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Academic knowledge brokers in Iran's health sector: Characteristics, skills, and qualifications

Khadijeh Shabankareh, Ali Hamidi¹, Mohammad Reza Soleymani, Mousa Alavi², Haniye Sadat Sajadi³

Abstract:

BACKGROUND: Knowledge brokers, as a bridge between producers and users of knowledge, need a set of skills and abilities to fulfill their role. The current study was carried out with the aim of identifying the characteristics, skills, and qualifications needed by knowledge brokers in Iran's health sector.

MATERIALS AND METHODS: This qualitative study was conducted through semi-structured interviews with 18 participants selected using social network analysis and snowball method from June to December 2022. All interviews were analyzed through the conventional content analysis method using the MAXQDA, version 20.

RESULTS: Two main categories (personality traits and professional competencies) and six subcategories (extroversion, acceptability, problem-solving skills, interactive skills, specialized skills, and specialized knowledge) were identified for knowledge brokers in Iran's health sector. Interpersonal communication skills, negotiation and persuasion skills, knowledge in both policymaking and research fields, and marketing and commercialization skills were defined as the most important factors in knowledge brokering.

CONCLUSION: Identifying and training qualified and interested individuals to undertake the task of knowledge brokering, by taking into account the characteristics identified in this research and strengthening the required skills and qualifications, can increase the effectiveness of knowledge brokering and help to bridge the gap between research and policymaking.

Keywords:

Academic knowledge brokers, evidence-informed policymaking, knowledge translation, skills

Introduction

In recent years, the use of research evidence to support health policies has received much attention. Experts believe that the use of research findings can lead to the formulation of more effective policies in terms of costs and health outcomes.^[1] Also, the interaction between researchers and policymakers can ensure the validity of the generated knowledge and its alignment with the health needs of society.^[2] However, the available evidence shows that there is no proper connection between research and policy in the health systems of different

countries in the world, including Iran.^[3,4] Among the proposed solutions to facilitate evidence-informed policymaking and communication between researchers and policymakers in the field of health is to seek help from knowledge brokers.^[5] The concept of knowledge broker, which was introduced in 2000 by the Canadian Institute of Health Research, refers to individuals or organizations that seek to facilitate the transfer of knowledge and establish communication and interaction between knowledge producers and users.^[6] However, the role of knowledge brokers as intermediaries between structural and social institutions emerged in the late 1800s

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Health Information
Technology Research
Center, Isfahan University
of Medical Sciences,
Isfahan, Iran, ¹Department
of Medical Library and
Information Sciences,
Faculty of Paramedicine,
Bushehr University
of Medical Sciences,
Bushehr, Iran, ²Nursing
and Midwifery Care
Research Center, Isfahan
University of Medical
Sciences, Isfahan, Iran,
³Knowledge Utilization
Research Center,
University Research and
Development Center,
Tehran University of
Medical Sciences, Tehran,
Iran

Address for correspondence:

Dr. Mohammad Reza
Soleymani,
Department of Medical
Library and Information
Sciences, Faculty of
Management and Medical
Information, Hezar
Jerib Street, Isfahan
University of Medical
Sciences, Isfahan, Iran.
E-mail: soleymani@
mng.mui.ac.ir

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in German-speaking countries to help create informal networks of communication between academia and industry. This role has been diversified over time and based on the different fields of activities of mediators, it has been referred to by different names such as agents of change, third party, intermediary informants, and knowledge mediators.^[7]

As early as 1997, Oldham and McLean proposed three frameworks for thinking about knowledge brokerage in the public sector: 1) knowledge system framework, which is concerned with the production, dissemination, and use of knowledge, and sees knowledge brokering as a way to facilitate or manage these activities; 2) transactional framework, in which knowledge brokering focuses on the relationship between knowledge “producers” and “users” and seeks to strengthen the link between the two; and 3) social change framework, in which agency is designed to increase access to knowledge by providing training to knowledge users and might lead to positive social outcomes.^[8] These brokering functions are widely accepted and are the basis of many practical works in the field of knowledge brokering in the public sector. However, knowledge brokerage activities have a wide scope and there is no consensus about the role or actual activities of a knowledge broker.^[9]

Knowledge brokers need a set of skills and abilities to fulfill their role. A review of related literature shows that a number of skills are generally agreed upon as important skills of knowledge brokering.^[7] According to the framework proposed by Oldham and McLean, various researchers have divided the required skills of knowledge brokers into three categories: 1) information management, 2) connection and exchange, and 3) capacity building.^[10-12] In some research, the roles of facilitation and evaluation have also been added to the three categories of skills of knowledge brokers.^[10,13,14] The role of facilitation introduces knowledge brokerage as a facilitator of evidence-informed policymaking. The role of evaluation includes the evaluation of the fields, processes, and consequences of knowledge translation at the research and clinical levels, and the self-evaluation of the knowledge brokers.^[10] Vaziri Goodarzi and Movahedi-Sobhani (2014) showed the structural relationship between the characteristics and duties of knowledge brokers using a conceptual model for the effectiveness of knowledge brokering in the knowledge-sharing process.^[15] Traynor *et al.* (2014) showed that the individual capacity of knowledge brokers increases through improving knowledge and skills in searching for critical evaluation, and applying research evidence in evidence-based issues.^[16] Jessani *et al.* (2016) argued that a combination of skills is required to play the role of knowledge brokering.^[17] Moore *et al.* (2018) identified four roles of diagnosis,

facilitation, consultation, and interpretation for knowledge brokers.^[18] In an integrative review study, Elledge *et al.* (2019) categorized the characteristics of knowledge brokers into six domains of self-awareness, self-management, social awareness, communication management, skills, and knowledge translation and understanding. However, they showed that none of the considered studies have specifically evaluated the facilitating features of knowledge brokering, rather the extracted characteristics have often been mentioned as accompanying data in these studies.^[19] Boutcher *et al.* (2022) also provided an organizational framework for the role of knowledge brokering by middle managers in the healthcare system.^[20]

A review of related literature showed that in recent years the issue of knowledge brokering has received wide attention globally, but there is a significant gap in the field of knowledge brokering in Iran, and no research has been done specifically in this field in the health sector. Therefore, the current research was carried out with the aim of explaining the role of knowledge brokers in Iran's health sector and identifying the characteristics, skills, and qualifications needed by knowledge brokers.

Materials and Methods

Study design and setting

The current research is part of a wider research with the aim of explaining the role of academic knowledge brokers in Iran's health sector, which has qualitatively identified the characteristics, skills, and qualifications needed to play the role of knowledge brokering, based on a contractual content analysis approach. This study was conducted in Iran in the period from June to December 2022.

Study participants and sampling

The research population included policymakers, knowledge brokers, and researchers working at the Ministry of Health and Medical Education of Iran. To define and choose the participants, social network analysis, communication network diagram, and snowball method were used for researchers and policymakers in Iran's health field. Therefore, the current study has sought to depict the current situation by analyzing the communication network and interactions between researchers and policymakers in Iran's health field and identify key people who can play a role as academic KBs.

Data collection tool and technique

The required data were collected through face-to-face semi-structured interviews and in some cases through the Skyroom.¹ First, based on the literature review and

¹ <https://www.skyroom.online>

research objectives, an interview guide was compiled, which was then verified and approved by the research team and an external expert. The interviews were conducted by one of the trained researchers. To build trust and rapport between the interviewer and interviewees, the interview began with an open-ended question, "What is your opinion about evidence-informed policymaking?" Interviews continued until data saturation was reached. Finally, the required data were collected by conducting 18 interviews. The interviews were recorded in a voice recorder after obtaining the consent of the participants. The duration of interviews varied from 30 to 60 minutes and was 50 minutes on average. The data obtained from the interviews were analyzed by the conventional content analysis method using the MAXQDA, version 20. Data analysis was done continuously and simultaneously with data collection, based on the steps suggested by Graneheim and Lundman (2004).^[21] Therefore, the conducted interviews were first implemented verbatim, and then the primary codes were extracted. After reviewing and merging similar codes, the categorization of related codes was done.

To check the accuracy and validity of the research data, the four criteria of Lincoln and Guba, i.e., Credibility, Confirmability, Dependability, and Transferability, were used.^[22] The researcher's long-term involvement with the research subject, continuous interaction with the participants, returning the extracted codes to some participants for approval, and the confirmation of the extracted codes and categories by three external observers were among the actions that were taken.

Ethical consideration

The present study was approved by the Research Ethics Committee of Isfahan University of Medical

Sciences with ethical code number IR.MUI.RESEARCH.REC.1398.323. In addition, at the beginning of the interview, the participants were notified about the objectives of the research, the confidentiality of the content of the interviews, how to record the interview, and their freedom to withdraw from the study at any stage of the research, and their informed consent to participate in the research was then obtained. To protect the privacy of the interviewees, each person was assigned a number and the data was reported in such a way that the individuals could not be identified.

Results

The number of participants in this research was 18, whose demographic characteristics are listed in Table 1. Based on the analysis of the data obtained from the interviews, two main categories (personality traits and professional competencies) and six subcategories (extroversion, agreeableness, problem-solving skills, interactive skills, specialized skills, and specialized knowledge) were extracted [Table 2].

Personality traits

Extroversion: One of the important characteristics needed in knowledge brokering that the participants mentioned was extroversion. According to the participants, being friendly, sociable, and determined are influential in the success of the broker in gaining trust and facilitating communication between the knowledge producer and the knowledge policymaker. One of the participants said:

"A knowledge broker must be an extrovert, a person who can communicate. A person who is introverted or overly focused on their own system will not succeed. He must be a good-natured person; a strict person who only wants to explain things by

Table 1: Demographic characteristics of participants

ID	Gender	Degree	Major	Academic position	Role
KB1	Female	PhD	Health Education and Promotion	Professor	Knowledge broker
KB2	Male	PhD	Occupational Health Engineering	Associate Professor	Knowledge broker
KB3	Female	PhD	Pharmacology	Associate Professor	Knowledge broker
KB4	Female	PhD	Epidemiology	Associate Professor	Knowledge broker
KB5	Female	PhD	Medical Biotechnology	Associate Professor	Knowledge broker
KB6	Female	PhD	Neuroscience	Assistant Professor	Knowledge broker
KB7	Female	PhD	Microbiology	Associate Professor	Knowledge broker
KB8	Female	PhD	Health Education and Promotion	Assistant Professor	Knowledge broker
KB9	Male	PhD	Environmental Health Engineering	Professor	Knowledge broker
PM1	Male	PhD	Epidemiology	Professor	Policymaker
PM2	Male	PhD	Environmental Health Engineering	Professor	Policymaker
PM3	Male	PhD	Epidemiology	Other	Policymaker
PM4	Male	Clinical Subspecialty	Gastroenterology and Hepatology	Distinguished Professor	Policymaker
PM5	Male	PhD	Health Education and Promotion	Associate Professor	Policymaker
PM6	Male	PhD	Epidemiology	Professor	Policymaker
PM6	Female	PhD	Knowledge and Information Sciences	Other	Policymaker
R1	Female	PhD	Healthcare Services Management	Associate Professor	Researcher
R2	Male	PhD	Library and Information Sciences	Associate Professor	Researcher

Table 2: Emerged categories and subcategories

Category	Subcategory-1	Subcategory-2
Personality traits	Extroversion	being friendly and sociable determined
	Acceptability	interested professional ethics flexible compassionate Humble and fair conscientious
Professional competence	Problem-solving skills	ability to perform multiple tasks ability to analyze
	Interactive skills	negotiation and persuasion skills networking skills interpersonal skills
	Specialized skills	leadership and planning Commercialization and marketing needs assessment searching, evaluating, and synthesizing knowledge mobilizing resources
	Specialized knowledge	Relative knowledge in relevant fields Familiarity with intellectual property rights Familiarity with policy and research environment

regulations and such, then the things won't go well. There must be a person who can communicate with these two different groups while also proceeding with the regulations" [KB7].

Another participant said, "You have to be very patient, because you have to go see both sides, talk to them, see what capabilities a knowledge producer has, what equipment they have, what services they can provide, and what the knowledge user needs. All this will be provided by talking and in fact by the various interviews and meetings they held" [KB3].

Acceptability: According to some participants, characteristics such as being honest and open to criticism, being interested, and the spirit of volunteerism of a knowledge broker contribute to his acceptability and acceptance by the policymaker. One of the participants said:

"Many times I did this voluntarily. And later I would come back and find a number of volunteers like me and we would do this together. Well, when I did this, when they wanted to do a project, I was their first candidate" This participant also said:

"Our method is that when we criticize our work and realize a mistake, we don't turn around at all. We say very clearly that we made this mistake and we are going to fix it. This is amazing [effective] in gaining trust" [KB2].

Another participant considered "professional ethics" as the most important characteristic of a knowledge broker in being accepted by researchers and policymakers:

"These people should be quite accepted by both parties in terms of their moral qualities, their behavioral qualities, and most importantly in terms of their professional ethics" [PM5].

According to some participants, a knowledge broker should have desirable characteristics such as being compassionate, humble, fair, and conscientious in order to gain the trust and support of policymakers. These participants stated that "the person who is chosen should be compassionate, conscientious. he should not be an ordinary person; he should be able to attract and motivate them as well" [KB8].

"I try to be fair and put myself in the other person's shoes, and I consult like that, and this has been very helpful" [KB2].

Problem-solving skills: Due to the complexity of the process of knowledge brokering, considering the diversity of the brokering activities in different fields and the need to communicate with different people and groups, the broker must have a high level of mental preparation. In addition, the broker must be able to identify problems and balance the demand and responses available in the environment. Having the ability to analyze, scientific ability, and the ability to perform multiple tasks at the same time were among the characteristics mentioned by some participants.

"A knowledge broker must be able to analyze the existing situation and pose questions. I mean, questions that are actually desirable and needed by the management system. They need a multi-function, multi-task person, and a scientific ability" [PM6].

Professional competence

Interactive skills: About 80% of the participants emphasized the interactive skills of the knowledge broker. Some essential abilities of a knowledge broker to facilitate communication, which were mentioned by the participants, are negotiation and persuasion skills, communicative and networking skills, interpersonal skills, and the ability to establish communication and constructive interactions between the producer and the user of knowledge. Here are some of the comments of the participants in this regard:

"In fact, the broker must be able to bring both parties together and actually negotiate with them, talk, and convince both sides" [R1].

"Broker should be able to provide a common language for the academic staff who have a series of achievements with their research work, and policymakers" [KB6].

"Well, for years I have been in contact with many friends in the ministry [Ministry of Health and Medical Education], I am consulted on many matters" [KB2].

"Another skill is the skill of interaction, communicating, and creating a network. A broker can actually create connections with different people, at different levels, in different parts of a country. Look at those who are almost working in the brokerage sector. They can somehow be close to the source of power and they themselves can become a source of power" [R1].

Specialized skills: According to the participants, a knowledge broker should have a set of specialized capabilities in addition to interactive skills to effectively play the role of a knowledge broker.

Based on the participants' opinions, the knowledge broker as a coordinator between the two groups of researchers and policymakers should have leadership and planning skills. One of the participants said:

"The broker should be familiar with the skills of leadership, planning, decision-making, and the main functions of policymaking" [R1].

Some other participants also considered it necessary for a knowledge broker to take training courses related to entrepreneurship and marketing to act as a knowledge broker.

"We were trained, we all went through an MBA course, a sub-branch of entrepreneurship. Only then did we find out what this knowledge broker's job is" [KB5].

Some argued that *"the knowledge broker must be completely familiar with the market environment; they must be able to provide interaction opportunities for academic staff who do not know the market at all or know the market poorly or do not know the language of the market. The broker must be able to create a common language between the researcher and the market" [KB6].*

The knowledge broker's understanding of the current needs of society and researchers' capabilities was also mentioned by some other participants:

"The knowledge broker must be able to recognize all this well, know the needs of the society, know the capabilities of the researchers, and connect these two together" [PM3].

The skills of searching, evaluating, and synthesizing knowledge as well as the skill of mobilizing resources were identified as the specialized skills needed by the knowledge broker to perform effectively as a knowledge broker. One of the participants said:

"The knowledge broker must know how to choose between evidence, or criticize it, evaluate it, and appraise it. A knowledge broker must have all these skills, such as searching for materials, evaluating materials, synthesizing materials, and so on." Besides, this participant said, "In my

opinion, another skill is the discussion of resource mobilization, which can be financial resources, human resources, data and information resources, and so on" [R1].

Specialized knowledge: According to the participants, the knowledge broker must first acquire some necessary knowledge to enter any field of activity. In addition, the broker must be familiar with legal issues and material and intellectual property. Knowing the policy environment and the field of research helps the broker understand both groups of policymakers and researchers and recognized the requirements of the different fields.

"The knowledge broker must have knowledge in the relevant field to be able to turn identified challenges into research questions" [KB4].

"A person who wants to do brokering work must be skilled, he must know law to some extent. Anyway, you know that there, in addition to the meeting they are holding and making acquaintances, the broker must also support the rights of the parties, including the rights of the university" [KB5].

"Knowledge brokers must fully understand the field of evidence. They must know the importance of explicit evidence; they should recognize the status of implicit evidence. On the other hand, they need to be familiar with the discussions of decision-making systems, policy-making systems, and the planning cycle" [R1].

Discussion

In the present study, two categories of personality traits and professional competencies were identified for knowledge brokers in Iran's health sector.

Personality traits are among the most important psychological variables that can significantly affect an individual's perception of all aspects of products and services.^[23] The most obvious feature expressed by the participants for the knowledge broker was having high communication skills, which has also been reported in most of the studies in this field.^[24-26] Moreover, the participants considered characteristics such as extroversion and acceptability as important factors in broker's acceptance by researchers and policymakers to establish constructive interaction between the two groups. Extroversion means the capability and skill of the knowledge broker in establishing social relations and interactions within and outside the organization.^[15] In other words, extroverted people have higher communication skills and perform better in acquiring interpersonal skills.^[27] Jessani et al. (2016) mentioned networking skills as one of the advantages of extroversion and believed that extroversion is one of the important personality traits necessary for academic

knowledge brokers.^[17] Landis *et al.* (2020) showed that extroverted people have larger networks and a greater desire to lead the group.^[28] Therefore, in addition to facilitating communication between researchers and policymakers, the characteristic of extroversion is also important in playing the role of leadership by knowledge brokers.

According to the participants, having appropriate moral and behavioral characteristics can also improve the acceptability of the brokers and help them win the trust of the policymakers. Elledge *et al.* (2019) considered enthusiasm, patience, flexibility, and dependability as self-management characteristics of knowledge brokers, in the framework of the facilitating role played by knowledge brokers.^[19] According to Vaziri Goodarzi and Movahedi-Sobhani (2014), having good behavior and desirable traits such as patience, cheerfulness, and charisma will attract people's trust and increase the effectiveness of the role of a knowledge broker.^[15]

Having problem-solving skills and the ability to analyze the existing situation can help the broker to identify and face existing challenges and create constructive interaction with different people at different levels in different places. In McGonigle (2020)'s proposed decision support framework for knowledge brokering, situation analysis is presented as one of the challenges facing policymakers, and the role of knowledge brokers is to bring stakeholders together to understand problems, discover conflicting interests, and visualize the future. Therefore, the knowledge broker's ability to analyze the current situation, including identifying key stakeholders, their goals and connections, identifying main investors, political/economic constraints facing the program and investment opportunities, is important.^[25] Gerrish *et al.* (2011) believed that the role of knowledge brokers is complex and multifaceted and goes beyond knowledge management, linking, and capacity building; it also includes the active processes of problem-solving and facilitating change.^[29]

In addition to personality traits, a broker needs three unique skills in the form of interactive skills, including negotiation and persuasive skills, networking skills, and interpersonal communication skills, to play the role of facilitator and create relationships between producers and users of knowledge. In Jessani's research, negotiation and networking skills have been proposed as interpersonal communication skills.^[17] Conklin *et al.* (2013) considered the ability to influence and persuade, interpersonal skills, teamwork, cooperation, and negotiation as knowledge broker skills for networking and expanding the communication network.^[30] Interpersonal and communication skills help the knowledge broker to work effectively and collaboratively in different fields and to

be successful in creating and maintaining relationships between different communities and networks in which s/he works.^[16]

In this study, leadership and planning skills, marketing and commercialization, needs assessment, search, evaluation and synthesis of knowledge, and resource mobilization were identified as the most important specialized skills required for knowledge brokers. In the study of Elledge *et al.* (2019), planning, leadership, monitoring, and evaluation skills were also identified as facilitators of knowledge brokering.^[19] According to Conklin *et al.* (2013), a knowledge broker is a leader who has influence instead of power and is ready to adopt any role and approach that is necessary to obtain a valuable result.^[30] In other studies, needs assessment, search, acquisition and dissemination of information, monitoring and evaluation of project progress,^[20] interpretation, evaluation, weighting and synthesis of evidence,^[25] synthesis, translation, and dissemination of evidence have been introduced as important skills of a knowledge broker.^[31] Skills such as environmental monitoring and needs assessment to identify local needs, help clarify the needs of stakeholders, determine available resources, and analyze organizational capacity have also been suggested by Bornbaum *et al.* (2015).^[13]

In addition, the participants believed that before entering any field, the knowledge broker should acquire the necessary knowledge and be aware of the most up-to-date evidence in that field. Elledge *et al.* (2019) also stated being aware of the most up-to-date evidence and the ability to receive new knowledge as characteristics describing the expertise of knowledge brokers.^[19] According to the participants, familiarity with the policy and research environment and familiarity with intellectual property rights are other criteria for the professional competence of knowledge brokers. Cranley *et al.* (2019) and Traynor *et al.* (2014) considered having knowledge in both research and policy fields as key characteristics of successful knowledge brokers.^[16,32] On the other hand, Berbegal-Mirabent *et al.* (2012) considered the regulation of explicit intellectual property rights related to knowledge transfer as one of the effective factors in the performance of knowledge transfer offices (KTOs) in charge of knowledge brokering.^[33]

In addition to the personality traits and professional competencies identified in this research, it seems that some demographic characteristics have also been involved in knowledge brokering in Iran's health sector. Examining the demographic information of the participants in this research shows that in Iran's health field, women are chosen more than men to play the role of knowledge broker; accordingly, out of a total of nine knowledge brokers in this research, seven of them were

women. Perhaps some personality traits of women such as higher communication skills to communicate with policymakers who are mostly men, personal interest, patience and follow-up, and less attention to material benefits in accepting the responsibility of knowledge brokerage by women can be considered as the reason for this issue.

Limitation and recommendation

The main limitation in performing this research was to conduct interviews with the research population, especially health policymakers, which was attempted to be resolved by follow-up and frequent calls, as well as coordination through relevant organizations or researchers' personal connections.

Conclusion

According to the results of this study, in addition to having some personality traits and inherent capabilities that are related to the individual's personality, knowledge brokers must also complete the necessary training courses and acquire the required skills. Based on the research participants' opinions, interpersonal communication skills, negotiation, and persuasive skills, having knowledge in both health policy and research fields, and marketing and commercialization skills were identified as the most important skills in knowledge brokering in the health sector, respectively. Identifying and training qualified and interested people for knowledge brokering, taking into account the characteristics identified in this research and other related research, and strengthening the required skills and capabilities, can increase the effectiveness of knowledge brokering and eliminate the gap between research and policymaking to enhance health policies and public health. For this purpose, it is necessary for the Ministry of Health and Medical Education to consider mechanisms to recognize and support knowledge brokering activities in universities of medical sciences and related organizations.

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Conflicts of interest

There are no conflicts of interest.

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