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Identification of key factors affecting the future of knowledge translation in Iranian health policy-making

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Abstract:

BACKGROUND: Production, publication, and effective of academic research in health policy-making are tools to strengthen interactions between policy-makers, the scientific community, and the public. The purpose of this study was to identify the key factors of knowledge translation in the policy-making of the health system in Iran using the structural analysis method.

MATERIALS AND METHODS: This future study was conducted using the foresight structural analysis method for a 10-year horizon in Iran from 2022 to 2031. Initially, 183 factors were identified by literature review and interviews with experts. In the next step, factors were reduced to 34 factors based on the research team's opinions by merging similar items and removing fewer related items. Then, 34 factors were sent to the experts through an online questionnaire. Nineteen factors were identified with importance and uncertainty above the average. Then, the average degree of cross-impact of the selected factors in the matrix was scored by 11 experts in a focus group meeting, ranged from 3 (strong) to 1 (weak). The cross-impact of these factors was analyzed using MICMAC software.

RESULTS: Five factors, including "policy-making method," "role and function of universities," "specialized services of knowledge brokering," "international conflicts," and "policy-makers' trust in university researches," were identified as key factors due to their high influence and effectiveness.

CONCLUSION: The results of this study will help the research managers of the universities to be more informed and, therefore, more successful in their planning for more efficient utilization of the knowledge and evidence from academic research by knowing the factors influencing the translation of knowledge.

Keywords:

Future studies, key factors, knowledge translation, policy-making

Introduction

Providers and consumers of health services expect policies that guide and support the field of healthcare should be entirely reliable and effective.[1] In other words, everyone assumes that healthcare should be based on knowledge and the results of scientific research. Evidence-based policy-making refers to the process of using research evidence in health policies to strengthen health systems so that they can ensure people's health.[2] The production, effective dissemination, and use of research in health policy-making is, hence, a complex and multifaceted process, but above all, a means to strengthen interactions and mutual understanding not only between policy-makers and the scientific community but also between these policy-makers and the general population.[3] Scientific evidence enables policy-makers to implement policies based on the best available knowledge. In addition, the existence of different evidence makes it possible for the policy-makers and program implementers to compare different modes, and they can choose a solution

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that fits the current situation and their facilities and capacities.[4]

Despite the importance and position of evidence-based policy-making in the proper management of the health system,[5] studies show that the lack of or improper and untimely use of evidence is still one of the main challenges of health systems in different countries in the world, including Iran.[6-8] Annually, many studies are conducted worldwide, the results of which are not used properly, and many decisions are made without regard to scientific evidence at different levels of decision-making, from clinical experts to policy-makers and managers.[4]

It seems that revising the knowledge translation processes can highly contribute to this field. Translation of knowledge in policy-making is the process of producing, exchanging, and using valid and quality knowledge for policy-making and health system management.[9] This process is a two-way communication between researchers, policy-makers, and health managers, in which researchers conduct applied research based on the needs of policy-makers and health system managers, and both parties benefit from the results.[10] In fact, knowledge translation in the health system refers to activities that aim at reducing the gap between evidence and practice, which will accelerate the application of "evidence-based knowledge" by the public, policy-makers, and health service providers.[11]

It is obvious that the first step for the successful implementation of the knowledge translation process and use of research results is to know the causes and influencing factors in the process of optimal application of research evidence, also known as evidence-based decision-making and policy-making in the health system. Therefore, it is possible to draw the vision and determine the future path and strategic planning to obtain the desired results.[12] One way to contribute to strategic planning is to conduct prospective research. Today, having foresight and drawing future perspectives have a very important contribution to the development of research and technology policies, and the knowledge and information achieved from these studies are used in policies related to these areas. It can be said that the influence of foresight on policy-making is one of the crucial issues that has become more prominent during the last two decades in parallel with the expansion of the concepts of foresight and policy-making.[13] Note that to draw the vision and determine the future path, it is necessary to understand the future.[14] Mirzaee *et al*.[12] categorized the barriers to conducting applied research (demand-driven) into nine factors: barriers to research management and policy-making; barriers to research organization and regulations; barriers to researchers; cultural-motivational barriers; barriers to supporting and using research facilities; educational barriers; political barriers; structural barriers, and financial and administrative barriers. Doshmangir *et al*.[15] showed that social, technological, and economic trends have the highest impact on evidence-informed policy-making and may create challenges or opportunities. In addition, political trends may affect evidence-informed policy-making; however, their impact is fewer than other trends. The growing need for high-quality local evidence and its availability for policy-makers was also known as a barrier to this kind of policy-making. In another research, the incompatibility of upstream documents with the university research capability, government funding constraint, and lack of awareness about the necessity of research were stated as factors affecting the future of research in seven comprehensive universities in Iran.[16] Nakhoda, in a study with a future research approach and using the Global Business Network (GBN) scenario planning method, identified two factors, "the state of international scientific and research cooperation" and "the government's approach to research," as influential factors that had the highest importance and uncertainty.[17]

In connection with this topic, some other similar studies that can be mentioned include Walters's study on the future of knowledge production and creation on the research programs of universities and its impact on university libraries. In a part of this study, the drivers and uncertainties affecting research planning in these universities were identified. Four scenarios were presented based on key factors such as the development of international interdisciplinary research, the increase of specialized research in specialized universities, attention to the authority of international research, and focus on education and student learning.[18] Also, in another study, factors such as competition for attracting research funds and publishing research results in prestigious and famous journals, a decrease in the recruitment of foreign students due to the competition of other countries, and the immigration policies of the US were identified as key factors affecting the future of research and research planning in the universities of the US.[19]

Considering that no forward-looking research has been conducted regarding knowledge translation in Iran's health policy-making, the present study was determined to identify the key factors of knowledge translation in Iran's health system policy-making system by using the method of structural analysis. In other words, the factors that are both influential and dependent on the future of production, transfer, and utilization of knowledge in the policy-making of Iran's health system should be identified.

Material and Methods

Study design and setting

This is a foresight study that was done using the structural analysis method for a 10-year horizon in Iran from 2022 to 2031. Structural analysis is a systematic and common method to identify key factors through the analysis of cross-impact and interactions between a set of affecting factors.[20] In this method, the relationship between each pair of factors is identified. Therefore, it is asked if factor A influences the factor B. If so, how much is this influence? One of the most important advantages of using the structural analysis method is the identification of hidden relationships between variables that may not be identified even by experts.[21] The MICMAC software is used for structural analysis and identifying key factors.

Study participants and sampling

The participants in the interviews (15 experts), focus group (11 experts), and those who answered the importance/uncertainty questionnaire (33 experts) were those who had published articles in the field of knowledge translation. The selection of experts was done using the snowball sampling method.

Data collection tool and technique

This research was conducted in several phases. In the first phase, factors affecting the future of knowledge translation in health policy were identified by a comprehensive literature review, analysis of government documents, and interviews with 15 experts. At the end of this phase, 183 factors were identified, which were reduced to 34 factors based on the opinion of the research team by merging similar items and removing fewer related items.

In the second phase, 34 factors were categorized into three groups of factors affecting knowledge production, knowledge transfer, and use of knowledge in policy-making. Then, these factors were sent as an online questionnaire to experts for scoring based on the two features of *influence* and *uncertainty*. By analyzing their answers, 19 factors were identified with importance and uncertainty above the average (score of 3.5). In the third phase, the cross-impact of the selected factors was investigated. As a result, a cross-impact analysis matrix was prepared, and the cross-impact of these factors on each other was scored in a focus group meeting. The influence rate was from 1 to 3 (0 = no influence, 1 = weak influence, 2 = moderate influence, 3 = high influence, and p = potential influence). In the fourth phase, the average scores of 19 factors were entered into the MICMAC software for structural analysis and identifying key factors. This software is used for structural analysis in future studies based on the power of influence and the degree of dependence of each factor and provides the possibility of further investigation of the range of each factor.[10]

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.1399.568.

Results

Thirty-four influencing factors on knowledge translation in health policy-making were identified according to a comprehensive literature review, analysis of government documents, and interviews with experts. These factors were categorized into three groups and sent to experts to determine the degree of influence and uncertainty. Finally, 19 factors were identified with a degree of importance and influence above the average [Table 1].

Analysis of interaction effect of factors

At this phase, MICMAC software was used to analyze the cross-impact of factors. In this way, first, a matrix was prepared, and a focus group meeting was required to determine the influence of each factor on other factors with numbers 0 to 3. Table 2 shows the initial analysis of matrix data and its statistics.

According to the dimensions of the matrix, there were 361 options for the matrix. Out of the total options, 70 were not influential, 171 had a weak influence, 105 had a moderate influence, and 15 had a strong influence. The degree of filling was 80.61%, indicating that more than 80% of the factors affected one another. Furthermore, the matrix is based on statistical indicators with two data rotations of desirability and optimization of 100%, which shows the high validity of the questionnaire and its answers.

Based on the placement of variables in the four areas of the matrix [see Figure 1], four categories of factors can be identified:

A: Determining or influential variables: These variables that are in the northwest area of the matrix are the factors that influence the future of knowledge translation in health policy and are much less influential. In this area, factors such as "international political conflicts, policy-makers' trust in academic research, behavioral characteristics of policy-makers, political-security considerations of evidence, policy-making method, increasing privatization process, growth of the competitive economy, and ethical and political considerations in transferring evidence" were placed.

B: Two-dimensional variables: These variables, which are in the northeast area of the matrix, are factors with two characteristics of influence and dependence. Out of a total of 19 factors, five factors of "changing expectations from universities, globalization of universities, specialized services of knowledge brokering, the interaction between researchers and policy-makers, and the social status of research" were placed.

C: Dependent variables: These variables are in the southeast area of the matrix. These are the factors affecting the system to a great extent and have less influence on the system. In this area, there are four factors: financial resources for conducting research, research facilities, elite immigration, and motivation of researchers to knowledge translation activities.

D: Independent variables: These variables, which are in the southwest area of the matrix, are factors that have low influence. According to the research findings, two factors, "conflict of interests of policy-makers" and "copyright concern" were identified as independent factors.

Figure 2 shows the graphical representation of the relationships of the studied factors. In this figure, the direct influences of the factors on other factors of the system are specified. Based on the colors, the factors that influence are shown as weakest, weak, moderate, strong, and strongest. Also, the ranking of the variables shown in Figure 3.

Stability and instability of the system

Dispersion of factors in the influence and dependence axis shows the stability or instability of the system. If the distribution of the factors on the axis has an L shape, the system is stable, and this stability indicates stability in effective factors and their continuing influence on other factors. However, if the factors move from the axis towards the bottom of the diagram and spread around it, the system is not stable, and the lack of effective factors threatens the system. In this study, the general pattern of the position of the factors on the axis shows that the system is unstable [see Figure 1].

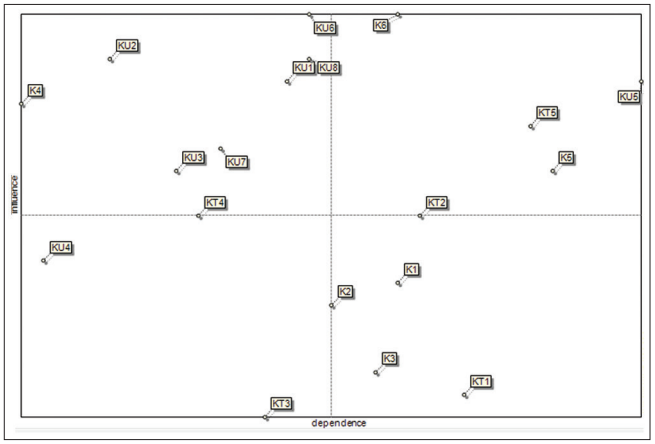

Figure 1: The distribution map of the factors and their positions in the axis of influential and dependent factors

Table 1: Factors affecting the future of knowledge translation in Iran's health system policy-making in three phases

Phases of knowledge translation	Factors	Codes
Knowledge production phase	Research facilities	K1
	Financial resources for conducting research	K2
	Elite immigration process	K3
	International political conflicts	K4
	Changing expectations from the university	K5
	The globalization of universities	K6
Knowledge transfer phase	The motivation of researchers to perform knowledge translation activities	KT1
	Specialized services of knowledge brokering	KT2
	The concern of researchers to preserve material and intellectual property	KT3
	Ethical and political considerations in transferring evidence	KT4
	Interaction of researchers and policy-makers	KT5
Knowledge use phase	Policy-makers' trust in academic research	KU1
	Behavioral characteristics of policy-makers	KU2
	Political-security considerations of evidence	KU3
	Conflict of interests of policy-makers	KU4
	The social status of research	KU5
	Policy-making method	KU6
	Increasing the trend of privatization	KU7
	Competitive economic growth	KU8

Table 2: Summary of matrix characteristics for indirect influences and dependencies

Matrix size	Number of iterations	Number of Zeros	Number of ones	Number of twos	Number of threes	Number of *P*	Total	Filling rate
19	2	70	171	105	15	0	291	80/61%

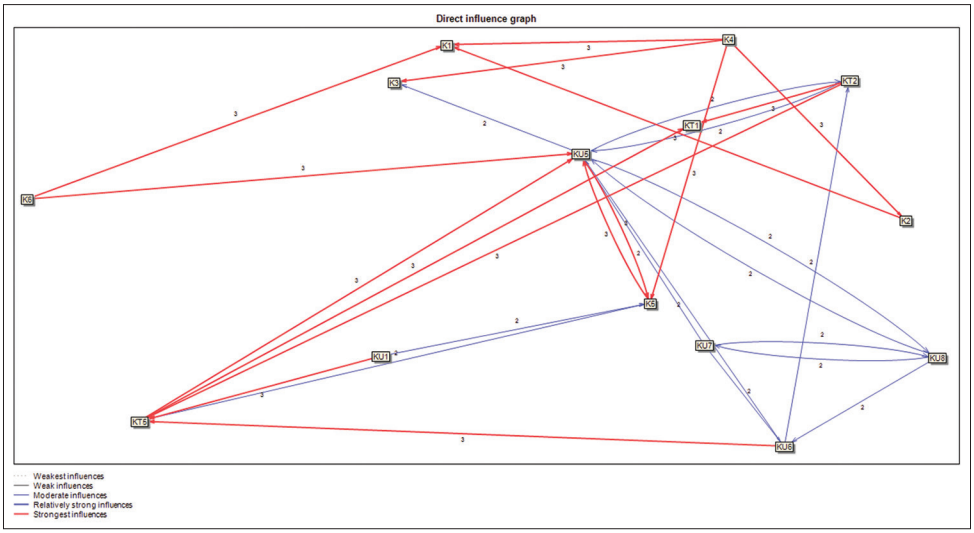

Figure 2: Direct influences between factors and the relationship between them

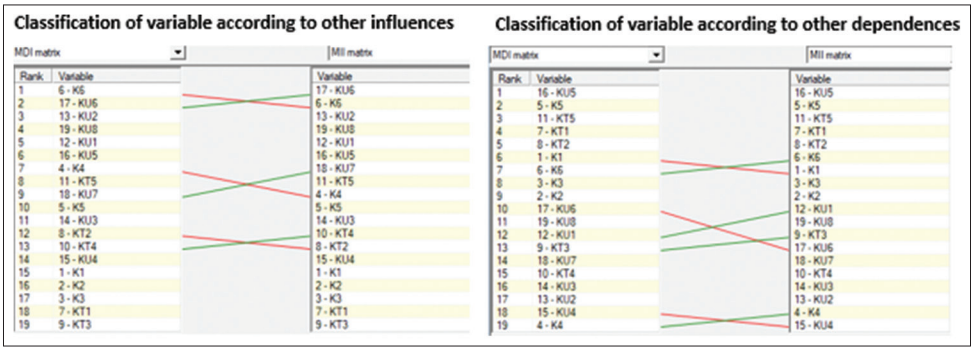

Figure 3: Comparison of influencing and depending variables ranking based on the direct and indirect effects

Identification of key factors

Key and strategic factors are factors that can be manipulated and controlled and that affect the dynamics and stability of the system. Therefore, indicators that have a high level of influence but cannot be controlled are not regarded as key factors. Therefore, it can be said that the factors in the northeast part have the characteristics of key factors.

According to the findings of the research, first, seven factors of "international conflicts," "changing expectations from universities," "globalization of universities," "specialized services of knowledge brokering," " policy-making method," "interaction between researchers and policy-makers" and "trust of policy-makers in university research" were identified which had both high influence and uncertainty. Then, merged close factors such as "changing expectations from universities and globalization of universities" and the factors of "interaction of policy-makers and researchers and the trust of policy-makers in university research." Finally, five factors, "international conflicts," "policy-making method," "policy-makers' trust in academic research," "specialized services of knowledge brokering," and "role and performance of the university" were selected as key and strategic factors affecting the future of knowledge translation in Iran.

Limitations and recommendation

Considering that the results of structural analysis strongly depend on the opinion of experts, their lack of familiarity with structural analysis and future studies is the most important limitation of the present study. However, this problem was somewhat moderated by the explanations of the research team for the experts.

Discussion

This future study was conducted to determine the key factors affecting the future of knowledge translation in Iran's health policy and use the method of structural analysis. The cross-impact between factors extracted through literature review and interviews was structure analyzed using MICMAC software.

The results of the analysis showed that the five factors, "policy-making method," "role and performance of universities," "specialized services of knowledge

brokering," "international conflicts," and " policy-makers' trust in university research," were identified as strategic and key factors. Considering that it seems that a similar study has not been done in this field, its results can be compared with similar studies in closer subjects, such as factors affecting academic research. As the findings of the present study show that political factors have the most influence on the knowledge translation in health policy-making, whereas Doshmangir's results showed that economic, social, and technological factors are more influential on research[15]. However, the factors identified in the research, Moradmand's (" inconsistency of legal documents with the research capability of universities," "budget," and "lack of awareness of the necessity of adaptive research"), are not consistent.[16] It can also be said that the factors of the "policy-making method" and "the trust of policy-makers in university research" are to some extent related to the "government's approach to research" and "the role and performance of universities" to "the state of international scientific research cooperation" in the research of Nakhoda are aligned.[17] Evidence-based policy-making or intuitive policy-making without paying attention to evidence is one of the essential factors affecting the motivation or lack of motivation of researchers to produce valid and reliable evidence and transfer it to the beneficiaries. If academic researchers feel that the basis of health policy-makers is based on scientific evidence, they will go out of their way to produce valid evidence and transfer the research results to the beneficiaries. The role and performance of universities of medical sciences are another factor influencing the future of knowledge translation in Iran's health policy. If the universities consider themselves responsible for the problems and issues of the country's health sector, undoubtedly, practical research based on solving health issues will be prioritized in their research policies. Moreover, they will proceed to produce valid evidence, and the results of their research will be transferred to health policy-makers. Considering that academic researchers have not been trained and empowered to identify and interact with key stakeholders as well as to transfer the results of their research to them, providing specialized services of knowledge brokering can be facilitators.

In other words, the presence of institutions and experts as intermediaries between researchers and other stakeholders can be effective in identifying research priorities and to interacting with policy-making organizations on one side, and utilizing the research capacities of researchers and university research centers on the other side. Among the obstacles to the use of evidence produced by academic researchers in the country's health policy-making is the distrust of policy-makers in academic research. They believe that researchers do not have enough knowledge of health problems and are completely inexperienced in this field. Therefore, the constant interaction of policy-makers and researchers from the stage of stating the research problem to the transfer of the research results will significantly help to solve the problem of mistrust in academic research. International conflicts and tensions in the country's foreign policy directly and indirectly affect the production and dissemination of reliable evidence. In recent years, imposing sanctions at the international level, in addition to limited financial resources, has prevented the effective publication of research results in international journals and the purchase of equipment needed for research.

Conclusion

In general, the results of this study will help the research managers of universities and health policy-makers of the country to accurately understand the key and strategic factors affecting the translation of knowledge in each of the three stages of knowledge production, knowledge exchange, and knowledge application. This knowledge can be effective during the planning of policy-makers and managers to determine the priorities of intervention in this area to use the knowledge and evidence obtained from academic research more appropriately. Finally, this can help to increase the rate of conversion of science to technology in health and further improve health in the country.

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Conflicts of interest

There are no conflicts of interest.

References

1. Loversidge JM, Zurmehly J. EvidenceInformed Health Policy: Using EBP to transform policy in nursing and healthcare. 1st ed. Indianapolis: Sigma Theta Tau; 2019.
2. Dodd M, Ivers R, Zwi AB, Rahman A, Jagnoor J. Investigating the process of evidence-informed health policy-making in Bangladesh: A systematic review. Health Policy Plan 2019;34:469-78.
3. Françoise M, Frambourt C, Goodwin P, Haggerty F, Jacques M, Lama ML, *et al*. Evidence based policy making during times of uncertainty through the lens of future policy makers: Four recommendations to harmonise and guide health policy making in the future. Arch Public Health 2022;80:140. doi: 10.1186/

s13690-022-00898-z.
4. Doshmangir L, Majdzadeh R, Mostafavi H. The Use of Evidence in Health Decision Making. Tabriz: Pezhvake Alborz; 2018.
5. Sajadi HS, Majdzadeh R, Yazdizadeh B, Mohtasham F, Mohseni M, Doshmangir L, *et al*. A roadmap for strengthening evidence-informed health policy-making in Iran: Protocol for a research programme. Health Res Policy Syst 2019;17:1-8. doi: 10.1186/s12961-019-0455-9.
6. Sajadi HS. The role of knowledge brokers in promoting evidence informed health policy making. Health Inf Manag 2017;14:1-2.
7. Gabbay J, Le May A, Pope C, Brangan E, Cameron A, Klein JH, *et al*. Uncovering the processes of knowledge transformation: The example of local evidence-informed policy-making in United Kingdom healthcare. Health Res Policy Syst 2020;18:1-5. doi: 10.1186/s12961-020-00587-9.
8. Masood S, Kothari A, Regan S. The use of research in public health policy: A systematic review. Evid Policy. 2020 Feb 17;16(1):7-43.
9. Mosadeghrad AM, Isfahani P. Barriers to knowledge translation in health policy and management: A scoping review. Hakim Res J 2020;23:86-103.
10. Mosadeghrad AM, Isfahani P. Facilitators to health policy and management knowledge translation: A scoping review. PAYESH 2021;20:529-48.
11. Mallidou AA, Atherton P, Chan L, Frisch N, Glegg S, Scarrow G. Core knowledge translation competencies: A scoping review. BMC Health Serv Res 2018;18:502.
12. Mirzaee M, Abolghasemi M, Ghahramani M. Barriers to applied research activities (demand-driven) in Isfahan University of Technology. Iran Higher Educ Q 2016;8:31-56.
13. Namdarian L, Hassanzadeh A. Foresight of Science and Technology and its Effects on Policy Making. Tehran: IRANDOC, Chapar; 2016.
14. Taheri Demneh M, Poorezat AA, Zolfagharzadeh MM. Contemplation on the concept of future images as the construction of social identity. Q J Natl Stud 2015;16:61-76.
15. Doshmangir L, Yazdizadeh B, Sajadi HS, Mohtasham F, Majdzadeh R. What is going on in the future for evidence-informed health policy-making in Iran? J Evid Based Med 2021;14:285-90.
16. Moradmand A, Nakhoda M, Noruzi A, Naghshineh N. Identifying the most important factors influencing the future of university research policies: A case study of seven comprehensive universities. J Sci Technol Policy 2019;12:31-46.
17. Nakhoda M, Moradmand A, Naghshineh N, Noruzi A. Developing conceivable scenarios for the future of university research programs and their impact on university library services. Acad Librariansh Inf Res 2020 Feb 20;53:77-96.
18. Walters T. The Future of Knowledge Creation and Production in University Research Programs and Their Effect on University Libraries (Doctoral dissertation).
19. Rouse WB, Lombardi JV, Craig DD. Modeling research universities: Predicting probable futures of public vs. private and large vs. small research universities. Proc Natl Acad Sci 2018;115:12582-9.
20. Nazarko J, Ejdys J, Halicka K, Nazarko Ł, Kononiuk A, Olszewska A. Structural analysis as an instrument for identification of critical drivers of technology development. Procedia Eng 2017;182:474-81.
21. Zali N, Rabbani T, Motti VV. Application of prospective structural analysis for identification of strategic variables in the future development of Baneh city in Iran. Eur Spat Res Policy 2015; 1:153-71.