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Force field analysis of driving and restraining factors affecting the evidence-based decision-making in health systems; comparing two approaches

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Abstract:

BACKGROUND: All policies and decisions need evidence examined by scientific methods. Moving toward evidence-based decision-making (EBDM) as a change in organizations, especially health systems (HSs), is inevitable. This study was conducted to identify the factors affecting EBDM in HSs from two approaches and to score them.

MATERIALS AND METHODS: A mixed-method study was carried out using the force field analysis regarding the change toward EBDM in HS in 2020. This study included six steps to identify and score the key driving forces (DFs) and restraining forces (RFs) to change toward the EBDM in HS: first, finding forces from literature; second, selecting key DFs and RFs through focus group discussion; third, scoring the first group of DFs and RFs by the experts through electronic forms; fourth, determining key DFs and RFs from the managers' perspective using qualitative interviews; fifth, scoring the second group of DFs and RFs by the experts; and sixth, comparison between forces resulted from two approaches.

RESULTS: According to the literature and experts' opinions, "relevant, reliable, interpretable, and understandable evidence" and "interaction between researchers and decision-makers" were the strongest forces to change, and "lack of organizational commitment and support" and "lack of relevant/high-quality evidence" were the strongest forces against the change toward EBDM in HS. Further, based on managers' perspective and scores by the experts, "suitable supervision and control" and "reforming the planning and decision-making system" were the strongest forces to change, and "inadequate knowledge of the managers and staff about the principles and contents of EBDM" and "issues beyond the authorities of managers" were the strongest forces against the change toward EBDM in HS.

CONCLUSIONS: Based on the findings, HSs' managers can focus to reduce RFs and promote DFs for implementing EBDM strategies, so they can provide better services by making more efficient decisions.

Keywords:

Evidence-based healthcare, force field analysis, health system agencies, organizational changes, policy-making

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Introduction

Nowadays, most organizations have to adapt their existing actions and activities for more growth and development due to various causes, including advances in technology and production methods, change of customer behaviors, economic evolutions, transformation of marketing and business methods, as well as rules and regulations variations.^[1] Likewise, healthcare organizations have to change due to different factors inside or outside the health systems (HSs) such as the development of technology and its application in the health sector, online availability of health information, demand for quality assurance, epidemiology of diseases, and the repetition of infectious diseases, the recognition of health as the people's right, privatization, and commercial interests, activation of the media, the participation of other sectors in the HS, and importance of efficient and effective policy-making and decision-making. Yet, all policies, strategies, and decisions need evidence that has been examined by scientific methods.^[2]

Decision-making is the first and fundamental part of managerial tasks. This makes it important to use good and sufficient evidence in managers' decisions. Of course, the evidence must also be accurate and rigorous, which is achieved through transparency, repeatability, and consensus of the findings in society.^[3] This is more especially important in the healthcare sector that evidence-based decision-making (EBDM) must be used routinely.^[4]

EBDM is defined as the process of deciding on a program, performance, or policy based on the best available research evidence and considering empirical and environmental findings, as well as relevant contextual evidence.^[5] EBDM can cause increasing the efficiency and effectiveness of the activities of healthcare organizations, evaluate and improve interventions, apply researches, and ultimately improve community health.^[6]

Regarding the factors influencing EBDM, the facilitators and barriers to its implementation have been varied, which include some external and internal factors such as financing, executive commitments, staff, education, and learning.^[7] To improve the processes in organizations, facilitators are seen as driving forces (DFs) for change, while some barriers are also known as restraining forces (RFs) to change. An force field diagram (FFD) is used to analyze these opposing forces and the possibility of change in the organization. When the whole power of DFs and RFs are equal, or when the power of RFs is greater, no changes in the organization will not result. To make a change, the power of DFs must prevail over RFs. To do this, the organization can reduce or eliminate the RFs or effort to strengthen the DFs.^[8]

In this regard, the force field analysis (FFA) has been widely used by those involved in organizational development to plan and implement organizational changes.^[9] Kotter and Schlesinger pointed out that managers who initiate change often assume that they have all the relevant information needed to make a decision, as well as those who will be affected by the change. However, this assumption is often incorrect.^[10]

FFA is a powerful tool that is widely used for evidence-informed decision-making, especially for planning and implementing change management.^[10] This technique provides a complete and comprehensive summary of the opposing forces for change (DFs and RFs).^[8,10] Furthermore, the balancing framework used in this analysis can be applied in addition to comparing between DFs and RFs to change, in cases such as determining the possible action and reactions, comparing the current and ideal situations, or evaluating the training courses.^[8]

Hitherto, FFA has been used in various scopes such as: increasing the involvement of adolescents in their healthcare,^[11] changing the health behavior of patients,^[12] the impact of community involvement in the development of clean air policies,^[13] the balance between underuse and overuse of resources in the HS,^[14] the selection of appropriate strategies for the hotel industry,^[15] and the implementation of the nursing information system.^[16]

Therefore, this study aimed to identify the key DFs and RFs to change toward EBDM in HS in two ways (reviewing the literature and the viewpoints of real managers) and score them based on experts' opinions through a FFA.

Materials and Methods

Study design and setting

The present mixed-method study was carried out using the FFA regarding the change toward EBDM in HS in 2020.

Even though FFA is simple, it is a vigorous method for figuring out the forces that will facilitate and hinder a proposed change.^[8] This efficacious framework can use along with qualitative research for providing a systematic analysis of a wide range of factors such as people, available resources, customs, traditions, beliefs, attitudes, needs, and desires. This tool was designed by Kurt Lewin, a social psychologist, and it finds application in a wide range of fields such as social science, public health, psychology, community, and management. Based on the administrative approach in HSs, it helps the recognition of all those factors that should be regularly

modified and assessed to give the capability to the authorities and managers to evaluate the effectiveness of changes and rectification and to regulate the proper plans and training strategies. FFA can categorize any problem into two scopes/groups, factors/pressures for maintenance of the existing status (RFs), and those for bringing about a change in the existing situation and thus shift toward the desired path (DFs).^[17]

This analysis includes a two-column framework, with DFs listed in one column and RFs in another. These forces can be positive, persisting us to a special situation, or negative, pushing us away from that. The FFD portrays these two sets of forces that affect the desired issue. It can be used to compare any kind of opposites, actions, and consequences, different points of view, and so on.^[8,10] If FFA performs by a group or a team of experts, it is more beneficial. Individual biases and limited knowledge may inhibit a single person from accurately assessing the forces influencing a strategy. Group discussion of forces also increases understanding about how the forces will influence a proposed strategy.^[10] According to do this, about 6–8 participants were recommended.^[17]

Study participants and sampling

In this study, two groups of participants were included; a team of experts and a group of managers and policymakers. The experts' team in this research consisted of eight professionals with related managerial education or at least 2 years of managerial experience and having specialty or history of research in health policy or decision-making (at least one article or research project in this field) which they were selected by purposeful sampling. The group of policymakers or senior managers included 30 managers from three groups of the deans and vice-chancellors of faculties, the managers and vice-chancellors of the deputies of a university of medical sciences, and the chief hospital managers.

Data collection tool and technique

Considering the FFA method, the present study included five steps to identify and score the key influencing forces (DFs and RFs) to change toward the EBDM in HS.

1. Finding the influencing factors from the literature: At first, we tried to find and list the probable factors that could positively or negatively influence the change toward the EBDM in HS through a literature review. We searched the databases including the ISI Web of Science, PubMed, and Scopus by incorporating related keywords such as "driving forces," "facilitators," "restraining forces," "barriers," "evidence-based decision-making," "health," from 2010 to 2020
2. Selecting the key DFs and RFs: In this step, the most important or key DFs and RFs were selected using

critical thinking and focus group discussion between the members of the research team

3. Scoring the resulted DFs and RFs: In this step, DFs and RFs resulted from Step 2 were sent to the experts through electronic forms and they were scored by them. The experts were asked to score each factor from 1 to 10. Then, the total mean score of each factor was calculated through Excel software version 2016, and according to them, the FFD was illustrated. The factors that had more or less effect to change toward EBDM in the HS from the experts' opinions showed with longer or shorter arrows in the diagram, respectively. Finally, the total scores of DFs and RFs were calculated
4. Determining the key DFs and RFs from the managers' perspective: In this phase, to compare between the key DFs and RFs to change toward EBDM in the HS that resulted from the literature and the DFs and RFs based on the managers' approaches in real situations, we conduct qualitative interviews with 30 managers of a university of medical sciences. After recording interviews, extracting data, and incorporating them through thematic analysis, the final codes as the key DFs and RFs to change toward EBDM in health organizations have been created
5. Scoring DFs and RFs extracted from the previous step by the experts: The experts were asked to score each factor from 1 to 10 through electronic forms. Then, the total mean score of each factor was calculated through Excel software version 2016, and according to them, the FFD was illustrated. The factors that had more or less effect to change toward EBDM in the HS from the experts' opinions showed with longer or shorter arrows in the diagram, respectively. Finally, the total scores of DFs and RFs were calculated
6. Comparison between DFs and RFs resulted from two approaches: Eventually, two groups of resulted forces with their scores were compared.

Ethical consideration

This study was under a research project that was approved by the Ethics Committee of Shiraz University of Medical Sciences (Ethical Code: IR.SUMS.REC.1396.424).

Results

We have identified the key DFs and RFs to change toward EBDM in the HS from two perspectives and scored them according to the experts' opinions. The demographic characteristics of the participating experts in this study are presented in Table 1. The first group of DFs and RFs to change toward EBDM in the HS resulted from the literature review, focus group discussion and the scoring phase (steps 1–3) are shown in Figure 1 with their mean scores.

As can be seen in Figure 1, based on the scoring, “relevant, reliable, interpretable, and understandable evidence” (score = 9) and “interaction between researchers and decision-makers” (score = 8.8) were the strongest forces to change, and “lack of organizational

commitment and support” (score = 8.4) and “lack of relevant/high-quality evidence or inadequate access” (score = 8.2) were the strongest forces against the change toward EBDM in the HS.

Table 1: Characteristic of the participating experts in the study

Variables	Frequency (%)
Gender	
Male	5 (62.5)
Female	3 (37.5)
Job position (place)	
University of medical science/research center	6 (75)
Hospital	2 (25)
Age (years), mean±SD	42±7
Work experience (years), mean±SD	14±6

SD=Standard deviation

On the other hand, “imperative and fostering of using scientific evidence” (score = 6.4) was the weakest DF to change toward EBDM in the HS, and “workloads pressures or frequent turnover” (score = 5.2) and “inadequate funding and inappropriate infrastructures or structure” (score = 6.4) were the weakest RFs against the change toward EBDM in the HS.

The total score of the first group of DFs and RFs to change toward EBDM in the HS is shown in Figure 2. Consequently, the DFs to change toward EBDM in the HS were stronger than the restraining ones.

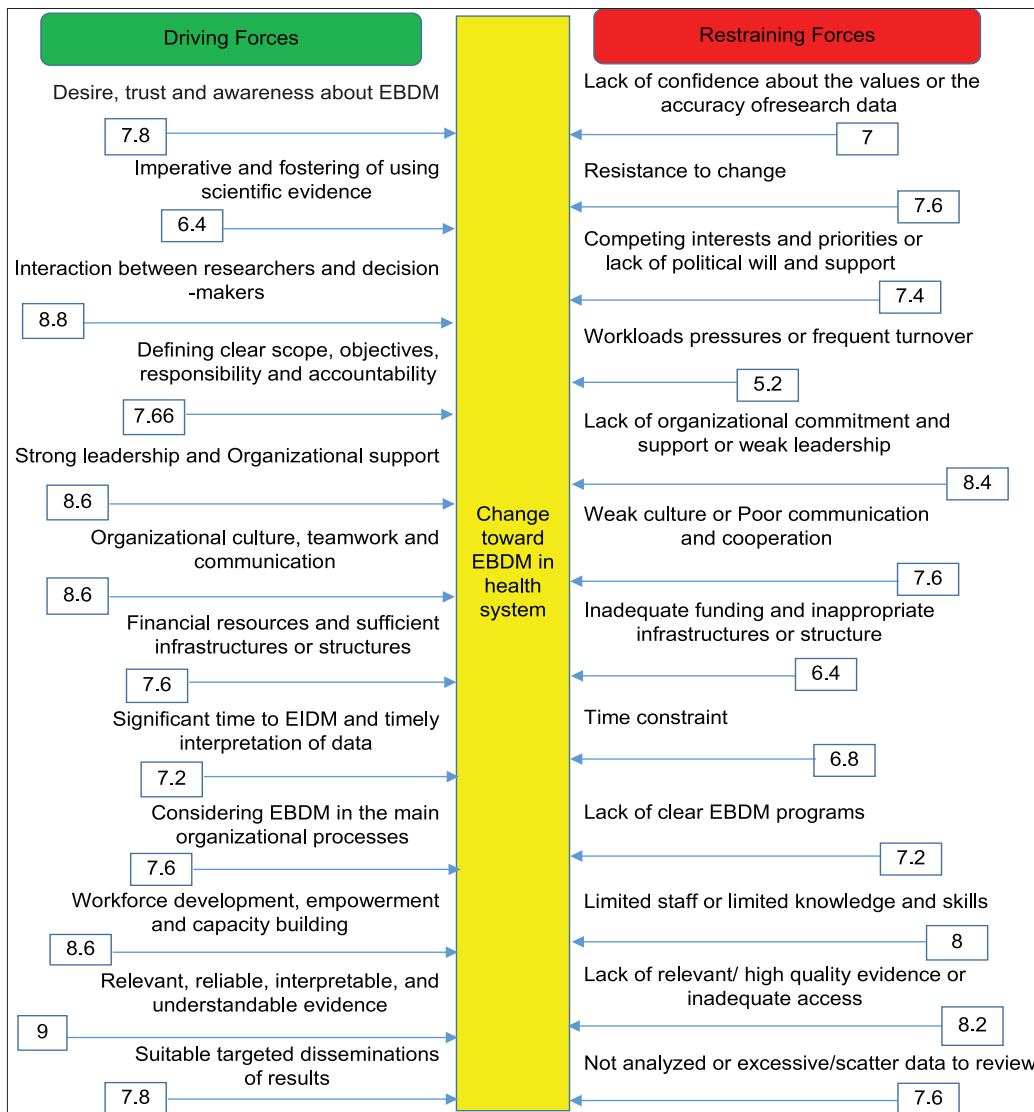


Figure 1: Key driving and restraining forces to change toward evidence-based decision-making in health system resulted from the literature and their scoring from the experts' opinions

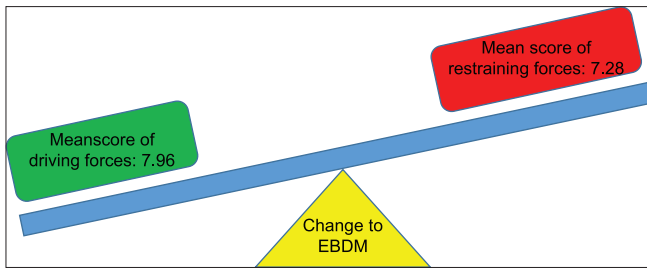


Figure 2: Total score of the first group of driving and restraining forces to change toward evidence-based decision-making in health system

The demographic characteristics of the participating managers in the qualitative interviews in this study are presented in Table 2.

The second group of DFs and RFs to change toward EBDM in the HS resulted from the approaches of health-related organizations’ managers and the scoring phase (Steps 4 and 5) are shown in Figure 3 with their mean scores.

As can be seen in Figure 3, based on the scoring, “suitable supervision and control” (score = 9.1) and “reforming the planning and decision-making system” (score = 8.8) were the strongest forces to change, and “inadequate knowledge of the managers and staff about the principles and contents of EBDM” (score = 9.2), “issues beyond the authorities of managers” (score = 8.9), and “making macro-organizational decisions according to some inappropriate bases” (score = 8.8) were the strongest forces against the change toward EBDM in the HS.

On the other hand, “making the necessary reforms in organizational structures” (score = 5.3) and “decentralization and increasing the managers’ scope of authorities” (score = 5.8) were the weakest DFs to change toward EBDM in the HS, and “lack of infrastructures, facilities, and resources and cooperation” (score = 6.8) and “lack of managers’ accountability or their attention about EBDM importance” (score = 6.8) were the weakest RFs against the change toward EBDM in the HS.

The total score of the first group of DFs and RFs to change toward EBDM in the HS is shown in Figure 4. Consequently, according to the managers’ approaches, the effect of the RFs against change toward EBDM in the HS can be stronger than the effect of diving forces.

Discussion

Today, going toward change, especially EBDM, for improvement and development of the organizations in HSs is inevitable.^[2,18] It is encouraging policymakers and stakeholders to use evidence in the decision-making process.^[19] Identifying DFs and RFs for this change can help policymakers to prepare appropriate plans inside and outside the HS.^[14]

Table 2: Characteristic of the participating managers in the study

Variables	Frequency (%)
Job position (place)	
Deans and vice-chancellors of faculties	6 (20)
Managers and vice-chancellors of the University of medical sciences	
Deputy for culture and student affairs	2 (6.67)
Deputy for administration and finance	4 (13.33)
Deputy for health	3 (10)
Deputy for curative affairs	4 (13.33)
Deputy for food and drug	3 (10)
Deputy for education	2 (6.67)
Deputy for research	2 (6.67)
Hospital managers	4 (13.33)
Education level	
MSc	10 (33.33)
Ph.D. and SP	13 (43.33)
GP	7 (23.33)
Gender	
Male	23 (76.66)
Female	7 (23.33)
Marital status	
Married	26 (86.66)
Single	4 (13.33)
EBDM-related experiences	
Had	24 (80)
Didn't have	6 (20)
EBDM-related researches	
Had	9 (30)
Didn't have	21 (70)
EBDM-related training	
Had	16 (53.33)
Didn't have	14 (46.66)
Age (years), mean±SD	48±9
Work experience (years), mean±SD	20±5

SD=Standard deviation, EBDM=Evidence-based decision-making

In the FFA, some forces may be recognized as both DFs and RFs on the path to change, in which case 1 depicts with a smaller arrow and the other with a larger arrow, depending on the size of their effect on the process of change at the same time.^[20] In the present study, six similar key factors in favor and against change toward EBDM have been identified in the literature so that their existence is considered as a DF, and their absence or weakness is considered as a RF regarding the implementation of EBDM in health organizations. Of course, most of these cases have more effect in the DFs category from the experts’ opinions.

In the present study, 12 key DFs and RFs have been found from the literature and they have been scored using experts’ opinions. Further, at the next steps, 11 and 13 items have been determined by the managers as the DFs and RFs to change toward EBDM in health organizations, respectively. Comparison of these two groups of the forces

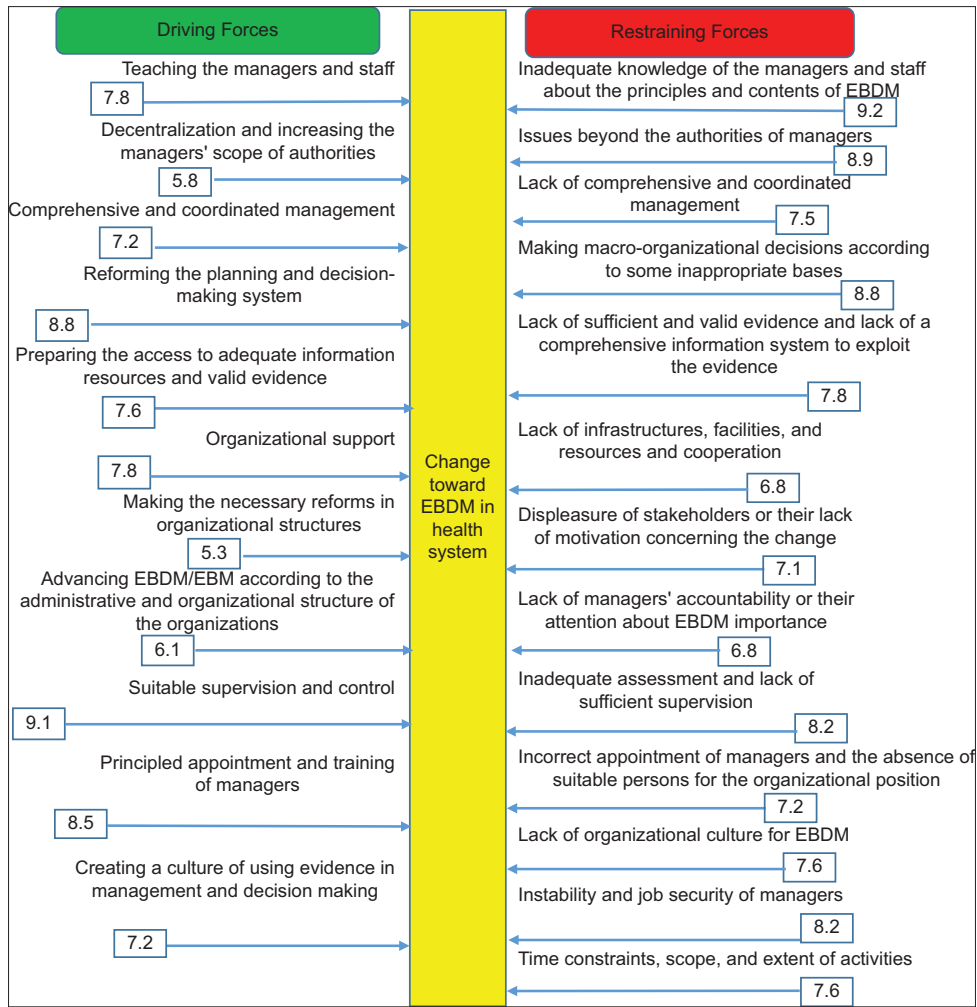


Figure 3: Key driving and restraining forces to change toward evidence-based decision-making in health system from the managers' perspective and their scoring from the experts' opinions

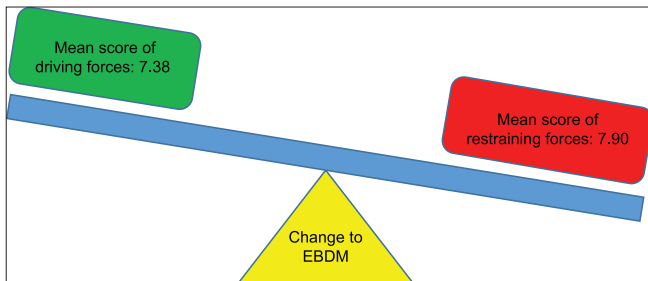


Figure 4: Total mean score of the second group of driving and restraining forces to change toward evidence-based decision-making in health system

resulted from different approaches (literature review and qualitative interviews) showed that almost half of the DFs were similar in both categories. The same is true about RFs.

Driving forces

Among DFs in group 1, “relevant, reliable, interpretable, and understandable evidence,” “interaction between researchers and decision-makers,” and “strong leadership and organizational support” had the most effects on

EBDM application, and factors such as “significant time to EIDM and timely interpretation of data,” and “imperative and fostering of using scientific evidence” had the least effects, according to their scores. In group 2 of DFs that resulted from the managers’ perspective and scored by the experts, “preparing the access to adequate information resources and valid evidence” was an important facilitator, too. In addition, “workforce and managers empowerment and suitable training” was a strong DF in two groups of factors. Although some factors were explained by the managers and get more scores by the experts that were not mentioned in the literature including “suitable supervision and control” and “reforming the planning and decision-making system,” but some items such as “considering EBDM in the main organizational processes” were identified from the literature.

In a study about balancing between overuse and underuse of medical services, the DFs were education, preparing clinical guidelines and standard

protocols, resource allocation, using evidence-based medicine, evidence-based management (EBM), and evidence-informed policy-making approaches.^[14] In addition, in another previous study, the external pressure, clarity of change objective, leadership, and skills were mentioned as DFs.^[20] Besides, in the study of Bozak to implement a nursing information system, the DFs were explained such as viewed favorably by management and positively by staff, desire to learn a new system, training needs, adequate financial resources, culture, and high level of commitment by management, staff, and individuals.^[16]

In the present study, “relevant, reliable, interpretable, and understandable evidence” was the most important DFs to change toward EBDM. In this regard, a previous systematic review explained that persons who have access to more available resources, such as electronic databases, libraries, and professional guidelines, tend to rely on more scientific evidence.^[21] Further, it was said in another review that the availability of high-quality researches and relevant evidence to the local context and access to guidelines and academic journals were the facilitators to knowledge translation (KT) strategies.^[22]

“Interaction between researchers and decision-makers” was explained in the present study as one of the most important DFs. This interaction helps make a consensus between researchers and managers/decision-makers, which can facilitate and promote evidence use.^[23-32] The relationship between researchers and decision-makers leads to making decisions on more accurate, reliable, up-to-date information and thereby avoid the waste of limited resources.^[29] The study of Uneke *et al.* emphasized the researcher and policymaker interaction in the promotion of evidence-informed policymaking, too.^[33]

In the study by Hasanpoor *et al.*, “lack of communication between knowledge producers and hospital decision-makers” had the highest mean scores among all barriers and was one of the main obstacles to using EBM.^[34] Moreover, a previous review noted that strong institutional and personal links/networks, partnerships and collaborations, trust between researchers and policymakers, and alignment of research with local priorities were the facilitators of KT strategies.^[22] Formal academic–practice partnerships can be important for advancing EBDM and for implementing evidence-based programs and policies. In the study of Erwin *et al.*, on the local health departments (LHDs), it was reported that 51.6% of them had a formal partnership with the academic health department (AHD), 21.6% had an informal partnership, and 26.7% of LHDs reported no AHD partnership. In addition, there were statistically significant differences across these three

AHD partnership types regarding LHD jurisdiction size, accreditation status, and participant characteristics of educational attainment.^[35]

Any reform will usually be resisted unless the affected parties ask it. The Japanese approach to decision-making proposes an open and frequent discussion of problems that may ensure the employees that the change would be beneficial. When the staff participates and collaborates as a member of the team that suggests the change/reform, the resistance to change is generally reduced.^[10]

Regards to other DFs to change toward EBDM presented in this study, some previous studies noted some similar factors such as strong leadership, teamwork, collaboration and communication, workforce development, empowerment, and capacity building,^[19,22,36,37] education and training, increase commitment, designing up-to-date and evidence-based training programs,^[14] capacity to generate, understand, and use research, financial resources, and organizational culture that favors the use of research.^[22]

Restraining forces

In this study, the most important RFs against change toward EBDM in the HS resulted from literature and experts’ opinions, based on their scores, were as follows: “Lack of organizational commitment and support,” “lack of relevant/high-quality evidence or inadequate access,” and “limited staff or limited knowledge and skills” according to their scores. Further, among DFs in group 2, “inadequate knowledge of the managers and staff about the principles and contents of EBDM” was the most powerful barrier to EBDM in health organizations, too. Also some RFs such as “issues beyond the authorities of managers” and “making macro-organizational decisions according to some inappropriate bases” were explained by the managers and get more scores by the experts that were not mentioned in the literature. Furthermore, considering both approaches for finding factors, “insufficient resources and inadequate structures” was determined as a weak RF against change toward EBDM.

In a previous study, the RFs for balancing overuse and underuse in the HS were the conflict of interest, payment systems, patients’ and physicians’ side problems, and culture of consumerism in the community.^[14] Further, in the study by Swanson and Creed, the management style, weak system, number of staff, and communication of change were mentioned as RFs.^[20]

In another previous study, the RFs for implementing a nursing information system were explained as viewed unfavorably by management and negatively by staff, personal needs not addressed/supported, negative experience with change, organizational culture, lack of

accommodation for education/training, lack of financial resources, and low level of commitment by management, staff, and individuals.^[16] In addition, Mathieson *et al.*'s review disclosed the importance of support strategies when implementing EBP in the community, including regular meetings and updates from the researcher, the allocation of resources, and managerial support.^[38]

Based on the finding of the present study, "lack of organizational commitment and support" was a very important RFs to change toward EBDM. In a previous review about the organizational support for implementing EBDM in the organization, awareness of EBDM, capacity for EBDM, resource availability, evaluation capacity, EBDM climate cultivation, and partnerships to support EBDM were explained as important and as components of the organizational support.^[6]

Lack of processes and institutional support and lack of support from public authorities were the barriers of the KT according to a previous study.^[22] Besides, in the Li *et al.*'s systematic review (2019), all cited barriers stratified to three possible factors including inadequate supports of time and resources, inadequate knowledge and training, and inadequate encouragement and assistance from organizations. Further, it was said that policy support and institutional protection are not a choice, but a necessity.^[21]

Another important RF in the present study was "inadequate/uneven access to evidence." Further, one of the current challenges to KT in HS was access to relevant and reliable research and the lack of locally applicable quality research.^[22] Limited access to the electronic databases and experts leads to barriers in using EBDM.^[39] Furthermore, getting high-quality evidence from a large volume of diverse literature is an important task in clinical care. Besides, using automation in the evidence appraisal process and the approval of evidence by domain experts can improve the relevance and quality of acquired evidence.^[40]

Considering the rest of RFs to change toward EBDM in the present study, the previous studies noted some similar factors including lack of skilled staff, time constraints, insufficient infrastructures/resources or funding constraint,^[10,21,22,41,42] poor communication with decision-makers, resistance to change,^[22,36] lack of formal training,^[21,41] management functions,^[21] changing jobs, organizational culture, conflicting regulations and guidelines from various government agencies,^[10] or conflict of interests,^[14] and coordination issues.^[42]

Limitations and recommendation

One of the strengths of this study is identifying the factors influencing EBDM from reviewing the literature

and conducting a qualitative interview to gain a deeper understanding of the issue, as well as ranking these factors from the perspective of experts and comparing the obtained factors.

However, the selection of policy-makers and managers to determine the factors affecting EBDM in the real situation from only one university of medical sciences can be one of the limitations of the study. It can be a suggestion for other studies to be reviewed in other universities or other levels of HS and compared their results with this study.

Conclusions

Moving toward EBDM, as a change in an organization, causes fear for managers or staff that leads to resistance to change, so proper strategies and policies are necessary to EBDM implementation in the organizations' processes. Regarding the lack of organizational commitment and support as a key RF to implement EBDM in the organization; at first, the managers and authorities of the HS organizations have to realize the importance of EBDM and then identify DFs and RFs for providing the requirements for its implementation in the organization. Then, they should reduce RFs and promote DFs of its implementation if they want to go toward providing better services and making efficient decisions regarding scarce resources.

In addition, some ways to decrease the RFs and strengthen the DFs are to prepare the essential infrastructure and structures for adequate and sufficient access to high-quality and valid evidence, as well as to create appropriate and mutual interaction among decision-makers, researchers, and academics.

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Conflicts of interest

There are no conflicts of interest.

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