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RESEARCH ARTICLE

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The use of evidence in decision making by hospital managers in Lebanon: A cross-sectional study

Nadeen Hilal[1] | Sara Harb[2] | Diana Jamal[3] | Fadi El-Jardali[3]

[1]Department of Internal Medicine, Ain Wazein Medical Village, Lebanon

[2]Geriatrics Medical Center, Ain Wazein Medical Village, Lebanon

[3]Department of Health Management and Policy, Faculty of Health Sciences, American University of Beirut, Beirut, Lebanon

Correspondence
Fadi El-Jardali, Department of Health Management and Policy, Faculty of Health Sciences, American University of Beirut, Beirut, Lebanon.
Email: fe08@aub.edu.lb

Summary

Background: Knowledge synthesis products have emerged as support agents for decision making in clinical practice and policy. However, their use for evidence-informed decision making remains limited in health care management especially in low- and middle-income countries. This study assesses the use of evidence by middle and senior managers in Lebanese hospitals.

Methods: This multihospital cross-sectional study used a self-administered web survey of middle and senior managers. Hospitals were purposively selected, and data were analyzed using descriptive statistics and thematic analysis.

Results: Hospital participation rate was 25%, while adjusted managers' response rate was 44.8%. Prevalence of using evidence was 70%, while prevalence of evidence-seeking behavior was 90%. Evidence was mainly used in design of policies, protocols, and procedures; nursing issues; or procurement decisions. Facilitators for evidence-informed decision making included upper management support and organizational culture, whereas limited resources such as funding, time, and training hindered use of evidence.

Conclusions: Findings indicate that utilization of evidence was comparable with that of high-income countries. Training and continuous education were crucial for advancing evidence-informed decision making among hospital managers. However, neither the quality nor the sources of evidence used for decision making were assessed in this study. Future studies should assess the quality and sources of evidence utilized in decision making.

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KEYWORDS
evidence-based management, health management research, hospital managers, knowledge translation, Lebanon

1 | BACKGROUND

Evidence from health systems studies has persistently pointed out to a huge gap between what we know and what we do.[1] Health systems have been unsuccessful in making optimal use of the available knowledge to improve efficiencies, increase productivity, and enhance the well-being of people.[2,3] As a result, significant investments are wasted, and the resulting accumulating knowledge is underutilized.

Knowledge synthesis products such as systematic reviews have arisen as support agents for decision making in clinical practice and policy making.[4] In one systematic review, the majority of studies reported a perceived usefulness of systematic reviews as assistants in decision making.[5] Other studies have revealed that systematically incorporating research evidence in program planning and policy decision making enhances the provision of high-quality, effective, and efficient health services and ensures a more liable use of the financial and human resource investments.[6-8] However, the availability of systematic reviews and their associated perceived usefulness do not necessarily ensure proper dissemination and uptake.[9-11] This might owe to the complex real world of policy making with all its associated economic, political, social, and ideological interactions that are taking place.[12] Other described forms of synthesized evidence include summaries of systematic reviews, overviews of systematic reviews, and policy briefs, all of which constitute knowledge translation resources.[13]

Despite all of those available resources, knowledge is still underutilized by those for whom it is designed to inform, namely, policy and decision makers. In one systematic review designed to identify interventions aiming at encouraging the use of systematic reviews by health policy makers and health care managers, only 23% to 63% of surveyed respondents reported using systematic reviews to inform their decisions.[14]

Numerous multilevel factors act as determinants for the uptake of evidence by policy and decision makers. These factors can be broadly stratified into those that operate at the health systems level such as financial disincentives, organizational level such as lack of appropriate equipment, teams level such as having local standards not in line with the desired practice, professionals level such as lack of knowledge and skills, and patients level such as poor adherence to advice.[15]

At the health systems level, lack of relevance of the questions the reviews are addressing,[16-22] lack of contextualization of findings,[16-21] unwieldy size of the report, poor presentation format,[16,17] poor technical infrastructure,[23-26] poor communication channels,[27,28] untimeliness of the availability of evidence,[18-21,26-28] lack of access and time to seek and acquire systematic reviews,[16,17,23-25] and lack of skills to appraise and apply the evidence[16-21,23-25] have been identified as barriers to using findings from systematic reviews by decision makers. On the other hand, collaboration between researchers and policy makers, skills development,[26,29] strengthening networks, and building organizational cultures receptive to embedding evidence in practice[29] have shown to be promising strategies for facilitating evidence uptake.

At the level of health care organizations, evidence uptake was found to be dependent on three factors: access to external sources of information such as scientific journals, prior knowledge particularly in research methods, and social integration, manifesting as ties with researchers and knowledge brokers.[30,31] In Canada, limited resources, time constraints, and negative attitudes toward change were the most frequently identified barriers to evidence-informed decision making in health care organizations, whereas decision makers' interests along with their willingness to invest resources to create a culture for evidence uptake were the most frequently identified facilitators.[32] Systematic reviews identified several facilitators for knowledge utilization at the

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health care organizational level: an organizational structure and culture that promotes research,[22,33] a technical infrastructure such as the presence of databases that provide access to research evidence, availability of training programs,[33] access to summarized evidence,[34] individual skills,[22] and interaction between researchers and decision makers.[22,33,34]

Research that examines the use of evidence in decision making originates from high-income countries.[30-34] However, up to our knowledge, research that explores evidence uptake at the health care organizational level from low- and middle-income countries (LMICs) and from the Eastern Mediterranean region (EMR) is still lacking. This study aims to assess the extent to which middle and senior hospital managers in Lebanon use evidence in their decision-making practices and to identify barriers to and facilitators for the use of evidence. To our knowledge, this study is the first of its kind from the EMR and can potentially act as a primer for further research aiming at assessing evidence use among managers in wider health care settings such as primary health care centers and specialty clinics. Importantly, findings from this study can be utilized for the future design of interventions specifically tailored to enhance the uptake of evidence in decision making in health care settings. This shall be done with the hope that incorporation of evidence into decision making at the hospital level will result in favorable outcomes such as improvements in quality and efficiency, as has been revealed by the literature.[6-8]

2 | METHODOLOGY

This study used a cross-sectional design based on a self-administered web survey.

The survey targeted middle and senior managers working in hospitals. For the purpose of the study, a manager was defined as an individual in a managerial or supervisory role. Hospitals were purposively selected on the basis of their geographic location (spread over all governorates), type (private and governmental), teaching status (academic and nonacademic hospitals), size (small with less than or equal to 150 beds, large with more than 150 beds), and profit (for profit and not for profit).

The general administration office of each hospital was contacted to introduce study objectives and obtain administrative approval. Contact was done through email and occasionally through phone in case no email reply was received after 1 week of contact. Upon the approval of the hospital's participation, the office of the general administration provided names and email addresses of their middle and senior managers. To avoid any undue influence or coercion, the general administration office only identified potential participants and was not involved in inviting or recruiting any of the participants. Potential participants were contacted by email. In case potential participants did not respond to the initial invitation, up to three reminders were sent to each individual, 1 week apart. The questionnaire was hosted on Limesurvey. A total of 134 invitations were sent to middle and senior managers by email, with the goal of achieving a nonstatistical sample of at least 60 responses.

The study questionnaire was adapted by a tool used and validated by El Jardali et al[35] in a study that assessed the use of evidence in policy making in the EMR. Such tool was used to identify influencing factors, barriers, and facilitators that impact policy makers' use of evidence and to identify the resources needed to enhance such use.

The questionnaire was divided into four sections. The first section collected general information about the participants. The second section assessed the use of evidence in decision making among middle and senior managers and the availability of investments and resources for the production of evidence. In this section, questions were answered using a Likert scale whereby respondents were offered a choice of six responses (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, and no answer). To note, in the analysis of the results, responses of "strongly agree" and "agree" are merged into one category (agree). Similarly responses of "strongly disagree" and "disagree" are merged into one category (disagree). Responses in Table 3 are presented according to the original categories (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, and no answer). The third section assessed factors needed for the use of evidence in decision making using a multiple-choice format, whereby participants were asked to select their responses from a set of predetermined

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choices based on what has been previously reported in the literature. Finally, the fourth section was composed of open-ended questions that asked participants to identify different situations encountered in their work or different purposes for the use of evidence in decision making.

Data were analyzed using the SPSS software (IBM SPSS Statistics for Windows, version 22; IBM Corp., Armonk, N.Y., USA). Since the study is explorative in nature and was not designed to identify associations between variables, data were analyzed in a strictly descriptive manner.

3 | RESULTS

A total of 28 hospitals were contacted, out of which seven agreed to participate, with a hospital participation rate of 25%. None of the participating hospitals were located in the North Governorate or labeled as "for profit." More details on the participating hospitals can be found in Table 1. As for managers, 70 out of 134 invitees responded to the questionnaire. Of the 70 responses, 44 were complete and 26 were incomplete, with a total response rate of 52.2% and a complete response rate of 32.8%. Incomplete responses were included in the data analysis if more than half of the questions were answered and discarded otherwise, rendering an adjusted total number of responses of 60 and an adjusted response rate of 44.8%.

The majority of participants were females in the 30 to 40 years age range. A total of 60% of participants were middle managers, 38% were senior managers, and 2% did not specify their managerial position. 60% of managers were appointed as managers after the year 2010. Around two-thirds of the managers had a master's degree as their highest educational degree, and a much lower number of respondents had a doctorate degree (18.2%). The majority of responding managers obtained their last degree after year 2010. Detailed baseline characteristics of participants are found in Table 2.

Regarding the use of evidence, 70% of managers use evidence in decision making, while more than 90% of managers ask for evidence to support formulating and implementing managerial decisions. The vast majority (66.7%) also believed that the evidence is delivered at the right time and that it provides sufficient information on the impact, cost, quality, and applicability of options. 53% of the participants were aware of summaries of evidence with key messages and recommendations related to managerial decisions confronted in their hospitals.

When asked about facilitators for evidence uptake, half of the participants agreed that there are incentives for knowledge use or production within the hospital. Similarly, 51% of the participants agreed that there is an administrative structure supportive of the production of evidence-informed managerial decisions. In addition, around 80% of managers declared that the hospital board or upper management request scientific evidence in decision making. Moreover, 68.7% of managers acknowledged that they have access to health research through an Internet connection at the hospital. Additionally, 43.1% of managers established formal and informal ties to researchers and brokers outside the organization who can assist them in integrating evidence into decision making. On the other hand, more than 90% of managers agreed that there is a need for training and continuing education that focuses on integrating research evidence in decision making. However, there was a large variability in managers' responses regarding the availability of a budget or funding plan for research and evidence-informed management within the hospital. There was also considerable variability in the answers regarding the conduct of primary research on managerial issues in the hospital as well as the participation of managers in such kind of research. As an example, 45.1% of respondents agreed, 23.5% neither agreed nor disagreed, and 27.4% disagreed that hospital managers participate in the production of research products. Details regarding the production and uptake of evidence by decision makers are found in Table 3.

As for the resources that are needed to ensure use of evidence, around 78% of managers reported the need for training for decision makers and managers on finding and using research evidence. Additionally, around 37% thought that the presence of an evidence-based management unit or efficient funding is required for evidence use in decision making. Relatively a lower number of managers described a need for web support or connections with outside

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TABLE 1 Characteristics of participating hospitals

	Characteristics								
Hospital	**Location**	**Private**	**Governmental**	**Large**	**Small**	**Academic**	**Nonacademic**	**For profit**	**Not for profit**
Hospital 1	Beirut	x		x		x			x
Hospital 2	Chouf	x		x		x			x
Hospital 3	Jezzine		x		x		x		x
Hospital 4	Zahle	x			x		x		x
Hospital 5	Keserwan	x			x		x		x
Hospital 6	Rashaya		x		x		x		x
Hospital 7	Baabda	x			x		x		x

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TABLE 2 Baseline characteristics of participating managers

Categories of Baseline Characteristics	Percentage
Age, y	
<30	1.8
30-40	41.8
41-50	23.6
51-60	9.0
61-70	1.8
>70	0
No answer	21.8
Gender	
Female	60
Male	38.2
No answer	1.8
Degree	
Doctorate (MD or PhD)	18.2
Master's	63.6
Bachelor	16.4
No answer	1.8
Date of last degree	
Before 1970	0
1970-1980	1.8
1981-1990	5.5
1991-2000	20.0
2001-2010	41.8
After 2010	29.1
No answer	1.8
Current position	
Middle manager	60.0
Senior manager	38.2
No answer	1.8
Date position obtained	
Before 1970	0
1970-1980	0
1981-1990	3.6
1991-2000	5.5
2001-2010	29.1
After 2010	60.0
No answer	1.8

researchers for evidence uptake. Other less reported needs included the culture inside the organization, allocated time, encouragement, and incentives. More details on the resources needed for evidence-informed decision making are found in Table 4.

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TABLE 3 Use of evidence by hospital managers

Questions Reflecting Use of Evidence	Percentage of Respondents					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	No Answer
Managers ask for scientific evidence to support formulating and implementing managerial decisions	39.2	54.9	1.96	1.96	0	1.96
Managers believe scientific evidence is delivered at the right time	3.9	62.8	25.5	5.9	0	2
Managers believe the scientific evidence provides sufficient information on the impact, cost, quality, and applicability of options	13.7	70.6	11.8	2.0	0	2.0
Managers believe there are summaries of evidence with messages that specify possible actions about managerial decisions confronted in the hospital	5.9	47.1	25.5	9.8	0	11.8
Managers have access to health research through an internet connection at the hospital	27.5	41.2	13.7	9.8	0	7.8
Managers believe there is an administrative structure suitable to support an evidence informed managerial decisions	3.9	47.1	21.6	21.6	2.0	3.9
Managers use scientific evidence in the decision making process	9.8	43.1	25.5	17.7	0	3.9
Managers believe there is a need for training and continuing education that focuses on finding and using research evidence in decision making	56.9	37.3	2.0	0	2.0	2.0
Managers believe there is explicit budget or funding for both research- and evidence-informed management within the hospital	5.9	29.4	25.5	23.5	7.8	7.8
Managers participate in the production of research, reviews, and research-derived products on hospital management issues	3.9	41.2	23.5	19.6	7.8	3.9
Managers believe there is conduct of primary research on managerial issues in the hospital, dedicated to answer questions and aid decision making	3.9	29.4	25.5	21.6	7.8	11.8
Managers established formal and informal ties to researchers and brokers outside the organization who can assist in integrating evidence into decision making	5.9	37.2	19.6	17.7	3.9	15.7
Managers declare that the hospital board or upper management requests scientific evidence in the decision making process at the organization	19.6	58.7	8.7	6.5	2.2	4.4
	8.7	41.3	30.4	13.0	2.2	4.35

(Continues)

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TABLE 3 (Continued)

Questions Reflecting Use of Evidence	Percentage of Respondents					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	No Answer
Managers believe that there are incentives for knowledge and evidence production within the hospital						
Managers believe that here are incentives for knowledge and evidence use within the hospital	4.35	47.8	28.3	13.0	0	6.5

TABLE 4 Resources or tools needed for evidence-informed decision making

Needed Resource or Tool	Percentage of Respondents
Evidence-based management unit	36.96
Researchers in the field of management from outside the institution	23.91
Training of decision makers and managers on finding and using research evidence	78.26
Efficient funding	36.96
Web support	32.61
Others	8.70

Regarding self-efficiency, 76% of participants expressed that they have sufficient skills to retrieve evidence that supports their management decisions. Nearly half of the responding managers received training on finding and using evidence to inform decision making, and around 44% are involved in research production. On the other hand, the majority of managers (84.78%) acknowledged that providing packaged evidence would be useful to them. More details on the availability of skills and trainings for evidence-informed decision making are found in Table 5.

As revealed by the qualitative part of the survey, when managers used evidence, it was mainly for finding answers related to nursing issues, formulation of protocols, policies, procedures, and purchasing decisions. Participants identified administrative and management support and the presence of a research culture as the main facilitators for the use of evidence. On the other hand, participants identified lack of funding, time, and training as barriers in the face of evidence uptake during the formulation of managerial decisions.

TABLE 5 Availability of skills and trainings on the use of evidence

Questions Related to the Availability of Skills and Trainings	Percentage of Respondents		
	Yes	No	No Answer
Managers feel they have sufficient skills to retrieve evidence that supports managerial decisions	76.08	10.87	13.04
Managers underwent training in finding and using research evidence to inform decision making	45.65	41.30	13.04
Managers produced evidence-based research products	43.48	36.96	19.57
Managers believed that receiving packaged evidence is useful for decision making	84.78	0.00	15.22

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4 | DISCUSSION

The vast majority of managers believed that the evidence is delivered at the right time and that it provides sufficient information. Thus, the reported barriers of untimeliness[14,18-21,26,27] and inadequacy of content[23-26] do not constitute obstacles in the face of proper use of evidence for decision making among the surveyed Lebanese hospital managers. This discrepancy could be partly due to bias in the sample of hospitals, as hospitals whose managers were able to participate in the web survey were most likely those that rely on information technology in their daily operations. This bias might also explain the high prevalence of use of evidence (70%) and evidence-seeking behavior (90%), with such use even better than the reported use of 23% to 63% in one systematic review of three Canadian studies.[14] Another possible explanation is that the majority of participants were relatively young managers who earned their degrees after the year 2010 and thus most likely had a higher chance of receiving training on research methods and on finding and using research evidence for informed decision making then their relatively older counterparts.

Participating managers seem to be well supported by their upper management and by the availability of incentives and resources for the use of evidence, including formal and informal ties with researchers outside the organization. This speaks of an organizational culture that supports evidence-informed decision making, independent of the individual efforts or preferences of the managers. Despite that, there seems to be a general agreement among managers that further training and continuing education is needed for evidence uptake and the incorporation of research findings into decision making.

As concluded from the study results, evidence was mainly utilized in the formulation of financial managerial decisions and decisions related to nursing work. Designing of policies, protocols, and procedures also frequently incorporated the use of evidence. Such information is vital for the design of training programs that improve the uptake of quality evidence in such domains of interest and simultaneously expand the scope of the use of evidence in decision making in hospitals.

This study was marked by a low participation rate at the level of hospitals, with only 25% of the approached hospitals agreeing to participate. This might be contributed to the limited interest of the upper management of some hospitals in evidence-informed decision making or the limited appreciation of its value in decision making. Time constraints and fear of the repercussions of disclosure of internal information might also be reasons behind the low participation rate. Another possible contributing factor to the low participation rate is the limited use of information technology such as email and Internet in some hospitals. For example, five of the approached hospitals demonstrated interest but were not able to participate because, as reported by them, they lacked a database of emails of their managers to share with the study team. Importantly, this diminished use of information technology in some hospitals might underlie a limited ability to seek or use evidence in decision making.

The use of a web survey might be considered a limitation for participation by for many hospitals, especially those with limited use of information technology in their daily operations. Another possible study limitation is the response bias encountered in the self-reported survey. Moreover, what constitutes "evidence" was not defined in the study questionnaire. Simultaneously, the source, quality, or contextualization of evidence was not addressed by the study questionnaire. Therefore, it cannot be taken for granted that all managers who use evidence base their decisions on systematic reviews or high-quality synthesized evidence or contextualize the evidence they have in hand to provide the best answers to their questions or needs.

5 | CONCLUSIONS

To the best of our knowledge, this is the first study from the region to explore the use of evidence in decision making by middle and senior hospital managers. The participation challenges together with the study results reflecting the high uptake of evidence among hospital managers hint to the possibility that that there might be large variability regarding the use of evidence in decision making by hospital managers in Lebanon. As such, future studies that assess

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the extent to which hospitals are equipped with basic information technology resources such as continuous Internet connection and access to email accounts are much needed. Research is also needed to determine the quality of evidence that organizations incorporate into their decisions and their contextualization procedures. Possible absence of quality or contextualization of the utilized evidence might limit organizations from achieving their pursued goals of quality improvement, cost reduction, patient satisfaction, and others. Finally, training and continuous education, as identified by the managers themselves and the international evidence,[33] are crucial for the initiation and advancement of informed decision making at the hospital level and health care field in general.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

ETHICS STATEMENT

The study protocol was submitted to and approved by the Institutional Review Board of the American University of Beirut Medical Center on 17 March 2017 and the Institutional Review Board of Ain Wazein Medical Village 17 December 2016. Participants were consented digitally via the software hosting the study questionnaire (Limesurvey).

ORCID

Fadi El-Jardali https://orcid.org/0000-0002-4084-6524

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