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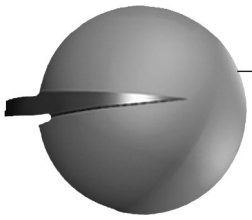

Original Article

Nursing Managers' Perspectives on the Facilitators and Barriers to Implementation of Evidence-Based Management

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Key words
evidence-based nursing, evidence-based management, nursing managers' perspective, barriers, facilitators

ABSTRACT

Background: Evidence-based health management is defined as a new approach to improve the quality of hospital decisions by systematic application of the best available evidence. To use that, facilitators and barriers to implementation of evidence-based management (EBMgt) in the decision-making process need to be identified.

Aim: The purpose of this study was to assess nursing managers' perspectives on the facilitators and barriers to implementation of EBMgt in Tabriz hospitals, northwest Iran.

Methods: A cross-sectional study design was used in 2017. The study was conducted in one state in Iran (Tabriz). A total of 276 nursing managers (e.g., matrons, supervisors, & head nurses [HNs]) were invited to participate from the Tabriz hospitals (N = 20); 212 completed and returned the survey, yielding a response rate of 76.81%. The EBMgt assessment questionnaire was used to collect data. The questionnaire consists of two parts. The first part includes barriers to EBMgt (five main domains and 46 questions). The second part includes the facilitators of EBMgt (five main domains and 42 questions). Data entry and analysis were carried out using SPSS-21 software.

Results: Highest mean scores of barriers were observed for "training and research systems" (64.65 ± 12.42). "Lack of communication between knowledge producers and hospital decision-makers" (68.19 ± 17.32) had highest mean scores among all 46 barriers. Also, the results showed that mean scores for all the barriers were higher than 55. The highest mean scores were observed for "social/interpersonal factors" (65.84 ± 17.07). "Interest and willingness to scientific management principles" (68.62 ± 20.17) had highest mean scores among all 42 facilitators.

Linking Evidence to Action: The aim of EBMgt is to provide the most effective healthcare outcomes. Identifying barriers and facilitators is essential for implementing EBMgt in hospitals. Building the facilitators and eliminating barriers are foundation of EBMgt. Filling the gap between knowledge producers and nursing managers can be a starting point for improvement of the decision-making process in nursing care.

BACKGROUND

Evidence-based management (EBMgt) has been expanded as a new management model for improving the quality of healthcare organizations' decisions (Janati, Hasanpoor, Hajebrahimi, & Sadeghi-Bazargani, 2017; Melnyk et al., 2004). The idea for EBMgt is derived from evidence-based medicine (EBMed) that argues for the use of scientifically proven findings to guide practices in medicine and now nursing. EBMgt is an approach that emphasizes finding and using the best current evidence to make healthcare decisions (Hussein & Hussein, 2013; Janati, Hasanpoor, Hajebrahimi, & Sadeghi-Bazargani, 2018; Janati, Hasanpoor, Hajebrahimi, Sadeghi-Bazargani, & Khezri, 2018; Olade, 2004; Yurumezoglu & Kocaman, 2013). EBMgt is about making decisions through the conscientious, explicit, and judicious use of the best available evidence from multiple sources by six steps of decision-making process that includes asking, acquiring, appraising, aggregating, applying, and assessing A decision requires some formulation of information, be it from managers expertise, local context, stakeholder preferences, or external evidence (Hasanpoor, Bahadori, Yaghoubi, Haghgoshayie, & Mahboub-Ahari, 2018; Hasanpoor, Janati, Arab-Zozani, & Haghgoshayie, 2018).

Additionally, nursing managers are one of the most important health professional groups in order to implement and overcome the barrier to EBMgt (Bahtsevani, Khalaf, & Willman, 2005). The shifting healthcare perspective over

the last two decades has complicated nursing management. Regarding its nature and complexity, nursing management as a skill and specialty has become an important and fundamental issue in improving healthcare quality. Therefore, it is essential that nursing managers use the evidence-based healthcare management to improve the quality of nursing care management (Axelsson, 1998, 2000; Hasanpoor, Janati, Gholizadeh, & Haghgoshayie, 2018; Walshe & Rundall, 2001). Evidence-based nursing management (EBNMgt) improves organizational and managerial decisions by bridging theory and practice gaps and has a critical impact on hospital performance. EBNMgt is the synthesis of scientific and research evidence, facts and information of hospital, political–social development plans, managers' professional expertise, ethical–moral evidence, and values and expectations of all stakeholders (Janati et al., 2017; Newhouse, 2007; Newhouse, Dearholt, Poe, Pugh, & White, 2005; Underhill, Roper, Siefert, Boucher, & Berry, 2015).

Understanding relevant barriers and facilitators to EBMgt might help its adaption and implementation and improve their skills in finding the best evidence and critically appraising that evidence to assess its validity. Researchers in the field of nursing management should not merely focus on understanding organizational life, but they should also conduct studies that elaborate on managerial practices with a view to explaining, as well as predicting, the implications of managerial actions (Dalheim, Harthug, Nilsen, & Nortvedt, 2012; Leasure, Stirlen, & Thompson, 2008; Yurumezoglu & Kocaman, 2013).

Evidence suggests that there are numerous barriers to EBMgt. These barriers include decision-maker characteristics, decision-making environment, training and research system, organizational barriers, and team barriers (Ammouri et al., 2014; Barends et al., 2017; Chang, Russell, & Jones, 2010; Greaves, 2017; Hasson, Andersson, & Bejerholm, 2011; Majdzadeh, Yazdizadeh, Nedjat, Gholami, & Ahghari, 2011; Majid et al., 2011; Pagoto et al., 2007; Rapp et al., 2010; Wallis, 2012). Also, studies have been reported different facilitators such as organizational factors, manager characteristics and individual factors, factors related to research productions, external or environmental factors, and social or interpersonal factors (Chehrzad, Ghanbari, Rahmatpour, Salehzade, & Pasban, 2015; Jeffers, Robinson, Luxner, & Redding, 2008; Majdzadeh et al., 2011; Pagoto et al., 2007; Solomons & Spross, 2011; Yurumezoglu & Kocaman, 2013).

This study identified barriers and facilitators of EBMgt among nursing managers. The findings of the study can help managers and policy-makers in planning for better use of EBMgt among nurses and other personnel in hospitals by identifying and overcoming these barriers.

METHODS

Study Design

A cross-sectional study design was used in the city of Tabriz, Iran, from August 02 to December 30 in 2017. This cross-sectional study was reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement (Von Elm et al., 2014). The study setting included all hospitals in Tabriz. Twenty hospitals participated in the study. The following hospitals were assessed: Imam-Reza, Razi, Sina, Shahid Madani, Shohada, Taleghani, Alavi, Kodakan, Al-Zahrah, Noor-e-Nejat, Alinasab, Shams, Shariyar, 29 Bahman, Shafaa, Amir Al-Momenin, Mahallati, Vali-e-Asr, Asadabadi, and Nikokari.

Participants and Data Collection

Of the 20 hospitals, six were private, 10 were public, two were social-security, one was charity, and one was a military hospital. The study population included all nursing managers (chief nursing officer or matron, supervisors, and HNs). They play the key role in the care delivery process and management of patients. In addition, they supervise nursing staffs and their performance. Of 276 nurses, 212 nurses participated in the study (see Table S1). Participants were identified by one of the researchers through contact with the human resources managers of hospitals. Data collection was conducted by two trained researchers. The researchers were members of the Research Center for Evidence-Based Medicine and the Iranian Center of Excellence in Health Management (ICEHM) in Tabriz University of Medical Sciences.

Development of the Instrument

The self-administered questionnaire was used to collect data. According to review and Delphi studies, we synthesized facilitators and barriers to implementation of EBMgt (Hasanpoor, Hajebrahimi, Janati, Abedini, & Haghgoshayie, 2018; Janati, Hasanpoor, Hajebrahimi, Sadeghi-Bazargani, & Khezri, 2018). For identification, papers were read and re-read, and details of the studies and factors related to facilitators and barriers were recorded. Data extraction forms were used to record details of results coded as first and second order bodies. Questionnaire was designed using facilitators and barriers to EBMgt that have been identified in review.

The questionnaire consists of two parts. The first part included the barriers to EBMgt, with five main domains as follows: (a) barriers related to decision-maker characteristics, (b) decision-making environment, (c) training and research systems, (d) organizational barriers, and (e) team barriers. Barriers to EBMgt include 46 closed-ended questions. The second part included facilitators of EBMgt with five main domains as follows: (a) organizational factors, (b) manager characteristics and individual factors, (c) factors related to research productions, (d) external or environmental factors, and (e) social or interpersonal factors. The facilitators of EBMgt include 42 closed-ended questions. The following demographic characteristics of nurses were also included: gender, age, level of education, positions, specialty of nurses, hospital ownership,

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and work experience (see Table S2). The questionnaire rating scale included 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).

Questionnaire validity was measured using indicators of content validity ratio (CVR) and content validity index (CVI). Fifteen experts (five health policy and management specialists, seven nursing management experts, & three experts in field of evidence-based practice) appraised the questionnaire by scoring relevancy, clarity, simplicity, and necessity of the items in order to calculate CVI and CVR. CVR, 3-point Likert scale from completely necessary to not necessary, was completed by panel of experts. According to Lawshe table for 15 experts, questions with CVR >0.49 were acceptable (Lawshe, 1975). Therefore, CVR for all questions were more than 0.86. Relevance, clarity, and simplicity of all questions were checked using 4-point Likert scale, and questions with CVI >0.79 were considered appropriate. Four questions with CVI <0.73 were revised. CVI was found to be 0.88 and CVR to be 0.86. In addition, reliability of the items was assessed using Cronbach's coefficient alpha. Internal consistency has been shown with an alpha Cronbach's coefficient of .89 for all items.

Data Analysis

After checking completeness of the survey tool, data entry and analysis were carried out using SPSS software (version 21; IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated with all survey items and total scores, as well as demographic data. All available data were used for analysis, and no participants were removed from the analysis due to missing data. Barriers and facilitators were rated between 0% and 100%. The differences between the groups of nursing manager characteristics were analyzed using independent-samples *t* test and one-way ANOVA. Also, Pearson correlation was used between age and work experience with sources of evidence. All tests considered significant at the .05 level. To determine the reliability coefficient (internal consistency), Cronbach's alpha was used.

Ethical Aspects

The study was approved by ethical committee of Tabriz University of Medical Sciences (Ethical code of project: TBZMED.REC.1395.497). An approval from the local ethics committees from each hospital was acquired. All nurses participating in this study gave an informed consent. An informed consent form was completed by all participants.

RESULTS

Demographic Characteristics of the Respondents

The self-administered tool was distributed for the total of 276 nursing managers, reflecting a response rate of 76.81% ($N = 212$). Almost 63% nursing managers were female. The majority of participants were HNs and supervisors (91%). Of 212 participants, 63.2% have bachelor's degree. Almost 57.5% nursing managers were working at public-teaching hospitals. Main expertise and skill of nursing managers (70.30%) was clinical skill. The mean age was 41.34 ($SD = 5.54$) years. Also, participants' average work experience was 17.17 ($SD = 5.54$) years. Additionally, average work experience and age are presented separately for the positions (see Table S2).

Results Related to Barriers to EBMgt

Table S3 shows the mean score percentage barriers to EBMgt according to 46 items. The mean barriers related to decision-maker characteristics (59.28 ± 12.94) were less than the other barriers. In this domain, mean lack of criteria for the selection of evidence-based managers was 65.18 ± 22.06 that is the biggest obstacle in this area. Also, mean barriers related to decision-making environment, training and research systems, organizational barriers, and team barriers were 63.84 ± 11.86, 64.65 ± 12.42, 63.86 ± 11.69, and 64.38 ± 14.33, respectively.

In addition, the highest mean scores of barriers related to decision-maker characteristics were found in relation to "lack of criteria for the selection of evidence-based managers" (65.18 ± 22.06), "time constraints in the use of EBMgt" (63.96 ± 18.14), and "lack of reward and incentive mechanism for using EBMgt" (63.49 ± 18.50). The highest mean scores of barriers related to decision-making environment were found in relation to "limits of innovation and new ideas in the hospital administration" (68.15 ± 19.26). In addition, the highest mean scores of barriers related to training and research systems were found in relation to "the lack of communication between knowledge producers and hospital decision-makers" (68.19 ± 17.32).

"Organizational hierarchy and high bureaucracy" (65.09 ± 19.48), "conflict in organizational culture with EBMgt" (65.47 ± 18.47), and "insufficient workforce" (65.66 ± 19.71) had the highest mean scores across all the organizational barriers. The highest mean scores of team barriers were found in relation to "resistance to the use of sources of evidence" (65.47 ± 18.78). Finally, the overall mean score percentage of nursing managers' perceptions of the barriers to EBMgt was 63.20 ± 9.91. Other findings are shown in Table S3.

Results Related to Facilitators of EBMgt

Table S4 shows that the overall mean score percentage of the nursing managers' perceptions of the organizational factors of EBMgt was 61.48 ± 10.20. In addition, highest mean scores of facilitators were found in relation to manager characteristics and individual factors (65.13 ± 12.6). The highest mean scores of the nursing managers' perceptions of the organizational factors were found in relation to "use of research evidence as organizational value"

(66.50 ± 17.44). Moreover, the highest mean scores of the nursing managers' perceptions of the manager characteristics and individual factors were found in relation to "interest and willingness to scientific management principles" (68.62 ± 20.17). The highest mean scores of the nursing managers' perceptions of the factors related to research productions were found in relation to "promotion of continuous learning of management principles," "financing priority projects," and "the ability to transfer managerial knowledge" (64.57 ± 19.31, 64.52 ± 0.9, and 64.05 ± 19.28), respectively. In addition, "society and stakeholders in sources of evidence" (64.71 ± 16.30) and significant impact of social norms (64.45 ± 17.48) had the highest mean scores across all the external or environmental and social or interpersonal factors, respectively.

RESULTS OF STATISTICAL TESTS

Group Differences in Demographic Variables (Positions, Educational Levels, Hospital Ownership, Participants' Gender, Work Experience, and Expertise and Skills)

In this study, no statistically significant differences were observed among nursing managers in relation to barriers to EBMgt according to their positions ($F = 1.14$, $p = .295$), educational levels ($F = 1.30$, $p = .132$), hospital ownership ($F = 1.41$, $p = .073$), participants' gender ($F = 1.71$, $p = .192$), and work experience ($F = 1.20$, $p = .216$). Furthermore, statistically significant differences were found among nursing managers in relation to barriers to EBMgt according to their expertise and skills ($F = 1.5$, $p = .042$).

There were no statistically significant differences found among nursing managers in relation to facilitators of EBMgt according to their positions ($F = 0.307$, $p = .736$), educational levels ($F = 1.32$, $p = .138$), work experience ($F = 0.742$, $p = .593$), participants' gender ($F = 1.97$, $p = .167$), and their expertise and skills ($F = 1.30$, $p = .221$). Furthermore, statistically significant differences were found among nursing managers in relation to facilitators of EBMgt according to hospital ownership ($F = 2.64$, $p = .035$). Statistically significant differences using the Tukey's test were found among nursing managers in relation to facilitators of EBMgt between training and private hospitals ($p = .001$) and training and charity hospitals ($p = .041$).

Correlation Between Quantitative Variables

Regarding the age variable, there was no correlation between the nurses' age and barriers to EBMgt ($r = .068$; $p = .326$). There was no correlation between the nurses' age and facilitators of EBMgt ($r = .056$; $p = .416$). As shown in Table S5, there was a positive correlation between barriers' domains ($p < .001$). At the same time, there was a positive correlation between facilitators' domains ($p < .001$; see Table S6). Finally, the results of Pearson's correlation analysis showed that there was a negative correlation between barriers and facilitators of EBMgt ($r = -.280$; $p = .000$).

DISCUSSION

Nursing managers are a very important group in healthcare organizations and play key roles in hospital administration, such as overcoming barriers to EBMgt and facilitating the implementation process of EBMgt (Ebrahimi, Seyedrasooli, Khodadadi, & Yousefi, 2017). The purpose of this research was to explore facilitators and barriers to implementation of EBMgt based on nursing managers' perspectives.

This study explored the factors that were barriers to EBMgt. The domain of "training and research systems" had highest mean scores. "The lack of communication between knowledge producers and hospital decision-makers" had the highest mean scores among all 46 barriers. Knowledge producers are actors who literally produce research-based, practice-based, or experience-based knowledge that can be shared with hospital decision-makers, such as nursing managers. They include groups such as academic researchers, program evaluators, and analysts who interpret research and data. As these barriers have high mean scores and intensive influence on the implementation of EBMgt, nursing managers must try to overcome barriers to EBMgt. Moreover, they can use the facilitators of EBMgt for overcoming weaknesses.

Moreover, this study explored the facilitators of EBMgt among nursing managers. The highest mean scores were observed for "social/interpersonal factors." "Interest and willingness to scientific management principles" had the highest mean scores among all 42 facilitators. Findings of the this study were generally consistent with the previously reported research claiming that nursing managers' viewpoints of organizational support and a favorable learning environment developed their knowledge, skills, and confidence to interpret research evidence into practice (Brown, Wickline, Ecoff, & Glaser, 2009; Janati et al., 2017; Majdzadeh et al., 2011; Majid et al., 2011; Malik, McKenna, & Plummer, 2016; Melnyk et al., 2004; Pagoto et al., 2007; Wallis, 2012).

The extent of perceived barriers and the frequently cited barriers to nurses' use of research has been consistent in new literature. However, the most cited barriers vary among countries such as Iran, Africa, UK, Australia, and the USA. For example, in Iran and most low- and middle-income countries, limits of innovation, lack of incentives, and insignificant resource are the most important barriers to EBMgt. In Australia and high-income countries, insufficient time for evidence-based decision-making is the most important barrier (Khammarnia, Haj Mohammadi, Amani, Rezaeian, & Setoodehzadeh, 2015; Malik et al., 2016; Mndzebele & Tshivhase, 2016; Wallis, 2012).

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In this study, significant barriers were found, including insufficient time, lack of incentives, insignificant resources, difficulty recognizing, appraising, and interpreting research findings to change managerial practice of nurses and lack of authority that consistent with the previously reported research (Ebrahimi et al., 2017; Koehn & Lehman, 2008; Majdzadeh et al., 2011; Majid et al., 2011). For overcoming the barriers to EBMgt, the present study suggests that an approach of empowering nurses can be useful by implementing educational plans of EBMgt application for improvement of nursing management practice.

Nurses identified "the lack of communication between knowledge producers and hospital decision-makers" as a key barrier in using and applying EBMgt principles. It was rated as the top barrier in this study, which is consistent with other studies conducted in similar settings and organizational contexts (Liang, Howard, & Rasa, 2011; Majdzadeh et al., 2011). Khammarnia and colleagues found that 57% of barriers to implementation of EBMgt are related to individual aspects (Khammarnia et al., 2015). In addition, an Iranian study reported that 21.4% of barriers to implementation of EBMgt are related to individual aspects. The authors showed that lack of time is a common barrier to implementation of EBMgt (Kermanshahi & Parvinian, 2012). Hussein and colleagues perceived organizational barriers (73.8 ± 16.8) more than individual barriers (65.0 ± 24.1) that current study indicated 63.86 ± 11.69 and 59.28 ± 12.94, respectively. In Malik's study, perceived lack of incentives was the major barrier to EBMgt (Malik et al., 2016). The previous research suggests that nurses were not interested using EBMgt because they were too tired, overworked, and were not supported by hospital (Almaskari, 2017; Koehn & Lehman, 2008; Majid et al., 2011; Malik et al., 2016). On the other hand, the highest mean scores of facilitators were observed in relation to manager characteristics and individual factors. Also, the highest mean scores of the nursing managers' perspectives of the manager characteristics and individual factors were found in relation to "interest and willingness to scientific management principles." The results showed that the highest mean scores of the nursing managers' perceptions of the factors related to research productions were observed in relation to "promotion of continuous learning of management principles" that were generally consistent with the previously reported research (Malik et al., 2016).

Furthermore, statistically significant differences were found among nursing managers in relation to facilitators of EBMgt according to hospital ownership ($p = .035$). In addition, the results of Pearson's correlation analysis indicated that there was a negative correlation between barriers and facilitators of EBMgt ($r = -.280$; $p = .000$). It means that with increasing facilitators, nursing managers can decrease the barriers to implementation of EBMgt. In a similar study, the barriers to EBMgt and facilitators were investigated among Omani nursing leaders that there were no significant differences in the mean scores of the barriers to EBMgt and facilitators (Almaskari, 2017).

This study indicated that organizational support, existence of adequate resources, and use of continuing education programs facilitated the implementation of EBMgt for nursing managers. Findings of previous studies revealed that organizational support, sufficient resources, and access to continuing education were perceived as factors promoting acceptance of EBMgt (Almaskari, 2017; Koehn & Lehman, 2008; Majdzadeh et al., 2011; Majid et al., 2011; Malik et al., 2016; Solomons & Spross, 2011). In Chehrzad's study, the most important facilitator was "collaboration between university centers and hospitals" (Chehrzad et al., 2015). Supportive policies, training opportunities, and an adequate and relevant evidence base appeared to be the most common facilitators (Pagoto et al., 2007). This study has a cross-sectional design, so it is difficult to make any causal conclusion. A cross-sectional design is merely a single point measurement, which means that results may differ depending on the time frame. This study has at least two limitations. One limitation is that a response bias may have occurred due to self-reporting by the participants. Also, in this study, only nursing managers' perspectives were investigated; other nurses were not included in the study.

CONCLUSIONS

The results of this study can guide nursing managers to provide structures of EBMgt implementation. Overcoming EBMgt barriers is the first step in moving toward widespread implementation of EBMgt in healthcare organizations. Educational efforts are currently underway to increase health professionals' awareness and skills related to EBMgt. According to findings, by identifying facilitators and barriers to EBMgt, continuing education regarding EBMgt for nursing managers is crucial in order to enhance nurses' management knowledge and skills, and hospital management should take steps to minimize the barriers to EBMgt implementation. There were five major barriers to EBMgt that must be overcome by improving the nursing managers' skills and five major facilitators that must be developed in the decision-making process of nursing managers. Hospital management can create a favorable and conducive environment and provide socializing opportunities for nursing managers to promote peer-to-peer information and knowledge sharing. The lack of communication between knowledge producers and hospital decision-makers was one of main obstacles to using EBMgt. Therefore, interaction between knowledge producers and nursing managers is an influential means by which to generate practice-relevant knowledge and enable evidence-informed practice.

LINKING EVIDENCE TO ACTION

- The nature of the decision-making process in nursing care must be based on the best available evidence, and it is important to use EBMgt in providing the highest level of patient care.
- Identification of facilitators and barriers to EBMgt for continuing education of nursing managers is crucial in order to enhance nurses' knowledge and skills toward EBMgt.
- Dynamic and active interaction between knowledge producers and nursing managers with the aim of guaranteeing that the nursing managers have the information they need is necessary.
- Hospitals should encourage using EBMgt by providing adequate time, resources, knowledge, and skills for nursing managers through conducting workshops and mentoring.
- There is a need for implementing effective interventions in order to overcome the barriers to EBMgt and to develop the facilitators at both organizational and individual levels to encourage nursing managers to change their practice to be based on evidences.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's web site:

Table S1. Distribution of nursing managers (N = 212) according to hospital ownership.
Table S2. Overview of the nursing managers' characteristics in Tabriz (N = 212).
Table S3. Nursing managers' perspectives on the barriers to EBMgt.
Table S4. Nursing managers' perspectives on the facilitators of EBMgt.
Table S5. Pearson correlations between barriers' domains.
Table S6. Pearson correlations between facilitators' domains.