The Use of Evidence-Based Management in Nursing Management

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Abstract

Evidence-based management (EBM) has been developed as a management framework for improving the quality of decisions. To use that, we need to identify the sources of evidence and to assess the utilisation of evidence in EBM. Therefore, the purpose of this study was to assess the utilisation of evidences and to identify predominantly used sources in EBM among nursing managers in Tabriz, north-west Iran. A facility-based descriptive cross-sectional study design was used in Tabriz hospitals. Out of 276 nursing managers eligible for the study from the Tabriz hospitals (n = 20), 205 nursing managers completed and returned the self-administered questionnaire, which indicated a response rate of 74.27 per cent. The questionnaire components included scientific and research evidence (four sources), facts and information from the hospitals (four sources), political-social development plans (three sources), the managers' professional expertise (three sources), ethical-moral evidence (three sources), and values and expectations of all stakeholders (three sources). The results showed that the average use of scientific and research evidence (58.41 ± 13.23) was less than other sources of evidence. The average

use of values and expectations of all stakeholders' political-social development plans was (67.15 ± 14.78), managers' professional expertise (70.47 ± 12.49), and ethical-moral evidence (68.91 ± 11.62). In addition, hospital ownership and the participants' gender influence the use of facts and information of hospital and managers' professional expertise. The findings showed that nursing managers were more customer- and expertise-oriented in the decision-making process. From the study findings we recommend utilisation of all the sources of evidence for decision-making in a full evidence-based nursing management process.

Background

There has been an intensive effort to extend new organisational and managerial frameworks in the last 20 years. One of these models is evidence-based management (EBM) to manage hospitals (Liang et al. 2012, 284–90; Olade 2004, 60–68; Rynes and Bartunek 2017, 234). Nowadays, the EBM scope of all sciences encompasses nursing management, education, criminology, social work, management, and health and public policies (Arab Zozani, Amery, and Jafari 2014, 99–112; Boström et al. 2013, 165; Briner, Denyer, and Rousseau 2009, 19–32; Liang et al. 2012, 284–90). The EBM is rooted in evidence-based medicine. This is a new approach to nursing management practice that needs a change in attitude among nursing managers. Like evidence-based medicine, EBM is a tool to answer questions about a decision's outcome (Olade 2004, 60–68; Sams, Penn, and Facteau 2004, 407–414; Watson 2004, 207–209; Yurumezoglu and Kocaman 2013, 59).

Nursing managers are one of the largest health professional groups in all parts of hospitals (Bahtsevani, Khalaf, and Willman 2005, 196–207). 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. Therefore, nursing managers are forced to use evidence-based healthcare management to be effective (Bahtsevani, Khalaf, and Willman 2005, 196–207; Janati et al. 2017, 659–68). Evidence-based nursing management (EBNM) improves organisational and managerial decisions by bridging theory and practice gaps and has a critical impact on hospital performance (Janati, Hasanpoor, Hajebrahimi et al. 2018, 436). Evidence-based practice in nursing is the synthesis of clinical expertise, research evidence, and patient values to create effective patient care strategies (Newhouse et al. 2005, 35–40; Newhouse 2007, 21–29; Underhill et al. 2015, 70–78). Evidence-based practice emerged out of the evidence-based medicine movement. Evidence-based practice is defined as a process of decision-making in which nurses make a decision by integrating the best available evidence with their own clinical expertise together with patient preferences (Munten et al. 2010, 135–57; Yurumezoglu and Kocaman 2013, 59).

The movement towards EBM poses new organisational challenges to provide the necessary infrastructure for the promotion of effective nursing interventions based on the best available evidence. The American Nurses Association Scope and Standards for Administrators clearly state that nurse leaders are responsible for ensuring the dissemination of research findings and providing the organisational support to integrate findings (Pochciol and Warren 2009, 317–24; Thiel and Ghosh 2008, 182–92; Weng et al. 2015, 22–30). There are many studies suggesting that nursing care should be evidence-based and that managers should use different sources of evidence (Melnyk 2012, 127–35; Melnyk et al. 2010, 51–53; Yurumezoglu and Kocaman 2013, 59). One of the most important problems faced by nursing managers is basing their decision on different sources of evidence.

Researchers in the field of nursing management should not merely focus on understanding organisational life. They should also conduct studies that elaborate managerial practices with a view to explain, as well as to predict the implications of managerial actions. In order to implement EBNM, nursing managers need to improve their skills in finding the best sources of evidence and critically appraising that evidence to assess its validity (Dalheim et al. 2012, 367; Leasure, Stirlen, and Thompson 2008, 74–82; Yurumezoglu and Kocaman 2013, 59; Janati, Hasanpoor, Hajebrahimi, Sadeghi-Bazargani 2018, 436).

EBM could be defined as basing organisational practices and managerial decisions on the best available evidence. The results of different studies showed that there are four sources for healthcare management: the best available scientific research; organisational data; professional experience and judgement; and stakeholders' values and concerns (Barends et al. 2015; Briner, Denyer, and Rousseau 2009, 19–32; Rynes and Bartunek 2017, 101). Sources of evidence include information ranging from primary quantitative and qualitative research studies, systematic reviews, national guidelines, consensus statements of professional organisations, and benchmarking or quality improvement data in different studies (Dalheim et al. 2012, 367; Guo, Farnsworth, and Hermanson 2015, 274–83; Janati et al. 2017, 659–68). Hence, there is no clear information with regard to the utilisation of evidences and which sources of evidence were mostly used in the decision-making process among the nursing managers in Tabriz Hospitals, north-west Iran. In addition to this, we tried to evaluate the style of management exercised by nursing managers by identifying evidence sources.

Methods and Participants

Study Design

A facility-based descriptive cross-sectional study design was used at the hospitals in the city of Tabriz, Iran, during 2017. The cross-sectional study results are reported according to the reporting of observational studies in epidemiology (Von Elm et al. 2014, 1495–9). The study setting included all hospitals in Tabriz. Tabriz city has 20

hospitals. Nursing managers who were working in the following hospitals (n = 20) 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, Beinolmelal, Asadabadi, and Nikokari.

Participants and Data Collection

Of the 20 hospitals, 6 were private hospitals, 10 were public hospitals, 2 were social-security hospitals, 1 was a charity hospital, and 1 was a military hospital. The study population included all the nursing managers (chief nursing officers (CNOs), supervisors and head nurses (HNs)). The eligible study subjects were 276 nursing managers.

Instrument

The evidence sources questionnaire was used to collect data. This self-administered questionnaire (with 20 items) was developed in English by the researchers after reviewing different studies. The following questionnaire domains were identified (Janati et al. 2017, 659–68):

1) SRE: Scientific and research evidence (four sources);

2) FIH: Facts and information of hospital (four sources);

3) PSDP: Political-social development plans (three sources);

4) MPE: Managers' professional expertise (three sources);

5) EME: Ethical-moral evidence and values (three sources); and

6) VES: Values and expectations of all stakeholders (three sources).

The following demographic characteristics of nurses were also included: Gender, age, level of education, positions, specialty of nurses, hospital ownership and work experience. The questionnaire validity was measured using indicators of the content validity ratio (CVR) and the content validity index (CVI). Fifteen experts (five health management specialists, seven nursing management experts and three experts in field of evidence-based medicine) appraised the questionnaire by scoring relevancy, clarity, simplicity, and necessity of the items in order to calculate the CVI and CVR. The CVR, three-point Likert scale from "completely necessary" to "not necessary" was completed by a panel of experts. According to the Lawshe table for the 15 experts, questions with a CVR > 0.49 were acceptable (Lawshe 1975, 563–75). Therefore, the CVR for all questions were more than 0.86. The relevance, clarity, and simplicity of all questions were checked using a four-point Likert scale, and questions with a CVI > 0.79 were considered appropriate. Four questions with a CVI < 0.73 were revised. The CVI was found to be 0.88 and the CVR to be 0.86.

In addition, the reliability was assessed using Cronbach's coefficient alpha. Internal consistency has been shown with an alpha Cronbach's coefficient of 0.89 for all items.

Data collection was conducted by two researchers. The researchers were members of the Road Traffic Injury Prevention Research Center and the Iranian Center of Excellence in Health Management at the Tabriz University of Medical Sciences. The questionnaire rating scale included a five-point Likert scale (1 = strongly disagree; 5 = strongly agree).

Data Analysis

Descriptive statistics (frequencies within groups) were used to determine the distributions of the nurses' demographic characteristics. The data entry and analysis were carried out using the SPSS software (Version 21). Using sources of evidence in EBNM was rated between 0 per cent and 100 per cent. The differences between the groups of nursing managers' characteristics were analysed using a t-test and an analysis of variance. In addition, the Pearson correlation coefficient was used between age and work experience with sources of evidence. A p value < 0.05 was considered significant.

Ethical Aspects

The study was approved by the ethical committee of the 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. To ensure their rights, the participants were informed about the prevailing ethical considerations, for instance informed consent, the rights of the participants, voluntary participation, anonymity, and confidentiality. We obtained informed consent from each participant. The consent was obtained orally after each participant had had the opportunity to carefully consider the risks and benefits and to ask any pertinent questions about the study.

Findings

Demographic Characteristics

In total, 276 nurses from 20 hospitals were included in the study. Table 1 gives an overview of the distribution of the nurses' demographic characteristics. A total of 276 nursing managers received the questionnaire and 205 completed the survey, reflecting a 74.27 per cent response rate. Almost 70 per cent of the nursing managers were female. The majority of the participants were HNs and supervisors (90.7%). Of the 205 participants, 62 per cent have a bachelor's degree (BA). Almost 56 per cent of the nursing managers were working at public-teaching hospitals. The main expertise and skills of nursing managers (70.20%) were clinical skills. The mean age was 41.39 (5.54) years. The participants' average work experience was 17.13 (5.78) years. On the other hand, the average work experience and age are presented separately for the positions.

Table 1: Overview of the nursing managers' demographic characteristics

Demographics (n = 205)				
			Frequency	%
Gender		Male	76	37.10
		Female	129	62.90
Current position		Matrons	19	9.30
		Supervisors	83	40.50
		Head nurses	103	50.20
Highest level of education		BA	127	62.00
		Master's	77	37.60
		PhD	1	0.05
Main expertise and skills		Clinical skills	144	70.20
		Strategic planning	9	4.40
		Change management	8	3.90
		Process improvement	7	3.40
		Human resources management	24	11.70
		Total quality management	8	3.90
		Accreditation	5	2.40
Hospital ownership		Public-training	115	56.10
		Private	29	14.10
		Public-charity	14	6.80
		Social security	33	16.10
		Military	14	6.80
Work experience		< 5 years	5	2.4
		6–10 years	16	7.8
		11–15 years	57	27.8
		16–20 years	75	36.6
		21–25 years	40	19.5
		≥ 26 years	12	5.9
		Minimum	**Maximum**	**Mean**	**SD**
CNOs	Average age	31.00	54.00	43.00	5.09
	Average work experience	11.00	29.00	19.53	4.55
Supervisors	Average age	26.00	55.00	41.96	5.63
	Average work experience	1.00	38.00	17.71	6.12
HNs	Average age	24.00	53.00	40.49	5.45
	Average work experience	2.00	27.00	16.21	5.56
Total	Average age	24.00	55.00	41.32	5.54
	Average work experience	1.00	38.00	17.13	5.78

Utilisation of Evidence Sources

In Table 2, the average use of sources of evidence is shown according to 20 items. The average use of hospital data and expertise was 75.19 ± 17.37 and 75.02 ± 17.28 among nursing managers, respectively. The average use of sources of decision support systems (DSSs) was less than the other sources (28.00 ± 13.37). The sources of evidence were categorised into six main domains which are indicated in Table 3.

Table 2: The use of sources of evidence among nursing managers

Sources of evidence	N	Minimum	Maximum	Mean	SD
SRE					
Conference	205	20.00	100.00	58.43	19.13
Scientific research	205	20.00	100.00	60.48	17.49
Management literature	205	20.00	100.00	59.12	16.96
Academic journal	205	20.00	100.00	55.60	17.66
FIH					
Hospital information system	205	20.00	100.00	65.46	17.97
Hospital data	204	20.00	100.00	75.19	17.37
Decision support system	205	20.00	80.00	28.00	13.37
Checklist	203	20.00	100.00	72.12	18.58
PSDP					
Governance laws	205	20.00	100.00	69.27	18.09
Governance plans	205	20.00	100.00	62.05	19.94
Ministry of Health and Medical Education plans	204	20.00	100.00	70.09	20.39
MPE					
Personal experience	205	20.00	100.00	72.00	16.87
Expertise	205	20.00	100.00	75.02	17.28
Observations	205	20.00	100.00	64.39	17.44
EME					
Religious	205	20.00	100.00	67.41	15.58
Ethical-moral principles	205	20.00	100.00	68.68	15.48
Behavioural principles	205	20.00	100.00	70.63	14.88
VES					
Patients' values	205	20.00	100.00	72.48	15.59
Patient' expectations	205	40.00	100.00	72.00	15.15
Internal stakeholders	205	20.00	100.00	69.56	18.42

As Table 3 shows, the average use of SRE (58.4 ± 13.23) was less than other sources of evidence. Average use of VES was more than others sources of evidence for all the CNOs (72.63 ± 11.08), supervisors (70.68 ± 12.27) and HNs (71.66 ± 11.64).

Table 3: The use of six sources of evidence according to position

Position	Sources of evidence	Minimum	Maximum	Mean	SD
CNOs	SRE	25.00	75.00	58.94	14.19
	FIH	40.00	70.00	58.15	9.60
	PSDP	40.00	93.33	67.71	16.37
	MPE	46.67	100.00	70.87	14.77
	EME	33.33	93.33	67.36	14.21
	VES	53.33	86.67	72.63	11.08
Supervisors	SRE	25.00	90.00	58.79	12.50
	FIH	30.00	85.00	59.93	11.28
	PSDP	33.33	93.33	68.67	14.60
	MPE	40.00	100.00	69.71	13.01
	EME	40.00	100.00	69.63	11.52
	VES	40.00	100.00	70.68	12.27
HNs	SRE	25.00	90.00	58.00	13.73
	FIH	40.00	80.00	60.66	8.57
	PSDP	26.67	100.00	65.82	14.66
	MPE	33.33	100.00	71.00	11.68
	EME	40.00	93.33	68.60	11.26
	VES	40.00	100.00	71.66	11.64
Total	SRE	25.00	90.00	58.41	13.23
	FIH	30.00	85.00	60.13	9.83
	PSDP	26.67	100.00	67.15	14.78
	MPE	33.33	100.00	70.47	12.49
	EME	33.33	100.00	68.91	11.62
	VES	40.00	100.00	71.34	11.81

The results of Pearson's correlation analysis are shown in Table 4. There was a correlation between the use of SRE and the use of FIH ($r = 0.242$; $p = 0.000$) and PSDP ($r = 0.262$; $p = 0.000$). The results also show a positive correlation between FIH and PSDP ($r = 0.303$; $p = 0.000$). It means that the increasing use of FIH leads to the use of PSDP. In addition, there was a positive correlation between EME and VES ($r = 0.255$; $p = 0.000$). There was also a positive correlation between PSDP and both EME ($r = 0.274$; $p = 0.000$) and VES ($r = 0.141$; $p = 043$). Finally, there was a positive correlation between MPE and both EME ($r = 0.304$; $p = 0.000$) and VES ($r = 0.308$; $p = 0.000$). There was no significant correlation between other sources of evidence analysed.

Table 4: Correlation between sources of evidence among nursing managers

Sources of evidence		SRE	FIH	PSDP	MPE	EME	VES
SRE	R		.242*	.262*	−.066	.126	.069
	P-value		.000	.000	.346	.071	.328
FIH	R			.303*	.072	.026	.246*
	P-value			.000	.305	.713	.000
PSDP	R				.057	.274*	.141*
	P-value				.416	.000	.043
MPE	R					.304*	.308*
	P-value					.000	.000
EME	R						.255*
	P-value						.000
VES	R						
	P-value						
*Significance level < 0.05							

The relationship between the sources of evidence and demographic variables is shown in Table 5. There was no significant difference between gender and the sources of evidence except for FIH ($p = 0.033$) and MPE ($p = 0.037$). There was also no significant difference between the current position, level of education and work experience in using sources of evidence. On the other hand, there was a significant difference between hospital ownership and SRE ($p = 0.031$), PSDP ($p = 0.000$) and MPE ($p = 0.008$).

Table 5: Relationship between sources of evidence and demographic variables

Demographic variables	Sources of evidence	P-value	Demographic variables	Sources of evidence	P-value
Gender	SRE	0.687	Hospital ownership	SRE	0.065
	FIH	0.033*		FIH	0.031*
	PSDP	0.182		PSDP	0.000*
	MPE	0.037*		MPE	0.008*
	EME	0.067		EME	0.538
	VES	0.804		VES	0.211
Current position	SRE	0.908	Work experience	SRE	0.052
	FIH	0.580		FIH	0.452
	PSDP	0.422		PSDP	0.519
	MPE	0.777		MPE	0.485
	EME	0.696		EME	0.748
	VES	0.760		VES	0.168
Highest level of education	SRE	0.075			
	FIH	0.516			
	PSDP	0.667			
	MPE	0.582			
	EME	0.929			
	VES	0.669			

*Significance level < 0.05

Discussion

In this study, using six sources of evidence, the most important used sources were identified in the EBM process. Also, as shown in Figure 1, according to the six sources of evidence, the nursing managers are located in the sextet areas of the web. The nursing managers that use the source of SREs are known as scientific-oriented managers. The managers who utilise only the FIH are known as data- and fact-based managers. Plan-based managers are those who rely on the PSDP. These managers are highly regulatory and inflexible. Many managers only consider the need to reflect critically on their experiences and the practical examples. They are expertise-oriented managers. The nursing managers who use the EMEs are known as ethics-oriented managers. Finally, the last management area in the EBNM is related to shareholder-oriented managers. They are extremely customer-focused and respect their values in particular. The results showed that these nursing managers were more customer-oriented and expertise-oriented in the decision-making process.
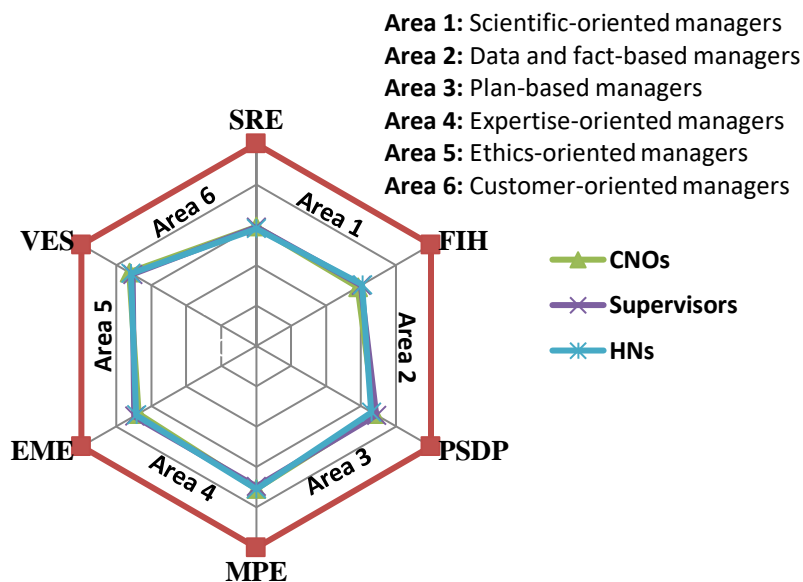

Figure 1: Management areas in evidence-based nursing management

The findings showed that the average use of SRE (58.41 ± 13.23) was less than other sources of evidence. It means that the nursing managers did not use the SRE for decision-making considerably.

In a study conducted in Belgium, the Netherlands and the US, out of 1 500 healthcare managers involved, only some of those managers replied that they base their decisions

on scientific research outputs (33%). Most hospital managers base their decisions on personal experience (72%) (Barends et al. 2015, 157). Martelli (2012) surveyed 103 chief executive officers (CEOs) and CNOs in Canada. Most participants base their decisions on academic research (Martelli 2012, 157). In the study by Guo et al., the results showed that personal experiences (87%), organisational data (84%), scientific research (75%) and stakeholders' values and concerns (63%) were the top four sources of evidence used for decision-making among healthcare managers in the US (Guo et al. 2017, 45–68). Niedźwiedzka (2003) in Poland estimated that only 15 per cent of medical managers used scientific research (Niedźwiedzka 2003, 106–115). In Norway and the UK, the use of personal experiences was one of the sources of evidence among nurses for decision-making (Dalheim et al. 2012, 367; Gerrish and Clayton 2004, 114–123). In our study, the mean use of scientific research, personal experience and value and expectations of all stakeholders was 58.41 per cent, 70.47 per cent and 71.34 per cent among nursing managers in decision-making, respectively.

In our study, there was no significant difference between the level of education and work experience in scientific-research evidence. Barends et al. (2015) did not find a relationship between the level of education (r = −.11, CI 95% −.16 to −.05), the level of experience (r = −.004, CI 95% −.05 to .04), and the use of sources of evidence (Barends et al. 2015, 157). Rynes, Colbert, and Brown (2002) reported a small negative correlation (−0.21) between the level of experience of human resource managers and their desire to learn about academic research (Rynes, Colbert, and Brown 2002, 149–74). Guo et al. (2017) indicated that the level of education positively moderated the relationship between attitude and intention to use EBM (p < 0.01). There was a statistically significant difference between less and more years of management experience among healthcare managers (Guo et al. 2017). Some researchers do not think that the evidence-based medicine pyramid applies to management decision-making, but that healthcare managers should use various types of knowledge, planning on formal academic knowledge and experiential knowledge, as well as values and expectations of all stakeholders (Guo et al. 2017; Liang and Howard 2011, 12; Liang et al. 2012, 284–90; Hasanpoor et al. 2017, 19).

Therefore, a full evidence-based nursing manager is a person who utilises all evidence sources in a six-step decision-making process. Nursing managers should use the best evidence sources based on the problem and population. The main predictors should be considered in using sources of evidence that include stakeholder values and expectations, functional behaviour, knowledge, key capabilities and skills, evidence sources and levels, evidence benefits, and government plans (Guo et al. 2017; Liang and Howard 2011, 12; Liang et al. 2012, 284–90; Hasanpoor, Hajebrahimi, Janati, Abedini et al. 2018; Hasanpoor, Janati, Arab-Zozani et al. 2018; Hasanpoor, Janati, Gholizadeh et al. 2018; Newhouse et al. 2007, 552–7; Newhouse and Johnson 2009, 409–11; Newhouse 2007, 21–29). This study has at least one limitation. The limitation is that a response bias might occur owing to self-reporting by the participants.

EBNM can improve management decisions and service delivery, effectiveness and efficiency. Since EBM is an emerging approach, its practice among nursing managers has been limited. Several factors exist at the organisational and personal levels, which play different and considerable roles. We know that many nursing managers lack EBM skills. Thus, they need to train the principles of EBM through training organisations and research institutes. By using the six evidence sources, managers can recognise the best available evidence for managerial decisions and in an evidence-based decision-making process to make the best decision.

Conclusions and Recommendations

The findings of this study could help policymakers and professional associations better understand nursing managers' decision-making style. The outcomes of the study can be used for exploring some possible interventions that might increase the use of an evidence-based approach and reduce barriers to the adoption of EBM in the future, for example to reduce the gap between research and practice in nursing management. To adopt and use sources of evidence, nursing leaders need to promote a culture that helps nurses to dedicate time to consult scientific evidence; personnel in educational institutions need to focus on improving EBM skills that are needed to find, read, evaluate and apply scientific evidence. University leaders need to train academics about methods needed to critically appraise and summarise the best available evidence on a topic relevant to best practice. To increase EBM benefits and use in hospitals, training organisation and research institute staff must involve nursing managers to set research programmes and to guide research evidence to facilitate evidence interpretation.

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