



Survey sources of knowledge used by intensive care nurses in clinical knowledge source used in nursing practice



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ABSTRACT

The aim of this research is to identify the sources of knowledge that ICU nurses prefer to use in practice. This descriptive study was conducted on 158 nurses working in intensive care units using census method. Data collection was done using a questionnaire consisted of four sections: personal, professional, and organizational information as well as, Estabrooks' knowledge sources questionnaire. Findings were analyzed by descriptive statistics and ordinal logistic regression using software SPSS version 21. Nurses were more inclined to use empirical knowledge in patient care rather than evidence-based information. Information from "nursing school" was the main source of nurses' knowledge and the least important source of knowledge was the "research Journals." Alternatively the results showed that, with increasing number of years of employment, nurses rely more on their previous knowledge learned at the nursing school, and male nurses and nurses with higher education are more inclined to use research journals.

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1. Introduction

Central concept in nursing is care (Meleis, 2012) and clinical decision making forms the basis of patient care (Torunn and Hamilton, 2011). Nurses must be familiar with new methods to provide appropriate care for patients (Solomons and Spross, 2011), and use different sources of knowledge (Estabrooks et al., 2005) as well as the best evidence to make decision (Majid et al., 2011). Since nurses work in a complex environment where each patient has his/her own unique condition, it is necessary for nurses to make correct decision based on patients' clinical condition, and cannot use a universal method to meet the needs of all patients (Paryad et al., 2011). Thus, the nurses have to use different sources of knowledge to better care for their patients. Therefore, identifying sources of knowledge used by nurses is crucial as it can help to understand the process by which nurses use the findings of clinical research as well as clinical decision making (Estabrooks et al., 2005). With progresses in technology and science and changing condition of

patients, it is required that nurses combine their technical skills, professional knowledge and evidence – based in their practice, and base their practice (Kahouei et al., 2012) on research and evidence (Neak Peima and Izadi, 2011). Nurses should make appropriate decision to provide better care for patients, and to do so, they need to use several of information and valid knowledge resources (Torunn and Hamilton, 2011). An important point is that, nurse should pay attention to level of resources and use first level and high quality evidence and researched-based knowledge that is found in valid databases (Kahouei et al., 2012). Estabrooks et al. (2005) believed that, nurses' clinical resources include; information acquired from interpersonal interactions and communication, personal experience in nursing, printed resources, and information learned in nursing school. They concluded that, nurses prefer to use their personal experience and information from fellow nurses and patient's information in their practice rather than journals and books (Neak Peima and Izadi, 2011). However, the community expects more from the nurses. Nurses must use research finding in their practice in order to respond the needs of patients and health care systems (Adibhajbagheri, 2007). Evidence-based practice (EBP) is the integration of clinical expertise, patient values, and the best evidence into the decision making process for patient care. There are many reasons for the use of

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evidence-based practice including; improving and updating clinical activities, improving quality of care, reducing length of stay and medical costs, cost-efficiency for patients, hospitals and organizations (Solomons and Spross, 2011; Adibhajbagheri, 2007). While, majority of developed countries are trying to shift towards research evidence-based practice, the lack of evidence-based care and intervention is one of the major problems of Iran's nursing practice. The aim of research in nursing is to produce knowledge that can be used in clinical practice. Therefore, if the findings of a research could not find their way into practice, these findings are worthless. The opposite is true for clinical professionals, if they do not use these findings in the practice, the research activities are worthless (Valizadeh, 2010). Melyn et al. (2004) also confirmed this and points to 17 years gap between the time of research and entry of its findings in practice. AdibHajbagheri (2007) also referred to lack of evidence-based practice and the gap between theory and practice as two of the main problems of Iran's nursing. The existence of such a gap and delay in using research findings could lead to devastating and irreparable consequences for patients and society, but reducing this gap can provide the best evidence-based care for patients (Salemi et al., 2010). In this regard, nurses working in intensive care unit, which is one of the most sensitive units in any hospital (Pashae et al., 2014), play an important role in restoring the health of critically ill patients (Jahromi, 2013), therefore, their caring behavior is very important (Estabrooks et al., 2005). Quality clinical care are delivered when nurses base their practice on scientific evidence⁸, therefore, it is necessary to pay attention to knowledge and information resources that nurses need to use in their practice (Estabrooks et al., 2005). The use of evidence in patient care is an important issue of clinical nursing, which aims to improve the quality of care by reducing the gap between research and clinical practice. But this old health problem will not be solved unless the sources of knowledge that are used by nurses in their daily clinical activities are identified (Neak Peima and Izadi, 2011). This can help to make the necessary revisions required in strategies to increase the use of research's findings in clinical practice. In order to provide evidence-based care, first of all we need to know how nurses obtain their required clinical knowledge. This study aimed to identify the preferred sources of clinical knowledge used by critical care nurses in patient care.

1.1. Methods

This was a cross-sectional study. The sample of this study consisted of all critical care nurses of educational hospitals affiliated with Guilan University of Medical Sciences across the city of Rasht in Iran. In total, 158 critical care nurses were selected to participate in this study through census method. Inclusion criteria for critical care nurses participated in the study were to have at least one

year working experience in the critical care units. To collect the data, a questionnaire was used which consisted of 4 parts; personal information, professional information, organizational information, and source knowledge questionnaire developed by Estabrooks et al. (2005). Estabrooks' questionnaire consisted of 16 five- option Likert scale, ranging from never to always. Items were ranked in order based on mean frequency scores. As this tool has not been psychometric in Iran, to determine its validity and reliability, the method of (CVR, CVI) was used. To determine the validity of the questionnaire, face and content validity methods were used. The "intuition" item received a CVI less than 0.7 and a CVR less than 0.6 and was therefore excluded from the questionnaire. To use the Estabrooks' sources of knowledge questionnaire, permission was obtained from the author through an email. The participants in this study were informed that participation and withdrawal is voluntarily and they can leave the study at any time. They were also ensured about the confidentiality. Prior to data collection, an informed consent was obtained from the participants and permission was received from hospitals officials. Data were analyzed using the SPSS software version 21, descriptive statistics (mean and frequency) and inferential statistics (ordinal logistic regression). The significant level was set at 0.05.

1.2. Findings

The results showed that, most participants were women (94.9%), and married (71.5%) with an average age of 34.1 ± 6.33 years, and average work experience of 9.74 ± 5.79 years, and also an average of 10 years, $SD = \pm 6.20$ were passed from their graduations. Majority of the participants reported that, they have been participating in service education at work but that has not been designed based on their needs. A rank ordering from 1 to 5 was used to determine the nurses' preferred sources of knowledge in practice and the ordinal mean was calculated as 3.48 for all the sources used. The results showed that, the most important sources of knowledge used by nurses in the clinical setting were included; information learned in nursing school (mean rank ordering 4.14), physicians' orders (mean rank ordering 3.96), what has worked for years (mean rank ordering 3.81), and personal experiences (mean rank ordering 3.78). In comparison, the five sources used least were: medical journals (mean rank ordering 2.80), nursing research journals (mean rank ordering 2.85), individual patient information (mean rank ordering 2.85) and the internet (mean rank 2.97) had the lowest priority among nurses (Table 1). The number of variety of sources of knowledge that were frequently or always used by intensive care nurses in their daily practice is shown in Table 2. According to Table 2, more than half of the nurses sampled often used 5 to 10 sources in their practice, while 12.5% of them were used 11 to 15 sources. In this study, ordinal logistic regression analysis was used to

determine the predictors of rate of using knowledge clinical sources that nurses were applied in the practice. The rate of using knowledge clinical sources was set as 1 to 5. ('Never'=1, 'Seldom' = 2, 'Sometimes'=3, 'Frequently'=4, 'Always'=5). The results showed that, the most important significant predictors of using "nursing school" was "work experience" ($P = 0.008$) (Table 3). In a way that, an increase of one year in work experience we would expect a 1.18 times increase the odds of being in a higher rate of using university education in clinical knowledge in the practice [Odds Ratio(OR) = 1.18, 95% Confidence Interval(CI) of OR: 1.34-1.04]. The findings also showed that, the number of years from graduation ($P=0.007$) was a predicting factor for another source of knowledge used by nurses, which was information obtained from "physician's orders". With each passing year of graduation the odds of using physician's orders for the patient as a source of knowledge increased by 1.08 times (95% CI of OR: 1.02-1.15) (Table 3). Another finding was that, education level could be used as predictors of the use of medical journals ($P=0.020$, bachelors vs MS degree: OR = 0.2) and nursing journals ($P=0.025$, bachelors vs MS degree: OR=0.19). That means master nurses associated with higher rate of using medical and nursing journals as source of knowledge in the practice than bachelor's degree. In addition, practicum of medical students on the units was another predictor of the use of medical ($P=0.006$) and nursing ($P=0.023$) journals. Another sobering fact was that, nurses, who were working in the units where medical students were doing their practicum in, were using fewer medical and nursing journals as a source of knowledge in their clinical practice. The odds ratio of nurses with versus without practicum of medical students on the units were using medical journals (OR=0.37), nursing journals (OR =0.45), both were less than 1, and also male nurses were using medical journals more than female nurses ($P=0.027$, OR=4.61, 95% CI of OR: 1.19-17.85) (Table 3).

The important point was that, the use of medical and nursing journals had less priority for nurses even compare with the use of media such as the Internet (with average rating 2.85 and 2.80). The

nurses' tendency to use reference books, which are accessible in all clinical settings with average rating of 3.57, was less than average. In other words, the findings indicated that, the nurses had a tendency to use available information at their work environments such as doctors' treatment orders and previous information acquired during their university education (Table 1). Another finding was that, education level could be used as predictors of the use of medical journals ($P=0.020$) and nursing journals ($P=0.025$). In addition, practicum of medical students on the units was another predictor of the use of medical ($P=0.006$) and nursing ($P=0.023$) journals. Nurses, who were working in the units where medical students were doing their practicum in, were using fewer medical and nursing journals as a source of knowledge in their clinical practice. The nurses were using medical journals (OR=0.37), nursing journals (OR =0.45), and also male nurses were using medical journals more than female nurses 4.6 (CI: 1.19-17.85).

3. Discussion

Without doubt, one of the most important priorities of nurses in evidence-based practice is identifying sources of knowledge used by them in clinical setting. The findings of this study showed that, nurses preferred to gain their required knowledge from observation, direct patient care and interpersonal interaction with colleagues in their work environment, which can be referred to as empirical knowledge. Melesi (2012) also refers to empirical knowledge as one of the main sources of information for nurses. The findings of this study showed that, knowledge gained during nursing school was the main source of knowledge for nurses in clinical practice. The findings also showed that, by increasing work experience, the nurses' reliance on their school educations was also increasing. However, this finding is inconsistent with the Banner's view, who believes only newly qualified nurses benefit from the information they gained from university education (Neak Peima and Izadi, 2011).

Table 1: Distribution of nurses' sources of knowledge in practice

Item	Never		seldom		Sometimes		Frequently		Always		Mean score	Rank
	%	No.	%	No.	%	No.	%	No.	%	No.		
Individual client/patient	19	30	15.2	24	36.7	58	19.6	31	9.5	15	2.85	12
Personal experience	1.9	3	2.5	4	35.3	40	56.3	89	13.9	22	3.78	4
Nursing School	0.6	1	0.6	1	14.6	23	52.5	83	31.6	50	4.14	1
Physicians' discussion with nurse	1.3	2	6.3	10	35.4	56	38	60	19	30	3.67	5
Physician's orders	0	0	3.2	5	28.5	45	37.3	59	31	49	3.96	5
Medical journals	6.3	10	31.6	50	43.7	69	12	19	6.3	10	2.80	14
Nursing journals	6.3	10	27.2	43	46.2	73	15.8	25	6.4	7	2.85	13
Textbooks	1.3	2	7	11	41.8	66	33.5	53	16.5	26	3.57	8
What has worked for years	0.6	1	1.3	2	31	49	50.6	80	16.5	26	3.81	3
Ways nurse has done always	1.9	3	10.8	17	46.8	74	31.6	50	8.9	14	3.35	10
Fellow nurses	1.3	2	7.6	12	50	79	34.8	5	6.3	10	3.37	9
In-services in workplace	1.3	2	7.6	1	34.8	55	43.7	69	12.7	20	3.59	7
Policy and procedure manuals	0	0	3.2	5	40.5	64	43	68	13.3	21	3.66	6
Internet	4.4	7	22.7	35	47.5	75	22.4	37	2.5	4	2.97	11

Table 2: Variety of sources of knowledge used by nurses

Number of Sources	Number of Nurses	%
0	4	2.5
1-5	43	27.2
5-10	91	57.6
11-15	20	12.7
Total	158	100

Mean number of sources used: 7
Note: Table reports the number of sources that were frequently or always used by the nurses in practice

Table 3: Regression coefficient and odds ratio for sources of knowledge

Source of knowledge	predictors		Coefficient of regression	SE	P - value	OR	CI 95%
Nursing school	Total work experience		17%	0.6	0.008	1.18	1.04-1.34
	Work experience in ICU		-0.13	0.05	0.009	0.88	0.79-0.97
Physician’s orders	Number of years graduated		0.08	0.03	0.007	1.08	1.02-1.15
	Work experience in ICU		-0.08	0.04	0.066	0.93	85-1.01
	Work with student physicians , nurses	Yes	0.63	0.34	0.067	1.87	0.92-3.67
		No	0			1	
What has worked for years	Number of years graduated		0.06	0.03	0.027	0.06	1.01-1.11
Personal experience	Work experience		0.1	0.03	0.001	1.10	1.04-1.16
Physician’ discussions with nurse	Number of years graduated		0.08	0.03	0.001	1.09	1.03-1.14
	Sex	Men	-1.60	0.70	0.022	0.20	0.05-0.8
		Female	0		0	1	
	Education	BS	-1.22	0.73	0.094	0.3	0.07-1.23
		MS	0			1	

Considering that fact that, most of the participants in this study were married women, it could be said that, the interference of female nurses' professional role with their roles as a wife and a mother prevented them to update their knowledge, also increase of work experience distanced them from scientific documents and caused them to rely more on their prior learned knowledge. It is suggested to examine the underlying causes in a qualitative study. In this study, using information gained "what has worked for years" was another important source of information for nurses in clinical decision-making. This finding was also the second source of knowledge for nurses in the study of Neak Peima and Izadi (2011). Other studies have also noted nurses' neglecting of research finding and reliance on clinical experiences (Estabrooks et al., 2005; Thompson et al., 2004; Melynk et al., 2004). It is obvious that, experiences gained during practice reinforcement the body of knowledge the nurses have learned previously. The need for more learning after graduation is necessary. Knowledge alone cannot always act as a clinical guideline, and the condition of patients determines how nurses use their knowledge in practice (Skar, 2010), and that can only be achieved by combining knowledge and experience. In this study, nurses perform their clinical activities based on the information that had no theoretical and scientific basis, it is necessary to update and develop the nurses' knowledge by in-service trainings. But the findings of this study showed that, nurses were not interested to participate in such trainings. Participation in seminars and educational programs were the main methods to gain knowledge for nurses in the study of Millis (2009) and in other studies such as studies of Gerrish (2004), Ozsoy and Ardahan (2008), and

Estabrooks (2005). However, in this study, more than half of nurses stated that, the educational programs were rarely designed in accordance with their needs. Perhaps this finding is not far from reality as it reveals the need for revision in design and development of in-service training programs. Although, policies and procedure manuals are among the most accessible information sources in hospitals, the findings of this study showed that, nurses were less interested to use them. This finding is consistent with the findings of Kahouei et al. (2012) study. However, Estabrooks et al. (2005), and Gerrish (2004) in their studies referred to them as the main sources of knowledge. Perhaps the reason for nurses' lack of interest in using such resources is that, they prefer oral sources of information rather than printed sources, as oral sources resolve their problems quicker and provide immediate solution for patients' problems (Estabrooks et al., 2005). Bringsvor et al. (2014) believe that, nursing policies and guidelines are useful and usable if only they were evidence-based, while this is not always the case. Moreover, since these guidelines have been derived from developed countries, they are required to be localized and updated for use in Iran. Perhaps another reason for the failure to use of nursing policies and guidelines is that, the recommended guidelines are not consistent with nurses' treatment preferences or there is no consensus about them. Personal resistance and the barriers created by individuals not well-equipped with the required knowledge, attitude and skills is also another reason for not using such resources. In recent years, clinical governance has been implemented to promote quality in Iran's health system and an important part of it has been dedicated to protocols and guidelines in which development of guidelines away from any

personal preference or self-interest has been emphasized. Since, practicing in accordance to these guidelines is obligatory, thus it is necessary to 1) use scientific and precise methods to develop them, 2) use encouraging strategies in their implementation by personal and group education, and 3) managers pay more attention to the design and use of nursing guidelines. Findings of this study showed that, medical and nursing journals were the least important sources of knowledge for the nurses in their practice which is in line with the studies of Mills and Field (2009) and Ozsoy and Ardahan (2008), and is inconsistent with the studies of Kosteniuk (2006) and Estabrooks et al. (2005). Latest journals and research findings can be beneficial in provision of scientific and evidence-based care for patients but this approach has not gained its rightful place in Iran's nursing practice, whereas, development of evidence-based practice requires knowledge and skills in searching, understanding and interpreting research's findings (Younger, 2010). Younger believes that, one of the reasons for the lack of use of journals by nurses is that, they feel that, they are not able to interpret and analyze the findings and also they do not have the ability to search for articles effectively (Salehi et al., 2014). Another finding in this regard was that, male nurses were more interested to use medical journals than female nurses. In most cultures the identity of women is intertwined with their mothering and childbearing roles and men's identity is measured by their occupation and income. Study of journal's articles requires free time, facilities and freedom from daily activities that women do not have enough of them comparing to men (Meleis, 2012). Findings of this study also showed that, nurses with master's degree and higher education were using journals more in their practice, which could be due to their higher ability and skills in the searching for journals in databases. The interesting point in this regard was that, nurses were less interested to use journals in the wards where medical student were on their practicum. This could be due to that fact that, medical students were considered as a source of knowledge by the nurses and reduced the need for personal study. Scientific discussions that were happening regularly between nurses and medical student created an academic atmosphere that could lead to consultation and innovations in patient's care (Salehi et al., 2014). Despite managers and officials' attempts to create foundation for evidence-based practice in hospitals such as IT training and internet access, in this study, nurses were more interested to use traditional sources of information and personal experience in patient's care. In this regard, internet was the least source of knowledge for nurses. These findings are consistent with many other studies (Estabrooks et al., 2005; Mills and Field, 2009; Bringsvor et al., 2014; Kosteniuk et al., 2006). The reasons for nurses' lack of interest in the use of internet in many studies include; lack of access to internet at work place, lack of internet searching skills, negative attitude and lack of self-confidence

(Kahouei et al., 2014; Mills and Field, 2009; Bringsvor et al., 2014; Cheraghi, 2009). Although this result was predictable, it seems that, hospital's librarians and IT experts can play an important role in teaching nurses internet searching skills and consequently, promoting evidence-based practice (Kahouei et al., 2014). Also, knowledge management through information technology can play an important role in providing the online access to valid evidence-based databases (Heydari et al., 2014).

3. Conclusion

Findings of this study showed that, although nurses were using variety of resources in patient care and clinical decision making, they had a greater tendency to use the knowledge gained in clinical environment than evidence-based knowledge. The nurse also were using fewer research findings in their patient care and in fact, the findings of this study showed that, nurses had tendency to use traditional methods in patient care. This finding indeed will have significant impact on different aspects of nursing management, education and clinical practice. By reducing the gap between theory and practice we can provide the best evidence-based care for patients. Therefore, awareness about the sources of knowledge used by nurses in clinical settings is necessary in delivery of high quality care for patients. It is also necessary that, health system's managers and officials make plan to develop nurses' skills in the use of evidence-based resources in order to promote the quality of patient care.

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