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Nurses' understanding of evidence-based practice: Identification of barriers to utilization of research in teaching hospitals

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Abstract

Original Article

BACKGROUND: In medical organizations, utilizing evidence-based practice (EBP) helps nurses and patients make the best decision in health care in certain clinical settings. Hence, recognizing its educational barriers is so important.

METHODS: The present study was a descriptive-analytical research that was conducted using a cross-sectional design in 6 teaching hospitals of Qazvin City, Iran, in 2014. The study sample consisted of 260 nurses. Based on the number of the nurses working in each hospital, the study sample was chosen by a stratified random method. Two questionnaires were employed to collect the required data. The first questionnaire was Evidence-Based Practice Questionnaire (EBPQ) that evaluates nurses' understanding of EBP. The second questionnaire was related to measuring the barriers to utilization of research by the nurses that was developed by Funk et al. For analyzing the collected data, frequency distribution tables, analysis of variance (ANOVA), and linear regression coefficient were used.

RESULTS: The total mean of EBP among the nurses was at a level above average. The subscales of knowledge/skill (3.74) and attitude (3.87) had a lower average compared to the subscale of practice (4.14). The total mean of the barriers was 3.07. According to the results of the present study, organization and adopter had the highest and lowest means, respectively.

CONCLUSION: Identifying the barriers that affect effective EBP implementation can help nurses achieve their goals by removing these obstacles, building the necessary infrastructure, and providing human, physical, and financial resources.

KEYWORDS: Evidence-Based Practice, Knowledge, Attitude, Nursing, Teaching Hospitals, Iran

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Introduction

Care is considered as an essential component in health care services. Among all types of care that are delivered in medical environments (such as hospitals), nursing care has a particular significance.[1] That is why provision of care and services with appropriate quality is proposed as a priority in the health care system especially in the field of nursing services.[2] In this regard, nurses are expected to deliver care services with maximum quality and quantity standards and based on scientific findings. In addition, by examining and reviewing care procedures, they should acquire necessary ability to make clinical decisions while delivering care services.[3]

Evidence-based practice (EBP) is a problem-

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solving approach in providing health care services, in which the best evidence of relevant studies and the data obtained from taking care of patients is combined with the health care providers' experiences and the patients' preferences and values. In these conditions, the highest quality care and outcomes can be obtained.[4] In medical organization, nurses use evidence- and research-based practice in order to evaluate their skills, develop and implement policies and procedures, carry out effective clinical interventions, and prepare care plans so as to enhance positive outcomes for patients.[5] International Council of Nurses (ICN) has committed nurses to actively participate in research in the field of nursing and use the findings in order to develop EBP.[6] It is stated that EBP has different advantages such as improving the care quality and its outcomes, positive results of clinical practice, positive outcomes for the patients, standardization of care, and an increase in nurse satisfaction.[7] Implementing EBP, however, is challenging.[8] Various studies have indicated that in general, the nurses' understanding of EBP is positive and they believe that it is important to pay attention to it in order to deliver care services with higher quality; however, its implementation is slow.[9] Unfortunately, a small percentage of nurses work within EBP framework.[10] Research has indicated that there are some barriers to implementing EBP among clinical nurses.[11]

A study in Iran showed that major barriers to employing research include lack of time to study articles, insufficient facilities for conducting research, and lack of sufficient authority to change nursing procedures.[12] In a study carried out on 760 clinical nurses throughout the United States (US), Pravikoff et al. found out that nurses sought necessary information more from their colleagues than articles published in journals. In that study, more than half of the nurses stated that they had not used research reports in their clinical decisions and 82% of them had never used the

hospital's library.[13] In another study that was carried out in the US, EBP among nurses was 4.49, 5.15, and 4.56 out of 7 for practice, attitude, and knowledge/skill, respectively.[14] In a study that was carried out by Koehn and Lehman, the participants obtained an average score on practice and attitude of EBP. The mean scores of knowledge/skill were to some extent lower. Two barriers were mentioned to be involved in implementing EBP: time and knowledge.[15] Based on what was said, considering the importance of EBP in nursing practice and its effect on the quality and efficiency of patient care, and seeing that no study has been done in this field in teaching hospitals of Qazvin City, Iran, the research team decided to do this research. Therefore, the present study was aimed at investigating the level of understanding EBP, including the level of knowledge/skill, attitude, and the level of using EBP among the nurses working in Qazvin's teaching hospitals, and identifying the barriers to using research in nurses' usual functions.

Materials and Methods

The present study was a descriptive-analytical research that was carried out using a cross-sectional design in 6 teaching hospitals of Qazvin City in 2014. The study sample consisted of 260 nurses. Based on the number of the nurses working in each hospital, the study sample was chosen by a stratified random method. Two questionnaires were employed to collect the required data. The first questionnaire was Evidence-Based Practice Questionnaire (EBPQ) developed by Upton and Upton[11] which measures the nurses' understanding of EBP. This instrument has 3 subscales: knowledge/skill, attitude, and utilization extent. It has 24 items that are scored using a 7-point Likert scale.

The second questionnaire was related to measuring the barriers to utilization of research by the nurses, that was developed by Funk et al.[16] This scale consists of 29 items and 4

subscales including adopter, organization, innovation, and communication. It is scored based on a 5-point Likert scale: 1 for "to no extent", 4 for "to a great extent", and an option for "no opinion".

Results

A total of 260 nurses from 6 hospitals affiliated with Qazvin University of Medical Sciences participated in the present study. The studied hospitals included: Shahid Rajaie, Kousar, Avicenna, Qods, Velayat, and 22 Bahman. Their mean age was 31.9 years and most of the participants (45.7%) belonged to the age group of 30-39 years. The individuals' mean work experience was 8.17 years, with the maximum work experience belonging to 1-4 years (33.8%). Table 1 indicates the participants' frequency in regard to their responses to EBPQ.

According to the results presented in table 1, the average total EBP among the nurses was 3.91 out of 7. Here, the subscales of practice and attitude had a higher average than knowledge/skill subscale. Among the items of practice dimension, the highest mean was related to "Evaluating the outcome of the practice" with 4.51 and the lowest to "Critically appraising the evidence" with 3.52.

According to the results presented in table 2, organizational dimension or factors related to the medical center had the highest mean, and adopter dimension or factors related to the individuals (nurses) obtained the lowest means. Moreover, the total mean of the barriers was 3.07. Among the items of the adopter dimension, the maximum mean was related to the item "The nurse sees little benefit for self" and the minimum to the item "The nurse is unwilling to change/try new ideas". Among the items of organization dimension, the highest mean was related to the item "There is insufficient time on the job to implement new ideas" and the lowest to the item "The nurse does not have time to read research".

Table 3 shows the relationship between knowledge, attitude, and practice with the dimensions of the perceived barriers to EBP. The results of the regression test between the dependent variable of knowledge/skill and independent variables of the dimensions of EBP barriers indicated that the variable of adopter's characteristics had a decreasing effect on knowledge/skill, such that with an increase of 1 unit in standard deviation (SD) of the adopter's characteristics, a decrease of 0.22 unit would occur in the variable of knowledge/skill. Moreover, organization and communication had an increasing effect on knowledge/skill in a way that an increase of 1 unit in the SD of organization and communication would lead to 0.206 unit and 0.192 unit of increase in knowledge/skill variable, respectively. The effect of innovation on knowledge/skill was not significant at a level of 0.050 ($P = 0.485$). Moreover, the results of regression test showed that there was no significant relationship between attitude and the dimensions of the perceived barriers to EBP ($P > 0.050$). Considering the results of linear regression test between the variable of practice and the dimensions of the perceived barriers to EBP, it can be concluded that adopter had a reducing effect on practice, such that by increasing of 1 unit in SD of adopter, the practice score increases to 0.166 unit. In addition, communication had an increasing effect on practice in a way that an increase of 1 unit in SD of communication would lead to an increase of 0.182 unit in practice. The effect of organization and innovation on practice was not significant at a level of 0.050 ($P > 0.050$).

Discussion

In the present study, the total mean of EBP among the nurses was at a level above average. The subscales of knowledge/skill (3.74) and attitude (3.87) had a lower average compared to the subscale of practice (4.14).

Table 1. The frequency of nurses' responses to the evidence-based practice questionnaire (EBPQ)

Practice	Mean (4.14)		Never						Frequently
			1	2	3	4	5	6	7
Formulating a clearly answerable question	(4.02)	n (%)	21 (8.1)	34 (13.1)	55 (21.2)	49 (18.8)	36 (13.8)	40 (15.4)	25 (9.6)
Tracking down the relevant evidence	(3.90)	n (%)	14 (5.4)	41 (15.8)	55 (21.2)	53 (20.4)	57 (21.9)	25 (9.6)	15 (5.8)
Critically appraising	(3.52)	n (%)	19 (7.3)	57 (21.9)	60 (23.1)	63 (24.2)	29 (11.2)	18 (6.9)	14 (5.4)
Integrating the evidence	(4.37)	n (%)	6 (2.3)	24 (9.2)	51 (19.6)	61 (23.5)	50 (19.2)	42 (16.2)	26 (10.0)
Evaluating the outcomes of practice	(4.51)	n (%)	6 (2.3)	20 (7.7)	45 (17.3)	64 (24.6)	47 (18.1)	43 (16.5)	34 (13.1)
Sharing the information with colleagues	(4.49)	n (%)	5 (1.9)	28 (10.8)	40 (15.4)	63 (24.2)	41 (15.8)	51 (19.6)	32 (12.3)
Attitude	**Mean (3.87)**		**Negative**					**Positive**	
			1	2	3	4	5	6	7
Making the time to keep update new evidence instead of insufficient time due to workload	(3.04)	n (%)	82 (31.5)	46 (17.7)	32 (12.3)	45 (17.3)	16 (6.2)	13 (5.0)	26 (10.0)
Resenting when your clinical practice questioned instead of welcoming them	(3.86)	n (%)	50 (19.2)	37 (14.2)	37 (14.2)	34 (13.1)	29 (11.2)	24 (9.2)	49 (18.8)
Being EBP a waste of time instead of fundamental to professional practice	(4.72)	n (%)	23 (8.8)	26 (10.0)	30 (11.5)	34 (13.1)	34 (13.1)	36 (13.8)	77 (29.6)
Sticking to old ways versus changing your practice	(3.86)	n (%)	42 (16.2)	40 (15.4)	46 (17.7)	32 (12.3)	32 (12.3)	23 (8.8)	45 (17.3)
Knowledge/skills	**Mean (3.74)**		**Poor**					**Best**	
			1	2	3	4	5	6	7
Research skills	(3.08)	n (%)	56 (21.5)	52 (20.0)	46 (17.7)	54 (20.8)	35 (13.5)	7 (2.7)	10 (3.8)
IT skills	(3.50)	n (%)	25 (9.6)	49 (18.8)	62 (23.8)	59 (22.7)	34 (13.1)	22 (8.5)	9 (3.5)
Monitoring and reviewing of practice skills	(3.90)	n (%)	19 (7.3)	33 (12.7)	45 (17.3)	72 (27.7)	54 (20.8)	24 (9.2)	13 (5.0)
Converting your information needs into a research question	(3.15)	n (%)	42 (16.2)	46 (17.7)	72 (27.7)	53 (20.4)	30 (11.5)	13 (5.0)	4 (1.5)
Awareness of major information types and sources	(3.62)	n (%)	24 (9.2)	38 (14.6)	61 (23.5)	65 (25.0)	45 (17.3)	16 (6.2)	11 (4.2)
Ability to identify gaps in your professional practice	(3.95)	n (%)	18 (6.9)	28 (10.8)	51 (19.6)	74 (28.5)	43 (16.5)	34 (13.1)	12 (4.6)
Knowledge of how to retrieve evidence	(3.50)	n (%)	29 (11.2)	38 (14.6)	66 (25.4)	59 (22.7)	41 (15.8)	22 (8.5)	5 (1.9)
Ability to analyze critically evidence against set standards	(3.57)	n (%)	19 (7.3)	49 (18.8)	54 (20.8)	71 (27.3)	41 (15.8)	21 (8.1)	5 (1.9)
Ability to determine how valid (close to the truth) the material is	(3.78)	n (%)	20 (7.7)	36 (13.8)	49 (18.8)	70 (26.9)	52 (20.0)	23 (8.8)	10 (3.9)
Ability to determine how useful (clinically applicable) the material is	(3.87)	n (%)	20 (7.7)	27 (10.4)	61 (23.5)	65 (25.0)	46 (17.7)	28 (10.8)	13 (5.0)
Ability to apply information to individual cases	(3.99)	n (%)	18 (6.9)	30 (11.5)	50 (19.2)	58 (22.3)	61 (23.5)	28 (10.8)	15 (5.8)
Sharing of ideas and information with colleagues	(4.25)	n (%)	21 (8.1)	16 (6.2)	49 (18.8)	52 (20.0)	56 (21.5)	44 (16.9)	22 (8.5)
Dissemination of new ideas about care to colleagues	(4.06)	n (%)	29 (11.2)	25 (9.6)	46 (17.7)	48 (18.5)	49 (18.8)	40 (15.4)	23 (8.8)
Ability to review your own practice	(4.19)	n (%)	21 (8.1)	18 (6.9)	47 (18.1)	61 (23.5)	50 (19.2)	44 (16.9)	19 (7.3)

EBP: Evidence-based practice; IT: Information technology

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Table 2. The frequency of the barriers to utilization of evidence-based practice (EBP) among studied nurses

Adopter	Mean (2.90)		To no extent	To a little extent	To a moderate extent	To a great extent	No opinion
The nurse is unaware of the research							8 (3.1)
The nurse feels the benefits of changing practice will be minimal	(3.12)	n (%)	21 (8.1)	49 (18.8)	78 (30.0)	102 (39.2)	10 (3.8)
The nurse is isolated from knowledgeable colleagues with whom to discuss the research	(3.08)	n (%)	20 (7.7)	50 (19.2)	90 (34.6)	90 (34.6)	10 (3.8)
The nurse sees little benefit for self	(3.15)	n (%)	16 (6.2)	45 (17.3)	95 (36.5)	90 (34.6)	14 (5.4)
The nurse does not see the value of research for practice	(2.70)	n (%)	49 (18.8)	72 (27.7)	67 (25.8)	51 (19.6)	21 (8.1)
There is not a documented need to change practice	(2.89)	n (%)	23 (8.8)	78 (30.0)	85 (32.7)	53 (20.4)	21 (8.1)
The nurse is unwilling to change/try new ideas	(2.56)	n (%)	58 (22.3)	73 (28.1)	72 (27.7)	40 (15.4)	17 (6.5)
The nurse does not feel capable of evaluating the quality of the research	(2.83)	n (%)	41 (15.8)	66 (25.4)	77 (29.6)	50 (19.2)	26 (10.0)
Organization	**Mean (3.28)**		**To no extent**	**To a little extent**	**To a moderate extent**	**To a great extent**	**No opinion**
The facilities are inadequate for implementation	(3.32)	n (%)	20 (7.7)	36 (13.8)	52 (20.0)	146 (56.2)	6 (2.3)
The nurse does not have time to read research	(3.23)	n (%)	25 (9.6)	35 (13.5)	63 (24.2)	130 (50.0)	7 (2.7)
The nurse does not feel she/he has enough authority to change patient care procedures	(3.27)	n (%)	14 (5.4)	45 (17.3)	66 (25.4)	128 (49.2)	7 (2.7)
The nurse feels results are not generalizable to own setting	(3.25)	n (%)	15 (5.8)	40 (15.4)	78 (30.0)	118 (45.4)	9 (3.5)
Physicians will not cooperate with implementation	(3.34)	n (%)	17 (6.5)	38 (14.6)	70 (26.9)	110 (42.3)	25 (9.6)
Administration will not allow implementation	(3.26)	n (%)	15 (5.8)	53 (20.4)	70 (26.9)	93 (35.8)	29 (11.2)
Other staff are not supportive of implementation	(3.27)	n (%)	13 (5.0)	47 (18.1)	74 (28.5)	110 (42.3)	16 (6.2)
There is insufficient time on the job to implement new ideas	(3.37)	n (%)	13 (5.0)	25 (9.6)	85 (32.7)	128 (49.2)	9 (3.5)
Innovation	**Mean (3.14)**		**To no extent**	**To a little extent**	**To a moderate extent**	**To a great extent**	**No opinion**
The research has not been replicated	(3.13)	n (%)	21 (8.1)	66 (25.4)	77 (29.6)	50 (19.2)	46 (17.7)
The nurse is uncertain whether to believe the results of the research	(3.00)	n (%)	23 (8.8)	60 (23.1)	91 (35.0)	67 (25.8)	19 (7.3)
The research has methodological inadequacies	(3.18)	n (%)	12 (4.6)	69 (26.5)	80 (30.8)	58 (22.3)	41 (15.8)
Research reports/articles are not published fast enough	(3.23)	n (%)	21 (8.1)	41 (15.8)	71 (27.3)	110 (42.3)	17 (6.5)
The conclusions drawn from the research are not justified	(3.18)	n (%)	14 (5.4)	62 (23.8)	96 (36.9)	38 (14.6)	50 (19.2)
Communication	**Mean (2.95)**		**To no extent**	**To a little extent**	**To a moderate extent**	**To a great extent**	**No opinion**
Research reports/articles are not readily available	(2.92)	n (%)	24 (9.2)	69 (26.5)	79 (30.4)	79 (30.4)	9 (3.5)
Implications for practice are not made clear	(3.03)	n (%)	19 (7.3)	60 (23.1)	86 (33.1)	85 (32.7)	10 (3.8)
Statistical analyses are not understandable	(2.72)	n (%)	36 (13.8)	79 (30.4)	73 (28.1)	65 (25.0)	7 (2.7)
The research is not relevant to the nurse's practice	(2.77)	n (%)	29 (11.2)	76 (29.2)	87 (33.5)	62 (23.8)	6 (2.3)
The relevant literature is not compiled in one place	(3.23)	n (%)	11 (4.2)	54 (20.8)	92 (35.4)	70 (26.9)	33 (12.7)
The research is not reported clearly and readably	(3.03)	n (%)	18 (6.9)	64 (24.6)	89 (34.2)	71 (27.3)	18 (6.9)

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The results of the present study are in agreement with those of the studies carried out by Shafiei et al.[17] and Upton and Upton.[18] They are also in line with the findings of the study carried out by Koehn and Lehman who reported that the participants obtained an average score on practice of and attitude toward EBP.[15] In a study, Thiel and Ghosh reported that the level of knowledge and attitude among the participants was positive and average.[19] It was suggested that implementing educational plans on EBP fundamentals and philosophy would be useful in enhancing the level of knowledge, attitude, and practice among the nurses and improving nursing practice.

Among the items of practice dimension, the maximum mean was related to "Evaluating the outcomes of practice" with 4.51 and the minimum to "Critically appraising the evidence" with 3.52. In the studies carried out by Brown et al.[14] and Shafiei et al.,[17] "Critically appraising the evidence" placed in the first priority.

Among the items of attitude dimension, the highest mean was related to "Being EBP a waste of time instead of fundamental to professional practice" with 4.72 and the lowest to "Making the time to keep update new evidence instead of insufficient time due to workload" with 3.04. This finding is not in line with that of the study carried out by Shafiei et al.[17] who reported that the highest priority belonged to "Sticking to old ways instead of changing the practice".

Among the items of knowledge/skill dimension, the maximum mean was related to "Sharing ideas and information with colleagues" with 4.25 and the minimum to "Research skills" with 3.08. This finding is in line with those reported by Shafiei et al.[17] In Brown et al.'s study, this item placed in the second rank.[14]

According to the results of the present study, organization and adopter had the highest and lowest means, respectively. In Brown et al.'s study, the mean of the whole barriers was lower than that of the present study, and organization and innovation dimensions were the lowest.[20] In the study carried out by McCleary and Brown, communication obtained the maximum mean and adopter placed at the end.[21] Researchers have suggested that better understanding of workplace is necessary in understanding and improving the interventions so as to promote EBP in nursing.[22,23]

Table 3. The relationship between knowledge/skill, attitude, and practice with the dimensions of the perceived barriers to evidence-based practice (EBP)

Response variable	Independent variable	R2	F	P	B	SE	B	T	P
Performance	Adopter				-4.316	1.965	-0.166	-2.196	0.029
	Organization				2.889	2.259	0.111	1.279	0.202
	Innovation				-1.328	2.225	-0.053	-0.597	0.551
	Communication				4.851	2.421	0.182	2.004	0.046
	(Constant)				45.095	5.834	--	7.730	< 0.001
Attitude	Adopter				-1.390	0.700	-0.150	-1.980	0.050
	Organization				0.760	0.810	0.080	0.930	0.350
	Innovation				-0.590	0.800	-0.070	-0.740	0.460
	Communication				1.060	0.870	0.110	1.220	0.220
	(Constant)				15.630	2.100	--	7.460	< 0.001
Knowledge/skill	Adopter				-2.558	0.860	-0.220	-2.974	0.003
	Organization				2.401	0.994	0.206	2.415	0.016
	Innovation				-0.684	0.979	-0.061	-0.699	0.485
	Communication				2.299	1.065	0.192	2.158	0.032
	(Constant)				19.624	2.563	--	7.658	< 0.001

SE: Standard error

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In organization dimension, the top priority was related to the barriers. In Brown et al.'s study, organization was also considered as a barrier that was compatible with EBP, followed by communication, adopter, and innovation, respectively.[20] In other published studies, this barrier has also been reported as a similar response pattern.[21,24-26] In their study, Solomons and Spross concluded that the commonest barrier to EBP among nurses was related to the lack of time and authority for change.[27] In a study carried out by Majid et al., it was concluded that EBP training, availability of sufficient time, and supervision by an experienced nurse could play an effective role in implementing EBP. Shortage of time, inability to understand statistical concepts, and insufficient understanding of terminology were three major barriers to implementing EBP.[9] Nurses need time when they are free from their bedside responsibilities and can evaluate evidence and promote the educational foundations. It is necessary to devote some hours other than taking care of patients to participating in educational plans that are scheduled in the workplace.

Furthermore, according to the nurses, among organizational barriers, lack of cooperation by doctors (3.34) had the highest priority. In studies carried out by Mehrdad et al.,[12] Funk et al.,[16] and Retsas,[28] this dimension was reported to have significance. In Brown et al.'s study carried out in the US, however, this dimension had the 7th priority.[14]

According to the results of the present study, practice had a negative (decreasing) relationship with adopter barrier and a positive (increasing) relationship with communication. There was a negative (decreasing) relationship between knowledge/skill and adopter barrier, and there was a positive (increasing) relationship between organizational barriers and communication. There was no significant relationship between attitude and the perceived barriers to EBP. The results of the present study are not in agreement with those of the study carried out by Brown et al.[20] who concluded that there was a negative significant relationship between practice and communication. Attitude had a negative significant relationship with all four barriers, and there was a negative significant relationship between communication and adopter, communication, and organization.

Conclusion

In general, the results of the current study indicated that the nurses' capacity for EBP was at a level higher than average. However, it is better to design appropriate educational plans by employing the findings of the present study and focusing on the improvable aspects in order to increase the nurses' awareness of the concepts and access to the best educational evidence. These educational plans can also be taken into account in the curriculum of nursing trainings, so that after their graduation, they can use their skills properly to enhance their practice. Moreover, through evaluation of learning needs, educational plans persuade the managers of the organizations to support such plans. Since barriers influence the implementation of EBP, identifying these barriers and adopting strategies to remove them can facilitate EBP implementation and improve the efficiency of the plans. In this regard, suggestion of establishing organizational infrastructures and the required human, physical, and financial resources can be helpful. One of the limitations of the current study is that the findings have been collected and analyzed in training hospitals of Qazvin University of Medical Sciences; therefore, they cannot be generalized for non-training, private, and other hospitals.

Conflict of Interests

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this paper.

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