

The barriers to the application of the research findings from the nurses' perspective: A case study in a teaching hospital

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ABSTRACT

Background: The application of the nursing research findings is one of the most important indicators of development in the nursing profession, which leads to providing efficient and effective patient care and improving the quality of nursing care. According to the result of some studies, transferring the evidence-based findings to the nurses' practice and education in the world has been slow and sometimes unsuccessful. This study aimed to investigate the most important barriers to the application of research findings from the nurses' perspective. **Materials and Methods:** This cross-sectional study conducted on a sample of 210 nurses in a teaching hospital in Tehran in 2013. The data were collected using a researcher-made questionnaire consisted of two parts, including items about nurses' demographic characteristics and 30 items to identify the most important barriers to the application of research findings from the studied nurses' perspective. **Results:** "The lack of sufficient time for reading the studies," "the lack of sufficient time to implement the new ideas," "the lack of adequate facilities to implement the ideas," "nurses' little interest in conducting studies," and "the lack of authority to change the methods and patterns of care" with, respectively, 85%, 84.6%, 83.8%, 83.4%, and 80.5% agreement with the existence of barriers were the most barriers to application of research findings from the studied nurses' perspective. **Conclusion:** The lack of time was the most important barrier to the use of research findings from the perspective of studied nurses. Therefore, some effective strategies should be used by hospital managers and health policy makers to overcome this barrier. Some of these strategies can be employing new personnel and hiring skilled and efficient human resources in order to decrease the workload of nurses, organizing the nurses' work shifts, providing right balance between patients and nurses in the wards, etc.

Key words: Barriers, Iran, nursing, research utilization

INTRODUCTION

The main function of nurses, as the largest health team members, is the professional care. Nurses are responsible for providing the

safest and most efficient care for patients.^[1] The use of evidence and research findings can result in providing the efficient and effective patient care and improving the quality of nursing care and also can make nurses accountable for their individual performance.^[2] Utilizing the research findings not only will improve the quality and standards of nursing care,^[3] but also

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can lead to the nurses' personal and professional development.^[4] Using research findings in nursing is defined as the application of the research findings in each task and function of a nurse^[5] and is one of the most important indicators of development in the nursing profession.^[6,7] Nursing research can provide a useful source of evidence for patients and communities,^[8] which will resolve ambiguities and uncertainties inherent in nursing and health care.^[9] The researchers have also emphasized that nurses should not only carry out research, but also they should have analytical thinking about its findings and use the research findings in their daily functions.^[10]

Nurses do not have much interest in research and transferring its findings to the clinical practice,^[11] which can be due to the development and recognition of the nursing profession, the nurses' professional and personal interests, and increased patients' reliability and safety.^[12] Although nurses may have overall positive attitudes toward research and research-based practice^[13-15] and most of them believe that using the research findings is important and necessary, transferring the evidence-based findings to the nurses' practice and education has been slow and sometimes unsuccessful and the findings have not been used much in practice.^[16,17] From the perspective of many researchers, the use of research findings in practice has not increased in parallel with the increase in nursing research,^[18] and nurses in their nursing care still rely on their personal experience and the training, which they have received in colleges and universities.^[19] Therefore, the use of research findings in nursing and the extent to which nurses' practice is based on scientific findings have become a concern for researchers.^[20-22] Furthermore, many nurses are unaware of evidence-based practice and do not have adequate preparation for using the research findings, which multiply the problems of applying research findings.^[23,24]

The results of studies conducted in the US and The Netherlands have shown that 30–40% of patients do not receive scientific evidence-based care and about 20–25% of them receive unnecessary care.^[25] In addition, the results of studies indicate that although nurses have started to move toward evidence-based practice in order to change their paradigm, its process is slow in many countries.^[26] Because the use of research findings in practice will lead to better outcomes for patients, it is necessary for nursing researchers to study the factors hindering the application of the research findings.^[7]

During the last years, many studies have been carried out among nurses to identify these barriers, as well as the factors facilitating the application of research findings. Some of these barriers include nurses' attitudes toward conducting research, nurses' organizational positions and the lack of managers' support of the findings.^[27,28] Adib Hajbaghery and Salsali and French in their studies have reported some barriers, including the lack of time, the lack of organizational and financial support, the low participation of colleagues, the staff shortages, the low ability to understand research reports, the low reliability and validity of research findings, the lack

of generalizability of findings, uncertainty about the results of the analyses, the lack of knowledge, nurses' dependence on physicians and managers in clinical decisions.^[10,29] Most of the barriers, also, include organizational factors and inadequate system for nurses' personal and professional development.^[30] Furthermore, demographic and personal characteristics such as the lack of sufficient knowledge about research methods, poor knowledge of research findings, and nurses' negative attitudes toward research have been the other barriers.^[31]

Many authors believe that nurses' lack of preparation and lack of sufficient skills in conducting studies and using their findings cause the gap between research and practice, and the lack of using clinical findings results from the lack of skills or failure to study the related nursing journal and updated clinical findings.^[32,33] Melnyk *et al.* in their study have concluded that having research skills and engaging in research activities are necessary for preparing nurses to apply research findings, which should be considered along with developing clinical skills.^[34] In fact, the positive attitudes toward the use of the best evidence in clinical practice can affect the barriers to the use of updated information, including the heavy workload and not having enough time, the lack of required knowledge and skills and having limited opportunities for participating in research. In another study that has done in Iran, barriers including the lack of time, the workload of nursing, the unavailability of supervisor for guiding, the lack of adequate incentives for research, the lack of fluency in English language and the lack of organizational and financial support.^[35-37]

In the patient care units in which the patients' conditions are complicated and they are at high risk of mortality, it is important to show the effectiveness of care provided. Therefore, choosing and performing the interventions using the best evidence is considered as a key issue for nurses as clinical assistants.

Applying the research findings in the nursing activities in Iran is in the early stages and the use of research findings requires good understanding of the capabilities and available facilities, as well as determining the main barriers to and facilitators of applying the research findings. Also, identifying the barriers to and facilitators of applying the research findings is an essential tool that should be considered by the authorities and policy makers in planning in order to provide and expand the use of research findings in clinical practice. Accordingly, the present study aimed to investigate the most important barriers to the application of research findings from the nurses' perspective.

MATERIALS AND METHODS

This study was a cross-sectional and descriptive-analytical study conducted in a large teaching hospital in Tehran between April and July 2013. This hospital has 517 beds and with bed occupancy rate of around 80%. It's active in the training all of the medical specialties. The population study consisted 460 of nurses. A sample of 210 nurses was determined using the findings of previous studies,^[38] the results of the pilot

study, as well as the following formula (assuming $n = 460$, $P = q = 0.5$, $\alpha = 0.05$, $d = 0.05$):

$$n = \frac{Nt^2 \times pq}{Nd^2 + t^2 pq}$$

The return rate in this study was 100%. The inclusion criteria for the study were having over 20 years of age, having higher than associate degrees, working in Clinical and Administrative Departments, having the positions of nurse, head nurse, and supervisor. This sample was selected using random sampling method.

The required data were collected using a researcher-made questionnaire consisted of two parts. Its first part included items about studied nurses' demographic characteristics, including sex, age, job experience, positions, education degrees, and the level of nurses' participation in scientific research, and the second part included 30 items to identify the most important barriers to the application of research findings from the nurses' perspective. Most of the items extracted according to the studies of Retsas *et al.* and Tan *et al.*^{138,391} The validity of this questionnaire was confirmed through getting the opinions of ten experts and calculation of content validity index = 0.85 and content validity ratio = 0.84 of the questionnaire. The reliability of the questionnaire was confirmed using (reliability of data collected) combinatorial reliability test and inter-consistency reliability of the questionnaire was done using Cronbach's alpha coefficient test ($\alpha = 0.914$). A five-point Likert scale was used to identify the barriers whereby 1 referred to strongly disagree and 5 as strongly agree. The percent of participants with scores at the ceiling (score of 5) and floor (score of 1) were calculated for each of the scales. The ceiling and floor effects were <20% to ensure that the scale takes the full range of potential responses within the target population and that the changes can be detected over time.

The questionnaire was distributed by one of the researchers and returned by participants within a 4-week period by nurses in this the study.

Informed consent was obtained from all nurses participating in this study using verbal consent. Normality of the data was carried out using the Kolmogorov-Smirnov test. Results showed that the data distribution is abnormal. IBM SPSS Statistics 21.0 [IBM Corp.: Armonk, NY] and some statistical non-parametric tests, including Kendall's tau-b, Kendall's tau-c and Eta were used to analyze the collected data and measurement of the correlation between the studied nurses' demographic and the application of the research findings. $P < 0.05$ was considered as statistically significant.

RESULTS

The results showed that most of the nurses participating in this study were female (94%), in the 30–40 age-group (46%),

and working in the clinical wards (97%). The majority of participants had <10 years job experience (59%) and had a bachelor's degree (85%), and 3% of them were nursing staff [Table 1].

According to Table 2, “the lack of sufficient time for reading the studies,” “the lack of sufficient time to implement the new ideas,” “the lack of adequate facilities to implement the ideas,” “nurses' little interest in conducting studies,” and “the lack of authority to change the methods and patterns of care” with, respectively, 85%, 84.6%, 83.8%, 83.4%, and 80.5% agreement with the existence of barriers were the most barriers to application of research findings from the studied nurses' perspective. In addition, from their perspective, “the lack of awareness of research,” “the nurse's unwillingness to change based on the new ideas,” “the lack of connection between the research and the nurses' activities,” “there is no documentary need to scientific change,” and “the nurses' lack of ability to assess the quality of research” with, respectively, 62.4%, 65%, 65.1%, 67.6%, and 68.3% agreement with the existence of barriers were the least barriers to application of research findings from the studied nurses' perspective.

The results of Kendall tests showed that, from the studied nurses' perspective, the barriers to application of research findings did not have any significant correlation with their

Table 1: The demographic characteristics of studied nurses

Variables	Frequency	Percentage
Education level		
Associate degrees	20	10
Bachelor's degrees	178	85
Master's degrees	9	4
PhD	3	1
Sex		
Male	12	6
Female	198	94
Age (years)		
20-30	88	42
30-40	97	46
40-50	20	10
>50	5	2
Job experience (years)		
<10	124	59
10-20	70	33
>30	16	8
The wards and units of service		
Clinical	203	97
Managerial	7	3
Positions		
Nurse	173	84
Nursing staff	8	3
Head nurse	6	2
Supervisor	0	0
Without any response	23	11

Table 2: The level of studied nurses' agreement with the existence of barriers to application of research findings

Rating	Barriers	The score mean of agreement with the existence of barriers	The agreement with the existence of barriers (%)
1	The lack of sufficient time for reading the studies	4.2	85.0
2	The lack of sufficient time to implement the new ideas	4.2	84.6
3	The lack of adequate facilities to implement the ideas	4.2	83.8
4	Nurses' little interest in conducting studies	4.2	83.4
5	The lack of authority to change the methods and patterns of care	4.0	80.5
6	The lack of understanding of statistical analysis	3.8	77.0
7	The lack of research results application	3.8	76.6
8	The lack of implementation clarity	3.8	76.4
9	The separation of nurses from academic knowledge	3.8	76.3
10	The lack of physicians' cooperation in implementing the results	3.8	76.0
11	Not generalizing the results according to the conditions	3.8	76.0
12	The lack of proper administrative framework for the implementation of research findings	3.8	75.4
13	The methodological shortcomings of research	3.8	75.4
14	The lack of a uniform formulation of the research literature	3.8	75.2
15	The lack of timely publication of research reports and articles	3.8	75.1
16	Research articles and reports are mostly in English	3.7	74.6
17	The lack of other employees' cooperation in implementing the results	3.7	73.7
18	The lack of access to research reports and articles	3.7	73.4
19	The lack of a clear explanation of the research	3.7	73.0
20	Too few research findings from the perspective of nurses	3.6	72.0
21	Nurses have not seen the value of research in practice	3.6	71.9
22	Uncertainty about the research results	3.6	71.8
23	The replication of some of the information obtained from the study	3.6	71.5
24	Inconsistencies between reports and results	3.5	71.0
25	The lack of justifiability of the results obtained from studies	3.4	68.5
26	The nurses' lack of ability to assess the quality of research	3.4	68.3
27	There is no documentary need to scientific change	3.4	67.6
28	The lack of connection between the research and the nurses' activities	3.3	65.1
29	The nurse's unwillingness to change based on the new ideas	3.2	65.0
30	The lack of awareness of research	3.1	62.4

education level and level of English language proficiency. Furthermore, the results of Eta test indicated a weak correlation or lack of correlation between the barriers to application of research findings and the studied nurses' job experience, age, sex, the wards and units of service, positions, participation in research and scientific activities, use of the Persian and English journals, and financial support of research activities [Table 3].

DISCUSSION

The present study aimed to investigate the most important barriers to the application of research findings from the perspective of nurses in a teaching hospital. The results showed that the level of studied nurses' research activities based on their participation in scientific research and activities and attendance at the scientific conferences was acceptable. However, the level of studying the scientific journals and articles among the studied nurses was low, and only 20% of them were involved in the study of English articles. Oh in a study found that only 4.8% of studied nurses had studied scientific articles weekly and 17.5% had not studied scientific

articles at all,^[28] which confirm the results of McKenna *et al.* study.^[40]

Therefore, given that clinical sciences are being updated daily and diseases, medications and treatment methods are constantly changing, it is essential for nurses, as the most effective and important member of the health care system, learn how to use scientific journals and articles, and study them. This requires increasing their knowledge of and skills in access to electronic resources, how to use databases and knowledge of the available updated evidence around the world. Thus, for an effective search in databases nurses should become more familiar with some skills, including skills in how to organize scientific databases and how to determine the different search keywords and methods in order to achieve the relevant articles of the highest quality.

In the present study, 30 barriers to application of research findings were studied from the nurses' perspective. The results showed that "the lack of sufficient time for reading the studies," "the lack of sufficient time to implement the new ideas," "the lack of adequate facilities to implement the

Table 3: The correlation between the studied nurses' demographic characteristics and their participation in scientific activities

Variables examined in the correlation tests	Type of tests	Parameter	P	Result
The barriers to application of research findings and the studied nurses' education level	Kendall's tau-b	-0.0780	0.150	Noncorrelation
The barriers to application of research findings and the studied nurses' job experience	Eta	0.067	-	Noncorrelation
The barriers to application of research findings and the studied nurses' age	Eta	0.031	-	Noncorrelation
The barriers to application of research findings and the studied nurses' sex	Eta	0.100	-	Weak correlation
The barriers to application of research findings and the studied nurses' wards and units of service	Eta	0.012	-	Noncorrelation
The barriers to application of research findings and the studied nurses' positions	Eta	0.067	-	Noncorrelation
The barriers to application of research findings and the studied nurses' participation in the scientific research	Eta	0.170	-	Weak correlation
The barriers to application of research findings and the studied nurses' participation in the scientific activities	Eta	0.034	-	Noncorrelation
The barriers to application of research findings and the studied nurses' use of the Persian journals	Eta	0.029	-	Noncorrelation
The barriers to application of research findings and the studied nurses' use of the English journals	Eta	0.113	-	Weak correlation
The barriers to application of research findings and the studied nurses' financial support of research activities	Eta	0.046	-	Noncorrelation
The barriers to application of research findings and the studied nurses' level of English language proficiency	Kendall's tau-c	0.026	0.618	Noncorrelation

ideas," "nurses' little interest in conducting studies," and "the lack of authority to change the methods and patterns of care" were the most barriers to application of research findings from the studied nurses' perspective.

Tan *et al.* in their study in Eastern Turkey concluded that "the lack of time to implement the new ideas in the workplaces," "the lack of enough power and authority to change the methods and patterns of care," and "the lack of sufficient time for reading the studies" were the most important barriers to research findings utilization perceived by the studied nurses.^[38] In the Oh's study, also, the most important barriers to the application of research findings from the perspective of critical care nurses in Korea were, respectively, "the lack of clarity about the outcomes of research findings application," "the lack of sufficient time to implement the new ideas in the workplaces," "the lack of documentary evidence for changes in the therapeutic procedures," "the lack of adequate facilities to implement the ideas," and "the lack of sufficient time for reading the studies."^[28]

Furthermore, Chien *et al.* in their study found that the most important barriers to the application of research findings from the perspective of nurses in China were, respectively, "the lack of time to implement the new ideas in the workplaces," "the lack of adequate facilities to implement the research findings," "the lack of sufficient time for reading the studies," and "the lack of awareness of research."^[41] The results of the three mentioned studies confirm the results of the present study. Overall, the most important barrier that makes it difficult for nurses to use research findings in practice is the lack of time. The results of several studies have shown that the first and most important barrier to the application

of research findings has been the lack of sufficient time to implement the new ideas.^[3,39,42,43]

Time is an important factor for the use of research findings in the clinical environments. Most nurses believe that their heavy workload leaves no enough time and energy to implement the new ideas and they do not have the required authority to manage time. In Iran, given the heavy workload and the organizational climate prevailing on nurses, they prefer to use the traditional framework for providing patient care and therefore, they devote most of their time to perform routine care activities and they feel they do not have enough time to implement the new ideas.

Furthermore, In the Parahoo and McCaughan,^[44] Bryar *et al.*,^[45] Glacken and Chaney,^[46] Veeramah,^[47] Fink *et al.*,^[48] and Vratny and Shriver's^[49] studies although the lack of time to read studies and implement the new ideas has not been the most important barrier, it has been considered as one of the important barriers to the application of nursing research findings. The differences between the results of the present study and those of other studied mentioned above can be due to the differences between the environmental conditions of each organization and strategies used to provide nursing care for patients.

In addition, "the lack of adequate facilities to implement the ideas," "nurses' little interest in conducting studies," and "the lack of authority to change the methods and patterns of care" were the important barriers in the present study. The results of several studies have also shown that "the lack of authority to change the methods and patterns of care"^[30,46,50] and "the lack of adequate facilities to implement the ideas"^[49] are the barriers to the application of research findings.

In the present study, “the lack of awareness of research,” “the nurse’s unwillingness to change based on the new ideas,” “the lack of connection between the research and the nurses’ activities,” and “there is no documentary need to scientific change” were the least important barriers to the application of research findings from the studied nurses’ perspective. In the Oh’s study, the least important barriers were “nurses’ little interest in conducting studies” and “nurses have not seen the value of research in practice.”^[28] In the Boström *et al.* study, they were “uncertainty about the research results” and “the lack of connection between the research and the nurses’ activities,”^[51] and in the Chien *et al.* study, the least important barrier was “the lack of usefulness of nursing research findings.”^[41] Therefore, the low importance of these barriers indicates that nurses are aware of the value of research in their job and they have positive attitudes towards the use of research findings in their clinical practices.

Moreover, the results of the current study showed that there weren’t any significant correlation between the studied nurses’ demographic characteristics and the score mean of their agreement with the existence of barriers. In the Strickland and O’Leary-Kelley^[52] and Oh’s^[28] studies, only nurses’ education level and positions had significant relationships with their perceptions of barriers to the research findings utilization. Yava *et al.*, also, in their study concluded that nurses’ perceptions of barriers to the research findings utilization did not have any significant relationship with their demographic characteristics, including age, education level, and clinical experience^[53] and Olade did not find any significant relationship between the studied nurses’ age, sex and evidence-based practice in his study.^[54] The results of all of these studies confirm the present study results. However, Veeramah,^[47] Chau *et al.*,^[7] and Eizenberg^[55] in their studies showed a significant relationship between nurses’ education level and their perceptions of barriers to the research findings utilization, which are inconsistent with the results of the present study. It can be due to different reasons. More than 80% of studied nurses had a bachelor’s degree, they had similar perceptions of barriers to the research findings utilization, and this caused the lack of any correlation between education level and the score mean of agreement with the existence of barriers. In other studied variables, also, the results of the present study and other studies indicated that the perceptions of barriers to the application of the nursing research findings were more related to the organizational and professional factors and were not much affected by the nurses’ demographic characteristics. This study has done in a teaching hospital and it limits the generalizability of results. The level education of most participants was bachelor’s degree, so distribution of different is not suitable. Also, acquiring deep knowledge about the barriers of research utilization requires a mixed-method study including quantitative and qualitative data collection that in this study we just quantitative method.

CONCLUSION

The results of the present study showed that, from the perspective of studied nurses, the most important barriers that

caused them not to use research findings in clinical practice were “the lack of sufficient time for reading the studies,” “the lack of sufficient time to implement the new ideas,” “the lack of adequate facilities to implement the ideas,” “nurses’ little interest in conducting studies,” and “the lack of authority to change the methods and patterns of care.”

Because the results of the current study and other studies showed that the lack of time was one of the most important barriers to the use of research findings, the lack of time should be paid special attention and some effective strategies should be used by hospital managers and health policy makers to overcome this barrier. Some of these strategies can be employing new personnel and hiring skilled and efficient human resources in order to decrease the workload of nurses, organizing the nurses’ work shifts, providing right balance between patients and nurses in the wards, and devoting a day to the study in the nurses’ work schedule or issuing a directive requiring nurses to devote part of their time to utilize and implement the research findings.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. MacArthur J, Hill G, Callister D. Professional issues associated with the clinical research nurse role. *Nurs Stand* 2014;29:37-43.
2. Nurmi SM, Pietilä AM, Kangasniemi M, Halkoaho A. Nurse leaders’ perceptions of the ethical recruitment of study subjects in clinical research. *J Nurs Manag* 2015;23:1020-8.
3. Niederhauser VP, Kohr L. Research endeavors among pediatric nurse practitioners (REAP) study. *J Pediatr Health Care* 2005;19:80-9.
4. Yanagawa H, Takai S, Yoshimaru M, Miyamoto T, Katashima R, Kida K. Nurse awareness of clinical research: A survey in a Japanese University Hospital. *BMC Med Res Methodol* 2014;14:85.
5. Estabrooks CA, Derksen L, Winther C, Lavis JN, Scott SD, Wallin L, *et al.* The intellectual structure and substance of the knowledge utilization field: A longitudinal author co-citation analysis, 1945 to 2004. *Implement Sci* 2008;3:49.
6. Adib-Hajbaghery M. Factors facilitating and inhibiting evidence-based nursing in Iran. *J Adv Nurs* 2007;58:566-75.
7. Chau JP, Lopez V, Thompson DR. A survey of Hong Kong nurses’ perceptions of barriers to and facilitators of research utilization. *Res Nurs Health* 2008;31:640-9.
8. Hallberg IR. Challenges for future nursing research: Providing evidence for health-care practice. *Int J Nurs Stud* 2006;43:923-7.
9. Richards DA, Borglin G. Complex interventions and nursing: Looking through a new lens at nursing research. *Int J Nurs Stud* 2011;48:531-3.
10. French B. Contextual factors influencing research use in nursing. *Worldviews Evid Based Nurs* 2005;2:172-83.
11. Chan GK, Barnason S, Dakin CL, Gillespie G, Kamienski MC, Stapleton S, *et al.* Barriers and perceived needs for understanding and using research among emergency nurses. *J Emerg Nurs* 2011;37:24-31.
12. Scott K, McSherry R. Evidence-based nursing: Clarifying the concepts for nurses in practice. *J Clin Nurs* 2009;18:1085-95.
13. Houlston C. The role of a research nurse in translating evidence into practice. *Nurs Manag (Harrow)* 2012;19:25-8.

14. Trossman S. Nurse explorers: They conduct research to make a difference. *Am Nurse* 2014;46:1, 6.
15. Wilkes L, Cummings J, McKay N. Developing a culture to facilitate research capacity building for clinical nurse consultants in generalist paediatric practice. *Nurs Res Pract* 2013;2013:709025.
16. Roberts D, McLeod B, Stajduhar KI, Webber T, Milne K. Applying research into practice: A guide to determine the next palliative home care nurse visit. *Home Healthc Nurse* 2014;32:88-95.
17. Gawlinski A, Becker E. Infusing research into practice: A staff nurse evidence-based practice fellowship program. *J Nurses Staff Dev* 2012;28:69-73.
18. Hommelstad J, Ruland CM. Norwegian nurses' perceived barriers and facilitators to research use. *AORN J* 2004;79:621-34.
19. Thompson C, McCaughan D, Cullum N, Sheldon T, Raynor P. Barriers to evidence-based practice in primary care nursing – Why viewing decision-making as context is helpful. *J Adv Nurs* 2005;52:432-44.
20. Thompson DS, Estabrooks CA, Scott-Findlay S, Moore K, Wallin L. Interventions aimed at increasing research use in nursing: A systematic review. *Implement Sci* 2007;2:15.
21. Squires JE, Estabrooks CA, Gustavsson P, Wallin L. Individual determinants of research utilization by nurses: A systematic review update. *Implement Sci* 2011;6:1.
22. Kajermo KN, Boström AM, Thompson DS, Hutchinson AM, Estabrooks CA, Wallin L. The BARRIERS scale – The barriers to research utilization scale: A systematic review. *Implement Sci* 2010;5:32.
23. Chester LR. Many critical care nurses are unaware of evidence-based practice. *Am J Crit Care* 2007;16:106.
24. Malik G, McKenna L, Plummer V. Perceived knowledge, skills, attitude and contextual factors affecting evidence-based practice among nurse educators, clinical coaches and nurse specialists. *Int J Nurs Pract* 2014.
25. Grol R, Grimshaw J. From best evidence to best practice: Effective implementation of change in patients' care. *Lancet* 2003;362:1225-30.
26. Hynes DM, Perrin RA, Rappaport S, Stevens JM, Demakis JG. Informatics resources to support health care quality improvement in the veterans health administration. *J Am Med Inform Assoc* 2004;11:344-50.
27. Hannes K, Vandersmissen J, De Blaeser L, Peeters G, Goedhuys J, Aertgeerts B. Barriers to evidence-based nursing: A focus group study. *J Adv Nurs* 2007;60:162-71.
28. Oh EG. Research activities and perceptions of barriers to research utilization among critical care nurses in Korea. *Intensive Crit Care Nurs* 2008;24:314-22.
29. Adib Hajbaghery M, Salsali M. A model for empowerment of nursing in Iran. *BMC Health Serv Res* 2005;5:24.
30. Kajermo KN, Undén M, Gardulf A, Eriksson LE, Orton ML, Arnetz BB, *et al.* Predictors of nurses' perceptions of barriers to research utilization. *J Nurs Manag* 2008;16:305-14.
31. McCleary L, Brown GT. Barriers to paediatric nurses' research utilization. *J Adv Nurs* 2003;42:364-72.
32. Egerod I, Hansen GM. Evidence-based practice among Danish cardiac nurses: A national survey. *J Adv Nurs* 2005;51:465-73.
33. Hutchinson AM, Johnston L. Bridging the divide: A survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *J Clin Nurs* 2004;13:304-15.
34. Melnyk BM, Fineout-Overholt E, Fischbeck Feinstein N, Li H, Small L, Wilcox L, *et al.* Nurses' perceived knowledge, beliefs, skills, and needs regarding evidence-based practice: Implications for accelerating the paradigm shift. *Worldviews Evid Based Nurs* 2004;1:185-93.
35. Al-Kubaisi NJ, Al-Dahnaim LA, Salama RE. Knowledge, attitudes and practices of primary health care physicians towards evidence-based medicine in Doha, Qatar. *East Mediterr Health J* 2010;16:1189-97.
36. McCaughan D, Thompson C, Cullum N, Sheldon TA, Thompson DR. Acute care nurses' perceptions of barriers to using research information in clinical decision-making. *J Adv Nurs* 2002;39:46-60.
37. Sereshti M, Parvin N, Bozorgzad M, Imani R. Barriers of research performances in the view of nurses. *J Ilam Univ Med Sci* 2007;15:7-13.
38. Tan M, Akgün Sahin Z, Kardas Özdemir F. Barriers of research utilization from the perspective of nurses in Eastern Turkey. *Nurs Outlook* 2012;60:44-50.
39. Retsas A. Barriers to using research evidence in nursing practice. *J Adv Nurs* 2000;31:599-606.
40. McKenna H, Ashton S, Keeney S. Barriers to evidence based practice in primary care: A review of the literature. *Int J Nurs Stud* 2004;41:369-78.
41. Chien WT, Bai Q, Wong WK, Wang H, Lu X. Nurses' perceived barriers to and facilitators of research utilization in mainland china: A cross-sectional survey. *Open Nurs J* 2013;7:96-106.
42. Brenner M. Children's nursing in Ireland: Barriers to, and facilitators of, research utilisation. *Paediatr Nurs* 2005;17:40-5.
43. Carrion M, Woods P, Norman I. Barriers to research utilisation among forensic mental health nurses. *Int J Nurs Stud* 2004;41:613-9.
44. Parahoo K, McCaughan EM. Research utilization among medical and surgical nurses: A comparison of their self reports and perceptions of barriers and facilitators. *J Nurs Manag* 2001;9:21-30.
45. Bryar RM, Closs SJ, Baum G, Cooke J, Griffiths J, Hostick T, *et al.* The Yorkshire BARRIERS project: Diagnostic analysis of barriers to research utilisation. *Int J Nurs Stud* 2003;40:73-84.
46. Glacken M, Chaney D. Perceived barriers and facilitators to implementing research findings in the Irish practice setting. *J Clin Nurs* 2004;13:731-40.
47. Veeramah V. Utilization of research findings by graduate nurses and midwives. *J Adv Nurs* 2004;47:183-91.
48. Fink R, Thompson CJ, Bonnes D. Overcoming barriers and promoting the use of research in practice. *J Nurs Adm* 2005;35:121-9.
49. Vratny A, Shriver D. A conceptual model for growing evidence-based practice. *Nurs Adm Q* 2007;31:162-70.
50. Thompson DR, Chau JP, Lopez V. Barriers to, and facilitators of, research utilisation: A survey of Hong Kong registered nurses. *Int J Evid Based Healthc* 2006;4:77-82.
51. Boström AM, Kajermo KN, Nordström G, Wallin L. Barriers to research utilization and research use among registered nurses working in the care of older people: Does the BARRIERS scale discriminate between research users and non-research users on perceptions of barriers? *Implement Sci* 2008;3:24.
52. Strickland RJ, O'Leary-Kelley C. Clinical nurse educators' perceptions of research utilization: Barriers and facilitators to change. *J Nurses Prof Dev* 2009;25:164-71.
53. Yava A, Tosun N, Çiçek H, Yavan T, Terakye G, Hatipoglu S. Nurses' perceptions of the barriers to and the facilitators of research utilization in Turkey. *Appl Nurs Res* 2009;22:166-75.
54. Olade RA. Evidence-based practice and research utilization activities among rural nurses. *J Nurs Scholarsh* 2004;36:220-5.
55. Eizenberg MM. Implementation of evidence-based nursing practice: Nurses' personal and professional factors? *J Adv Nurs* 2011;67:33-42.