

International Journal of Nursing and Health Care Research

Bakr AOM and Mukhtar HF. Int J Nurs Health Care Res 03: 1181.

DOI: 10.29011/2688-9501.101181

Review Article

The Impact of an Evidence-Based Practice (EBP) Educational Program on the Nursing Managers' Professional Knowledge/Skills, Attitude, and Practice: Quasi-Experimental Study

Amna Omer Mostafa Bakr^{1*}, Hayat Fadlallah Mukhtar²

¹Community Health Nursing Department, College of Nursing, Imam Abdulrahman Bin Faisal University, Kingdom of Saudi Arabia

²Nursing Education Department, College of Nursing, Karary University, Sudan

***Corresponding author:** Amna Omer Mostafa Bakr, Community Health Nursing Department, College of Nursing, Imam Abdulrahman Bin Faisal University, Dammam 34212, Kingdom of Saudi Arabia

Citation: Bakr AOM, Mukhtar HF (2020) The Impact of an Evidence-Based Practice (EBP) Educational Program on the Nursing Managers' Professional Knowledge/Skills, Attitude, and Practice: Quasi-Experimental Study. Int J Nurs Health Care Res 03: 1181. DOI: 10.29011/2688-9501.101181

Received Date: July 29, 2020; **Accepted Date:** August 24, 2020; **Published Date:** August 28, 2020

Abstract

Background: Nurses' preparations for Evidence-Based Practice (EBP) include their understanding of the knowledge/skill, attitude, and practice of EBP. It is imperative to provide educational programs about EBP competencies to nursing managers to ensure their readiness. This study aimed to evaluate the impact of evidence-based practice educational program on the professional practice, attitude, and knowledge/skills of Nursing Managers.

Material and Method: A quasi-experimental design with a single group was employed. The intervention was face-to-face EBP educational program to educate 42 registered nursing managers. Pre and two posttests were administered; Evidence-Based Practice Questionnaire scale and a demographic information sheet were used for data collection.

Results: Statistical Package for Social Science was used for analysis. Results revealed significant differences in the participants' knowledge/skills, attitude, and practice concerning EBP. The significant value was ($P = 0.000$) for knowledge, attitude, and practice. Large effect size: knowledge (0.25), attitude (0.18), and practice (0.33). There was association between Knowledge, Attitude, Practice, and participants' education, position, and previous experience in EBP.

Conclusion: The results demonstrated improvement in the participants' practice, attitude, and knowledge/Skills of EBP. Also their education, position, and previous EBP experience have an impact on that. Generalization of the study in other healthcare facilities is recommended.

Keywords: Attitudes; Evidence-based practice; Face-to-face education; Knowledge; Nursing managers; Skills

Introduction

Sigma Theta Tau International, (STTI) an honorary nursing society, defined evidence-based practice as the integration of the best evidence available, nursing expertise, and the values and preferences of individuals, families, and communities who receive the services [1]. EBP has been built into nursing curricula in many schools; however, there is limited information available on teaching

the evidence-based practice to the experienced nurse [2]. As nurses require their nursing managers' support, it is imperative to provide educational programs about EBP competencies to nursing managers to equip them and ensure their readiness and support of EBP culture. There have been numerous recommendations from educational initiatives to promote the adoption of EBP, mainly focusing on providing knowledge of the associated processes. Whereas the Institute of Medicine's (IOM) latest report [3] in its vision emphasized that all health professionals should be educated about EBP to deliver high-quality patient-centered care.

The significance of EBP emanates from the Institute of Medicine's (IOM) report [3]. And the IOM committee on quality of healthcare report that noted the importance of EBP in enhancing the quality of care through the utilization of best practice and incorporating EBP to improve patient care. The report emphasized that the patient, as a healthcare receiver, needs to be involved in the decision-making process, about the healthcare plan, and has the right to choose from various treatment options [4]. In addition, that, the International Council of Nurses considers EBP to be a professional responsibility and the central aspect of nurses' work, which will enable them to have the confidence that they are providing the highest quality of healthcare to meet the needs of patients and their families, which will enrich the professional expectation [5]. Previously the Institute for Healthcare Improvement (IHI) identified three aims to optimize system performance in healthcare. But recently the IHI added the fourth aim, which includes staff engagement, and it recognized that EBP would be the key to help the healthcare facility to achieve this aim [6].

Nurses' knowledge of EBP includes research, information technology skills, and the ability to interpret the literature and apply it to individual patients and/or populations [7]. It is imperative for nurses to develop the ability to access, summarize, and apply the best and most recent evidence from the literature to daily clinical practice. Recently the term competence has been described broadly as a concept that incorporates knowledge, skills, attitudes, and the ability to do something well [8]. Same as the American Nursing Association (ANA) defined competency as an expected and measurable level of nursing performance that integrates knowledge, skills, abilities, and judgment by established scientific knowledge and expectations for nursing practice [9]. Accordingly, EBP education aim not only to increase knowledge but also improve skills, attitudes, and beliefs to ensure nurses incorporate evidence into their practice. Effective EBP education requires more than merely a comprehension of skills and an approach to knowledge. Instead, a social, inter-dependent process of shared educator-student experiences is needed. It is imperative that the educational process is learner-centered so that learners are not only passive but also actively involved in the learning process [10,11]. This statement is in line with the Quality and Safety Education for Nurses (QSEN) project, established by American Association of Colleges of Nursing (AACN). The project aimed to develop competencies that would prepare future nurses who would have the knowledge, skills, and attitudes (KSAs), necessary to continuously improve the quality and safety of the healthcare systems within which they are work [12].

Various educational programs for clinical nurses have been conducted to decrease barriers and enhance their acquisition of EBP competencies. Although the duration and content of these programs vary, they all contain necessary information on EBP and its implementation. The teaching methodologies in the programs

also vary; they include face-to-face classes, group discussions, online learning, journal clubs, and self-directed learning. Camargo, et al. [13] conducted a descriptive-quantitative study based on the evaluation of workshops at a teaching hospital. The study evaluated an intervention for the diffusion of evidence-based practice among the nurse leaders of a public teaching hospital. The leaders had a positive attitude toward incorporating evidence into practice. The workshops encouraged the diffusion of information regarding the need to integrate scientific evidence to qualify better the care provided by nurse leaders. Hsu, et al. [14], Holed a quasi-experimental study, used a pre-posttest design with a single group of participants. The study aimed to explore the effect of a basic evidence-based nursing course, as a form of educational intervention, on the development of evidence-based nursing knowledge and activities, and how to overcome obstacles. The study revealed different EBP barriers.

Moreover, findings from a recent study of nurses from 19 healthcare systems across the US concluded that there is an urgent need to increase the knowledge and skills of nurses and other interprofessional clinicians, in evidence-based care [15]. The literature and findings of previous EBP educational programs have revealed a lack of such programs for international and national nursing managers. There is a scarcity of studies on nursing managers' practices, attitudes toward, and the knowledge/skills of EBP. Consequently, a group of nursing managers formed the sample for the present study. Besides, clinical nurses cannot implement EBP alone without nursing managers and leaders' support and encouragement. Accordingly, this EBP educational program was conducted to address this limitation.

Conceptual Framework

This study employed the assumptions and principles of Knowles' Adult Learning Theory that has proven to be a useful framework in guiding instruction for patient teaching and the continuing education of nursing staff [16,17]. Knowles emphasized that teachers and students should work together to develop an active association. The five assumptions of adult learners include self-concept, adult learner experience, readiness to learn, orientation to learn, and motivation to learn. And four principles include: Adults need to be involved in the planning and evaluation of their instruction, experience (Including mistakes) provides the basis for learning activities, adults are most interested in learning subjects that have immediate relevance to their jobs or personal life, and adult learning is problem-centered rather than content-oriented. The assumptions and principles of the theory were utilized throughout the program implementation.

Aim

This study evaluated the impact of an EBP educational program on the professional practice, attitudes, and knowledge/skills of nursing managers.

Objectives

- To assess the primary practice, attitudes, and knowledge/skills of nursing managers related to EBP.
- Design and implement EBP educational program and evaluate its impact on professional practice, attitudes, and knowledge/skills of nursing managers.
- Explore the association between dependent variables, namely, the three dimensions of the Evidence-Based Practice Questionnaire (EBPQ), (Practice (P), Attitude (A), and Knowledge/Skills (K/S), and independent variables included in demographic characteristics of the participants; (Gender, education, nationality, position, and prior experience of EBP activities).

Research Hypotheses

The following hypotheses were formulated:

- Face-to-face, evidence-based practice educational program has no impact on the Nurses Managers' professional practice, attitudes, and knowledge/skills related to EBP.
- Face-to-face, evidence-based practice educational program has an impact on the Nurses Managers' professional practice, attitudes, and knowledge/skills related to EBP.
- Face-to-face, evidence-based practice educational program has an impact only on the Nurses Managers' professional practice and attitudes related to EBP.
- Face-to-face, evidence-based practice educational program has an impact only on the Nurses Managers' professional knowledge/skills related to EBP.

Methods

Design, Area Setting, and Participants

The study design was quasi-experimental, one group in which a pre-intervention test and two post-intervention tests were conducted.

The study was conducted at King Fahd Hospital of the University (KFHU), Al Khobar/ Kingdom of Saudi Arabia. This hospital is a 550 bed, inpatient acute care facility.

The study participants' duty areas are The Medical-Surgical wards (Pediatric and Adults), Intensive Care Unit (ICU), Coronary Care Unit (CCU), Operation Room (OR), Emergency Room (ER), Hemodialysis unit, Nursing Education and Quality Insurance departments, and the Chief Nursing Office (CNO).

Participants were Registered Nurses (RN) Nursing Managers, their positions: Nursing Managers from Nursing Education, Quality Insurance and Chief Nursing Office (CNO)

Clinical Nursing Supervisors, Head Nurses, and Assistant Head Nurses. Their qualifications included diplomas, bachelors, and master's degrees. They involved in direct and indirect acute care of hospitalized patients.

Inclusion Criteria

- Having permanent managerial positions as stated.
- Full-time job
- Willingness to participate.
- Available at the times of program conduction.
- Any Nurse Manager who didn't meet the above mentioned criteria was excluded.

Sampling

A total covering sample of Registered Nursing managers who met the inclusion criteria were included in the study. (N= 42).

The Study Variables

Dependent variables

- The practice of EBP pertained to how frequency the nurse applied the steps of EBP to individual patient care Bernadette M [18].
- Attitudes towards EBP include perceived barriers (e.g. workload) along with personal judgments as to the value of EBP.
- Knowledge/ skills of EBP Nurses' knowledge of EBP include research, information technology skills, and the ability to interpret the literature and apply it to individual patients and/ or populations [7].

Independent Variables

- Gender, Nationality, Educational qualification, position, and previous experience with EBP activities

The Tools

The following tools were used for data collection

- Evidence-Based Practice Questionnaire scale (EBPQ), it has 24 items which organized into three subscales. The first subscale's six questions assess the Practice (P) of evidence-based. Second four questions assess attitude (A) towards EBP. The third 14 questions assess Knowledge/Skills (K/S) relevant to the implementation of EBP. All items (PAK) were scored on a scale of 1-7, with a higher score indicating a more positive attitude towards clinical effectiveness/EBP, or use and knowledge of clinical effectiveness and EBP. Cronbach's alpha revealed the questionnaire's overall internal reliability was 0.87. Cronbach's alpha for the practice, attitude, and

knowledge/skills were 0.85, 0.79, and 0.91, respectively [19].

- Demographic information sheet related to characteristics of the participant, including age, gender, education, Nationality, position, and prior experience with EBP activities.

Ethical Consideration

- Permission to use the Tool (EBPQ scale) obtained from the Author.
- Approval from the College of Nursing, and the Institutional Review Board of (UOD), recently Imam Abdulrahman Bin Faisal University. (IRB No.-2016-04-168)
- The participants gave their consent through the CNO.

Pilot Study

For this study, a pilot study was conducted in the King Fahd Hospital of the University (KFHU) to test the clarity and applicability of the EBPQ scale, as the participants were multi nationalities, bilingual, and the English language isn't their mother tongue. The questionnaire was wholly answered, and no any comment indicated miss-understanding to any of its part.

Program's Preparation

- The researcher prepared the learning package that contains different learning materials to be used during the application

and later as a reference. Experts in the field of EBP revised the content of the learning package. The main contents of the program were related to the seven-step process of EBP, facilitations, barriers to EBP, and strategies to overcome it.

- The program sessions took place at the University hospital, where the participants are posted, and due to adequate classrooms space and Intra-net services.
- The Medical Librarian was informed.

Pre-Program Data Collection Technique

- Participants were seated conveniently.
- Explained the program and its objectives.
- Conducted Pre-intervention test. The allotted time was 15 minutes to fill their demographic data and their responses to the 24 statements in the EBPQ scale.
- Questionnaire papers were collected back to be confidentially kept as pre-intervention data.

Program Implementation

EBP educational program started in April 2017. It formatted into six weekly sessions, of four hours of face- to-face interactive presentations. Contents are displayed in (Table 1).

Session No.	Contents
1	1. Objective and overall learning outcomes.
	2. Adult learning theory assumptions and its relation to EBP
	3. Lecture about the history and concept of EBP.
	4. Characteristics of EBP Nurse
	5. Terminology related to research process.
	6. Participants are requested to plan for the next session.
2	1. PowerPoint presentation and workshop about the seven-steps of EBP. Step 0, how to activate it. Step 1, how to ask clinical question in PICOT format.
	2. Application of PICOT examples, giving different clinical scenarios (group work).
	3. Participants create scenario from their clinical areas.
3	1. Locating resources/ search for the best evidence. Basic Search Principles. (videos and handouts)
	2. Step 3 to 6 of EBP.
	3. Discuss how the Nurse Manager facilitate EBP. Barriers to EBP, examples to overcome the barriers.
4	1. How to develop search strategy, key words, Boolean operator, searching different databases (Facilitated by Medical Librarian). All have Internet access.
	2. Application.

5	1. Continue application (how to search) examples of clinical situations.
6	1. Critical Appraisal of EBP
	2. Apply critical appraisal with template. Used published articles as an example.
	3. End of program. Immediate post - test.

Table 1: Educational Program of EBP for clinical Nursing Managers.

- Participants were seated into subgroups to allow for sharing of information, interaction, and group discussion. Lectures were provided to acquire and expand the knowledge about the concept of EBP and explained the seven- steps process of EBP.
- Class sessions were reinforced by 1-2 hours of home study and electronically submission of weekly assignments, through participants' Electronic Mail accounts.
- Each home assignment was related to the contents of the week session. Throughout the program implementation the assumptions and principles of Adult Learning Theory were utilized as explained in (Table 2).
- The program included library sessions conducted by the Medical Librarian. Mainly to, teach the principles of search, train the participants to develop the skills of how to search for evidence, and to know the main Data Bases that are useful for clinical nurses.

Assumption & principle	Utilization during the education program
Self- concept and planning	Emphasis and encouraging of the participants to take part in directing their learning process about the seven-step process of EBP, and to maximize autonomy through their participation, writing scenarios related to their clinical, group discussions, assignments submission, their feed -back, and planning for next session.
The experience	Recognizes the value and effects of the participants' experience in the learning process, and how to co-relate their experience to the different steps of EBP specially step Zero, and step One where they will apply the experience they have gained in the class session.
	Take into consideration their deferent level of their experience.
Orientation to learning; Adult learning is a problem- centered	Encouraged the participants to focus on learning, and recognize the value of education about knowledge and skills related to EBP that expected to acquire throughout the program and how to immediately apply it in their clinical work. Once the nurses are aware of the benefits of EBP, the need for education becomes evident. Conduct group discussions about facilitation of, and barriers to EBP, and some strategies to overcome it.
Readiness to learn	Emphasized the participants to think about their current practices and the importance of continuing education, and to recognize that, as a nursing profession, they have a social obligation that they base their nursing intervention on current evidence. The researcher encouraged them to create their accounts e.g. in Google scholar, linked-in, Research gate, etc., this will help them to interact with their colleagues in other healthcare facilities, who have the same interest in EBP and create their net- workgroups.
Motivation	Motivation ignited from the time of explaining the objectives, and the expected learning outcomes and how much their participation in the program will be useful to them in their clinical work by started applying whatever they are getting. They will be more motivated when they see that their behaviors or thinking become evidence-based, and see positive outcomes on their patients. The researcher acknowledged the worth of experiences that participants brought to the classroom, which enriched the discussions throughout the sessions.

Table 2: Utilization of Adult Learning Theory's Assumptions and Principles.

Post-Program Test

- After completion of the program, the first post-intervention test was administered immediately, and then five months later, administered the second post-intervention test by follow the same technique in the two previous tests.
- The program conducted between April 2017 and October 2017.

Analysis

Data entered into the Statistical Package for Social Sciences program, (SPSS) version 23.0. Descriptive statistics were conducted to describe the characteristics of the sample. The effectiveness of the intervention was tested using a one-way among groups analysis of variance (ANOVA) (One-way analysis of variance involves one independent variable which has a number of different conditions). Independent sample t-test analyses to compare the mean scores of the categorical variables (Nationality and previous experience of EBP) and the continuous variables (Practice, attitude, and knowledge/ skills) related to EBP.

Results

All the participants were female, completed the pre and two posttests. The participants' demographic characteristics are displayed in (Table 3).

Category	Nationality	Frequency	%
	Saudi	32	76.2
	Non-Saudi	10	23.8
Gender			
	Male	0	0
	Female	42	100
Education			
	Diploma	3	7.1
	Bachelor's degree	33	78.6
	Master's degree	6	14.3
Position			
	Assistant Head Nurse	10	23.8
	Head Nurse	17	40.5
	Clinical Nursing Supervisor	10	23.8
	Other Nursing Managers	5	11.9
Previous Training of EBP			
	Yes	5	11.9
	No	37	88.1
Age			
	Range	Mean	Std. Dev.
	30-61 years	37.67	7.7
Years of Experience			
	6-40 years		

Table 3: Demographic characteristics of the participant's N (42).

The mean scores of the EBPQ subscales in pre and two post interventions are as follow: Practice (3.13 ± 2.00 , 5.55 ± 1.47 , and 5.38 ± 1.21), Attitudes (4.06 ± 1.85 , 5.79 ± 1.37 , 5.79 ± 1.37) and Knowledge/skill (3.85 ± 1.31 , $5.19\pm.94$, $5.02\pm.88$) respectively. (Table 4) displays the significance in the three dimensions, Practice, Attitude, and Knowledge/ Skill (PAK).

Dependent Variable	Sum of Squares	Df	Mean Square	F	Sig.
Practice					
Between Groups*	147.51	2	73.76	28.77	0
Within Groups**	302.51	118	2.56		
Total [#]	450.02	120			
Attitude					
Between Groups*	64.88	2	32.44	12.35	0
Within Groups**	302.01	115	2.63		
Total [#]	366.89	117			
Knowledge/ Skills					
Between Groups*	42.74	2	21.37	18.74	0
Within Groups**	130.01	114	1.14		
Total [#]	172.75	116			

Statistically significant at a **P**- value of ≤ 0.05

*Between the independent variables/ participants characteristics.

**Within each of the groups.

#Different in the total Df in three sub-scales, resulted from missed Data as per participants' responses.

Table 4: Overall significance in the Participants' Practice, Attitude, & Knowledge/ Skills of EBP.

The Eta-squared was calculated to determine the effect size. By employing Cohen's formula [20]. Eta squared = Sum of squares between groups / total sum of squares. Cohen classifies .01 as a small effect, .06 as a medium effect and .14 as a large effect. The results revealed 0.33, 0.18, and 0.25 for practice, attitude, and knowledge/skills, respectively. (Table 5) displays the mean scores of the participants' qualifications, and (Table 6) configures the association between qualifications and the (PAK) related to EBP.

Dependent Variables	Qualifications	N	Means	95% CI
Practice	Diploma	3	1.00± .00	1.00, 1.00
	Bachelor	32	2.99±1.93	2.30, 3.69
	Master	6	4.94±1.52	3.35, 6.53
	Total	41	3.13±2.00	2.50, 3.77
Attitude	Diploma	3	1.75± .00	1.75, 1.75
	Bachelor	31	4.14±1.90	3.44, 4.83
	Master	6	4.83±1.04	3.74, 5.93
	Total	40	4.06±1.85	3.47, 4.65
Knowledge/Skills	Diploma	3	2.79± .00	2.79, 2.79
	Bachelor	32	3.68±1.28	3.22, 4.14
	Master	6	5.27± .52	4.72, 5.82
	Total	41	3.85±1.31	3.44, 4.26

Table 5: Practice, Attitude, & Knowledge/Skill's Means of Participants' Qualifications.

Dependent Variable	Sum of Squares	Df	Mean Square	F	Sig.
Practice					
Between Groups*	33.95	2	16.97	5.09	0.011
Within Groups**	126.84	38	3.34		
Total [#]	160.79	40			
Attitude					
Between Groups*	19.78	2	9.9	3.22	0.051
Within Groups**	113.69	37	3.07		
Total [#]	133.47	39			
Knowledge/Skills					
Between Groups*	16.48	2	8.24	6.03	0.005
Within Groups**	51.93	38	1.37		
Total [#]	68.41	40			

Statistically significant at a **P-** value of ≤ 0.05

*Between the independent variables (different participants' qualifications)

**Within each of the groups.

[#]Different in the total **Df** in three sub-scales, resulted from missed Data as per participants' responses.

Table 6: Association between qualification & the Practice, Attitude, and Knowledge/ skills.

The Eta-squared results for qualification revealed 0.21, 0.15, and 0.24 for practice, attitude, and knowledge/skills, respectively. (Table 7) displays the means scores of the participants' positions and (Table 8) illustrates the association between positions and the (PAK) related to EBP.

Dependent Variables	Positions	N	Means	95% CI
Practice	Assistant Head Nurse	9	1.57±1.54	.39, 2.76
	Head Nurse	17	2.92±1.65	2.07, .77
	Clinical Nursing Supervisor	10	4.00±2.09	2.50, 5.50
	Other Nursing Managers	5	4.93±1.73	2.79, 7.08
	Total	41	3.13±2.00	2.50, 3.77
Attitude	Assistant Head Nurse	9	1.89±.92	1.18, 2.60
	Head Nurse	16	4.56±1.72	3.64, 5.48
	Clinical Nursing Supervisor	10	4.80±1.56	3.68, 5.92
	Other Nursing Managers	5	4.90±1.08	3.55, 6.25
	Total	40	4.06±1.85	3.47, 4.65
Knowledge/Skills	Assistant Head Nurse	9	2.89±1.20	1.97, 3.81
	Head Nurse	17	3.59±.96	3.10, 4.08
	Clinical Nursing Supervisor	10	4.51±1.48	3.46, 5.57
	Other Nursing Managers	5	5.11±.46	4.54, 5.69
	Total	41	3.85±1.31	3.44, 4.26

Table 7: Practice, Attitude, & Knowledge/Skill's Means for Participants' Positions.

Dependent Variables Practice	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups*	46.36	3	15.45	4.99	0.005
Within Groups**	114.44	37	3.09		
Total [#]	160.79	40			
Attitude					
Between Groups*	55.47	3	18.49	8.53	0
Within Groups**	78	36	2.17		
Total [#]	133.47	39			
Knowledge/Skills					
Between Groups*	21.85	3	7.28	5.79	0.002
Within Groups**	46.56	37	1.26		
Total [#]	68.41	40			

Statistically significant at a **P**- value of ≤ 0.05

*Between the independent variables (different participants' Positions)

**Within each of the groups.

#Different in the total **Df** in three sub-scales, resulted from missed Data as per participants' responses.

Table 8: Association between positions & the Practice, Attitude, and Knowledge/ skills.

Eta-squared results for position determined 0.29, 0.42, and 0.32 for practice, attitude, and knowledge/skills, respectively. Independent sample t-test analyses regarding Nationality. The Saudi participant's N (32) and Non-Saudi N (10).

According to Cohen's Formula [20]:

$$\text{Eta squared} = \frac{t^2}{t^2 + (N_1 + N_2 - 2)}$$

Effect size was 0.004, 0.0001, and 0.002 for practice, attitudes, and knowledge/skills, respectively.

Regarding the previous experience of EBP, the participants who had experience were (5), and the ones who had not been were (37). The Effect size result was 0.08 and 0.37 for attitude and knowledge/skills, respectively.

Discussion

Offering educational program opportunities is a method used to help nurses acquire more skills and an enhanced understanding of EBP. In this study, nursing managers underwent a face-to-face educational program to strengthen their practice, attitudes, and knowledge/skills of EBP. It is imperative to equip nursing leaders and managers with the competencies needed for EBP to promote and create an EBP atmosphere, and to support clinical nurses in adopting and implementing EBP.

The study revealed that face-to-face, EBP educational programs that employed different intervention methods and strategies had a significant impact on nursing managers' practice, attitudes, and knowledge/skills related to EBP. The overall Significance $p = 0.000$, in the three dimensions of EBPQ (Practice, attitude, and knowledge/ skills) for the pre- and two post-intervention tests. This finding is similar to study conducted by Weng, et al. [21] Cross- sectional questionnaire surveys for a nationwide representative sample of Director of Nurses (DONs). The study led to examine views related to EBP, including changes in beliefs, attitudes, knowledge, skills, behaviors, and barriers. Their research revealed DONs' knowledge, skills, and behaviors regarding EBP increased after the multifaceted intervention.

In this study, the practice was one of the study dependent variables. The participants' responses showed high significance, $P = 0.000$ and large effect size after attending the educational program, which indicates the impact of the educational program on the practice of nurse managers. The findings point out the importance of the continuous in-service educational programs about the concept and competencies of EBP, to help in advance or foster the process of EBP implementation. The results are, to some extent in line with the results of Ecoff [22], who used a descriptive study with a mixed-method design to evaluate a mentoring

program of EBP.

Attitude is one of the dependent variables of this study. The results revealed highly significant P of .000, Plus the large effect size = .18 after participating in the educational program. The finding of the current study concurs with a previous descriptive-quantitative study involving nursing leaders, conducted by Camargo, et al. [23] based on the evaluation of workshops at a teaching hospital. Their study aimed to evaluate an intervention for the diffusion of evidence-based practice among the nurse leaders. The nurse leaders, after the workshops had a positive attitude toward incorporating evidence into practice. However, the design was different from this study. At the same time, the finding is inconsistent with that of Bakr Amna [24] who found that nursing managers and leaders responded to specific activities related to educational courses about EBP and if they compelled their staff nurses. While the participants' responses in Bakr's study were below average, the managers in this present study show a positive attitude. In the study of Varnell, et al. [25] evaluated an accelerated development EBP program, administered to nurses from five hospitals. The results revealed that participants have the potential to enhance their beliefs and attitudes about EBP significantly. These findings together reflect the crucial of such programs to improve the beliefs and attitude toward the EBP, and dissemination of results among healthcare facilities to be viewed as a motivator, since attitude is central to leadership thinking, their communication with their staff nurses, a collaboration between professionals, and different health and social care agencies.

In this study the Knowledge dimension is one of dependent variables, the participants' responses after attending the educational program, showed high significance, $P = 0.000$, and large effect size = .25. The findings are similar to the quasi-experimental study design of Ramos, et al. [26] which concluded that a brief essential educational intervention on EBP with online and face-to-face learning could produce improvements in the knowledge and skills of clinical nurses. Educational qualifications contributed to a significant difference in the mean scores, particularly with knowledge dimension. The participants with a master's degree had higher mean scores; thus, showing the impact of their educational qualification. This result is in line with Prior, et al. [27] who found education contributed to the success of EBP implementation in New Zealand nurses. But it differed from the ones revealed by Koehn, et al. [28] who determined the BSN group demonstrated a significantly higher score than the other qualifications. These results are encouraging to the Nursing faculties to stick to the recent bachelor's and master's nursing programs, in which EBP has been introduced into the curriculum; this will have facilitated an understanding of the EBP process for graduates. Furthermore, it enhanced their readiness to include evidence in their practice.

The managers' job positions results demonstrated an

association between the position and the three dimensions (PAK) the means of the more senior positions were significantly higher than, the less senior. The findings in this study showed no significant differences between the participants Nationalities. About the previous EBP experience, the findings revealed a significant difference in the mean scores of practice, attitude, and knowledge. According to Cohen's classification [20], the effect size interpreted as, moderate for practice and attitude, and large for knowledge/ skill, revealed that the nurse managers with previous EBP experience improved more. This study demonstrated that the combination of conducting EBP activities and providing informational resources by the Medical Librarian was highly effective in increasing the Nurse Managers' knowledge and skills of how to access and how to search the evidence. Since Nurse Managers and leaders are critical for successful EBP implementation, and as the literature revealed, EBP cannot be implemented if there is no culture for EBP at the facility. According to Melnyk, et al. [29], this must begin with the nursing leaders and administration. It is vital that the nurse manager's competencies in EBP are developed to value the EBP and to assist in fostering climates supportive of EBP Implementation. Evidence to deliver high-quality patient care is imperative, especially since healthcare facilities have strategies to meet growing expectations from accreditation bodies, consumers, and third-party contributors.

Conclusion

The findings of this study demonstrated that a face-to-face EBP educational program has significant effects on nursing managers' professional practice, attitude, and knowledge/skills related to EBP. The results reflected the association between the nurse's managers' demographic data (Education qualification, position, and previous experience of EBP). No Nationality impact. This active involvement in such programs allowed a group of nursing managers to learn together, reflect on their practice, and discuss EBP. It was an opportunity to develop and build competencies needed for EBP. Consequently, nursing managers are expected to be less resistant, open- minded and able to recognize what is essential for clinical excellence and could be in a position to model EBP for their clinical nurses. Finally, prior planning, utilization of adult learner assumptions, involving the learners, effective utilization of the resources in healthcare facilities, and usage of different teaching strategies are beneficial and vital to teach EBP due to the multifaceted nature of the concept.

Recommendations

- Generalization of the study in other healthcare facilities for more benefits.
- To encourage the integration between academia and clinical in the area of education, researches, and in- service educational programs related to EBP.

- Collaboration between clinical nurse educators and faculty in the nursing colleges, to conduct more researches to accelerate the development of EBP competencies among clinical nurses, to facilitate EBP implementation. Moreover, encourage novice nurses to be involved in such studies.
- To develop continuous educational programs about EBP for all nursing categories.

As a result, the Chief Nursing Officer (CNO) arranged a series of lectures and workshops to all nursing staff to disseminate the knowledge about the EBP concept. Which it signs study benefits.

Limitations

- The study was conducted in only one University hospital, as per rule and policy in K.S.A
- All the participants were female. No opportunity to compare between the genders.

Acknowledgment

This present study has been derived from a Ph.D. thesis conducted under the supervision of Associate Prof. Dr. Hayat Fadlallah Mukhtar. The researcher gratefully acknowledges the Dean of the nursing college in Imam Abdulrahman Bin Faisal University (IAU) and all the colleagues in the nursing college, nursing administration, CNO in KFHU, the participants nursing managers and all the departments for their efforts and support. Special thanks to Associate Prof. Dr. Huda Ghareeb for her guidance and support. The researcher owes a debt of sincere gratitude to the lecturers, Noora Aletaibi, Hiba Al-Masoud, the demonstrators, Siham Al- Rasheedi, Kholod Al- Rasheedi, and the nursing students, Fatima Al Shamsi, Refaa Al Qahtani, Zahra Al Fardan, Fatima Al Ousfour, and Ahmed Al Gasim. The researchers would like to thank Prof. Upton and Dr. Penny Upton to permit us to use the Evidence-Based Practice Questionnaire Scale. Thanks to Enago (www.enago.com) for the English language review. And Dr. Amir Husain in IAU, statistical dept. for the analysis work.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

1. Sigma Theta Tau International, Research & Scholarship Advisory Committee (2008) Sigma Theta Tau International Position Statement on evidence-based practice summary. *Worldviews on Evidence-Based Nursing* 5: 57-59.
2. Hockenberry M, Brown-Walden M, Barrera P (2009) Teaching evidence-based practice skills in a hospital. *Journal of continuing education in nursing* 40: 28-32.
3. Institute of Medicine (2003) *Patient safety: Achieving a new standard of care*. Washington, DC: National Academies Press.

4. Institute of Medicine (U.S) (2001) Crossing the quality chasm: A new health system for the 21st Century Washington, D.C: National Academy Press.
5. International Council of Nurses (2007) Position statement: Nursing research.
6. Feeley D (2017) Institute for Healthcare Improvement IHI triple aim initiative. The triple aim or the quadruple aim? Four points to help set your strategy [Web log post].
7. Upton D, Upton P (2006) Development of an evidence-based practice questionnaire for nurses. *Journal of Advanced Nursing* 54: 454-458.
8. Melnyk BM, Gallagher-Ford LE, Fineout-Overholt E (2014) The establishment of evidence-based practice competencies for practicing registered nurses and advanced practice nurses in real-world clinical settings Proficiencies to improve healthcare quality, reliability, patient outcomes, and costs. *Worldviews on Evidence-Based Nursing* 11: 5-15.
9. American Nurses Association (2010) Nursing Scope and standards of practice (3rd Edition) Washington. DC: Author.
10. Dewey A, Ward D, Harris J, Dean T (2006) Teaching evidence-based practice: A survey of UK's higher education provision. *International Journal of Therapy and Rehabilitation* 13: 22-29.
11. Feldman HR, Levin RF (2006) Our approach to teaching/learning EBP: The talking head versus the dancing feet. In: Levin RF, Feldman HR, (Eds), *Teaching evidence-based practice in nursing* New York: Springer Publishing Company Pg. No. 15-22.
12. American Association of College of Nursing QSEN Education (2012) Consortium Graduate level QSEN competencies. Washington, DC: Author.
13. Camargo FC, Iwamoto HH, Monteiro DAT, Lorena LT, Pereira GDA (2017) Assessment of an intervention for the diffusion of evidence-based nursing in a teaching hospital. *Revista gaucha de enfermagem* 37.
14. Hsu LL, Hsieh SI, Huang YH (2015) A study of the Evidence- Based Nursing Practice Competence of Nurses and Its Clinical Applications. *Hu li za zhi The journal of nursing* 62: 30-40.
15. Melnyk BM, Gallagher-Ford L, Zellefrow C, Tucker S, Tan A, et al. (2018). The first U.S. study on nurses' evidence-based practice competencies indicates major deficits that threaten healthcare quality, safety, and patient outcomes. *Worldviews on Evidence-Based Nursing* 15: 16-25.
16. Smith MK (1996) Malcolm Knowles, informal adult education, self-direction, and Andragogy. *The encyclopedia of informal education*.
17. Kearsley G (2010) Adult Learning Theory Andragogy (M. Knowles). The theory into practice database.
18. Bernadette M, Fineout-Overholt E, Stillwell SB, Williamson KM (2010) The seven steps of evidence-based practice/AJN 110.
19. Upton P (2005) EBPQ ©D.R Upton & Upton. Psychology Division, University of Worcester, Worcester, UK.
20. Cohen J (1988) *Statistical power analysis for the behavioral sciences* (2nd Edition). Hillsdale, NJ: Lawrence Erlbaum Associates.
21. Yi-Hao W, Chieh-feng C, Kee-Hsin C, Ken-N K, Chun-Yuh Y (2016) Dissemination of Evidence-Based Practice to Directors of Nursing by an Outreach Campaign in Taiwan. *The Journal of Continuing Education in Nursing* 47: 181-188.
22. Ecoff LA (2009) An educational initiative to promote evidence-based practice (Doctoral dissertation).
23. Camargo FC, Iwamoto HH, Goulart MB, Araujo MRND, Contim D (2017) Apprehensions of nurse managers on evidence-based practice. *Escola Anna Nery revista de enfermagem*.
24. Bakr AOMO (2016) Exploring the factors affecting the implementation of evidence-based practice in the King Fahd Hospital of the University, Al-Khobar, K.S.A. *IOSR Journal of Nursing and Health Science* 5: 6-18.
25. Varnell G, Haas B, Duke G, Hudson K (2008) Effect of an educational intervention on attitudes toward and implementation of evidence-based practice. *Worldviews on Evidence-Based Nursing* 5: 172-181.
26. Ramos - Morcillo AJ, Fernández - Salazar S, Ruzafa - Martínez M (2015) Effectiveness of a Brief, Basic Evidence - Based Practice Course for Clinical Nurses *Worldviews on Evidence - Based Nursing* 12: 199-207.
27. Prior P, Wilkinson J, Neville S (2010) Practice nurse use of evidence in clinical Practice: A descriptive study. *Nursing Praxis in New Zealand* 26: 14-25.
28. Koehn M, Lehman K (2008) Nurses' perceptions of evidence-based nursing practice. *Journal of advanced Nursing* 62: 209-215.
29. Melnyk BM, Gallagher-Ford L, Thomas BK, Troseth M, Wyngarden K, et al. (2016) A study of chief nurse executives indicates low prioritization of evidence-based practice and shortcomings in hospital performance metrics across the United States. *Worldviews on Evidence-Based Nursing* 13: 6-14.