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Research Article

Study Protocol on "A study to assess the effectiveness of an Evidence-Based Practice educational program on clinical nurses' EBP & Critical Thinking Skill competencies" at HMC, Qatar-Pre-post Design.

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ABSTRACT

Introduction: The relationship between EBP and Critical Thinking skills is desired in almost every discipline and plays a major role in decision-making and daily judgments. Promoting critical thinking through an evidence-based skills fair intervention (Gonzalez, H. C., et al,2020). The study aims to determine the effectiveness of an Evidence-Based Practice educational program that targets clinical nurses by assessing clinical nurses' competencies in EBP & Critical Thinking.

Research Methodology: A one-group pre-posttest design will be adopted to evaluate the effectiveness of the Evidence-Based Practice educational program. subjects will be selected by simple random sampling. A baseline pretest will be conducted using a demographic tool, the EBP Competencies Scale Gallagher-Ford & Melnyk- 2022, and the Nursing Critical Thinking in Practice Questionnaire. Educational intervention

Results: Data analysis will be done using appropriate descriptive and inferential statistical methods. The anticipated outcome is to promote EBP & CT knowledge and practice among clinical nurses. Also, this study supports the development of educational programs and implements Evidence-based practice and critical thinking competencies at the Corporate Nursing and Midwifery Research Department level.

Discussion: The primary outcome will be to enhance the increase of 10% (EBP) Evidence-Based Practice competencies among clinical nurses from pretest and post-test scores as assessed by the EBP Competencies Scale Gallagher-Ford & Melnyk (2022). The secondary outcome will be enhancing the increase by 10% (CT) Critical Thinking competencies among clinical nurses from the pretest and posttest mean scores as assessed by the Nursing Critical Thinking in Practice Questionnaire (2000).

Key Words: Evidence-Based Practice, Critical Thinking Skills, Clinical Nurse, Education

Introduction and Background

Internationally, Evidence-based practice (EBP) is honored as a foundational element of healthcare professional education. The World Health Organization declared the creation of Evidence-based practice (EBP to be a precedent field of action to increase the contribution of nurses. Nurses play a crucial part in furnishing effective, safe, and Evidence-based care, which requires evidence of exploration results into EBP (WHO, 2017). also, as per (Friedmann, 2016) EBP has been honored as one of the core capabilities that clinical nurses should

acquire. Likewise, the benefits of adopting the EBP model in any healthcare system will help in achieving the proudest quality care, and better case issues, minimize healthcare expenditure and reduce variations in the delivery of care at the organizational position. Whereas at the staffing position, it promotes staff commission, and job satisfaction, supports decision-making, and improves nursing practice. The relationship between EBP and critical thinking skills is asked in nearly every discipline and plays a major part in decision-making and daily judgments. Promoting critical thinking through an evidence-based practice skills fair intervention (Gonzalez, H.C., et al, 2020) Also, the operation of an educational program for externship pupil nurses on EBP and its operation benefits showed an observable increase and enhancement of the externship scholars in nurses critical thinking disposition (Mohammed, K.M.A., & Hussein, H.E. A, 2020). Exploration appraisal and critical thinking skills form an integral aspect of Evidence-based nursing (EBN).

A public check in the US indicated that the utmost clinical nurses demanded sufficient EBP capabilities and asked for fresh EBP training (Melnyk et al., 2017). As a common problem world, nurses perceived inadequate EBP knowledge and skills for employing Evidence-based practice and didn't use the stylish substantiation in practice (Saunders et al., 2019) Wilby, K., & Al-Siyabi,K.(2013). Evidence-based healthcare practice in Qatar, Time constraints, and lack of familiarity with EBM generalities and processes have been demonstrated as walls to relinquishment in Qatar and the GCC. An analogous study by (Al-Maskari MA, and Patterson BJ 2018) the study concluded that aiding the nursing authorities in Oman in understanding further about the nurse leaders and staff nurse positions might impact the responsibility of EBP and CT Skills in the necessary changes in nursing practice. (AbdulqadirJ. Nashwan et al. 2016), emphasized that furnishing defended time, availability to exploration instructors or experts, and Evidence-based practice units are largely recommended by the frontline nurses through a review of the successful exploration governance models within HMC.

The limited application of evidence-based practices in the medical as well as nursing in HMC. Presently, unit-position nurses approach a nursing problem and find evidence-based results within the nursing practice by exercising commercial programs and clinical guidelines. Also, this is supported through Journal clubs and exploration systems, Ideas for improvement, and quality improvement projects. Clinical nurses in the unit position have no standardized process/ guidelines to follow in exploring evidence to be applied in clinical practice. Limited exposure, knowledge, and understanding of literature also circumscribe nurses' use of evidence-based practices. Other walls include misperceptions by EBP and a lack of instructors. Lack of academic focus on EBP. These lead to application, deficient action, and integration of evidence in nursing practice.

Therefore, including clinical nurses in EBP education is an essential step toward supporting EBP and critical thinking in the clinical setting. The data is grounded on experience in working with clinical nurses as preceptors. Formal and informal compliances are conducted regarding the beliefs and application of EBP models and critical appraisal of substantiation by nurses in HMC installations. (Kiran. p, 2022).

In the study, (Kim, 2019) EBP Educational Intervention program was effective in perfecting the knowledge, skills, stations, capabilities, and unborn use of EBP among nursing scholars. Another study by (Liu, M. et al 2021). A multi-dimensional EBP educational program to improve evidence-based practice and critical thinking evidence-based nurses stressed that it bettered clinical nurses' EBP beliefs, skills, and positive stations. unborn longitudinal exploration should explore the effectiveness of EBP education in clinical settings.

Further, findings from a recent study of nurses in 19 hospitals and healthcare systems across the United States indicated that they do not report being competent in any of the 24 EBP competencies for rehearsing nurses and advanced practice nurses (Melnykal., 2018). Grounded on a literature review and expert agreement, a set of core EBP competencies for nurses and the most important EBP learning issues was developed for perpetration in nursing education programs across European countries. (Jakub Dolezel, 2021).

Grounded on the current health script and considering the challenges posed by COVID-19, there's a need to develop EBP and Critical Thinking skills of clinical nurses to develop unborn EBP & CT silks. Presently there's a lack of EBP and critical thinking competency in the HMC (Kiran. P, 2022) Secondly, to support the HMC Nurse & Midwifery Strategic year 2018-22 has stressed in delivering high-quality, evidence-based, and compassionate care. ensure the restatement of evidence into practice grounded on a culture of exploration and innovation. (Nursing and midwifery strategy Hamad. 2019) In this environment, interested in conducting a study to answer the question, does the EBP Program increase EBP practices? The study seeks to estimate the effect of the EBP program on unit clinical nurses' EBP practices, EBP, and CT competencies.

Objectives

The objectives of the study were:

Primary Objective - a) To assess the effectiveness of the EBP educational program in improving the (EBP) Evidence-Based Practice competencies of the clinical nurses. b) To assess the effectiveness of the EBP educational program in improving the (C T) Critical Thinking competencies of the clinical nurses.

Secondary Objective - a) To find the correlation between (EBP) Evidence-Based Practice and (C T) Critical Thinking competencies among clinical nurses.

Hypothesis:
The following hypothesis is formulated.
H1. There will be a significant improvement in clinical nurses' competencies related to (EBP) Evidence-Based Practice after the implementation of the EBP educational program.
H2. There will be significant improvement in clinical nurses' competencies related to (CT) Critical Thinking Skills after the implementation of the EBP educational program.
H3. There will be a positive correlation between clinical nurses' competencies related to EBP practice and nurses' Critical Thinking skills after the implementation of the EBP educational program.

Study Methodology

Study Design: Pre-Experimental. This study uses a pre-experimental one-group pre and post-test study design to compare pre and post-tests of those who received EBP education programs among clinical nurses. The samples will be selected by the simple random method of sampling. (Polit, D., & Beck, C. 2020).

Pilot Study: A pilot study will be conducted for 11 clinical nurses 3 months before the study for the purpose of testing the proficiency of the tool to be used for data collection and to assess the feasibility of the study.

Setting: Al Khor Hospital. HMC, all units, and outpatient unit (ED, ICU, OPD, MOT, DCU, W-1, W-2, E-2, E1, OB-OPD,0B-ED, Labor Room, Dialysis PEC, W-1Pediatirc, Discharge Lounge Units).

Tools/Instruments: The socio-demographic data includes Age, gender, Total year of clinical experience in HMC, and Total year of clinical experience. current practice unit, education level, previous EBP education, previous EBP competency assessment, previous CT education, previous CT competency assessment, current, job title, and qualification.

EBP Competencies Scale Gallagher-Ford & Melnyk (2022). EBP Competencies Scale Gallagher-Ford & Melnyk-2022 is a valid, reliable questionnaire that measures the self-assessment competency of registered nurses in EBP based on an updated and specific competency framework. It permits the independent evaluation of attitudes, knowledge, and skills related to EBP. Two rounds of the Delphi survey resulted in total consensus by the EBP mentors, resulting in a final set of 13 competencies for practicing registered nurses and 11 additional competencies for APNs. Incorporation of these competencies into healthcare system expectations, orientations, job descriptions, performance appraisals, and clinical ladder promotion processes could drive higher quality, reliability, and consistency of healthcare as well as reduce costs.

Nursing Critical Thinking in Practice Questionnaire (2000): The instrument was designed based on the theoretical model 4- Circle Critical Thinking (CT) Model by Alfaro-LeFevre (2002), (Zuriguel-Pérez, E 2017). This model explores four components of critical thinking: a) personal characteristics, b) intellectual and cognitive skills, c) interpersonal and self-management skills, and d) technical skills. The number of items is 109, distributed in the four dimensions that configure the 4-Circle CT Model: Personal (39 items); Intellectual and cognitive (44 items); Interpersonal and self-management (20 items), and Technical (6 items). Cronbach's alpha total is 0.96 and for all four dimensions, it will be in the range of 0.94 to 0.78. This shows a high test-retest reliability for a 15-day interval (ICC ≥ 0.75). The content validity index is 0.85. The four dimensions are correlated.

EBP Program:
The researcher will develop the EBP educational intervention, the Program enables participants to find, appraise and apply evidence that is required for a critical approach to clinical practice by applying critical thinking skills. The EBP program will be delivered for 2 days face to face or virtual sessions which be delivered in phases (i) Orientation to the EBP and Critical Thinking Competence, (ii) Introduction to Critical Appraisal (JC –Journal Club), (iii) EBP & Critical Thinking Competency Workshop. Vera, D. (2022, February 1). To improve the EBP and CT skills competencies. The program will be developed. As per standard. Further, the program will be done content validation with 6 experts (2 in Nursing Rese EBP experts, 2 nursing professionals, and 2 educational experts). and follow-up assignments will be given to all participants.

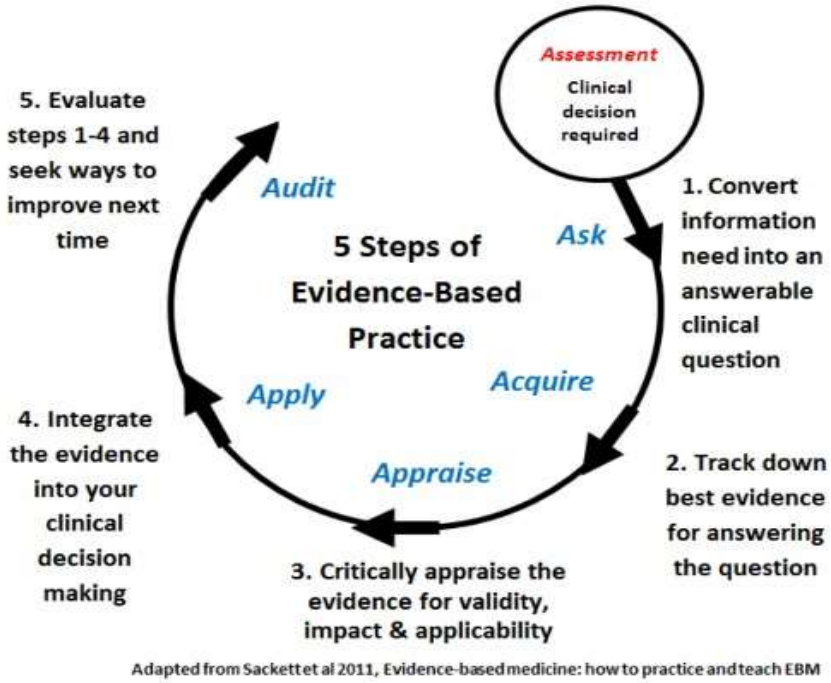

Fig No-1 5 Steps of EBP

Study Population and Study Setting/ Location Target Population. The target population consists of Clinical Nurses Working in Al Khor Hospital.
Accessible Population: The accessible population will be the Clinical Nurses working in Inpatient and Outpatient dept units (ED, ICU, OPD, MOT, DCU, W-1, W-2, E-2, E1, OB-OPD,0B-ED, Labor Room, Dialysis PEC, W-1Pediatirc, Discharge Lounge Units). at Al Khor Hospital and 550 Nursing workforces in AKH, HMC.
Sample Size: The sampling frame is prepared to get an approximate number of subjects in a suitable time frame. The researcher conducted a review of the literature in terms of the sample size and sampling design which provided the necessary input for determining the sample size. The sample size was calculated with power at 0.80, and significance level of $\alpha = 0.05$, and an attrition rate of 10% with a 5% effect size, we will require 110 nurses for pre- and post-experimental groups. Liu, M., (2021). Polit, D., & Beck, C. (2020). The sample calculation is based on the Power Calculator by Sealed Envelope.Com.(Sealed Envelope Ltd. 2012. Power Calculator) Sampling Method -Randomization The principal investigator/research team member will organize an informative session with potential subjects to obtain Informed Consent. These subjects will be screened for eligibility during the session using a checklist. After providing full information and answering the questions, informed consent will be signed by the participant and research team members on the same day. The research will collect the demographic details on the same day. Authorized research nurses will allocate a personal identification number (PIN) for each participant before randomizing the subjects. The research team will use computerized software to randomly assign the subjects to the group. 'Simple Random Sampling' based on the below-listed criteria for the enrolment of participants.

The inclusion and exclusion criteria include.
Inclusion Criteria: Clinical Nurses who are working in direct patient care.
Exclusion Criteria: Clinical Nurses who are on leave. New clinical nurses under orientation period Clinical Nurses who have already undergone EBP and CT Training. (Either Virtual or Face to Face) Clinical Nurses who have already undergone EBP and CT competency assessment. (Either Virtual or Face to Face).

Study Procedure: After obtaining approval from IRB Hamad Medical Research Center. The prospective study subjects will be invited to participate in the study through their respective Directors of Nursing after formal permission from the Executive Director of Nursing of the facility. The prospective subjects who are willing to participate in the study will be contacted by organization E-mail. The PI or Team Member will meet the prospective subjects and distribute an information sheet and an explanation will be provided regarding the study, its benefits, and any inconveniences and expected participation from them. They will be provided with 2 weeks for decision-making. Follow-up emails and telephone calls will be made by the research team to ensure their participation.
The Principal Investigator / Research Team members will organize an informative session in the hospital to meet the potential subjects to obtain Informed consent. The subjects will be screened for eligibility during the

session using a checklist. After providing full information and answering the questions, informed consent will be signed by the participant and research team members on the same day. After obtaining informed consent, the required samples will be enrolled in the study and informed through E-Mail. The total no of 110 participants will be divided into 3 groups of 36,37 and 37 respectively.
The EBP Educational program will be delivered to all three groups, a pretest will be conducted before the intervention and a posttest will be conducted after 4 weeks.

Data Collection:
Baseline Data collection:
Study participants (Clinical Nurses) will be distributed with a Demographic Profile and EBP Competencies Scale Gallagher-Ford & Melnyk (2022) and Nursing Critical Thinking in Practice Questionnaire (2000). The participants will be given 2 weeks to complete the baseline assessment. Each questionnaire set will have a unique identification code to enable us to identify responders throughout the course of the study. The data will be collected in Microsoft form through the survey link. and the data will be transferred to the Microsoft Excel file and saved on a password-protected computer. The data will be accessible by only the PI and the research team. The data will be kept for five years and then later will be destroyed.
After receiving the pretest, a Pre-Reading Material will be provided for participants. EBP Training will commence after obtaining informed consent from all subjects. The research team will schedule the 1- Days interactive didactic training sessions in groups for all the participants. Each group consists of 35 subjects. After the training program, the group members will submit 2 assignments on the Implementation of EBP and CT practices in their practice. A post-test using the scales of EBP Competencies Scale Gallagher-Ford & Melnyk (2022) and the Nursing Critical Thinking in Practice Questionnaire (2000) will be taken after 4 weeks. After the 4th week of the training and posttest, the clinical nurses' EBP, and CT Skills will be assessed Study Duration and Timelines
The expected duration of the study will be 1 year and 6-month Year. The study is expected to begin in October 2022 and be completed by Dec 2023 (Study duration includes submission, approval process, Data Collection, analysis, and manuscript writing).

Informed Consent: The prospective study subjects will be invited to participate in the study through their respective Directors of Nursing after formal permission from the Executive Director of Nursing of the facility. The prospective subjects who are willing to participate in the study will be contacted by organization E-mail. The PI or Team Member will meet the prospective subjects at the auditorium hall, Al Khor Hospital, and distribute an information flyer and an explanation will be provided regarding the study, its benefits, and any inconveniences and expected participation from them.
The Principal Investigator / Research Team member will organize an informative session in the auditorium hall, Al Khor hospital to meet the potential subjects to obtain Informed consent. The subjects will be screened for eligibility during the session using a checklist. After providing full information and answering the questions, informed consent will be signed by the participant and research team members on the same day. After obtaining informed consent, the required samples will be enrolled in the study and informed through E-Mail. They will be provided with 2 weeks for decision-making. Follow-up emails and telephone calls will be made by the research team to ensure their participation and the duration of participants in the study will be 12 weeks after the consenting.
The PI or Team Member will meet the prospective subjects n - 550 at Al Khor hospital and distribute an information flyer and an explanation will be provided regarding the study, its benefits, and any inconveniences and expected participation from them. The subjects will be screened for eligibility during the session using a checklist. The study participants will be n - 110. After obtaining informed consent the subjects will be assigned to the study group by using the simple random sampling method.
Risk: There are no anticipated risks for the intervention. The intervention is an educational program. which is developed according to the standards and delivered by qualified presenters in a controlled setting.

Discussion and Outcome: The primary outcome will be to enhance the increase of 10% (EBP) Evidence-Based Practice competencies among clinical nurses from pretest and posttest mean scores as assessed by the EBP Competencies Scale Gallagher-Ford & Melnyk (2022). The secondary outcome will be enhancing the increase by 10% (CT) Critical Thinking competencies among clinical nurses from the pretest and posttest mean scores as assessed by the Nursing Critical Thinking in Practice Questionnaire (2000).
The anticipated outcome is to promote EBP & CT knowledge and practice among clinical nurses. Also, this study supports the development of EBP educational programs and to implementation of Evidence-based practice and critical thinking competency at (NMRD) Nursing Midwife Research Dept, HMC, and the State of Qatar.

Limitation: This is pri experimental one group pre and post-test design that offers an increase of (EBP) Evidence-Based Practice competencies among clinical nurses from the pretest and post-test. The secondary outcome will be enhancing the increase (CT) Critical Thinking competencies among clinical nurses. The study

can be done in a Randomized control trial with large-scale intervention and control group. and can be done in multicenter research for more generalizing the study findings.

Data Collection, Management & Confidentiality: The research team members will collect data related to demographic variables by using a demographic profile. Standardized tools EBP Competencies Scale Gallagher-Ford & Melnyk (2022) and the Nursing Critical Thinking in Practice Questionnaire (2000) will be used to collect data on EBP & CT practices. Protected personally identifiable information will be replaced with research identification codes (ID codes). All participants will be informed about their right to refuse to participate or withdraw from the study at any time. Those participants' data will not be utilized for the analysis. Instead, the number of dropouts/attrition rate will be mentioned in the results/ discussion of the study on completion.

Statistical Consideration and Data Analysis: Descriptive statistics will be used to summarize and determine the sample characteristics and distribution of participants' data. The normally distributed data and results will be reported with mean and standard deviation (SD); the remaining results reported with median and inter-quartile range (IQR). The EBP and CT scores will be calculated, to sum up, all the questions for different domains. Categorical data will be summarized using frequencies and proportions. Associations between two or more quantitative data variables will be assessed using the Mc'Neymar chi-square ($\chi 2$) test as appropriate. Quantitative data between the two dependent groups will be analyzed using paired t-tests or rank sum tests as appropriate. Univariate and multivariate linear regression analysis (controlling and adjusted for predictors such as group, gender, education, etc. will be applied to determine and assess the associations and predictive values of predictors stated above with EBP and CT scores. The results of linear regression analyses will be presented as Coefficients with a corresponding 95% CI. All P values presented were two-tailed, and P values <0.05 will be considered statistically significant. All Statistical analyses will be done by using statistical packages STATA version 17.0.

Adverse Event Reporting: The study does not involve any treatment, administering a drug, or giving a substance to human subjects. The study intervention is an educational program administered to the selected participants. Hence no adverse events are anticipated. All infection control precautions will be undertaken during the education sessions.

However, if any participant reports any health issues/ serious events during the educational sessions it will be managed as per the hospital research policy. A code blue will be activated in case of cardiorespiratory arrest, or the person will be managed according to the emergency activation system protocol. The participant will be transferred to the emergency department immediately.

Ethical Consideration: The principal investigator affirms and states that the study will be conducted in full accordance with the principles of Helsinki, Good Clinical Practice, and abiding by the Laws and Regulations of Mo PH in Qatar. Informed consent will be obtained from the patients who are willing to participate after explaining the research study, objectives, and duration of the study. All participants will be informed about their right to refuse or participate or withdraw from the research at any time.

Sponsor, Funding & Collaborator Information: No funds will be requested from HMC.

Consent for publication.

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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