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Effectiveness of Evidence-Based Practice (EBP) Training Program on the Level of Competencies of Faculty Members in a School of Nursing

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ABSTRACT

The vision for the future of nursing has led to convergence of knowledge, quality, and new functions in nursing that require new competencies beyond evidence-based practice (EBP). However, the success of teaching and implementing EBP rely on the competencies of nursing educators. This study aimed to determine the effectiveness of the Evidence-Based (EBP) Training Program in enhancing the EBP competencies of faculty members. An EBP Training Program was conducted among 13 nurse educators. The participants cognitive and psychomotor competencies were measured before and after the EBP Training Program using a self-made cognitive and psychomotor competency questionnaire. Pre-test and post-test scores were then analyzed using RM-MANOVA. Results revealed that the EBP Training Program caused a large improvement in the cognitive competency in EBP of nurse educators. However, the training program was not sufficient to cause a significant effect on the psychomotor competency of the nurse educators.

Keywords: *Cognitive Competency, Evidence-Based Practice; Psychomotor Competency, Training Program*

Introduction

Transforming the face of the nursing profession is a call for evidence-based quality improvement initiatives. Redesigning the healthcare practice and healthcare education underscores the need for restructuring frameworks that are effective, safe, and efficient. Nursing educators must respond to innovations, which are continually challenging the full conveyance on the promise of evidence-based practice (EBP)[1-2]. Likewise, competencies must focus on utilizing knowledge in clinical decision-making and producing research evidence on interventions that promote application and must be operated by individual and group of providers. Furthermore, this will lead to inter-professional linkages in improving delivery systems, and brings to the fore new competencies, beyond EBP[1,3.]

The Academy of Medical-Surgical Nurses (AMSN)[4] values EBP as a method to improve patient care and close the unacceptable gap between what we know and what we do in the care of patients. They added that the development of EBP is fueled by the increasing public and professional demand for accountability in safety and quality improvement in healthcare.

However, uncertainties exist about what exactly that level of engagement encompasses. The development of EBP competencies should be aligned with the evidence-based practice process through, continual evaluation across the extent of the nurses' practice, including technical skills in searching and appraising literature, clinical reasoning, problem-solving skills in making recommendations for practice changes, and the ability to adapt to the changing environments[5].

Therefore, the nursing curriculum should enable the acquisition and development of knowledge, attitudes, and skills in the integration of evidence-based practice. Where, knowledge would need to result in skills, attitudes, and appropriate changes in behavior. Despite its importance, evidence-based practice is not explicitly and effectively incorporated in the undergraduate nursing curriculum.

In the Philippines, the undergraduate nursing curriculum is regulated by the Commission on Higher Education (CHED). According to the CHED Memorandum No. 14 (CMO 14) series of 2009, which outlines the policies and standards for Bachelor of Science in Nursing (BSN) program in the Philippines,

a total of 3 units or credits (equivalent to 153 contact hours) is allocated for Nursing Research (NRes). However, reviewing the course specifications for both NRes 1 and NRes 2, EBP was only mentioned once during the dissemination phase[6]. Moreover, Burke et al.[7] posited that the typical nursing curriculum focuses on the process of nursing research and fails to comprehensively discuss the appraisal and utilization of research findings. EBP is commonly discussed as a separate, isolated course, making it difficult to interrelate with other nursing courses[7]. This specification therefore, highlights that although research competency is an expected outcome in the undergraduate curriculum, this outcome does not necessarily include the competency in conducting evidence-based practice (EBP).

Purpose

The aim of the study was to:

1. Assess the pre-test and post-test mean cognitive and psychomotor competency scores on EBP of the faculty members.
2. Determine the difference between the pre-test and post-test mean cognitive and psychomotor competency scores on EBP of the faculty members.

Method

Design overview: The study utilized a one group pre-test-post-test quasi-experimental design to determine the effectiveness of the EBP Training Program. The group is pretested for the independent variable, then received the treatment, and is post-tested to examine the effects of manipulating the independent variable on the dependent variable[8].

Sample and setting: The study was conducted in a selected school of nursing in Metro Manila, Philippines that is duly recognized by Commission on Higher Education (CHED) to offer nursing program. The participants included part-time and full-time nurse educators with at least 1-year hospital experience and a master's degree. The Dean, Assistant Dean, and other nursing administrators were excluded due to their administrative work and limited contact time with students.

In addition, a total of 13 participants participated in the study. According to Melynk, Gallagher-Ford, Long and Fineout-Overholt[9], studies involving evidence-based practice application, such as in the case of this study, does not necessarily involve a large population or samples. Such approach is utilized since these types of study does not aim for greater generalizability but rather, to address a prevailing practice issue[9].

Instrumentation: The study utilized questionnaire which are divided into three parts; respondents' information sheet, cognitive competency questionnaire and psychomotor competency questionnaire.

Respondents Information Sheet: The respondent's information sheet which profiled the respondent's age, gender, years of clinical experience, educational attainment, employment status, and clinical areas of expertise.

Cognitive competency questionnaire: The cognitive competency questionnaire is a self-made questionnaire composed of 25 items which assess the cognitive competency of the participants in the following topics of Evidence-Based Practice: Concepts of EBP, steps in EBP, Hierarchy of Research Evidence, P.I.C.O.T. Framework, and Searching for Evidence. The questionnaire used a mixture of multiple choice, enumeration, ranking, and matching type items according to the critical thinking skills level of Bloom's Taxonomy.

After face and content validation by panel of 3 content experts, an I-CVI and S-CVI/Average of 1.00 was computed[10]. In addition, a Kuder-Richardson Formula 21 of 0.91 was computed after the pilot test of 6 eligible participants.

Psychomotor Competency Rubric: The Psychomotor Competency Rubric was adapted from Melnyk., Fineout-Overholt, Feinstein, Sadler, & Green-Hernandez[11]. This rubric was used to evaluate and score the psychomotor competency of the participants in answering given clinical case scenarios.

In each clinical case scenario, participants were asked to write a focused clinical question to guide searching; list potential sources of information that will address their question; identify the level of evidence needed; describe the search strategy and techniques; and identify characteristics of the study that will determine relevance, validity, magnitude of the impact, and clinical significance of the study. The answers of the faculty members were graded using the

psychomotor competency rubric which has six (6) key areas: formulation of clinical guide question, search plan, search process, appraisal of evidence, synthesis of evidence, and formulation of clinical decision or recommendations for clinical practice. The six (6) assessment areas were focused on the application of the different steps of Evidence-Based Practice.

Since the study has a pre-test and a post-test, two clinical case scenarios were developed. One clinical case scenario was answered during the pre-test, while the other clinical case scenario was completed during the post-test.

Akin to the Cognitive Competency Questionnaire, it underwent face and content validation which yielded an I-CVI and S-CVI/Average of 1.00 after 2 rounds of validation[11]. A Cronbach's alpha of 0.75 was also computed after pilot testing among 6 eligible participants. The scores in each clinical case scenario was graded using the rubric that ranges from 0 to 18.

Data Collection Procedures

The researcher secured an ethical clearance from a university ethics review committee prior to the conduct of the study. In selecting the participants, the researcher first listed down all CHED-recognized nursing schools in Metro Manila and randomly-selected 10% of them through fish-bowl technique. In Metro Manila, there were 38 CHED-recognized (non-Center of Excellence) nursing schools. Thus, four (4) schools were randomly-selected. From these schools, the school with the most number of faculty members were selected as the site for the data collection. Prior to the conduct of the EBP Training Program among the participating faculty members, the researcher first administered a pre-test questionnaire to determine the baseline characteristics and mean cognitive and psychomotor competency on EBP among the participants. Then, the training program was conducted for 8 hours with 4-hours didactics and 4-hour practicum session. After the training program, an evaluation was immediately done through a post-test and each participant was given a certificate of participation.

Data Analysis

The data were analyzed using Stata Statistical Software, Version 13, College Station, TX: Stata Corp LP, with a p-value of 0.05 was considered statistically significant. Specifically, mean, standard deviation, frequency, and percentage for descriptive statistics and Repeated Measures Multivariate Analysis of Variance (RM-MANOVA) for inferential statistics were utilized.

Findings

The table below illustrates the comparative analyses for the pre-test and post-test mean cognitive and psychomotor competencies of the participants after receiving the Evidence-Based Practice Training.

Table 1: Within-Group Comparison of Cognitive and Psychomotor Competency Scores (N = 13)

Variables	Pre-Test		Post-Test		F-value	p-value (Two-tailed)	Partial η^2
	Mean (SD)	Interpretation[a]	Mean (SD)	Interpretation[a]			
Cognitive Competency	8.85 (± 2.91)	Fair	14.46 (± 4.96)	Good	9.59	*0.0093	0.444
Psychomotor Competency	0.23 (± 0.60)	Poor	0.69 (± 1.55)	Poor	0.89	0.3634	0.069

Multivariate Test: Pillai's = 0.45, F=4.44, p=0.0386

[a]Cognitive Competency Scores are categorized as poor (scores ≤6), fair (scores 7 – 12), good (scores 13 – 19), and excellent (scores ≥20). Psychomotor Competency Scores are categorized as poor (scores ≤4.49), fair (scores 4.50 – 8.99), good (scores 9.00 – 13.49), and excellent (scores ≥13.50).

*Significant at ≤ 0.05 level

†Significant at ≤ 0.01 level

As presented in Table 1, the pre-test mean cognitive competency score of the participants was fair, with a mean of 8.85 (± 2.91) with the possible score range of 0 to 25 using the 25-item EBP Knowledge Questionnaire. On the other hand, the pre-test mean psychomotor competency score was poor, with a mean score of

0.23 (± 0.60) which ranges from 0 to 18 using the EBP Rubric. From these values, it can be noted that the participants had fair cognitive and poor psychomotor competencies about Evidence-Based Practice.

Focusing on the post-test scores, it can be gleaned that the mean post-test cognitive competency score of the participants became 14.46 (± 4.96) after the EBP Training Program. It can also be noted that the mean post-test psychomotor competency score slightly increased to 0.69 (± 1.55) after the intervention. Although the post-test cognitive competency score can be interpreted as good, the presented post-test psychomotor competency score remained poor.

Univariate analysis of the mean cognitive competency scores yielded an *F*-value of 9.59 and a computed *p*-value of 0.0093. It can also be noted that the computed partial eta squared was 0.444, which denotes that the 44.40% of the change in the cognitive competency scores was attributed to the EBP Training Program (Cohen, 1988).

On the other hand, univariate analysis of mean psychomotor competency scores yielded an *F*-value of 0.89 and a computed *p*-value of 0.3634. It can also be noted in Table 1 that the computed partial eta squared was 0.069, which denotes that the 6.90% of the change in the psychomotor competency scores was due to the EBP Training Program.

Discussion

Focusing on the pre-test cognitive and psychomotor competency scores, it can be noted that the participants had fair and poor competencies in these areas of EBP. Similar to the results of Iovu and Runcan[12] and Humphrey[13], participants had some or little knowledge about EBP. Such finding may be attributed to their exposure in the educational setting, being nurse educators, where EBP is a common concept. Despite being nurse educators with background in research, the concept of EBP is rarely discussed comprehensively in the undergraduate nursing curriculum. As a matter of fact, EBP is a nursing research topic that is commonly just tackled but not comprehensively discussed in the undergraduate curriculum. Likewise, the participants, being nurse educators in the Philippine setting, are expected to have completed at least a master's degree in nursing or any allied health profession[14]. This educational requirement may have exposed the participants to the different concepts or steps of EBP such as searching for research articles and appraising research evidences' validity and reliability[14].

In a different light, the results of the study found that the EBP Program facilitated the improvement in cognitive competency. From a poor cognitive competency, it improved to a good level (M=14.46, SD=4.96) after the EBP Training Program. However, the program was not sufficient to improve the psychomotor competency of the nurse educators despite the intervention. This result may be attributed to several reasons which are inherent to the characteristics of the EBP Training Program.

The EBP Training Program was a combination of a 4-hour didactic session and a 4-hour practicum session. The 4-hour didactic session served as the educational intervention component of the EBP Training Program. According to several studies, educational interventions such as lectures, workshops, and seminars are excellent means of improving knowledge-based deficits in a target population[13,15-17]. These approaches facilitate the transfer of knowledge to the recipients by addressing the nurturing concepts, notions, and perception about a given topic. In the study of Hart et al.[16], a 3-month module-based training program on evidence-based practice improved the knowledge of Registered Nurses and Practical Licensed Nurses.

Similarly, Manspeaker et al.[17] reported a statistically significant increase in the EBP knowledge of students on EBP after administering the Evidence-Based Teaching Model, which resulted to an effect size of 72.00% and mean difference score of 1.14. Shuval et al.[15] also reported a statistically significant increase in the knowledge scores of medical doctors after administering their Evidence-Based Medicine educational intervention which focused on the processes of evidence-based practice. The result of the study also showed that the EBP Training Program attributed 44.40% of the change in the cognitive competency of the participants, a result consistent with the study of Manspeaker et al.[17]. These evidences and presented results support the big effect of the EBP Training Program in improving the cognitive competency of nurse educators on EBP[18].

On the other hand, the results showed that the intervention did not cause a statistically significant change in the psychomotor competency. This finding

is contradictory with published literature showing that educational interventions on EBP can improve EBP skills[15-17]. However, this result may be explained by the limited time and practice that the participants had to enhance their EBP psychomotor skills.

Conclusions

The EBP Training Program largely improved the cognitive competency in EBP of faculty members. However, the training program alone was not sufficient to cause a significant effect to the psychomotor competency in EBP of the nurse educators.

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