

Developing Competencies of Evidence-Based Practice among Community Health Nursing Educators through Implementing Journal Club

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Abstract Introduction: Evidence-based practice (EBP) has become the standard expectation for all practitioners in healthcare nowadays. Nursing educators are in charge of training future nurses to integrate the EBP into clinical practice for improving healthcare outcomes. Journal club (JC) as an educational strategy promotes the essential knowledge and skills of EBP. **Aim:** Investigate the impact of implementing a journal club on developing evidence-based practice competencies among community health nursing educators (CHNE). **Method:** A quasi-experimental research design was conducted among 32 CHNE at the Community Health Nursing Department, Faculty of Nursing Mansoura University, Egypt. Four structured tools were used for data collection. **Results:** The total score of knowledge and skills revealed significant improvements. The improved knowledge and skills were mainly observed in formulating questions, searching for literature, and critically appraising research articles. These improvements retained up to 6 months after attending journal club sessions. Insignificant statistically difference was found in changing behavior with regard to the adoption of EBP in regular work, with the exception of seeking information from the Cochrane database and discussing scientific researches with each other. **Conclusion:** Significant improvements in knowledge and skills of EBP was revealed, however, no statistically significant change was found in accustoming EBP in regular work after attending journal club. Overall, the degree of improvement demonstrated in this study might provide sufficient evidence to support the journal club as a medium for facilitating the learning of EBP.

Keywords: evidence-based practice, journal club, community nursing educators

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1. Introduction

Evidence-based practice (EBP) is a crucial pillar and integral part of a dynamic healthcare system that facilitates going along with the acceleration in scientific knowledge, and technological innovation [1,2]. Application of EBP ensures the consistency in clinical decisions, increases the cost-benefit ratio and equity of delivered healthcare [3,4,5,6]. The process of EBP begins with research and ends with the practice that has extended benefits to patients, healthcare professionals and healthcare systems as a whole. Accordingly, implementing of EBP leads to reliable and high-quality healthcare [7,8]. Meanwhile, nursing practice is the core of the dynamic healthcare system, the current nursing literature is emphasizing on practicing and educating nursing on the basis of EBP [2,9].

Because nursing academic institutions formulate the character of upcoming nursing practice, its curricula should incorporate EBP [10,11]. In addition, nursing

educators are mandated for providing nursing students with core knowledge and skills that enable them to practice EBP in their future career [12,13,14,15]. Therefore, the academic nursing institutions and their staff should demonstrate the role model in adopting the EBP approach in their work with students [16]. Since educator competency is a significant element of the learning process, nursing educators are required to be competent in EBP and show accountability for this approach [11,17,18].

EBP approach incorporates making the decision based on valid knowledge that is integrated with clinical expertise and patient preference. EBP skills include formulating answerable questions, tracking down scientific materials, and appraising the different types of scientific materials. The obtained valid bulk of knowledge should be correlated to the clinical expertise and patient preference to make an informed decision. Lastly, skills of EBP involve competencies of application of evidence-based care and evaluating the outcomes [19,20]. There are insufficient studies that tackled the competencies of academic educators on EBP and their perception toward

their own skills of EBP [20]. In Egypt, few studies revealed that academic nurse educators need to be committed to the principles of EBP [21].

Appropriate adult learning modalities would be used to reinforce the competencies of academic educators in EBP. Journal club is one of the learning modalities that involve adult learning process [22,23,24]. A journal club is an educational meeting of a group who could have similar or diverse specialties. They meet to critically appraise a research article for its applicability to practice in a shared area of expertise [25-30]. As well, a journal club is used for teaching critical appraisal skills, and/or fostering the adoption EBP [31,32,33,34]. Journal club is a recommended educational method aid in acquiring essential knowledge and skills of EBP. Besides, it promotes attitudes toward EBP approach and motivates participants to adopt this approach in their work [17,35].

Journal club includes a variety of activities that keep learners energetically and actively participating in the teaching-learning process. What is more, journal club includes forms of participatory learning, as it provides chance to share the learners' experiences and relating the research findings to their field practice [37,38,39,40].

1.1. The Aim of the Study

Investigate the impact of implementing journal club on developing evidence-based practice competencies among community health nursing educators.

1.2. Research Hypotheses

1. Implementing a journal club will develop evidence-based practice competencies among the community health nursing educators.

2. Implementing a journal club will enable the community health nursing educators to adopt the evidence-based practice in their work.

2. Method

2.1. Study Design

A quasi-experimental research design was utilized to carry out this study.

2.2. Setting

The study was carried out at the community health nursing department, Faculty of Nursing, Mansoura University, Egypt.

2.3. Subjects and Sampling

A convenience sampling technique was used to involve all available CHNE at the community health nursing department (n= 32) which involved: twenty-two demonstrators, six assistant lecturers, and four lecturers.

2.4. Study Tools

Tool I: A structured self-administered questionnaire was used to gather demographic and academic data of the

CHNE including age, sex, educational level, academic ranking, certified specialist, research activities, and years of experience in their academic setting.

Tool II: A structured self-administered questionnaire was used to assess the knowledge of CHNE as regards evidence-based practice (EBP) pre, immediate post-test, and post-test after 6 months of implementing journal club. The questionnaire was classified into five categories covering (148) questions related to definition, importance, and benefits of evidence-based practice. In addition to steps of EBP, which include formulating the clinical question; searching efficiently for the best available evidence; critically appraising the evidence; applying and disseminating the evidence. One mark was awarded for each correct response. The total knowledge score was (148 marks). The mean score was also calculated. The knowledge level was categorized into three levels. Poor level = scores less than 50% of total scores (<74 marks). Fair level = scores 50% to < 75% of total scores (74 to less than 111 marks) and good level = scores more than 75% of total scores (more than 111 marks).

Tool III: An observational checklist in rubric form was designed based on related literature [40,41,42]. The checklist was used for assessing the skills of CHNE in applying steps of evidence-based practice which included developing answerable questions, appropriate searching strategy, and critical appraisal. The checklist was classified into seven categories included 61 items. All items required a response on 3 points Likert- rating scale with 3 continuums (competent, improving, and incompetent) according to determined criteria for acquiring skills in each step of EBP. A scoring system was used to quantify their skills. Three marks were given to competent, two marks were given to improving, and one mark was given to incompetent that made up a total score of (183) marks. Incompetent = scores less than 50% of total scores (0-less than 91.5 marks). Improving = scores 50% - less than 75% of total scores (91.5 - less than 137.25 marks). Competent = scores \geq 75% of total scores (137.25 marks and more).

Tool IV: Adoption of evidence-based practice self-administered structured questionnaire. EBP adoption was referred to the extent to which the key steps of EBP were integrated into day-to-day practice including (searching for research findings within a specialized field, reading research reports in professional journals, discussing research findings with academic members at other specialties, integrating the evidence with clinical expertise and patients' values and preferences, and evaluating the outcomes of practice). The questionnaire was composed of eight statements requiring a response on 3 points Likert-rating scale with 3 continuums (often, occasionally, and rarely). Each statement was given a score of (2) for often, (1) for occasionally and (0) for rarely [43,44].

Content validity of the study tools was tested by submitting the tools to a jury of five experts in the field of "Community Health Nursing and evidence-based practice". Face validity was tested by conducting a pilot study on 10% of the study sample (n= 3) who were not included in the study. Based on the collected data, the necessary modifications were done, some questions were added, and others were clarified or omitted.

2.5. Study Implementation Process

2.5.1. Planning and Implementation Of Journal Club Sessions

The journal club sessions were planned with a clear aim, specific objectives, as well as relevant content and educational strategies. The journal club sessions were composed of eleven sessions; each session was held for two hours in the educational facilities of the faculty that allowed the CHNE to work on computers with an internet connection.

A pilot study was conducted to evaluate the clarity, applicability, and reliability of the journal club session plan and to estimate the approximate time required for implementing these sessions. Three academic staff members in the Community Health Nursing Department who are experts in evidence-based practice approach participated in the pilot study.

The journal club sessions were focused on developing the knowledge and skills of CHNE on the five steps of EBP. These sessions were composed of formulating searchable questions, tracking down the evidence, appraising the evidence, applying and disseminating the evidence (Table 1).

The journal club was scheduled at a time that was not conflicted with the department courses. Details about journal club included date and time, place, topics, and duration of each session were distributed among the academic staff two weeks earlier than the meeting.

The journal club was introduced to thirty-two CHNE with prior or little knowledge of the evidence-based practice (EBP) and its principles as a series of 11 sessions. The CHNE were divided into six groups. Each group involved 5-6 participants with similar qualifications. One facilitator was assigned from each group to collaborate

in distributing the activities among the group.

The journal club was implemented in this study through six phases. Phase 1 was implemented throughout four sessions; in which the participants exposed to the PICO/T trend (P: population or patient; I: intervention; C: comparison; O: outcome; T: time). They learned the foreground questions and deriving highly explicit clinical questions from clinical problems, including questions about therapy, diagnosis, prognosis, or harm. In the session, the researchers presented clinical scenarios and asked the participants to frame focused and answerable questions in a structured PICO/T format. Subsequently, the participants were asked to settle on the best study design for answering the formulated questions.

Phase 2 was dedicated to developing the searching skills throughout two sessions. The participants were asked to utilize the PICO/T questions to develop searching strategies. A hand on searching was carried out in different databases such as the Cochrane, National Guideline Clearinghouse and PubMed.

Critical appraisal was taught in phase 3 by using critical appraisal worksheets during the 7th to the 9th sessions. The critical appraisal of evidence for validity, reliability, and applicability was discussed. The CHNE were taught to appraise the validity of randomized clinical trials, clinical practice guidelines, systematic review, and meta-analysis. The critical appraisal included: the suitability of the type of study to the type of question, the design of the study, sources of bias, the reliability and validity of the outcome measures chosen, and the applicability of the results. The critical appraisal was accomplished using SIGN checklist adopted from Scottish Intercollegiate Guideline Network that appropriate to the study design and iCAHE Guideline Quality Checklist [45,46].

Table 1. Content of journal club's Sessions

Journal club phases	Sessions	Content
Phase 1	1 st session	Introduction to evidence-based practice (EBP) - Meaning and benefits of EBP - Steps of EBP - Foreground and background questions
	2 nd to 4 th session	Formulation of answerable questions - PICO/T format - Types of questions - Hierarchies of evidence - Types of study design - The best study to answer each type of question
Phase 2	5 th and 6 th sessions	Tracking down the evidence - Different sources of the information database - Searching strategies
Phase 3	7 th and 8 th sessions	Critical appraisal - Tools of critical appraisal - Critical appraisal step - Common statistical terms - Basic criteria affecting the internal and external validity of primary and secondary researches
Phase 4	9 th session	- Levels and grade of evidence
Phase 5	10 th session	Synthesis of evidence - Evidence table - Method of evidence application
Phase 6	11 th session	- Method of evidence dissemination

In phase 4, CHNE were supported to assess the level of evidence by using the critically appraised topic (CAT) and to differentiate between the quality of research and the level of evidence. In phase 5, the CHNE designed an evidence table that described the main information of each scientific article, and after that, they summarized the results of researches they had collected and appraised. The last phase ended with journal club presentation of the problem, formulated questions, search strategies, critical appraisal of the retrieved article/s, and was followed by a discussion on how the findings could be applied to specific patients.

2.6. Data Collection

Data were collected pre-journal club sessions, immediate post-journal club sessions and follow up assessment after six months to assess the level of improvement in the knowledge and skills of CHNE.

Before starting each session, tool II was used to assess the knowledge of CHNE related to the session content, as well as immediately after each session and after six months.

Concerning skills assessment, the CHNE were asked to work on activities that were related to session content. These activities included pre-structured clinical questions and scenarios; the template for asking PICO/T questions; literature search strategy; randomized controlled trials and systematic reviews articles; clinical practice guidelines; critical appraisal worksheets; evidence table and CATs template. The same activities were used for skills immediately evaluated after attending each journal club session. Regarding follow up of the skills in EBP, it was accomplished as well by using the same activities with different scenarios. The skills were assessed by using tool III.

Adoption of using EBP in regular work among CHNE was accomplished by using tool IV once before starting journal club sessions and once after 6 months.

2.7. Ethical Considerations

Ethical approval was obtained from the Faculty of Nursing Research Ethics Committee, Mansoura University to conduct the study. Verbal informed consent was obtained from the CHNE after illustrating the aim of the study and ensuring confidentiality of data. What's more, the participants were informed about their right to withdraw from the study at whatever time without giving any reason.

2.8. Statistical Analysis

Data were sorted, coded, organized, categorized and then transferred into specifically designed formats. Analysis performed using SPSS (Stands for Statistical Product and Service Solutions) version 21. Categorical variables were described using the number and percent. Continuous variables were presented as mean± SD (standard deviation). Repeated measured analysis of variance (RM-ANOVA) was used to compare means in different follow-up duration. A statistical test with a p-value ≤0.05 was considered statistically significant.

3. Results

The mean age of the CHNE was 29.78±5.44 years, most of them (93.8%) were females, and (71.9%) of them were clinical demonstrators who completed a bachelor degree only. More than half of them (56.2%) previously attended a training session(s) on tracking down evidence and (15.6%) attended a session about critical appraisal as reflected in [Table 2](#).

Table 2. Distribution of the community health nursing educators according to their demographic and academic data

Academic data	N= (32)	%
Age ($\bar{X} \pm SD$)	29.78 ± 5.44	
<25 years	3	9.4
25-30 years	16	50
>30 years	13	40.6
Sex		
Female	30	93.8
Male	2	6.2
Years of experience as a faculty member ($\bar{X} \pm SD$)	1.72 ± .81	
<5 years	16	50
5- <10 years	9	28.1
≥10 years	7	21.9
Qualification		
Bachelor degree	23	71.9
Master degree	5	15.6
Doctorate degree	4	12.5
Academic ranking		
Clinical demonstrator	23	71.9
Assistant lecturer	5	15.6
Lecturer	4	12.5
Attending prior training session/s in evidence-based practice		
Attend session(s) in tracking evidence	18	56.2
Attend session(s) in critical appraisal	5	15.6

Table 3. Mean difference in knowledge pre, immediate and post six months follow-up of journal club sessions

Knowledge categories	Pre-test	Immediate post-test	Post-test after 6 months	% of change	F test	P-value
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$			
The concept of evidence-based practice (5 marks)	2.62±1.18	4.47±0.76	4.37±0.79	66.8%	61.17	0.000
Asking answerable questions (52 marks)	21.90±11.99	48.62±3.28	48.43±3.34	121%	179.59	0.000
Acquiring research (31 marks)	8.97±4.09	27.41±3.35	27.12±3.22	202.3%	134.19	0.000
Critical appraisal (49 marks)	10.19±5.61	41.03±7.98	40.94±6.91	301.8%	170.06	0.000
Applying and disseminating evidence (11 marks)	3.53±3.22	10.37±1.73	10.81±2.16	205%	123.78	0.000
Total knowledge score (148 marks)	47.21±31.31	131.90±13.02	131.68±12.06	178.8%	228.32	0.000

F: Repeated measures ANOVA. P: significance. * Significant ($p \leq 0.05$).

Table 4. Mean difference in skills of evidence-based practice and the total skills pre and post attending journal club sessions

Evidence-based practice skills	Pre-test	Immediate post-test	Post-test after 6 months	% of change	F test	P-value
	$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$			
Asking answerable questions (36 marks)	12.94±3.69	31.37±4.95	29.78±5.08	130	331.02	0.000
Determining the best study design (18 marks)	6.50±1.29	15.84±2.94	15.31±3.13	135.5	264.85	0.000
Acquiring research (36 marks)	14.19±4.34	34.44±3.66	32.15±6.40	126.5	243.57	0.000
Appraising RCTs (33 marks)	11.12±0.49	27.87±3.39	24.34±4.57	118.8	295.05	0.000
Appraising systematic review and meta-analysis (24 marks)	8.12±0.49	22.31±2.50	20.46±3.48	151.9	425.51	0.000
Appraising clinical guideline (24 marks)	8.75±2.95	21.96±3.34	20.71±3.76	136.6	256.98	0.000
Summarizing and synthesizing evidence (12 marks)	4.43±1.72	10.12±1.33	9.71±1.59	119.2	259.87	0.000
Total skills score (183 marks)	66.1±14.6	163.9 ± 17.2	152.5± 22.6	130.7	519.02	0.000

F: Repeated measures ANOVA. P: significance. * Significant ($p \leq 0.05$).

Table 5. Distribution of the community health nursing educators according to their adoption of evidence-based practice approach pre and post six months of attending journal club sessions

Items	N = 32				χ^2	P-value
	Pre-sessions		Post 6 months			
	N	%	N	%		
Incorporate evidence-based practice in regular work activities						
Rarely	25	78.1	17	53.1	4.99	0.082
Occasionally	5	15.6	8	25		
Often	2	6.2	7	21.9		
Update knowledge of regular work practice						
Rarely	14	43.8	6	18.8	4.78	0.092
Occasionally	10	31.2	13	40.6		
Often	8	25.0	13	40.6		
Discuss finding of published research with colleagues						
Rarely	19	59.4	14	43.8	5.86	0.05
Occasionally	10	31.2	7	21.9		
Often	3	9.4	11	34.4		
Seek information from MEDLINE/ PubMed						
Rarely	9	28.1	7	21.9	4.70	0.095
Occasionally	10	31.2	4	12.5		
Often	13	40.6	21	65.6		
Seek information from CINAHL						
Rarely	14	43.8	10	31.2	3.94	0.139
Occasionally	13	40.6	10	31.2		
Often	5	15.6	12	37.5		
Seek information from Cochrane database						
Rarely	19	59.4	14	43.8	5.86	0.05
Occasionally	10	31.2	7	21.9		
Often	3	9.4	11	34.4		
Seek information from secondary sources						
Rarely	21	65.6	11	34.4	8.58	0.014
Occasionally	8	25.0	9	28.1		
Often	3	9.4	12	37.5		

χ^2 : Chi-square test, $P \leq 0.05$.

Table 3 illustrates the mean difference between knowledge categories as well as total knowledge score pre and post attending journal club sessions. The total knowledge score was increased by 178.8% after 6 months of attending of the journal club sessions. The results revealed significant differences between mean scores of the pre-test and mean scores of the follow-up-test after 6 months.

Findings in Table 4 illustrate significant differences in mean scores of all skills in EBP pre and post attending journal club sessions. The mean scores of each skill were increased post attending the journal club sessions. The total mean scores of evidence-based practice skills remained increased by 130.7% after 6 months of attending the journal club sessions.

Table 5 displays an insignificant difference in adopting EBP after 6 months of attending the journal club sessions in most of the assessed items. The percentage of CHNE who often incorporate evidence-based practice in their regular work activities increased from 6.2% pre attending the journal club session to 21.9% post six months. Moreover, 40.6% of CHNE accustomed to update their knowledge of regular work practice more frequently after attending journal club sessions compared to 25% before that. While 34.4% of CHNE dedicated for discussing published research with colleagues constantly after 6 months compared to 9.4% before attending journal club sessions with a significant difference. However, follow up for adoption of practicing EBP after six months concluded that CHNE became more frequently seeking information from the Cochrane database; the difference was significant.

4. Discussion

Evidence-based practice (EBP) became a crucial approach for transforming knowledge into practice to ensure high-quality healthcare [47,48]. Providing nursing students with core EBP knowledge and skills is an effective strategy that enables them to implement best practices in their future career [14].

Nursing educators should be equipped with the competencies of EBP to transform these skills to their students for the purpose of making informed healthcare decisions [15,49]. They are required to be skillful in stating answerable questions, tracking down and appraising different types of researches as well as synthesizing extracted data for making decisions based on valid knowledge. Additionally, they should gain skills for implementing evidence-based care and evaluating the outcomes [20].

Continuing education for the nursing educators on the EBP process is significant to advance their EBP skills and strengthen their competencies in teaching EBP [10]. There are a number of strategies that can be used to accomplish these needs. One of these strategies is to initiate and integrate a regular journal club into the professional development time of the workplace environment [50]. The aim of the current study is to assess the impact of implementing a journal club on developing evidence-based practice competencies among CHNE.

The current study revealed significant gains in the EBP knowledge and skill of CHNE who attended the journal

club sessions. The CHNE gained knowledge and skills in all steps of EBP, principally in acquiring research and critical appraisal of the tracked down researches. The findings of this study are in accordance with other studies that implemented a journal club to teach EBP skills. These studies found that journal club maintains EBP knowledge and skills among different healthcare professionals including nurses [32,51,52,53,54,55].

Many authors confirmed the role of a journal club as a teaching strategy in acquiring and/or strengthening skills of EBP. They found a strong correlation between improved competency in EBP skills and sustainability of EBP application in regular work activities [50,51,53,56].

Concerning adoption and sustained practice of EBP approach, the present study reported a significant improvement in seeking information from the Cochrane database and secondary sources. These results could be interpreted on the highlight of Honey & Baker [52] who reported that journal club may develop individual reading habits and critical appraisal skills. The reported improvement in skills of appraising systematic reviews among CHNE may interpret the improved behavior in seeking information from the Cochrane database; which is the main source of systematic reviews. Additionally, Laaksonen, Palta, Schantz, & Ylönen, [17] and Gardner, et al., [56] found that journal club not only foster the searching and appraising skills but also improve the communication of scientific knowledge with colleagues. This opinion is significantly reflected in the present study, in which discussing scientific research was significantly improved among CHNE post attending the journal club.

On the other hand, changing usual practice behavior requires a lot of time and strategic planning on the organization level to make an acceptable change [57]. Moreover, journal club alone was found to promote knowledge and using of EBP in the first-line workforce but not maintain sustainability unless it was aligned with organizational vision [58,59]. Thus, the participants of the current study neither incorporated EBP nor costumed updating knowledge in their regular work attributable to the absence of organization policy for applying EBP in regular work of educators. These results are in harmony with Lizarondo et al., [32] who reported an insignificant increase in the adoption of EBP approach in regular work.

5. Conclusion

Participation in evidence-based practice (EBP) journal club led to significant improvements in knowledge and skills of EBP among community health nursing educators (CHNE). They became knowledgeable and more skillful in formulating questions, searching for literature, critically appraising research article, and applying best evidence in clinical practice. These improvements in knowledge and skills retained up to 6 months post attending journal club sessions. However, no statistically significant change in EBP adoption was found among CHNE post attending journal club sessions. Overall, the degree of improvement demonstrated in this study provides sufficient evidence to support the journal club as a medium for facilitating the learning of EBP.

6. Recommendations

1. A structured journal club should be used on a regular basis for teaching evidence-based practice at the academic setting.
2. Journal club should be integrated into the academic organization policies to improve the practice behavior change.
3. Adoption of using EBP in education should be included in the academic organization policies.

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