



Experiences of nursing students of evidence-based practice education according to rogers' diffusion of innovation model: a directed content analysis

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Abstract

Introduction: Evidence based practice (EBP) education is essential in promoting of clinical care, but an effective educational strategy for teaching EBP in nursing faculties is not available. The aim of this study was to explore the experiences of nursing students of EBP Education according to Rogers' Diffusion of Innovation Model.

Methods: This qualitative study was carried out using a directed content analysis method and purposeful sampling. Data were collected until saturation by fourteen semi-structured face-to-face individual interviews and two focus group discussions with nursing students from two nursing faculties in Tehran, Iran. Rogers' Model was used in this study.

Results: Data were classified into five themes and 11 categories according to the Rogers's Model. Themes and main categories were knowledge (educational enrichment, new strategy for education), persuasion (internalization of education, improvement of motivation), decision (acceptance, use in the future), implementation (objectivity, consolidation of learning) and confirmation (learning and teaching, achieving a goal, self-confidence).

Conclusions: EBP Education, based on the teaching strategy of Rogers's Model, leads to an improved EBP learning. All the necessary steps for a better education of it are included in this educational approach which can be used to teach any new subject like EBP.

Keywords: Evidence based practice; Education; Nursing; Baccalaureate

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Introduction

Evidence-based education (EBP) is a process, which is needed in clinical decision-making and response to clinical questions (1). EBP is essential in updating nursing knowledge. It has been accepted as the best approach to health care delivery (2). Therefore, the improvement of patient care affects the nursing graduates to have

the skills to incorporate EBP with current changes to the health care (2, 3). Now, preparing nurses who can provide effective care in a complex and changing setting is an international challenge (4).

However, many nurses are unable to determine, interpret and apply the best evidence in their practice (5-8) and a considerable gap exists between research evidence and the current

nursing practice (5, 9). Therefore, there has been a lot of emphasis on teaching EBP skills in the nursing curricula (8, 10) because using the best scientific EBP is the bridge of the existing gap between research and current practice (11).

Nevertheless, nursing instructors have many challenges when it comes to finding the most effective teaching approach to prepare the nurses for EBP (10, 12, 13). Different approaches have been used to teach EBP, such as workshop (14-17), seminar, journal club (18-20), computer based educational modules (21), distant learning, DVD, didactic classroom teaching (22), role modeling (23), etc. Thus, requiring the students to find articles pertinent to the clinical or seminar topic, criticize the article and determine its usefulness in answering a clinical question has been recommended by many (10, 24). Although available literature in the field of nursing education have discussed different approaches, many of them remain academic exercises and fail to make necessary changes in real practice by the nurses. Therefore, it is crucial to employ approaches that bring education into the clinical setting and results in changes in the nursing practice (25). Evidence-based teaching should be moved from classrooms to clinical practice to achieve improvement in substantial outcomes.

Creative approaches are currently being used to help the students obtain the required EBP skills (26). Rogers's diffusion of innovation (DOI) model includes all the necessary steps to teach the new concept and accept it (27); this model was chosen as the theoretical framework of the current research.

Rogers's Model has been applied to implement new practices in different clinical settings, for example to explore nurses' perception toward research-based practice, as a conceptual framework for explaining the process of research utilization in nursing (25).

DOI model includes innovation-decision process (teaching strategy) which has five steps. These steps consist of knowledge, persuasion, decision, implementation and confirmation. In the beginning, the individual acquires the necessary knowledge about an innovation and then forms an opinion in this regard. This stage is influenced by characteristics of the innovation. After that, the individual decides to adopt or reject the innovation. He/she then implements the innovation upon adoption. In the confirmation stage, the person searches for further information about its advantages or disadvantages.

Iranian studies show that EBP is a new concept in nursing education in Iran and the extent of its use in clinical practice is low. Therefore, further

studies are needed on many aspects of education and its adoption (5, 15). In this study, EBP, as innovation, is considered because an effective educational strategy is not available for teaching of EBP in nursing schools in Iran. The current study aimed to explore experiences of nursing students of EBP education according to Rogers' Model after teaching EBP by using educational strategy based on current model.

Methods:

Design: The present study is a descriptive qualitative research. A directed content analysis approach was conducted for gathering the data and analyzing the experiences of Iranian nursing students regarding EBP education based on the educational strategy of DOI.

Participants: Research participants consisted of 28 nursing students. Inclusion criteria were the students who had experiences of this strategy approach and were willing to describe their experiences. They were selected purposefully from two schools of nursing in bachelor level.

Data gathering: Fourteen in-depth interviews and two focus groups were used to gather the data. Interviews were conducted in a private place in the schools. This is a common method for data collection in qualitative research. The participants were asked to describe their own experiences and perceptions of EBP education based on DOI. Examples of the questions used in the interviews are as follows: "What is your experience of EBP education based on the Model?", "Could you talk about the process of acquiring knowledge in the method?", "What motivated you for learning?", "How have you been affected by this strategy?", "How do you feel about yourself in the implementation stage?" and "How do you feel about yourself in the confirmation stage?"

Open-ended questions to be used for data collection may be prepared according to the pre-specified categories. Pre-specified categories may also be used for data analysis in directed content analysis (28). The average duration of each interview with the focus group members was 20-40 minutes. Interviews continued until data saturation. One interviewer conducted all the interviews.

Data Analysis: Data analysis was conducted concurrently with data collection. Data from interviews were audio-taped, transcribed verbatim and analyzed adopting a directed content analysis with DOI as a guide for data interpretation. The aim of the directed content analysis was to accredit and develop the theory used in the research so that the theory helps

specify the key concepts or variables as categories. This kind of content analysis is an appropriate diachronic approach whose aim is to describe the phenomenon and the present theory (29).

After the data collection process and reading the text of each interview as a whole, an interpretive summary was developed. The analysis focused on the data that supported the conceptual constructs of the Rogers' Model. Then, codes, subcategories and categories extracted from the texts were placed in the themes based on the constructs of educational strategy of the Model (knowledge, persuasion, decision, implementation and confirmation).

Trustworthiness: Four criteria of credibility, dependability, transferability and conformability were employed to increase the rigor (29). Continuous observation, long involvement with research issues, communication and good interaction with the participants and using triangulation for data gathering were employed to promote the rigor of the research. Member check was done with six participants and external check was done with supervisors and two PhD students familiar with qualitative research. In addition, the methods of the research and sample characteristics were defined in detail.

Ethical consideration

This study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences. The researcher informed all the participants of the objectives of the study. Data from recordings and written materials were stored securely. Further permission and written consents were obtained from all participants.

Results

Interviews were performed with 28 nurses with an average age of 21-26. After the data analysis, 1231 codes were extracted. All codes were classified into 32 subcategories, 11 categories and 5 themes in accordance with Rogers' Model. Themes from the model were knowledge, persuasion, decision, implementation and confirmation (Table 1).

-Knowledge: This theme consisted of two categories: education enrichment and a new strategy for education. The participants believed that EBP education had led to their active and effective learning and had increased the quality of education. A participant asserts that EBP education has led to hypothesizing in the expression of the problems and activated the students in learning. She expresses her experience as follows:

“Through evidence-based education, we can

acquire knowledge, hypothesize instantly and face a situation where the patient comes and asks a question. As an educated nurse who is working here, I know what to do for the patient” (Participant: 1). They asserted that the step-by-step and systematic nature of this educational model as well as the attractiveness of the educational method which is due to its divergence from a routine and its challenging nature has led to its higher effectiveness compared with previous methods; the present educational strategy could transfer the knowledge of EBP to them. A participant said *“Many of the topics were unclear to my classmates and me, but when you took us forward step by step, you helped us to analyze the problems on our own. It was really good. When we proceeded step by step according to the knowledge you gave us, we succeeded easily”* (Participant: 14).

-Persuasion: This theme had two categories: the internalization of education and the improvement of student's motivation. The subcategories consisted of the deepening of education with the model, creating a clinical mentality in students and being encouraged by the model. According to the participants, the internalization of EBP can serve as a guarantee for adherence to it in the future. They asserted that one should first become aware of the characteristics of EBP like its usefulness so that one feels the need for learning it and has more motivation. Two of the participants said that:

“I think it is very important to know how to encourage the students from semester 1 or 2 when the internship courses begin. If one knows that this can help him, it's very important to him and he becomes encouraged” (Participant: 12).

“If one sees something himself and it becomes an objective that will become an unconscious practice for him and can do it automatically. I like to work on any problem using the evidence-based method because I see how good it was when I

Table 1: Theme and categories of EBP education perceived in nursing students based on Rogers's diffusion of innovation model

Themes	Categories
Knowledge	Educational enrichment
	New strategy for education
Persuasion	Internalization of education
	Improvement of students' motivation
Decision	Acceptance by the group
	Use in the future
Implementation	Objectivity of the method
	Consolidation of learning
Confirmation	Learning & teaching
	Achieving a goal
	Self-confidence

completed these stages" (Participant: 8).

-Decision: Acceptance by the group and use in the future were the categories of this theme. The participants believed that the acceptance of EBP by the professors and the clinical staff had an important effect on their acceptance of EBP. In fact, the experiences of the participants showed that "use in the future with regard to the acquired experience in order to answer clinical questions" and "caring for patients" and "self-confidence in the clinic" have led to their acceptance of EBP.

-Implementation: This theme consists of three categories: objectivity of the method and consolidation of learning. The participants' remarks showed that the way of implementing EBP was totally objective and easy and led to the consolidation of learning by them. It was a flexible method which they could do easily. They said *"You taught us in our internship course and it was really useful for us because we were doing the same thing in practice. Maybe, it could not be as useful if we attended a workshop. But this way, since we did it practically, we designed something ourselves; we found a topic and did everything on our own; it was very useful. It made the task easy"* (Participant: 6).

-Confirmation: The categories of this theme were learning and teaching, achieving a goal and self-confidence. The participants considered preparing a poster and presenting it effective in their academic promotion and asserted that its oral presentation led to the consolidation of learning by them. They deemed posters are a means for transferring their information. They had achieved the result of their work and had been able to be pride of themselves. *"I think what was done, I mean the stages we covered, is like a tree you plant. You see it grow and yield fruit. You see what you have done."* (p: 12). *"Well, definitely, when you present something which others approve of as something nice and novel, it gives you a good feeling. The feeling was great. I was proud of myself. It is opposed to the situation in which you do something routine which doesn't matter to you"* (Participant: 9).

Discussion

The results of the present research demonstrated that EBP education based on the Rogers' model is a systematic method that can enrich and promote the students' motivation for learning. The objectivity of the method has led to the consolidation of learning and the confirmation stage has been effective in their self-confidence. Rogers' Model is an adequate model fit to the adoption of EBP (30). Lim et al. (2012) showed that EBP workshops based on the

diffusion of innovation model by Rogers could increase the knowledge and insight of nurses (16). This is in line with the results of the present study. Various studies have demonstrated that students who receive EBP education through deductive teaching strategies like lectures which are teacher-centered, have less skill in designing clinical questions and searching for articles (31-35). However, Rogers' diffusion of innovation teaching strategy emphasizes being active in all stages (knowledge, persuasion, decision, implementation and confirmation) and has taken into account all stages for the acceptance of an innovation (EBP). The results of a previous study by the researcher indicated that knowledge of EBP has the greatest impact on the adoption of EBP (30). The results of Fernandez et al. (2014) and Popkess and McDaniel (2011) showed that the enrichment education of EBP happens when nursing students are active in the learning process and it leads to the promotion of EBP skills (22, 36). The results of Zhang et al.'s study (2012) showed that EBP education in which the students are active (such as self-directed learning) can lead to a higher satisfaction, problem solving ability, independent learning ability and communication and cooperation ability of students (37). It is also in line with the results of the present study in the stage of knowledge. In the persuasion stage, the participants asserted that the difference of this teaching strategy was that it made the students learn EBP profoundly and since they could make use of the evidence gained in the practice, they developed a clinical mentality which was less often paid attention to in other teaching strategies. These remarks were put in the category "internalization of education". Effective and innovative strategies which integrate the different aspects of EBP with the educational program of students strengthen the necessary skills for their occupational and professional future (37). Among these skills, one can mention the ability to learn communication skills and cooperation independently.

The participants stated that the step-by-step nature of education made learning EBP more effective. Schmidt and Braun (2007) state that Rogers' diffusion of innovation model is much more beneficial than other educational strategies because students cover 5 essential stages of learning (25). It is of utmost importance that nursing educators use creative methods which link the research with care in EBP education.

Colon-Emeric et al. (2007) found out that the factor which is effective in the persuasion of nurses to do EBP is educating and empowering them and promoting evidence-based care in

clinical environments (38). Thus, it is necessary to emphasize a more profound understanding of the use of evidence in the clinic in order to encourage the nursing students to make use of EBP according to Rogers' model and research done in this area.

In the decision stage, the participants stated that the acceptance of EBP by professors and clinical staff is very effective in their decision for accepting and continuing the use of EBP. Many researches have demonstrated the importance of the clinical background and acceptance of EBP in integrating research with clinical practice (39, 40).

The last theme of the present research was confirmation which is also the last stage of Rogers' learning process. Rogers (2010) believes that at this stage, the individual is trying to strengthen his decision making to continue the acceptance (27). At this stage, individuals are seeking the others' messages and feedbacks. When people know they have been confirmed for their new idea, they accept it more easily and there is a higher probability of continuing it. Schmidt and Braun (2007) concluded that through the oral presentation of the results according to Rogers' diffusion of innovation model, students feel that the others' confirmation is a kind of reward for them and it makes the competition more enjoyable for them (25). Therefore, nursing education planners and managers need to be trained and review the nursing education programs, in order to prepare the necessary changes to provide EBP. Understanding the experiences of nursing students can be effective.

Conclusion

EBP education according to Rogers' diffusion of innovation model is a step-by-step and effective method compared with other methods and it includes all necessary parts for an active learning from knowledge acquisition, persuasion, decision making and implementation to winning confirmation. It is an objective, attractive and challenging method that leads to promotion of learning motivation, internalization, and consolidation of education; also, it may contribute to the diffusion of EBP. Therefore, it seems that not only is there a need for teaching EBP and integrating it into nursing Bachelor's programs, but "new methods" should be used in the teaching of "new topics" like EBP.

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