

Effect of evidence-based nursing on critical thinking disposition among nursing students

Hossein. Habib Zadeh, Ph.D¹, Nasrin. Khajeali^{2*}; Hamidreza Khalkhali, Ph.D³, Yousef Mohammadpour⁴

¹Assistant Professor, Urmia Faculty Nursing and Midwifery, Urmia, Iran

²MSC Educational Nursing, Author, Urmia Faculty Nursing and Midwifery, Iran

³Assistant professor, School of Public Health, Urmia, Iran

⁴Structor, Urmia Faculty Nursing and Midwifery, Urmia, Iran

*Corresponding Author: nasrinkh2009@yahoo.com

Abstract: Development of critical thinking is one of the aims of nursing education in Iran. Understanding the effectiveness of current practices in education in developing critical thinking can determine the efficiency and possible failure of the education system. Evidence-based learning is an effective approach in educating students. Comprehensive understanding of the concept of evidence-based nursing practice evokes the best performance. This study examines the impact of evidence-based nursing education on nursing students' critical thinking disposition. **Materials and Methods:** This quasi-experimental study was conducted on 48 nursing students of the third semester in Urmia Nursing faculty in the academic year 1392-1391. The method was available sampling and the cases were randomly divided into two groups of control (24) and intervention (24) respectively. Intervention -group students were trained in evidence-based nursing. the tendency towards critical thinking before and after training students in the intervention and control groups were evaluated through the questionnaire of California Critical Thinking Disposition. The data were analyzed by SPSS software, K2 statistical test, T-test and Mann Whitney test. **Results:** The results of this study showed that the tendency towards critical thinking in students in the intervention group who were trained in evidence-based nursing was significantly better than the control group ($P < 0.001$). When these two groups were compared, the mean difference of critical thinking disposition between two groups was significant after intervention ($P < 0.001$). **Conclusion:** Evidence-based nursing education enhances critical thinking disposition more than the traditional teaching method. Critical thinking requires employing the best evidences available, and considering clinical situation and experience. A critical thinker should be able to decide based on the current evidences, apply those decisions in practice and change his/her strategy when required. Therefore it is recommended that this method be used in clinical education.

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Introduction

Critical thinking as a positive activity is considered a necessary procedure for the development of any society and organization. This thinking trend is regarded as an important aspect of professional performance especially clinical nursing [1]. Nowadays, in health care realm, nurses constantly encounter complicated problems and issues which involve complicated thinking procedures, in particular critical thinking, to decide about [2]. Critical thinking is the intrinsic part of the clinical decisions and professional qualifications [3]. Nurses' ability to think critically enables them to assess the patients' condition, and to analyze, present and evaluate the individual care to each patient [4]. Trained students through traditional way of teaching try to memorize the materials instead of concentrating on understanding and employing them and they are simply the receiver from their teacher. Such students just apply their habitual practices unconsciously and make no effort to innovate and

think to recognize and meet the current needs [5]. Unfortunately, nursing students, when encounter patients' problems and critical situations, are merely the obedient followers of the physicians' instructions and this can lead to offering undesirable care to the patients and can cause life hazards for them [6]. Therefore it is required that the best nursing performance should be defined in order that nurses can learn how to think critically [7]. On the other hand evidence-based performance is one of the most important issues discussed within the last decades and has had a distinct place in health care system and the individuals, in all relevant professions, have started working properly. Nursing is not an exception either and has conducted various researches on evidence-based care [8]. Following routine and traditional models and decreasing self-trust and self-confidence in taking care of the patients are the consequences of not employing evidences in nursing and can lessen nurses' motivation for offering services and understanding the patients. This fact

intensifies the importance of engaging in evidence-based nursing [9]. Evidence-based nursing is a procedure during which nurses can make appropriate clinical decisions, taking the advantage of the current researches results, his/her clinical skills and the current performance. One of the aims of nursing is establishing a scientific base for clinical practices. By implementing the principles of evidence-based nursing, the fissure between the research and the clinical practice can be obviated and various researches results can be employed effectively and eventually the nurses' professional identity can be uplifted [10]. Evidence-based learning and active educational approaches such as problem-based learning enhance creative thinking [11]. Presenting nursing services according to the evidence-based approach is the fundamental of advanced nursing cares: nonetheless, it is not used due to the lack of required skills [12]. Now, considering the value and significance of critical thinking and its development in educational systems and the problem that the students' improvement in education is dependant on making use of critical thinking skills in different courses, a study was conducted to determine the impact of evidence-based nursing on critical thinking disposition in nursing students. The aim was to contribute to the improvement of clinical nursing education which is of high importance.

Materials and methods

This is a quasi-experimental study in which the effect of evidence-based nursing on students' critical thinking disposition has been investigated. The research samples were all the nursing students namely 48 individuals who were studying in the third semester. The students were homogenized in terms of their sex and their previous average score. They were divided into 6 groups of 8 members and then three groups were randomly assigned to intervention group (24 individuals) and the other three groups to the control group (24 individuals). Before implementing the program, the research aims were explained by the project manager and the participants' consent in both groups of control and intervention was assured. The tool for data collection was California Critical Thinking Disposition Inventory (CCTDI). The questionnaire was comprised of 75 questions which were ranked according to Likert scale from "completely agree", "mostly agree", "agree", "disagree", "mostly disagree" and "completely disagree", scored from one to six according to the instructions of the questionnaire. The questions include seven sub-groups of truth seeking (12 questions), tolerance (12 questions), the analysis ability (11 questions), data organization ability (11 questions), self-confidence (9 questions), the extent

of development (10 questions), and searching disposition (10 questions). Content validity of the questionnaire has been approved by the American philosophical society by means of Delfi technique. The reliability of the questionnaire, measured by calculating Cronbach's alpha, was assessed 90% [13]. In the present study, a copy which was translated and used in Iranian researches and thesis was employed [14]. Since evidence-based nursing involves knowing research methodology and making use of the research results, a four-hour workshop was held to make the intervention group students familiar with the research methodology. Because passing research methodology course is a prerequisite for evidence-based nursing. A workshop on evidence-based nursing was, then, held for intervention students. The evidence-based nursing workshop was managed in two sessions of two hours. There, the students got familiar with the basics of evidence-based nursing, with how to devise clinical questions, with how to use information resources and with how to review the articles in a four-hour session. After holding evidence-based nursing workshop, two scenarios were given to the students by the researcher and the scenarios were discussed for two sessions and the students got familiar with the research procedures. One month later, the critical thinking disposition was assessed in the students of both intervention and control group. To evaluate the results of the research, the data gained from the cases under study was codified and analyzed in SPSS ver16 software, descriptive-statistical tests, and K2 and Mann Whitney tests, in the significance level of $p=0.05$.

Results

Most of the cases namely 66.7 per cent were male. The cases average age was 21.05 ± 1.8 years. The independent T-test revealed no significant statistical difference between the students' age and average scores in both groups (table 1). Findings of this study showed that among 48 students participating in the study, 66/8% of the students were female and 33/3% males (table 2). Comparing two groups, Mann Whitney test manifested that the mean scores of critical thinking disposition in related realms before and after training did not indicate any significant statistical difference ($p=0.39$). The results of the present study disclosed that the mean scores in truth seeking, criticism tolerance, analysis ability, organizational ability, the extent of development, searching disposition, and self-confidence have increased in two groups of control and intervention after training on the basis of evidence-based nursing, and this increase was more noticeable in the intervention group and was statistically significant

($p < 0.001$) (table 3). Comparing two groups, Mann Whitney test depicted that the mean difference of critical thinking disposition scores before and after

intervention was statistically significant ($p < 0.001$) (table 4).

Table 1: comparing the average score, age and sex of the cases under study in two groups of control and intervention

Independent T-test result	Intervention group		Control group		variable
	Standard deviation	mean	Standard deviation	mean	
19/0P=	2.22	21.4	1.39	20.7	age (year)
72/0= P	1.48	14.2	1.46	14.37	Student's average score

Table 2: absolute and relative frequency distribution of the cases in terms of sex

male	female	male	female	sex	
16	8	16	8	Number of the cases	
66.7	33.3	66.7	33.3	percentage	

Table 3: the mean scores of different items in critical thinking disposition in two groups of control and intervention before and after training on the basis of evidence-based nursing

Mann Whitney test results	Intervention group after training		Control group after training		Mann Whitney test results	Intervention group before training		Control group before training		items
	Mean scores	Mean and standard deviation	Mean scores	Mean and standard deviation		mean scores	Mean and standard deviation	mean scores	Mean and standard deviation	
0.001> P	34.42	3.17±20.04	14.58	3.63±19.78	0.83=P	24.9	3.59±20.25	24.08	3.71±20.4	Truth seeking
0.001> P	35.17	5.33±30.9	13.83	5.35±18.62	0.46=P	25.9	5.39±19.75	23.1	5.48±18.33	Criticism tolerance
0.001> P	32.5	6.5±25.7	16.48	4.72±18.6	0.98=P	24.5	2.37±15.54	24.46	1.84±15.5	Analysis ability
0.001> P	34.3	5.24±26.8	14.62	4.4±16.5	0.83=P	24.9	5.08±17.87	24.08	5.79±17.83	Data organization ability
0.001> P	34.8	5.08±22.16	14.15	2.24±15.4	0.87=P	24.19	2.38±15.54	24.81	1.84±15.5	Self-confidence
0.001> P	34.3	4.79±23.7	14.69	6.57±14.33	0.31=P	26.42	5.48±18.33	22.58	3.9±12.29	The extent of development
0.001> P	33.4	5.38±24.45	15.52	4.15±16.7	0.67=P	23.69	4.71±17.33	25.31	4±17.25	Searching disposition
0.001> P	36.4	21.8±182.5	12.58	14.41±120.12	0.39=P	26.21	14.01±122.62	22.79	14.24±119.5	Total score of critical thinking disposition

Table 3: the comparison between the mean difference of critical thinking disposition scores in intervention and control group before and after training on the basis of evidence-based nursing

Mann Whitney test result	Intervention group before training		Control group before training		items
	Mean scores	Mean and standard deviation	Mean scores	Mean and standard deviation	
0.39=P	26.21	14.01±122.62	22.79	14.24±119.58	Before intervention
0.001> P	36.42	21.8±182.5	12.58	14.41±120.12	After intervention
0.001> P	36.5	15.04±59.78	12.5	0.5±5.02	Before-after difference

Discussion

Critical thinking is a requirement of nursing. Therefore it should be institutionalized in nursing student in order that he/ she can develop them in his/ her search for educational and professional experiences [2,15] The outcomes of the present study disclosed that the mean score of critical thinking disposition in students trained in evidence-based learning was significantly different. No similar study has been conducted on the same subject. Of the

studies conducted on critical thinking disposition, one can refer to the one by Badri (1384) which focuses on the effects of group problem-based learning and traditional teaching method on critical thinking in Teacher Training students. It depicted that critical thinking disposition (in research-based realm) in the group trained in group problem-based learning was higher than that in the group trained through traditional teaching method. However, in other realms of critical thinking disposition (truth seeking,

analysis, self-confidence and development) there was not a significant difference [16]. In this regard, the outcome of the mentioned research does not confirm ours. In our study there was no variation in the mean score in the realm of truth seeking, while in other realms we witnessed significant rise. Alfarolefevre (1995) maintains that enhancement of critical thinking in clinical situation is the main aim of nursing education. Each student is supposed to have the ability of clinical inference, recollecting information and pasting those pieces of information together to create a whole, and in the end employing them in different situations. Improving these abilities needs reinforcement because reinforcing them entails critical thinking improvement as well as self-confidence enhancement [17,18]. Case (1994) writes that information is the prominent element in critical thinking; the more extensive is the individual's information, the more capable he is in critical thinking. Basic knowledge in nursing provides nurses with a general outlook on the patient and his/her needs. The depth and the extent of this knowledge affect the nurse's ability to think critically and solve nursing problems [19]. Moattari et.al (1391) conducted a study regarding the effect of teaching conceptual mapping on critical thinking skills of nursing students. The results indicated that the total score of critical thinking in experimental group was statistically different from that of control group [20]. The result of the research by Magnussen (2000) showed that inquiry-based learning as a teaching methodology can enhance critical thinking abilities [21]. The outcomes of the researches on the effect of teaching on critical thinking are various. In some studies, the impact of teaching on the function of critical thinking has been approved [22-25]. and in some other researches the effectiveness of critical thinking skills test, as a test which can predict the successfulness of nursing, has been confirmed [26,27]. Moreover, Malloch and Porter (2005) state that critical thinking and evidence-based care are complementary and reflect a new approach to clinical performance. The aim is to assure a clear and real base for decision making and clinical activities, because critical thinking requires employing the best evidences available and considering the situation and having clinical experience. A critical thinker should be able to decide based on the current evidences and use those decisions practically and change his/ her approach when needed [28]. The result of the present study showed that evidence-based nursing can have a significant impact on enhancing the nursing students' tendency toward critical thinking. In addition, when this method is compared to the traditional one, it has been more influential in increasing the students' critical thinking disposition. The experiment group

and the control group did not have any significant statistical difference in terms of personal characteristics as well as the mean scores of critical thinking before intervention. This indicates the impact of this method on both student groups with personal differences.

Conclusion

The basis of training and learning in higher education system of our country is more concerned with enhancing and reinforcing the mind and memorization and pays less attention to developing critical and analytical thinking; thus, it is required of higher education system to revise the educational aims, contents and materials, teaching – learning methods and evaluation system and whatever that is related to educational curriculum to realize its goals. That being so, it should be considered that, to revise educational curriculum, the superficial and formal changes are not sufficient and, that there should be a logical, fundamental reformation in all aspects of curriculum. The excessive load of educational contents, the increasing number of students, the intensive educational programs, limited hours of educational classes, and inactive teaching methodologies are all hindrances to improving and developing critical thinking in educational curriculum. Therefore, researchers recommend a coherent and consistent critical thinking all through educational curriculums, which involves revision, collective thinking and discourse by experts, planners and educational trainers.

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