

Effect of Critical Thinking Training Program on Improving knowledge and skills of Nursing Students at Technical Institute of Nursing

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Abstract

Background: In today, nursing is a highly complex and challenging profession that exists within a rapidly changing health care environment, nursing students should be active learners and think critically about providing secure patient care. The capacity to think critically is also an important component of higher education and more specifically of education. The present study **aimed** to assess the effect of critical thinking training program on improving knowledge and skills of nursing students. **Subjects and methods:** A quasi-experimental design was used to conduct the present study. A stratified proportionate random sample of 267 students was chosen from technical institute of nursing in Suez Canal University that enrolled in the academic year 2019-2020. Data were collected using two tools namely; Critical thinking knowledge questionnaire and California critical thinking skills scale. **Results:** all nursing students (97.4%) had unsatisfactory knowledge of critical thinking before the program implementation. While, the highest percentage of nursing students (100%) had satisfactory knowledge of critical thinking after the program implementation. The highest percentage of nursing students (86.1%) had a low level of critical thinking skills before the program implementation. While, slightly less than half of nursing students (48.7%) had a high level of critical thinking skills after the program implementation. **Conclusion:** there is no statistically significant correlation between total scores of critical thinking knowledge and skills among students before the implementation of the training program. It **recommended** that nurse educators should develop continuous in service- training and education program for refreshing and increasing nursing students' knowledge and skills about concept of critical thinking.

Key words: *Critical thinking, Training Program, knowledge, skills.*

1. Introduction

In today's world, which is continuously changing, leaps are exponential and gaps may become impossible to recover. It is obvious that theoretical knowledge is essential but training arises as an alternative to the academic education that gives nursing students the opportunity to acquire the necessary competencies for the time when

they will develop themselves (**Amoah-Mensah& Darkwa, 2016**). Every nurse's student is unique and, therefore, will vary in education, skills, and ability. Educational preparation will vary, and some people will not have developed all of the skills and knowledge necessary to perform at the accepted level. This arises the importance of enhancing staff performance, which is an

activity usually referred to as staff development (Sullivan & Decker, 2014).

Critical thinking; is an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences, knowledge of the methods of logical inquiry and reasoning, and some skill in applying those methods. The Critical Thinking Appraisal tests skills of arguments, specifically drawing inferences, recognizing assumptions, evaluating conclusions, and assessing the strength of reasons offered in support of a claim (Ennis, 2016).

Dimension of critical thinking: Good critical thinking includes both a skill dimension that defined as critical thinking skills. It includes: 1) Interpretation, 2) analysis, 3) evaluation, 4) inference, 5) explanation, and 6) self-regulation. **Interpretation** is “to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria. **Analysis** is “to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information,

or opinions. **Evaluation** as meaning to assess the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, belief, and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions, or other forms of representation (Facione, 2020).

Significance of the study:

Currently, nursing across the nation is under pressure to meet academic standards by preparing well-equipped students to meet the demands of the market. Additionally, some studies mentioned that critical thinking skills are very important to students who feel more confident in themselves and their abilities are more liked and respected by others, and think reflectively.

The aim of the study: The current study aims to assess the effect of critical thinking knowledge and skills among nursing students at technical institute of nursing in Suez Canal University.

2. Subjects and Methods

Study design: The quasi-experimental research design was adopted to conduct this study.

The sample of the study: A stratified random sample of 267 students was chosen. Sample size was calculated using this formula (Yamane, 1967):

$$n = \frac{N}{1 + Ne}$$

n= sample size

N = population size.

e = margin error.

Study setting: Technical Institute of Nursing, at Suez Canal University.

Tools of data collection:

Tool (1): Critical thinking knowledge questionnaire:

Involved two parts as part I covered age, gender, academic year, marital status, and attendance of related training courses regarding critical thinking and part II covered nursing students' knowledge about critical thinking. It consisted of 25 multiple choice questions grouped under seven domains.

Tool (2): California of Critical thinking skills scale:

It was developed by **Facion (1991)** to assess the level of critical thinking skills among nursing students. It consisted of 34 multiple-choice questions grouped into five

critical thinking cognitive skills domains as follows: analysis, inference, evaluation, deductive reasoning, and inductive reasoning.

Scoring system:

Questions were scored as two for a correct answer and one for an incorrect answer, then, the total score was calculated and converted into a percent by dividing the nursing student's total score by the maximum possible score and then multiplying by 100 and then classified into three categories as the following

- Low \leq 35.3%
- Moderate 35.3- 53%
- high \geq 53%

Reliability of the Tool:

Internal consistency reliability was done using Cronbach's alpha to assess the consistency of results across items within a test. In internal consistency reliability estimation, a single measurement instrument (tool) administered to a group of students on one occasion was used to estimate reliability. Cronbach's alpha coefficients were 0.73 for California critical thinking skills scale.

Field work:

Data collection was carried out during the period from the beginning of (October 2019 to the end of April 2020) excluding two months

of examination and vacation (January & February). After official permissions were obtained from the director of the Nursing Technical Institute at Suez Canal University. The numbers of sessions were ten sessions for each group. The participants were divided into eleven groups based on according to their grades and time schedule; ten groups consisted of 24 nursing students and the last group were 27 nursing student. A variety of teaching methods used during the implementation of the program were lecture, group discussions, and brainstorming. Some sessions included the application of new skills and techniques. The training program designed for this study has been implemented through ten sessions for eleven group from which seven theories and three practical sessions. This lasted for thirteen hours; seven hours of theory (one hour for each theoretical session) for seven sessions, and six practical hours (two hours for each practical session) for three sessions. The program consisted of two main parts; the first theoretical part covered the following: knowledge about introduction to the program, definition, and types of thinking, definition, and importance of critical thinking, the second part is a practical part in form of giving activities in the form of exercises for nursing students to develop critical thinking skills.

Administrative design:

Official letters explaining the aim of the study were obtained from the manager technical institute of nursing at Suez Canal University. These letters of support indicated agreement with the aim of the study and granted permission to collect data and implement the program. Administrative support was helpful

Ethical considerations:

The study will follow common ethical principles in clinical research. A primary approval to conduct the proposed study will be obtained from the research ethical committee, Faculty of Nursing, Suez Canal University. Participation in this study is entirely voluntary. Verbal and written explanations of the nature and aim of the study have been explained to the nursing students included in the study sample. They were given an opportunity to refuse or to participate, and they were notified that they could withdraw at any stage of filling in the questionnaire. As well, they were assured that the information would be utilized confidentially and used for the research purpose only. Confidentiality was confirmed by not writing names.

Statistical design:

The collected data was coded, organized, categorized, tabulated, computerized and

analyzed using statistical package of the social sciences (SPSS) software program version 20.

3.Results

Table (1): Shows the total levels of nursing students' knowledge regarding critical thinking throughout program phases. It illustrates that the highest nursing students (97.4%) had unsatisfactory knowledge before the program implementation. While all of the nursing students (100%) had satisfactory knowledge after the program implementation.

Table (2): shows the total mean score of critical thinking skills domains among nursing students throughout program phases. Before the program implementation it is well-defined from the table the highest mean score of critical thinking skills as reported by nursing students was an inference (15.3380 ± 4.04643), while analysis skill after the program implementation (21.1065 ± 2.48956), Additionally, there are statistically significant differences between total mean scores of critical thinking skills among nursing students throughout the program phases ($p < 0.001$).

4.Discussion

Critical thinking skills are essential for graduate nurses to function effectively in complex healthcare environments. Nurse

educators are faced with the task of utilizing teaching methods, which encourage the use of higher-order thinking and the development of critical thinking skills of nurse students (Fatmawati, 2019). The present finding showed be that the highest percentage of students had an unsatisfactory level of knowledge about critical thinking before implementation of the program, while all of the nursing students had satisfactory knowledge after the program implementation. This may be due to the utilizing creative teaching approaches that can facilitate interactions and collaboration in the learning process. However, the improvement could be assigned to one or more rationales, which include the comprehensive content of the educational training program, and the written handout of the program that serves as an ongoing reference. Also nursing students' interest and their enthusiasm to know and change consideration of the patterns of adult learning, encouragement of questions, and interactive talk with the utilization of multimedia and repetition of the knowledge through a mixture of textiles. As well, the nursing students were satisfied with the content of the program and they endeavor to apply what learn in the program.

In this respect, **Adams (2017)**, determined a change in senior traditional baccalaureate nursing students, in California, and showed that the highest percentage of nursing students had a satisfactory level of knowledge about critical thinking after the program implementation. However, the previous findings are in disagreement with that of a study carried out by **Noohi et al (2012)**, who determine Critical thinking among nursing students at Kerman University and found that the level of critical thinking knowledge is the same after and before program among nursing students.

The finding of the present study revealed that the highest mean score of critical thinking skills among nursing students was related to analysis after the implementation of the program. This may be due to the researcher give exercises and situations to the students to trained them for identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinions. The current study findings are matching with a study conducted at Kashan University **Azizi-Fini et al (2015)**, which compare the critical thinking skills of freshmen and senior nursing students

and found that the highest mean score of critical thinking skills among nursing students was analysis after implementation the program.

The current study findings disagree with the study conducted in Malaysia by **Dümenci& Keçeci (2020)**, which explored demographic determinants of critical thinking skills among nurses from public hospitals in Peninsular Malaysia, and found that the highest mean scores among nurses were related to deduction about critical thinking skill after implementation program.

5. Conclusion

Based on the study findings, it could be concluded that: Before the program implementation; all nursing students had an unsatisfactory level of knowledge regarding critical thinking, the highest percentages of them had a low level of critical thinking skills. However, after the program implementation; all nursing students had a satisfactory level of knowledge regarding critical thinking; the highest percentages of them had a high level of critical thinking skills.

6. Recommendations

In the light of the study findings, can be suggested that, Nurse educators in nursing technical institute should develop continuous in service- training and education program for refreshing and increasing nursing students' knowledge and skills about concept of critical thinking., Nurse educators in nursing

technical institute should develop of curriculum contents, which concentrates on improving thinking skills in general and critical thinking skills in specific, Nursing technical institutes' management should be use computers and practical application with integrating technology in the classroom. These electronic devices can assist students in a creativity thinking

Table (1): Total levels of nursing students' knowledge regarding critical thinking throughout program phases (n=267)

Total level of knowledge	The total			
	Pre (n=267)		Post (n=267)	
	No	%	No	%
Satisfactory ($\geq 60\%$)	7	2.6	267	100
Unsatisfactory ($< 60\%$)	260	97.4	0	0.0

Table (2): Total mean score of critical thinking skills domains among nursing students throughout program phases (n=267).

Critical thinking skills domains	Pre program (N=267)	Post program (N=267)	Paired t	p. value
	Mean \pm SD	Mean \pm SD		
Analysis	14.2685 \pm 4.100 16	21.1065 \pm 2.48956	21.187	<0.001**
Evaluation	12.5139 \pm 3.915 36	16.9630 \pm 3.27904	12.806	<0.001**
Inference	15.3380 \pm 4.046 43	19.7870 \pm 3.04555	13.345	<0.001**

Deductive reasoning	11.54±4.3	14.93±4.2	10.603	<0.001**
Inductive reasoning.	10.30±2.04	15.906±3.2104	8.28	<0.001**
Total scores	16.7±2.6	30.6±3	85.926	<0.001**

7. References

Adams, B. L, (2017): Nursing education for critical thinking an integrative review. *Journal of Nursing Education*, 38 (3); 111-119.

Amoah-Mensah. A, Darkwa. P,(2016): Training And Development Process And Employees’Performance In The “Chop Bar” Industry. *Journal of Research and Development (JRnD)* Vol. 3, No. 1

Azizi-Fini. I, Hajibagheri. A, Adib. M, (2015): Critical Thinking Skills in Nursing Students: a Comparison between freshmen and Senior Students, *Nurs Midwifery Stud.*;Vol (4), No (1), Pp 25721, DOI:10.17795/nmsjournal25721

Dümenci. S. B, Keçeci. A, (2020): Creative drama: Can it be used to nursing education. *International Journal of Human Sciences*, 11 (2); 1320-1326. Doi: 10.14687/ijhs.v11i2.2763

Ennis. H, (2016): Definition: A Three-Dimensional Analysis with Bearing on Key Concepts, in Patrick Bondy and Laura Benacquista (eds.), *Argumentation, Objectivity, and Bias: Proceedings of the 11th International Conference of the Ontario Society for the Study of Argumentation (OSSA)*, Windsor, pp. 1–19.

<http://scholar.uwindsor.ca/ossaarchive/OSA11/papersandcommentaries/105> ; accessed 2017 12 02.

Facione. P. A, (2020): Critical Thinking: What It Is and Why It Counts Measured Reasons LLC, jmorante@insightassessment.com ISBN 13: 978-1-891557-07-1

Fatmawati A, Zubaidah, S , Mahana, S , and Sutopo3 (2019): Critical Thinking, Creative Thinking, and Learning Achievement: How They are Related *Journal of Physics: Conference Series* doi:10.1088/1742-6596/1417/1/012070

Noohi. E, Karimi-Noghondar. M, Haghdoost. A, (2012): Survey of critical thinking and clinical decision making in nursing student of Kerman University, 17 (6); 440-444. [Iran J Nurs Midwifery Res.](#)

Sullivan, L.M., & Decker, P.J. (2014): Effective leadership and management nursing, (7thed.); International edition, Julie Levin Alexander, Regina: Bruno, Wesley Longman, Inc.

Yamane. T, (1967): Statistics: An Introductory Analysis, 2nd ed New York: Harper and Row.