

Evaluation of Critical Thinking Educational Program Effectiveness on Nurses' Knowledge in Al-Hilla City

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Abstract

Background: Critical thinking (CT) is one of the fundamental characteristics of clinical nurses and is widely related with the provision of quality and safe care; yet, the concept of critical thinking presents significant challenges for researchers. Bloom's taxonomy has been utilized to measure critical thinking abilities. Similarly, clinical practice demands the development of all of Bloom's degrees of higher-order thinking skills. **Objective:** To evaluate nurses' knowledge related to critical thinking concepts (post-test). **Method:** A quantitative study, utilizing a pre-test and post-test design, a quasi-experimental study was conducted; to determine the impact of an educational program of critical thinking on nurses' knowledge from the period between 10th October 2020 to 30th August 2022. A non-probability purposive sample was chosen for this study's sample according to the crucial role of nurses in the critical care units in Al-Hillah Teaching Hospitals. **Results:** The present study confirmed the study's findings including the majority of nurses of both groups were in middle adulthood, between (25-29) The majority of the participants in the interventional and control group, (77.8%), (66.7%) were female nurses, (50%) of the control group were married and (63.9%) from the interventional group were single. Related to years of experience the results show that the high percentage in both groups 32 (88.9%), and 24(66.7) were with 3 years or less. **Conclusion:** The majority of participants in the study recorded homogenous characteristics related to demographical items (age, gender, marital status) and employment items (years of experience for nurses), following participation in the educational program on critical thinking, the nurses' knowledge increased. **Implementation** compared to their pre-intervention evaluation as a whole. **Recommendations:** Nursing staff and nursing management need to work together to provide a conducive atmosphere for critical thinking and innovation, further research can be conducted to Encourage critical thinking as a requirement for job promotion through healthcare organizations..

Keywords: Critical Thinking, Educational Program, Knowledge

1. Introduction

Critical thinking (CT) is one of the fundamental characteristics of clinical nurses and is widely related with the provision of quality and safe care; yet, the concept of critical thinking presents significant challenges for researchers. Bloom's taxonomy has been utilized to measure critical thinking abilities. Similarly, clinical practice demands the development of all of Bloom's degrees of higher-order thinking skills (Zaidi, et al., 2018). The Critical Thinking Foundation defines critical thinking as an intellectual discipline involving the following elements of thought: identification of purpose and problem, concept clarification, discovery of assumptions, consideration of points of view, detection of implications/consequences, validation of evidence, and reflection (Seibert et al., 2021). Annually, large numbers of new nurses are entering the professional practice environment. To function effectively in practice, nurses must reflect on identifying how they learn, be skillful thinkers, and know when to retrieve and apply previously learned information or skills to clinical situations for effective decision-making (Delle Site, C. 2019). The modern healthcare system is

complex. The World Health Organization (WHO) emphasized that excessive-quality care needs to be "safe, effective, people-centered, timely, efficient, equitable and integrated". Likewise, quality health care entails doing the proper thing at the proper time in the proper manner for the proper patient or the proper individual to perform the excellent possible results (Byrd & Asunda., 2020). One of the life skills exceedingly required in globalization Critical Thinking (CT) was emphasized as an essential component of the nursing process, numerous nursing scholars have attempted to define the concept of CT for nursing as intellectual or cognitive skills were mostly emphasized. In recent years, nurses have been increasingly expected to develop both CT affective dispositions and CT cognitive skills. Affective dispositions such as being open-minded, inquisitive, and cognitive skills may help nurses analyze their inferences, explain their interpretations, and evaluate their analyses (Lee, et al; 2020).

Objectives

To assess the knowledge of nurses related to critical thinking concepts (pre-test). To evaluate nurses' knowledge related to critical thinking concepts (post-test).

2. Method

Study Design

A quantitative study, utilizing a pre-test and post-test design, a quasi-experimental study was conducted; to determine the impact of an educational program of critical thinking on nurses' knowledge from the period between 10th October 2020 to 30th August 2022.

Setting of the Study

Al-Hillah City, located 100 kilometers (62 miles) south of Baghdad on the Hilla tributary of the Euphrates, was the site of the research. It is the capital of Babylon Province and is situated near the ancient cities of Borsippa, Kish, and Babylon. It is located in a predominantly agricultural region that is intensively irrigated with water from the Hilla canal and produces a variety of vegetables, fruits, and textiles.

The information was gathered from Al-Hillah Teaching Hospitals, whose critical care departments include (emergency departments, intensive care units, coronary care units, postoperative units' surgical units," and medical units):

1. Morjan Medical City: which included (12) nurses participating in a pilot study, is a hospital located in the city of Hilla in Babil Governorate, Iraq. It is a public educational medical institution that includes many specialized centers, which provide free services to the citizens of the governorate and neighboring areas.
2. Al-Emam Al-Sadiq Teaching Hospital: (36) nurses participating in an interventional group, Al-Imam Al-Sadiq Hospital (Turkish Hospital) is one of the Babylon Governorate's Governmental Hospitals. The hospital is linked with the Ministry of Health in Iraq. The hospital has 492 inpatient beds, numerous clinics and specialty units, and 18 operating rooms. The hospital's director is Adel Ibrahim Al-Najjar. In 2017, the hospital opened.
3. Al-Hilla teaching hospital, Critical Care Units included (36) nurses participating in a control group, The increase in population and a large number of disease cases that the pets are exposed to every year, they are accustomed to suffering from deadly diseases that kill hundreds of the poor who do not have the means to feed their lives, which prompted the need to build a hospital inside the city of Hilla to accommodate all medical specialties, so opened Al-Jumhuri Hospital 1972 A.D. Hilla Hospital (Al-Asadi, Salah Hashem Zghair, & Hassan Hadi Hassan., 2018).

The Sample of the Study

A non-probability purposive sample was chosen for this study's sample according to the crucial

role of nurses in the critical care units in Al-Hillah Teaching Hospitals.

Step One: Preliminary Assessment Need of Nurses' Knowledge about Critical Thinking

Data were collected from (10) nurses who work in critical care units at Al-Emam Alsadiq Teaching Hospital. The preliminary study included (10) close-ended questions (Appendix: 4) based on related literature. These close-ended questions were administered to know nurses' knowledge about critical thinking and help construct the program and the questionnaire. The assessment need was applied from the period between 10th to 25th August 2021.

Step Two: Construction of Educational Program

According to the finding presented on the assessment need, the information obtained from reviewing the related scientific literature, and previous studies the content of this program was constructed. It comprised of (4) sessions that focus to achieve the following objectives: -

1. Organize nurses' knowledge about critical thinking.
2. Enhance the cognition functioning of nurses.
3. Encourage nurses to take ethical issues under consideration during decision-making and problem-solving in any situation.
4. Find out suitable decisions and the best solutions for critical issues.

The program was created from 3rd September 2021 to 5th December 2021 (Appendix: 5).

Step Three: Study Tools

The researcher prepared a special questionnaire form; it was composed of four main parts:

Part I: Nurses' agreements: This part includes a cover letter to obtain the nurses' agreements (written consent) to participate in this study.

Part II: Demographical characteristics: This part involves basic information about the demographic of nurses' characteristics (age, gender, marital status).

Part III: Employment characteristics: (hospital name, years of experience as a nurse, units that nurse worked in.

Part IV: Nurses' Knowledge Related to Critical Thinking Concepts; which included two Domains: The multiple-choice questions about nurses' Knowledge related to critical thinking concepts were used in this part:

- ✓ First domain: content nurses' knowledge of its content (10) items.
- ✓ Second domain is intellectual and cognitive and consists of (10) items.

3. Results

Table 1: Distribution of Demographic Characteristics of the Study Sample for both Interventional and Control groups

Items	Rating and intervals	Control group		Interventional Group		p-value
		Frequency	Percent	Frequency	Percent	
Age / Years	20-24	15	41.7	9	25.0	.239 N. S
	25-29	20	55.6	24	66.7	
	30-34	1	2.8	3	8.3	
	Total	36	100.0	36	100.0	
	Mean ±SD	1.61±.549		1.83±.561		
Gender	Male	8	22.2	12	33.3	.014 N. S
	Female	28	77.8	24	66.7	
	Total	36	100.0	36	100.0	
Marital Status	Single	18	50.0	23	63.9	.234 N. S
	Married	18	50.0	13	36.1	
	Separated	0	0	0	0	
	Divorced	0	0	0	0	
	Widow	0	0	0	0	
	Total	36	100.0	36	100.0	
Years of experience	3or less	32	88.9	24	66.7	.036 S
	4-6	3	8.3	9	25.0	
	7-9	1	2.8	3	8.3	
	Total	36	100.0	36	100.0	
	Total	36	100.0	36	100.0	

Table 2: Evaluation of Nurses' Knowledge of Critical Thinking Responses Regarding the Interventional and Control Groups

No	Items	Control			Interventional		
		Pre-test	Post-test	p-value	Pre-test	Post-test	p-value
		Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD	
1	The characteristics of critical thinking include the following:	1.75±.439	1.53±.506	0.865	1.75±.439	1.89±.319	0.084
2	Professional nurses are responsible for making clinical decisions:	1.72±.454	1.47±.506		1.81±.401	1.83±.378	
3	The nurse needs a reminder of professional responsibility when performing which of these actions?	1.14±.351	1.17±.378		1.19±.401	1.56±.504	
4	What is the first component of the critical thinking model for clinical decision-making?	1.64±.487	1.61±.494		1.58±.500	1.64±.487	
5	Which of the following critical thinking model may be chosen when applying the best clinical decisions?	1.39±.494	1.39±.494		1.39±.494	1.61±.494	
6	The critical thinking skill of evaluation in nursing practice can be best described as:	1.33±.478	1.53±.506		1.50±.507	1.78±.422	
7	The student learning about therapeutic communication techniques knows that the most important concept in the definition of communication is:	1.50±.507	1.64±.487		1.89±.319	1.94±.232	
8	Five actions that help nurses to think critically are:	1.25±.439	1.25±.439		1.42±.500	1.56±.504	
9	The first step in the critical thinking process for nurses is:	1.53±.506	1.56±.504		1.44±.504	1.67±.478	
10	Which differentiates a nursing diagnosis from a medical diagnosis?	1.28±.454	1.31±.467		1.06±.232	1.44±.504	
General mean and SD		1.453±0.460	1.446±0.4781		1.503±0.4297	1.692±0.4322	
Evaluation		Poor	Poor		Good	Good	
N		36	36		36	36	

Table 3: Evaluation of Cognitive and Intellectual Dimensions Regarding Interventional and Control Groups

No	Items	Control			Interventional		
		Pre-test	Post-test	p-value	Pre-test	Post-test	p-value
		Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD	
1	A nurse instructor must assess students' capacity to synthesize data and discover linkages among nursing diagnoses. Which learning assignment meets this instructor's requirements the best?	1.17± .378	1.14± .351	0.417	1.17± .378	1.64± .487	0.396
2	When using the critical thinking process, which step may use to identify the problem	1.03± .167	1.03± .167		1.14± .351	1.64± .487	
3	A nurse has witnessed numerous cancer patients struggle with pain management because they fear getting dependent on the medications. By assisting patients in correcting their misconceptions regarding pain management, the nurse fulfills which responsibilities?	1.25± .439	1.25± .439		1.22± .422	1.53± .506	
4	A nurse prepares to place a Foley catheter. The patient is instructed to lie in the dorsal recumbent position in the procedure instructions. The patient reports back discomfort when lying on her back. Despite this, the nurse arranges the patient in the recommended dorsal recumbent position and inserts the Foley catheter. this is an instance:	1.28± .454	1.28± .454		1.36± .487	1.64± .487	
5	Patient knowledge is an element of clinical decision-making. Which of the following is the most important part of developing the skill to know the patient?	1.28± .454	1.28± .454		1.14± .351	1.58± .500	
6	A patient who lost her sister two weeks ago noted sleep issues, weariness, and a diminished capacity to focus and solve even simple problems. The nurses determine that the patient's issue is inadequate coping. As an illustration:	1.47± .506	1.42± .500		1.72± .454	1.89± .319	
7	A nurse has been working in a surgical unit for 3 weeks. A patient requires a Foley catheter to be inserted, so the nurse reads the procedure manual for the institution to review how to insert it. The level of critical thinking the nurse is using is	1.19± .401	1.19± .401		1.44± .504	1.69± .467	
8	The nurse asks the patient how she feels about her upcoming breast cancer surgery. Before the discussion, the nurse examined in his textbook the description of loss and grief, as well as the principles of therapeutic communication. The component of critical thinking included in the nurse's literature review is:	1.39± .494	1.42± .500		1.33± .478	1.50± .507	
9	Which of the following is exclusive to the level of commitment required for critical thinking?	1.11± .319	1.17± .378		1.08± .280	1.42± .500	
10	Which statement about the nursing process is correct?	1.69± .467	1.50± .507		1.78± .422	1.75± .439	
General mean and SD		1.286± 0.407	1.268± 0.4151		1.338± 0.412	1.628± 0.469	
Evaluation		Poor	Poor		Poor	Good	
N		36	36		36	36	

Table 4: Overall Assessment of the Study Sample Responses at Post-test for control and study group

Overall assessment	Pre test				Post test			
	freq	%	Mean	Assessment	freq	%	Mean	Assessment
Poor	14	70%	1.369	Poor	2	10%	1.66	Good
Good	6	30%			18	90%		

4. Discussion

Part I: Demographic in addition to Employment Characteristics of the Study Sample for both Interventional and Control groups

This study began by attempting to identify the participants, as well as their demographic and job characteristics. Seventy-two nurses were divided into two groups: interventional and control.

The present study confirmed the study's findings including the majority of nurses of both groups were in middle adulthood, between (25-29) The majority of the participants in the interventional and control group, (77.8%), (66.7%) were female nurses, (50%) of the control group were married and (63.9%) from the interventional group were single. Related to years of experience the results show that the high percentage in both groups 32 (88.9%), and 24(66.7) were with 3 years or less. Heidari and Shahbazi1 (2016) conducted a study titled "Effect of training problem-solving skill on

decision-making and critical thinking of personnel during medical emergencies" and reported that all of the participants were male nurses between the ages of 23 and 51, with between one and twenty-nine years of job experience.

Part II: Discussion of nurses' Knowledge related to critical thinking concepts

Critical thinking has been acknowledged as a crucial component of evidence-based practice; the development of critical thinking prepares nurses for the new EBP competences for practicing nurses. (Zuriguelpérez et al., 2017).

These results were congruent with those of research conducted by Tang et al (2020), who conducted their study on clinical nurses in China and revealed a statistically significant improvement regarding critical thinking disposition dimensions and total critical thinking disposition.

The consideration of knowledge is an essential component of critical decisions and is a key component of the quality of clinical decision-making. When comparing the pre-test and post-test of the study sample (interventional and control), the findings show that the pre-test recorded low a level, while post-test recorded significant change for the interventional group which indicated strongly the effectiveness of the educational program content which presented for participants during the data collection period.

These findings show the strong relationship between basic knowledge as the first step in Bloom's Taxonomy and their ongoing process of understanding, decision-making, and analysis which prepare the nurses to face any situation during their daily care.

Interventional and Control Groups Responses for Knowledge Domain

Due to the vulnerability of the population for which nurses are responsible, investigating the patient safety knowledge, understanding, and behaviors of our new graduate nurses will benefit the nursing profession as a whole by allowing for the strengthening of any areas of deficiency and the reinforcement of any areas of improvement (Murray, et al., 2018).

According to Durmaz Edeer & Dicle (2015), "competence in thinking skills is an essential requirement for today's nurses, who must make knowledgeable, confident, and effective decisions in a complex and changing health care environment." According to the data analysis, the results of the current study have proven that there is a difference found in the statistical analysis of nurses' knowledge demonstrating that there were no significant changes in the control group's overall mean (1.453) throughout their pre-test when compared with their post-test which collected after four weeks, (1.446) is conducted. While the findings of the interventional group members who attended the educational sessions demonstrated the average mean (1.503) in

their pre-test, a significant improvement in clearly recognized in their mean score of the post-test (1.692).

In contrast, the results demonstrated that well-implemented educational programs can effectively increase nurses' positive knowledge. which compared the effect of critical thinking on nurses' knowledge and shows that nurses' performance can be enhanced by making a concerted effort to boost their confidence (Alamrani, et al., 2018).

The present findings are consistent with a study published in (2022), which directed to study the Effect of a Self-Learning Package on Critical Thinking on Intern-Nurses' Knowledge, Disposition, and Skills, the results revealed general improvement in the intern nurses' critical thinking total knowledge level throughout the post and follow-up phases after three months of the program implementation from the pre-program phase (Towfik, et al., 2022).

In addition, this result could be explained in light of total critical thinking disposition improvement. Indeed, the critical thinking disposition dimensions were interdependent and total critical thinking disposition, and vice versa (Towfik, et al., 2022).

Interventional and Control Groups Responses for cognitive and intellectual Domain

Bloom's taxonomy differentiates cognitive skill levels and clarifies objectives requiring higher cognitive skill levels; the six levels, in order of increasing cognitive skills, are remembering, understanding, applying, analyzing, and evaluating. Lower levels encompass recall and recognition (remembering), summarizing (understanding), and application. The higher-level thinking skills consist of differentiating and organizing (analysis), critiquing (evaluation), and producing (creation).

According to this study's findings, an intellectual dimension analysis is shown in this table. The control group's pre-test general mean and SD (1.286 ± 0.407) are shown in this table, with no discernible change. demonstrates that there were no significant changes in the next post-test (1.268 ± 0.4151).

whereas the interventional group's results were recorded as a mean and SD (1.338 ± 0.412) in the pre-test, there are noticeable variations in the level of intellectual dimension initially post-test (1.628 ± 0.469).

Regarding the development of clinical competence in nursing simulation from the perspective of Bloom's taxonomy, a total of 871 papers were discovered, of which four made up the sample. Coordination of information, abilities, and attitudes led to the development of clinical competence. Bloom's taxonomy's knowledge and comprehension objectives were mobilized in order to advance the cognitive domain.

While; Drexler (2020) described the project evaluated changes in participants' knowledge of performance improvement methodology and attitudes and perceptions of shared governance,

involving staff nurses in the creation and evaluation of policies and procedures; empowering nurses to be problem-solvers within an evidence-based framework; enhancing effectiveness and outcomes. staff nurses having access to nursing department goals and objectives improvement calculated as 17% (45% pre-intervention; 62% post-intervention).

Riegel et al., 2018; revealed that professional nurses must be qualified for nursing practice based on scientific and intellectual rigor and ethical principles, being able to recognize and intervene in the most prevalent health-disease problems or situations in the national epidemiological profile, with an emphasis on the region of performance, identifying the bio-psychosocial dimensions of its determinants. When reviewing these studies, we can recognize the importance of the holistic nursing model which makes nurses perform their practice under high recognition of the legal and ethical issues plus the professionalism in the practices of this model allows them to carry out their responsibility toward individuals' family members, and community.

5. Conclusions

Critical thinking is at the core of professional nurses, The conclusion of the study showed that the educational program on critical thinking for nurses was helpful in enhancing nurses' knowledge, the finding is based on the results analysis of the information according to the study objectives; the conclusions are:

1. The majority of participants in the study recorded homogenous characteristics related to demographical items (age, gender, marital status) and employment items (years of experience for nurses).
2. Following participation in the educational program on critical thinking, the nurses' knowledge increased. implementation compared to their pre-intervention evaluation as a whole.
3. The nurses who participated in the critical thinking educational program received favorable evaluations of their knowledge, cognitive and intellectual domains after the educational program intervention compared to their pre-implementing evaluation.

6. Recommendations

Based on the current study's findings, research, education, and healthcare providers will need to the following recommendations are proposed: Nursing staff and nursing management need to work together to provide a conducive atmosphere for critical thinking and innovation. Further research can be conducted to Encourage critical thinking as a requirement for job promotion through healthcare organizations. Building a positive work environment that enhances nursing staff critical thinking in healthcare organizations. Improve nurses' critical thinking skills by approaching problems using critical

thinking models. Enhance nurses' knowledge and skills using self-learning packages and online-learning courses. Conduct longitudinal research designs that will enable future researchers to track nurses' critical thinking developed over the course of their entire undergraduate careers.

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