

Effect of Guided Clinical Reasoning on Nursing Students' Knowledge and Achievement Regarding Management of Primary Postpartum Hemorrhage

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Abstract

Background: Clinical reasoning (CR) is crucial for learning and improving. Today's healthcare services require effective use of clinical reasoning complex nursing situations in order to quickly assess the need for patient care. This study aimed to evaluate the effects of guided clinical reasoning on nursing students' knowledge and achievement regarding management of primary postpartum hemorrhage. **Design:** Quasi experimental research design was utilized. **Setting:** The study was carried out at two settings; the first one was Maternity Nursing Lab at the Faculty of Nursing-Mansoura University, Egypt, the second was Labor & Delivery room of Mansoura University Hospital, Egypt. **Subjects:** One hundred and four nursing students enrolled in the maternity course during 2nd term of the academic year 2018-2019 were recruited in the study. **Sample type:** Purposive sampling technique. **Tools:** Data were collected by using four tools (Structured Interviewing schedule, Students' achievement, Observation checklist, Students' satisfaction scale). **Results:** The students in the clinical reasoning group reported a significant improvement of knowledge regard CR than those of traditional group ($P=0.0001$), Pretest data related to students achievement between CR group and traditional group, showed no statistically significant difference between both groups ($p = 0.182$). While there was highly statistically significant difference in posttest with improvement in CR group ($P 0.0001$). Also, there was a highly statistically significant difference between both group regarding implementing CR steps of 1ry pphge management, moreover CR group reported more satisfaction by training method than traditional group. **Conclusion:** It was evident that CR teaching method was an effective; provided students with knowledge and practices that translate into significantly higher achievements and higher satisfaction scores compared to the traditional method. **Recommendation:** The study recommended that integrating CR method in maternity nursing and midwifery curriculum for positive patient outcomes.

Keywords: Achievement, Clinical reasoning, Knowledge, Satisfaction, Primary Postpartum Hemorrhage, Management.

Introduction

Primary postpartum hemorrhage (1ry PPH) is a major cause of maternal morbidity and mortality. Many risk

factors for 1ry PPH have been evaluated, while with changes of obstetric cases and technological advances, some of these factors became more important and others were less (Amal et al., 2017). World Health Organization estimates that, PPH is a cause of approximately 25% of maternal deaths (WHO, 2012).

Realizing the concept of patient safety, which can be invaluable to improve the quality of nursing care and not to harm patients and improve health outcomes, requires a high level of knowledge and skills during nursing university studies. Today, as nurses experience a rapid change, they need graduates who can use their various skills and scientific knowledge to take advantage of professional problem solving and long-term learning. In ever-changing situations in the healthcare system and education systems (Abdelnaby & Elsayed, 2015).

Consequently, strategies of teaching should allow learners to face these tasks. In keeping with this period of progress, the complexity and pace of production of nursing knowledge is steadily increasing. Therefore, superficial learning and incomplete knowledge have affected nursing students' performance in their relationships with patients and their families. To avoid such problems, nurses should apply new teaching methods that prevent superficial learning and develop critical thinking skills, increase students' memory as clinical reasoning (Kuiper et al., 2017)

The term CR is often used synonymously in the literature with critical thinking and clinical judgment. CR is defined as cognitive processes and strategies with which nurses understand the importance of patient data, identify and diagnose real or potential patient problems, make clinical decisions to

solve problems, and achieve positive results for patients (Sedgwick et al., 2014).

Moreover, CR is the method of health professionals "collecting clues, processing information, understanding a patient's problem or condition, planning and implementing interventions, evaluating results, reflecting and learning the process". Basically, CR is a term, describes the process used by healthcare professionals to make informed decisions and resolve problems that arise in patient care (Amanda et al, 2019). This process depends on "disposition" and is influenced by various factors such as a person's attitude. (CRC) plays a crucial role in patients. Indeed, a nurse who has arguments of CR effective for having a positive impact on patients and vice versa (Croft et al., 2018).

Clinical reasoning is best described as the thin line between the death of a patient or the deterioration of his state of health and his recovery. Nurses with poor (CR) put a patient's health at risk. The New South Wales Health Incident Management in the NSW Public Health System 2007 noted that the top three causes of adverse patient health outcomes include clinicians' failure to diagnose correctly, inability to determine and initiate a plan for proper treatment and poor management of complications, all three of which result from poor CR. The benefits of CR include, establishing timely diagnoses, establishing quick & vital treatment plans, avoiding unnecessary investigations that reduce costs for the patient, & ultimately, improving the patient's state of health (European Heart Association, 2017).

Therefore, nursing students need education to recognize relevant patient cues and understand how to link an accurate assessment to patient outcomes

by utilization of the clinical reasoning steps (Lambie et al., 2015). A nurse's approach to critical thinking & reasoning is believed to affect the accuracy of nursing diagnosis. Thus, it is directly related to influence on care and patient outcomes (Paans et al., 2012).

Significance of the study:

Clinical reasoning is very important to learn and develop. Today's healthcare requires the effective use of clinical reasoning in complex care situations for rapid assessment of patient care needs. There is a correlation between the effective use of CR skills and a positive patient outcome, which means that lack of CR skills can lead to poor outcomes (Amanda et al., 2019).

Also, Clinical reasoning has been proposed to be a key attribute of health professionals (Gummesson et al., 2018). Errors in clinical judgments and decision making are said to account for more than half of adverse clinical events (Tomlinson, 2015). For example, newly qualified nurses may identify fewer clues, have difficulty defining complex diagnoses, & cannot re-evaluate data as often as experienced nurses (Simmons, 2010).

Clinical reasoning & decision-making skills are well known contributors to negative outcomes in midwifery care. Midwifery decision making models share a common gap: in practice they are not sufficiently detailed to guide the reasoning processes for midwives. Also there is little research that studies the student experience of clinical reasoning in practice and there are little information is available regarding how students perceive their abilities to think and process information related to their delivery of patient care. For these reasons this study

was conducted to help in fulfilling the government strategy of 2030.

Aim of the study:

This study aimed to evaluate the effects of guided clinical reasoning on nursing students' knowledge and achievement regarding management of primary postpartum hemorrhage.

Research hypotheses:

Hypothesis1: Students who attend training by CR teaching method achieve higher knowledge and achievement scores than students in traditional group.

Hypothesis2: Students who attend training by CR teaching method' exhibit higher satisfaction scores than students in traditional group.

Operational definitions:

Clinical Reasoning: A set of reason that one thinks to contribute to make proper decision based on evidence and provide competent care.

Achievement: Is accomplishing learning goals, by great effort, or special skills.

Satisfaction: Feeling of knowledgeable, explanation and feelings of satisfaction of the teaching.

Subjects and method

Study Design: Quasi experimental research design was used.

Study Setting: This study was conducted in two settings: (1) Maternity Nursing Lab at the Faculty of Nursing-

Mansoura University, Egypt, (2) Labor and Delivery room of Mansoura University Hospital, Egypt. Maternity Nursing Lab is a simulated (Labor & Delivery) setting, with two high fidelity full-body simulated laboring women mannequin; with working programmable fetal monitor(FM) and two intermediate fidelity full-body simulated laboring women mannequin (Noelle TM Gaumard simulator).

Study subjects: students, who were selected in the 3rd year of nursing; who assigned to maternity course during the 2nd term of the academic year 2018-2019. All students not get CR training or any clinical experience before the research, as well as they did not receive a lecture on primary postpartum hemorrhage.

Sample type: Purposive sample.

Sample size: Total number of students in the third grade they studied maternity course at 2nd term of the academic year 2018 -2019 were (n = 312), (186) students were taken labour and delivery clinical rotation also (22) students were absent. So, the sampling of the study included 104 students.

Groups' Allocation:

One hundred and four nursing students were randomly assigned into two equal groups of 52 by using a method of closed envelope containing both group cards. Clinical reasoning group was receiving training about management of primary postpartum by CR teaching method. The traditional group was receiving training about management of primary postpartum on real women admitted to labor and delivery unit.

Tools for Data Collection (TFDC):

Tool I: A Structured Interview Questionnaire: It was designed by the researchers after reviewing related literatures; it included two parts, **1st part:** Cover the data related to students personal characteristics as (age & residence). **2nd part:** Includes knowledge about clinical reasoning such, definition, advantages, steps and so on, each answer had been score as 3 for correct, 2 for partial correct and 1 for incorrect answer, high score indicate better knowledge .

Tool II: Students' achievement: It was design by the researchers to assess the student achievement through questions pre and posttest about 1ry postpartum hemorrhage such as definition, risk factors, incidence, prevention and management..., each answers had been score as 3 for correct, 2 for partial correct and 1 for not correct answer, the high score the high achievement.

Tool III: Students' practical clinical reasoning steps Observation Checklist:

It was utilized to assess students' practical clinical reasoning steps about 1ry postpartum hemorrhage. It was designed by the researchers after reviewing related literatures, it consist of 8 steps as consider the patient situation, collect cues/ information, process information, identify problem / issue, establish goals ,Take action , Evaluate, reflect on process and new learning). Each step was [scored 2] if correct; [scored1] if partial correct or not correct. Total score ranges from 8 to 16, the higher score indicates the better performance.

Tool VI: Students' satisfaction Likert scale: It was utilized to assessed students' satisfaction about clinical training method using this scale which developed by the researchers. It consists

of six items as the teaching methods used in this learning activity were helpful, improve knowledge and effective, easy and clear, met my expectations and enjoyed with it, suitable and motivated me to learn, suitable to emergency situations, recommended the CR steps to other lectures and course in the future. Likert scale was utilized three points for assessing level of satisfaction, for satisfy take 3, uncertainly take 2 and not satisfy take 1, the total degree score was ranged from 6 to 18. The high score means higher satisfaction.

Validity and Reliability:

Validity of the tools content ascertained by a jury of 5 experts in the field of researcher specialty & the looked-for modification were carried out. While their reliability was tested for 10 students during the pilot study by using Cronbach's α (alpha). Tool II = (0.92), tool III = (0.91), tool VI = (0.89).

Ethical Considerations:

- Women's Health and Midwifery department approval was taken.
- Informed consent was obtained from the enrolled students after explaining the purpose and approach of current research. Students' scores were used only for research purpose, not as a part of students' course grades.
- Additionally, at the end of study & after collecting the necessary data students who had been allocated to the traditional group were invited to attend the clinical reasoning to gain the same benefits.

Pilot Study:

Pilot study was carried out on ten students. It aimed to examine the necessary time for each participant to apply the task and to examine clarity and

applicability of the research tools. The results of the pilot indicated that the task needs (15-20) minutes to be finished and the research tools are clear & applicable. The pilot sample was excluded from the study.

Research process:

The study consumed 3 months began from March 2019 till May 2019. Through 3 phases:

Preparatory phase:

- The researchers review the relevant literature related to preparing tools for the study. Official permission was taken from the head of woman's health and midwifery nursing department and the director of MUH.
- The researchers interviewed each student individually and explained the aim of the study also obtain the informed consent before data collection.

Implementation phase:

- Personal data were obtained from the study sample as (age, residence) also, pretest of knowledge was assessed.
- Then, students assigned into two groups clinical reasoning group and traditional group as mention above.
- For CR group: There are four sessions, 1 theoretical and 3 clinical.

First session: The researcher begin an interactive session by giving complete explanation of postpartum especially (1ry pphge) by using interactive and mediated lecture (video about 1ry pphge), it applied at classroom hall C of nursing faculty, and then the students go to apply the theoretical lecture and transferred into applicable

lecture as apply care of 1ry pphge by prepared scenario on a simulated lab (obstetrics and gynecology lab) by well training all students on NOELLE childbirth simulated manikin by using steps of CR cycle in teaching method.

- Then, the students divided into 5 subgroups, each group contain 10 students. Training provided over a period of 3 weeks, they classified on three sessions in three days along 3 weeks started from 9 a.m. to 2 p.m.

○ **The first clinical session**, the researchers use 8 steps of clinical reasoning and teaching methods starting by giving explanations about the needed activities during managing and perform the required clinical skills for 1ry pphge as:

1. Consider the woman situation:

Describe or list factors related to 1ry PPHge, **2. Collect cues/ information through** review current information (e.g. patient history, patient charts, results of investigations and nursing/medical assessments previously. Recall knowledge (e.g. physiology, pathophysiology, pharmacology, epidemiology, therapeutics, culture, context of care, ethics gather new information (e.g. undertake patient assessment **3.Process information by Interpret:** Which analyses data to come to an understanding of signs or symptoms of 1ry pphge and compare normal Vs. abnormal then **discriminate:** Distinguish relevant from irrelevant information; recognize inconsistencies, **limit the information to the most important things and identify gaps in the information collected.** Then **relate:** which discover new relationships or patterns; cluster cues together to identify relationships between them. **Then Infer:** Make conclusions form opinions that follow logically by interpreting subjective and objective **cues;** consider alternatives

& consequences. Match & adapt current situation to past situations or current patient to past patients (usually an expert thought process). And finally **predict** an outcome (usually an expert **thinking** process).

○ **2nd clinical session, the researcher reach to 4. Identify problem / issue** through synthesize facts and inferences to make a definitive diagnosis of the patient's problem (**1ry pphge**) then **establish goals:** which describe what you want to happen, a desired outcome, a time frame regarding 1ry pphge. **6. Take action** by select a course of action between different alternatives available then **7.Evaluate:** Evaluate the effectiveness of applying steps of CR on management of 1ry pphge. Finally **reflect on process & new learning by** consider what is learnt from this process & what could have done differently.

○ During this phase the students had a relay understanding of what's being taught and should be able to discuss all issues about the 1ry pphge.

○ **Finally, at the 3rd clinical session** reach to the 8th step of CR method as reflect on process and new learning step in which the students perform and reflect the needed maternity skills under supervision of demonstrator then each student were evaluated.

● After finishing the 8th step of CR on lab, the students go to deal with women complain from 1ry pphge in a real situation with real setting.

-**Traditional group:** This group received the theoretical lecture, then training for 3 hot days for 3 week in the hospital in immediate postpartum unit, Mansoura University Hospital, by the assigned faculty supervisor.

Evaluation phase: The students' knowledge, achievement, applying steps of CR and their satisfaction were evaluated among two groups after taking the assigned intervention.

Limitations of the study: Inadequate rate of primary postpartum woman; led the faculty senior to lengthen over time after clinical hours to complete the evaluation of students performance. Also, limited researches about clinical reasoning in maternity nursing was another limitation of this study as it led to limited references in the discussion part

Statistical analysis:

The statistical analysis were done for the collected raw data after it was coded, computed by using SPSS Inc. version 21. Data were presented as frequency and percentages (qualitative variables) and mean \pm SD (quantitative continuous variables). The paired t-test was used for comparison. Cronbach's α (alpha) is used to measure the reliability of the sample test score. Statistical significance was considered at a value $p < 0.05$, a highly significant difference obtained at $P < 0.01$ and a non-significant difference obtained at $P > 0.05$.

Results

Figure (1) shows the general characteristics of studied sample according to their age it was found that the age was ranged between 21-23 years, most distribution at 21 years (71.5% - 67.3% respectively) among CR and traditional group. Also, (61.5%, 38.5% respectively) were from rural area among CR and traditional group.

Table (1) present the total mean score of students' clinical reasoning knowledge among both groups. It was found that no statistically significant difference between pretest knowledge among CR and traditional group, while there was highly statistically significant difference among both groups posttest with improvement in CR group ($P=0.0001$).

Table (2) presents data related to students achievement between CR group and traditional group, it was found no statistically significant difference between pretest among both groups, ($P=0.182$). While there was highly statistically significant difference posttest among CR and traditional group, with improvement in CR group ($P=0.0001$).

Table (3): Shows distribution of two groups according to their practical management of 1ry pphge. It was found that there no statistical significant difference between mean scores of implementing CR steps of 1ry pphge management in both group pre intervention ($P=0.371$), while post intervention the mean score had a highly statistically significant improvement of implementing CR steps of 1ry pphge management among the clinical reasoning group ($P=0.0001$).

Applying clinical training method (n=52)

Table (4): Shows distribution of studied sample according to their satisfaction about clinical training method. It was found that highly statistical significant difference between mean scores among CR and traditional group with higher satisfaction among clinical reasoning group.

Discussion:

This study aimed to measure the effects of guided clinical reasoning on nursing students' knowledge and achievement regarding management of primary postpartum hemorrhage. This aim was achieved through the references of the current study hypotheses because the current study was revealed that a highly statically significant improvement of the mean scores of knowledge and achievement post intervention among CR group also, the current study findings stated that, the students among CR group had a significant higher score regarding applying CR steps regarding management of 1ry pphge in current learning method compared to traditional group and high level of satisfaction.

Regarding to knowledge about CR the current study revealed that there's no significant changes pre intervention among both groups this may be related to the similarity of general characteristics. While after intervention there were significant differences with better knowledge among CR group. The present study result agree with **Miguel et al., (2019)** who study clinical virtual simulation in nursing education and found that the experimental group made more significant improvements in knowledge after the intervention and 2 months later. This result may be due to clear and simple language used during the classes, the suitable strategy of teaching and the quality of educational materials utilized which help in retention of knowledge. Also, the students were having curiosity regarding this method & simulation training session concerning the care of the 1ry pphge, this sessions were reflected upon their improvement of knowledge, applying of CR steps of 1ry pphge.

Undergraduate student who taught by CR method had better achievement in posttest mean score with statistically significant difference. This result agrees

with **Donn et al., (2006)** who study about medical students clinical reasoning skills as a function of basic science achievement and clinical competency measures: A structural equation model. Who found that student significant improved of performance skills post intervention. This related to effectiveness of CR as an effective method improve student thinking and take proper action based decision making. On the other hand the result not agrees with **O'Bannon et al., (2011)** who study about using podcast to replace lecture: Effects on student achievement. Who found that no significant difference after using podcast. This may be related to when the student listen not enough to acquire and retained the knowledge but it needs manipulate and practice besides listening.

Considering, The effect of CR method as a method of thinking. The result of the study showed statistically significant improvement in mean scores of CR steps after intervention among CR group, compared to no significant change among the traditional group. The current study findings were supported with **Levett-Jones (2013)** who studies about clinical reasoning: Learning to think like a nurse. This is appears as we know the nurse is one of the important arm in the health triangular she stay with the patient from admission to discharge this reflected upon the nurse is involved in many or whole process of patient care. In addition to CR help nurses to guide direction, to facilitate decision-making, enabling the clear formulation of a care plan, and agrees with **Amanda et al, (2019)** who state that CR guides the decisions for patients with multisystem dysfunction.

Concerning to practical management of 1ry pphge according to CR steps the current study found that significant improvement post intervention. this agree with **Linn et al., (2012)** who

study about teaching in general practice clinical reasoning a guide to improving teaching and practice reported that CR is a skill to be learnt, not unlike driving a car. Knowing about the mechanics and understanding the functions of a car is quite different to driving one across town in peak hour traffic. So too, medical students are armed with knowledge helpful to patient diagnosis. But they can find it challenging to know how to navigate the information during a patient interaction. Junior nursing staffs similarly are developing these skills and would benefit from clear guidance on the reasoning process. In addition CR improves nurse's diagnostic competencies to state accurate nursing diagnosis and to link those with effective nursing intervention to achieve favorable patient outcomes **Leoni, Mayer & Muller (2020)**.

Regarding applying steps of CR, the student can make decision making based on collect information, process information, identify problem and establish goals this is in agreement with **Missouridou, (2017)** who state the heart of clinical practice is the ability to reason carefully and make decisions, often in difficult or emotionally charged situations.

Moreover **Bruylants et al., (2013)** in their study about effects of the quality of the nursing care process through an educational program and the use of electronic nursing documentation, stated that nursing assessment were improved nursing diagnosis were more specific and accurate also, nursing action were more specific and effective.

Regarding to students satisfactions with CR method and traditional method the result of study findings revealed that there was highly statistical significant difference between CR method group and traditional method group with more satisfaction CR group. These findings were in agreement with **Miguel, Puga & Costa (2019)**. Finally we can conclude that CR is seen as the best way for nurses and other clinicians to capture a vast and growing amount of data around a patient, sift through it for the most important elements in regard to the presenting care issue or issues, and then act upon it. Without clinical reasoning, or some other mechanism that acts in a similar fashion, the risks include failure to identify a care issue, failure to implement needed care, and inefficient management of staff and facility resources.

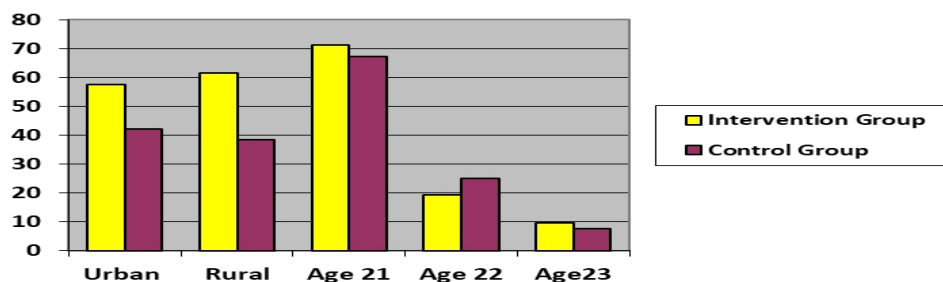


Figure 1: General characteristics of studied sample

Table [1]: Total Mean score of students' knowledge regard clinical reasoning among both groups.

Knowledge			Clinical reasoning group M±SD	Traditional group M±SD	Significant test
Total pre knowledge score			3.596 ± 1.19	3.38 ± 0.91	t=0.992, p=0.326
Total post knowledge score			8.019 ± 0.91	3.42 ± 0.91	t=24.34, p=0.0001
			t=21.84, p=0.0001	t=1.42, p=0.159	

Table [2]: Total Mean score of students' achievement regard management of primary postpartum hemorrhage among studied sample

Achievement			Clinical reasoning group M±SD	Traditional group M±SD	Significant test
Total pre achievement score about 1ry pphge			7.59 ± 0.69	7.65 ± 0.71	t=1.35, p=0.182
Total post achievement score about 1ry pphge			17.55 ± 0.60	10.94 ± 0.72	t=49.01, p=0.0001

Table [3]: Distribution of two groups according to their practical management of primary postpartum hemorrhage (n=104)

Steps of CR	Clinical reasoning Group (Pre)		Traditional group (Pre)		Clinical reasoning Group (Post)		Traditional group (Post)	
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect
Consider the pt's situation(1ry pphge)	8 (15.4%)	44 (84.6%)	5 (9.6%)	47 (90.4%)	51 (98.2%)	1 (1.9%)	18 (34.6%)	34 (65.4%)
Collect information about (1ry pphge)	8 (15.4%)	44 (84.6%)	6 (11.5%)	46 (88.5)	44 (84.6%)	8 (15.4%)	19 (36.5%)	33 (63.5%)
Process information.	1 (1.9%)	51 (98.2%)	1 (1.9%)	51 (98.2%)	47(90.4%)	5 (9.6%)	24 (46.2%)	28 (53.8%)
Identify problem / issue	4 (7.7%)	48 (92.3%)	3 (5.8%)	49 (94.2%)	52 (100%)	0 (0%)	9 (17.3%)	43 (82.7%)
Establish goals for caring of (1ry pphge)	2 (3.8%)	50 (96.2%)	2 (3.8%)	50 (96.2%)	52 (100%)	0 (0%)	12 (23.1%)	40 (76.9%)
Take action about (1ry pphge)	2 (3.8%)	50 (96.2%)	3 (5.8%)	49 (94.2%)	51 (98.1%)	1 (1.9%)	10 (19.2%)	42 (80.8%)
Evaluate	3 (5.8%)	49 (94.2%)	1 (1.9%)	51 (98.1%)	2 (3.8%)	50 (96.2%)	8 (15.4%)	44 (84.6%)
Reflect on process and new learning	2 (3.8%)	50 (96.2%)	2 (3.8%)	50 (96.2%)	49 (94.2%)	3 (5.8%)	5 (9.6%)	47 (90.4%)
Total Mean score	8.59 ± 1.38		8.48 ± 1.26		15.46 ± 1.39		10.09 ± 1.40	
Significant test	t=0.903		p=0.371		t=18.7		p=0.0001	

Table [4]: Distribution of studied sample according to their satisfaction about clinical training method.

Items	Clinical reasoning group			Traditional group		
	SA	SA to Some degree	Not SA	SA	SA to Some degree	Not SA
[1]The teaching methods used in this learning activity were helpful, effective and improve knowledge	43 (82.7%)	9 (17.3%)	0 (0%)	20 (38.4%)	20 (38.4%)	10 (19.2%)
[2]The teaching methods used in this learning activity were simple & clear.	46 (88.5%)	4 (7.7%)	2 (3.8%)	25 (48.1%)	20 (38.4%)	7 (13.5%)
[3]The teaching methods used in this learning activity met my expectations and enjoyed with it.	49 (94.2%)	3 (5.8%)	0 (0%)	21 (40.4%)	18 (34.6%)	13 (25%)
[4]Teaching materials used in this clinical training were suitable and motivated to learn	51 (98.1%)	1 (1.9%)	0 (0%)	17 (32.7%)	25 (48.1%)	10 (19.2%)
[5]The instructors in the clinical training utilize suitable situations for emergency cases.	51 (98.1%)	1 (1.9%)	0 (0%)	15 (28.8%)	20 (38.4%)	17 (32.7%)
[6]Recommended the current teaching method to other lectures and Course in the future.	50 (96.2%)	2 (3.8%)	0 (0%)	20 (38.4%)	16 (30.8%)	16 (30.8%)
Total mea score	17.53± 0.97			12.88± 1.97		
	t= 14.48			p= 0.001		

Conclusion:

It was evident that clinical reasoning teaching method was an effective; it provided students with knowledge and practices that translate into significantly higher achievements and higher satisfaction scores compared to the traditional method.

Recommendations:

- Integration CR method in maternity nursing and midwifery curriculum.

- Providing the maternity nursing students with clinical reasoning sessions prior the real clinical training.

- Clinical reasoning method can be adopted to enhance the students' achievement in different nursing subjects

Further study

-Application of much scientific research to study the effect of clinical reasoning sessions using scenarios on high- risk situation

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Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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