

## Effect of Case Based Learning on Internship Critical Care Nursing Students' Clinical Judgment

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**Abstract:** Case based learning is an effective teaching strategy which helps students to generate and develop critical thinking and clinical judgment skills. It also allows nurses to function effectively in the intensive care environment. Aim. To determine the effect of Case based learning on internship critical care nursing students' clinical judgment. Design. Quasi experimental. Methods. Sixty internship critical care nursing students were included in this study. The students have been randomly assigned into two equal groups: study and control group. Lasater Clinical Judgment in Practice Survey and Lasater Clinical Judgment in Simulation Rubric have been used. Both groups have been completed pretest and posttest of clinical judgment. Results. Internship nursing students' clinical judgment confidence was significantly increased between the pretest and post-test in both study and control group. Also There is statistically significant difference between groups regarding clinical judgment skills ( $p=0.001$ ). Conclusion. Case based learning is a valuable teaching and learning strategy in improving internship critical care nursing clinical judgment skills and confidence.

**Keywords:** clinical judgment, case based learning, clinical education

### I. Introduction

Clinical teaching is a hallmark of nursing education<sup>(1)</sup>. It is very important in the development of competency in clinical practice<sup>(2)</sup>. Clinical practice in intensive care units (ICUs) faces many challenges. These challenges revolve around caring for patient with complex conditions, decreased length of stay, sophisticated technology and increasing demands on time<sup>(3)</sup>. In addition, critical care nurses encounter a variety of problems related to patients' therapy, symptoms and daily care. Thus, today's critical care settings require that the nurses to be creative, analytic, critical thinker and abled to make sophisticated decisions quickly as patients in ICU are often unstable. Consequently, the central requirement of critical care nursing practice is the development of clinical judgment skills for new nurses<sup>(4,5)</sup>.

Clinical judgment is viewed as an essential skill for every professional nurse<sup>(6)</sup>. Tanner (2006) defined clinical judgment as an interpretation or conclusion about a patient's needs, concerns, or health problems and/or the decision to take action (or not), to use or modify standard approaches, or to improvise new ones as deemed appropriate by the patient's response<sup>(7)</sup>.

The nurse's clinical judgment is the heart of care delivery. It guides their clinical actions and decisions. Therefore, clinical judgment is a vital skill in caring for critically ill patients. As it helps in the identification and logical interpretation of symptoms and assists the patients to meet their needs<sup>(8,9)</sup>.

Tanner (2006) developed clinical judgment model which described the four major components/phases of clinical judgment as shown in the figure (1)<sup>(7)</sup>. Phase (I) noticing, it is a perceptual understanding of the situation at hand. The nurse has expectations based upon the patient data initially presented and recognizes deviations from the patient's baseline, or expected baseline. Phase (II) interpreting, the nurse uses one or more reasoning patterns to develop an understanding of the situation based upon the information gathered during noticing phase. Phase (III) responding, the nurse decides on a course of action they deem appropriate for the situation. The nurse may decide not to do anything which could be an appropriate action. Phase (V) reflecting, the nurse reviews the outcome of the action or responding. The nurse may evaluate what it was noticed, how it was interpreted and how it was responded<sup>(10)</sup>.

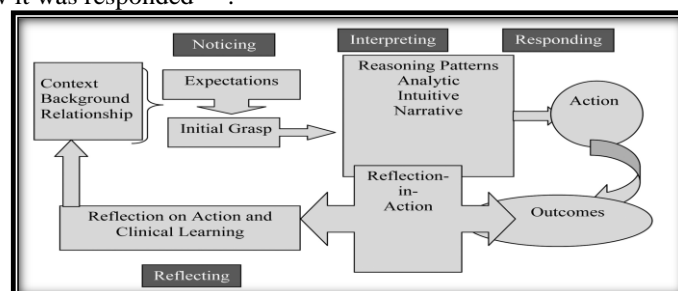
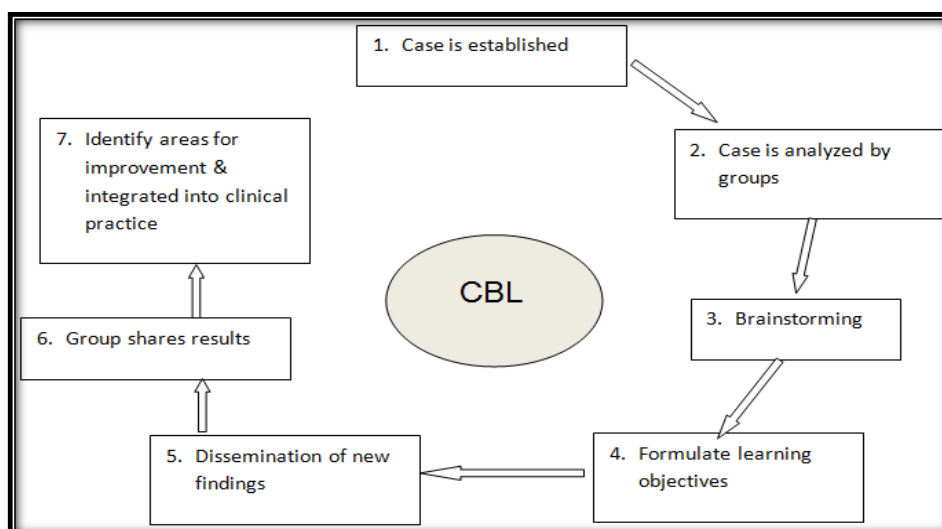


Figure (1): clinical judgment model<sup>(7)</sup>

There are different teaching strategies that can be used to train nursing students and promote their acquisition of clinical judgment. For examples, high fidelity simulation, problem based learning, concept mapping and case based learning<sup>(11)</sup>. Case based learning (CBL) is the most common teaching strategy that can be used<sup>(12)</sup>.

CBL is defined as a written patient scenario which included a background of a patient or other clinical situations such as vital signs, clinical signs and symptoms, and laboratory results outlined on paper format. It offers an opportunity to the students to create care plans and utilize decision making skills<sup>(13)</sup>. In CBL, students are motivated to use clinical knowledge from real-life scenarios to solve problems. Real cases are used to practice and apply basic scientific concepts in making clinical decisions. By discussing a clinical case, students understand the concept, integrate of the knowledge and practice, and develop the critical thinking and clinical judgment skills which would enable new nurses to function effectively in this changing environment<sup>(4, 14)</sup>. CBL is a systematic process that consists of seven steps as illustrated in figure (2)<sup>(15)</sup>.



**Figure (2) The CBL process**<sup>(15)</sup>

Despite the important role of CBL in the development of clinical judgment, there is still not enough evidence of the efficiency of this method on internship nursing students' clinical judgment, as the results of the studies are diverse. In this study, the effect of CBL on internship critical care nursing students' clinical judgment confidence and skills has been determined.

## II. Methods

### Design

To meet the aim of this study a quasi-experimental research design was selected.

### Participants

This study was conducted in ICUs of Assuit Main University Hospital, namely; general, coronary and trauma in Egypt. The sample was simple random sampling. The calculation of sample size was done by power analysis and it included sixty internships critical care nursing students enrolled during the period of academic year 2014/2015. The internship critical care nursing students were randomly assigned into two equal groups: control (traditional) and study group (CBL) (30 per group).

### Instruments

To evaluate the effectiveness of the teaching strategy, we used two tools; they were adopted from Lasater (2007):Lasater Clinical Judgment in Practice Survey (LCJPS) and Lasater Clinical Judgment in Simulation Rubric (LCJSR) (Lasater 2007, p. 500).In addition to internship critical care nursing students' sociodemographic and academic data which include age, marital status, sex, qualification, ICU work place, years of experience and previous attendance of in-service education/training regarding clinical judgment.

### Lasater Clinical Judgment in Practice Survey

The LCJPS used to measure the internship critical care nursing students' confidence in the application of clinical judgment into their practice. It consists of thirty statements and responses ranging from strongly disagree (1) to strongly agree (4) with a total score ranging from (30-120).

### **Lasater Clinical Judgment in Simulation Rubric**

The LCJSR used to assess the internship critical care nursing students' clinical judgment skill. It consists of four main components (noticing, interpreting, responding and evaluating) and a total of 11 sub-categories within the components and the total score ranging from (11-44). It evaluated clinical judgment across four level of ability: accomplished (4), competent (3), progressing novice (2) and novice (1). The cut point for "Good" is > 75% of the total score (more than 33), "fair" is between 50% to less than 75% of the total score (33-22) and "poor" is less than 50 % of the total score (less than 22).

### **Data collection**

A pilot study was carried out on six students. The study has been carried out on four phases: first phase, assessment, pretest was performed for both groups to assess their clinical judgment confidence. Second phase, preparation, four PowerPoint lecture materials were developed by the researcher based on reviewing the related literature. They include content about clinical judgment, acute coronary syndrome, pulmonary embolism and traumatic brain injury. In addition, three educational case scenarios about pulmonary embolism, head injury and acute coronary syndrome were developed by the researcher based on reviewing the related literature. Third phase, implementation, for the study group, it was divided into 3 sessions. *First session* included a PowerPoint lecture divided into four sub-sessions one hour for each session. *Second session* included the practical training for clinical judgment skills using written case studies. The study group was divided into six subgroups (5 per group). Each subgroup was received training on clinical judgment for two weeks by given three written case studies about acute coronary syndrome, pulmonary embolism and head injury. Each case study had a narrative description of the patient situations. Then, each subgroup had to notice, interpret, respond and evaluate the patient condition as the scenario progressed based upon the questions about the patient. For example, students were asked to assess patient chief complain, past history, risk factors, physical examination, diagnostic studies, medical management and create nursing intervention. Then, the group shared the result and feedback about the use of clinical judgment skills that was given to each student immediately after completed of each case study to identify areas for improvement and integrated them into clinical practice. *Third session* was lasted 2 weeks at ICUs on real patients. Each student was assigned to patient suffering from the same diagnosis in case scenarios to practice clinical judgment skills under the researcher's supervision.

As for, control group, they were also divided into six subgroups (5 per group). They were received firstly PowerPoint lecture divided into four sub-sessions one hour for each session about the theoretical content. After that, they were directly applied clinical judgment skills for two weeks at ICUs on real patients suffering from acute coronary syndrome, pulmonary embolism, and head injury. Last phase, evaluation, both groups have been completed the posttest for clinical judgment confidence and skills.

### **Ethical consideration**

The study was approved by the Graduate Studies Committee at faculty of nursing, Assuit University, Egypt. Permission to conduct the study has been obtained from the hospitals' responsible authority after explanation of the aim of the study. The participants received both oral and written information and were required to give their written, informed consent to participate. Furthermore, participants could withdraw from the study whenever they wanted without any consequences.

### **Statistical analysis:**

The demographic and academic data of the participants were compared with cross tables and chi-square. No significant demographic differences were measured between the study and the control groups, which indicated that the two groups were comparable. Data analyses were conducted using SPSS, version 20.0

## **III. Results**

### **Characteristics of the participants**

Both groups (100%) aged between 20 to less than 25 years old. The majority of both study and control groups were female (83.3%, 66.7% respectively). Moreover, the majority of students in study and control group were single (83.3%, 86.3% respectively). The most of the students in the study and control groups had less than one-year ICU experience (90%, 93.3% respectively). Moreover, the majority of the students in the study and control groups didn't attend education/training program about clinical judgment (80%, 86.7% respectively) (Table 1).

### **Clinical judgment confidence**

It was observed that internship nursing students' clinical judgment confidence was significantly increased between the pretest and post-test for both study and control group. However, there was no significant

difference found between the mean values for both groups in pre and post test scores (p= 0.399, 0.292 respectively)(Table 2).

**Clinical judgment skills**

It was found that the majority of the internship nursing students' in study group were generally good clinical judgment skills related to acute coronary syndrome, pulmonary embolism and head injury (86.7%, 86.7%, 83.3% respectively). Whereas, the majority of control group were generally poor clinical judgment skills related to acute coronary syndrome, pulmonary embolism and head injury (93.3%, 96.7%, 93,3 %respectively) and the difference between groups was statistically significant (p=0.001). It was also found that the total clinical judgment skills mean score in the study group was good and the highest mean score in pulmonary embolism (36.8±4.3), while the control group was poor and the highest mean score in acute coronary syndrome (16.6±3.2)(Table 3).

**IV. Discussion**

The results of this study indicate that internship nursing students' clinical judgment confidence was significantly increased between the pretest and post-test for study and control group. This result may be attributed to CBL helps focus the learners on the key points of a clinical case, encourages a structured approach to clinical problem-solving and allows each learner to make decisions <sup>(4,14)</sup>. In addition, active participation in small group discussion about written clinical cases helps students to strengthen their confidence to make appropriate clinical decisions. These helped them to be confident in clinical judgment with real patients. Flanagan et al. (2007), Kaddoura (2010) and Hsu (2011) also showed that most students enjoyed case-based teaching and considered that their clinical reasoning, diagnostic interpretation and ability to think logically were improved <sup>(20-22)</sup>. This finding is congruent with the study of Nielsen et al. (2007) who suggested that case based learning can help students enhance knowledge, facilitate skill acquisition, decrease anxiety, and promote clinical judgment in a safe environment. Thus, CBL experiences can be beneficial in enhancing student confidence regarding patient care decisions, and progressing to the advanced stage of practice <sup>(23)</sup>.

Results also revealed that there are no statistical significant differences between the study and control group regarding clinical judgment confidence. This finding is congruent with Brown et al. (2010) who found that the student's self-confidence and competence increased regardless using traditional hospital training or case based learning <sup>(24)</sup>.

For study group, the majority of the internship nursing students had good clinical judgment skills after application of case studies related to acute coronary syndrome, pulmonary embolism and head injury. This may be due the study group had the opportunity to practice clinical judgment in a safe learning environment which allowed them to repeat skills as many times as necessary to achieve competence of these skills, make mistakes and learn from their mistakes. CBL also provides ample opportunities for students to learn from each other and to be active participants in the learning process. Moreover, the use of realistic case studies helped students in establishing the relationship with the patient, health history, clinical manifestation and nursing intervention needed. Therefore, CBL session provided students with adequate preparation before the actual clinical practice with real patients. This adequate preparation will decrease students' level of anxiety that can improve clinical judgment skills in the clinical area.

This finding is supported by Murphy(2014)<sup>(25)</sup>, Glaze(2013)<sup>(26)</sup>, Paget(2013)<sup>(27)</sup> Brown et al. (2012)<sup>(24)</sup> who demonstrated that the CBL helps students to learn from experience, expand and develop their clinical knowledge and improves judgment in complex situations.

A for control group, the majority of the internship nursing students' had poor clinical judgment skills related to acute coronary syndrome, pulmonary embolism and head injury. This may be due to minimal educational emphasis and training on clinical judgment skills in internship nursing students' program. Guhde et al.(2011)<sup>(28)</sup> supported the current study result; it was found that the nursing students were generally poor score in clinical judgment skills after traditional hospital training. The nurses and other health care professionals are under increased scrutiny to provide safe, effective care.

**Tables:**

**Table (1):** Distribution of the study and control groups according to their characteristics

Internship nurses' characteristics	Study (No=30)		Control (No=30)		X2 P
	N	%	N	%	
<b>Age</b>					
20: < 25 year	30	100	30	100	0.480
<b>Sex</b>					
Male	5	16.7	10	33.3	0.136
Female	25	83.3	20	66.7	
<b>Marital status</b>					

Single	25	83.3	26	86.7	0.718
Married	5	16.7	4	13.3	
<b>work place</b>					
General ICU	14	46.7	10	33.3	0.210
Trauma ICU	11	36.7	9	30.0	
Coronary care unit	5	16.7	11	36.7	
<b>years of experiences</b>					
< one year	27	90.0	28	93.3	0.640
1<5 years	3	10.0	2	6.7	
<b>attendance of training courses about clinical judgment</b>					
Yes	6	20.0	4	13.3	0.488
No	24	80.0	26	86.7	

X<sup>2</sup>= chi-square test

**Table (2):** Pre and post test scores for the study and control groups in relation to their clinical judgment confidence

Internship nurses' clinical judgment confidence	Pre test	Post-test	P
	X + SD	X +SD	
Study (No=30)	77.2 + 9.1	91.9 + 7.1	0.001**
Control (No=30)	75.3 + 8.2	89.6 + 9.1	0.001**
P	0.399	0.292	

\*P≤0.05 (significant)

**Table (3):** Post-test scores of clinical judgment skills between the study and control groups

Clinical judgment skills	Study (No=30)		Control (No=30)		P
	N	%	N	%	
<b>Acute coronary syndrome</b>					
Poor	0	0.0	28	93.3	0.001**
Fair	4	13.3	2	6.7	
Good	26	86.7	0	0.0	
X±SD	36.1 ± 3.8		16.6 ± 3.2		0.001**
<b>Pulmonary embolism</b>					
Poor	0	0.0	29	96.7	0.001**
Fair	4	13.3	1	3.3	
Good	26	86.7	0	0.0	
X±SD	36.8 ± 4.3		14.8 ± 2.8		0.001**
<b>Head injury</b>					
Poor	0	0.0	28	93.3	0.001**
Fair	5	16.7	2	6.7	
Good	25	83.3	0	0.0	
X±SD	35.6 ± 3.6		15.8 ± 3.1		0.001**

\*P≤0.05 (significant)

## V. Conclusion

This study demonstrated that CBL has an impact on the development of clinical judgment. Internship nursing students who participated in CBL scored better than students in control group in the confidence and skills dimensions of clinical judgment. This finding suggests the importance of CBL as a teaching and learning strategy.

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