

# Achieving Clinical Judgment of Nursing Students through Simulation: A Quasi-experimental Study

Dr. Hamdan AlBaqawi\*

College of Nursing, University of Hail, Saudi Arabia

\*Corresponding author: [dr-hamdan@outlook.com](mailto:dr-hamdan@outlook.com)

**Abstract Objective:** Clinical Judgment is an inference regarding patient's needs, health problems, and assertion whether or not to take action, utilize or amend universal approach or create new ones as necessary based on the patient's response. This research aims to investigate the effect of simulation on the clinical judgment of Saudi nursing students utilizing Lasater's Clinical Judgment Rubric (LCJR). It also aims to determine the association of gender to the participants' clinical judgment as to components noticing, interpreting, responding and reflecting. **Methods:** This research utilized a quasi-experimental, single group pretest posttest approach. The study was conducted in the College of Nursing at the University of Hail, Saudi Arabia. A total of 100 Saudi nursing students participated in the study (83% response rate). The participants were currently enrolled in a Medical Surgical Nursing course during the first semester of the academic year 2017-2018. Statistical Package for the Social Sciences (SPSS) program was utilized to calculate the weighted mean, standard deviation, repeated measures ANOVA, and Bonferroni test as statistical treatments. The participants underwent simulation of various patient scenarios in two separate points in time (pre-clinical training and post-clinical training) and were evaluated using the LCJR. **Results:** Simulation significantly has an effect in the clinical judgment of Saudi nursing students ( $P=0.026$ ). Saudi nursing students' clinical judgment depicted heightened competency in the dimensions of Responding ( $p=0.006$ ) and Reflecting ( $p=0.005$ ) of the LCJR. **Conclusion:** Simulation is an effective teaching strategy in developing clinical judgment in Saudi nursing students. Furthermore, the LCJR can be recommended for use as an assessment tool. The results of the study can be utilized by the different nursing colleges across Saudi Arabia to develop simulation programs as an adjunct in nursing education and to consider the use of the LCJR in determining the clinical judgment of nursing students.

**Keywords:** *clinical judgment, Lasater's clinical judgment rubric, nursing, Saudi nursing students, simulation*

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## 1. Introduction

Clinical Judgment is an inference regarding patient's needs, health problems, and assertion whether or not to take action, utilize or amend universal approach or create new ones as necessary based on the patient's response.[1] This provides the basis for nurse's actions and supports safe professional nursing practice. [2] Generally, it is essential in every aspiring nurse to understand patient problems, respond in a timely manner, become a patient advocate and manage care. [1,2] In itself, nurses use a variety of ways of knowing and do not follow a linear pattern in their clinical judgments. [4] In nursing education, this clinical judgment customarily uses simulation to advance and develop this skills.

Previous researches show that simulation has been utilized to develop clinical judgment. [5,6,7] This provided students the chance to apply clinical judgment skills in a low risk environment [8,9], and it has proven to be an effective teaching strategy. [10] Simulation develops students' clinical judgment through feedback and evaluation

of critical thinking. It is in this context that transfer of learning happens because learners can put on their knowledge and skills from training in the simulated work setting [11]. However, it has been demonstrated that simulation does not essentially intensify the learners' ability to think critically, [12] and that some scholars disagreed. As such, it is evidently that simulation can enhance acquiring knowledge and critical thinking. [13] In an educational viewpoint, simulation has been mainly used as teaching strategy and most have been anchored in Lasater Clinical Judgment Rubric. As such, this mainly used rubric may serve as a framework for nursing education to enhance the clinical judgment skills of student nurses. According to Lasater [14] clinical judgment Rubric (LCJR), was developed based on Tanner's model and this provides criteria for measuring nursing student's development of clinical judgment. Several studies utilized the LCJR in evaluating students' clinical judgment. [6,7,8,10] The LCJR consists of four dimensions: Noticing, Interpreting, Responding and Reflecting. [14] The rubric provides a means for evaluating clinical judgment based on students' "focused observation, recognizing deviations from expected patterns, information

seeking, prioritizing data, making sense of data, calm, confident manner, clear communication, well-planned intervention/flexibility, being skillful, evaluation/self-analysis, and commitment to improvement". [14,15]

Simulation has been widely used and it demonstrates positive benefits in simulation and increased self-confidence, satisfaction, self-efficacy, heightened critical thinking. [16,17,18] However, literature is sparse on nursing simulation in Saudi Arabia which the researcher aims to replicate and add to the literature in the local context. This research is of importance as it helps the nursing students to enhance their clinical judgment skills. As such, it enables the student nurses to practice their clinical judgment to uphold patient safety and best results of their intervention. While it is assumed that simulation has an effect on the clinical judgment, this research intent to translate this concept to Saudi nursing students. Generally, this research aims to investigate the clinical judgment of the Saudi nursing students using simulation. Specifically, the effect of clinical judgment using Lasater Clinical Judgment Rubric on pre and post clinical simulation. Also, the effect of simulation on the clinical judgment of Saudi Nursing Students using as regards gender.

## 2. Methods

### 2.1. Design

This research utilized a quasi-experimental, single-group pretest-posttest design in investigating the effect of simulation on the clinical judgment of Saudi nursing students utilizing the LCJR. The study involved the participation of 100 Saudi nursing students (83% response rate), currently in level 3 and were enrolled in a Medical Surgical Nursing course during the first semester of the academic year 2017 – 2018. This study took place in the North-Western region of Saudi Arabia, particularly at the University of Hail. Data was taken in September 2017 (pre-clinical) and in January 2018 (post-clinical). All students who have agreed to participate in the study were included.

### 2.2. Instrument

The researcher used the Lasater Clinical Judgment Rubric (LCJR) which consists of four dimensions: Noticing, Interpreting, Responding and Reflecting. [14]

The rubric consists of 11 observable dimensions to aid faculty and students in assessing clinical judgment. [15] Scores ranging from 1 to 4 can be assigned to each observable dimensions. A score of 4 indicates exemplary clinical judgment, a score of 3 indicates accomplished, a score of 2 indicates developing and a score of 1 indicates beginning clinical judgment. [14] Total LCJR scores range from 11 to 44, with higher scores indicating heightened clinical judgment. The Cronbach's alpha was computed at 0.867.

### 2.3. Ethical Consideration

This study has been approved by the research ethical committee in the University of Hail. The respondents were explained of the confidentiality clause, freedom to withdraw at any point in the research information. Consent was obtained prior.

### 2.4. Data Analysis

Outcomes were measured across two data collection points. Simulation was done before clinical exposure (pre-clinical) and after clinical exposure (post-clinical). Gathered data were analyzed using Statistical Package for Social Sciences (SPSS) version 22. [19] Weighted mean and standard deviation were computed for male and female participants in determining their clinical judgment pre-clinical and post-clinical. One-way repeated measures ANOVA with Greenhouse-Geisser correction was used for analysis. Post hoc comparisons were made by using the Bonferroni test for significant F values.

## 3. Results

Respondents were females (60%) and males (40%; n=100). Female nursing students had higher clinical judgment scores, as compared to male students, on the four dimensions of the LCJR during the pre-clinical simulation procedures: Components noticing ( $7.05 \pm 2.49$ ); Interpreting ( $4.52 \pm 1.35$ ); Responding ( $10.20 \pm 2.85$ ); Reflecting ( $5.50 \pm 1.52$ ). See Table 1.

Post-clinical simulation scores using the LCJR showed increased clinical judgment by male students (40%; n=100) in the Interpreting ( $6.40 \pm 1.13$ ) and Responding dimensions ( $13.05 \pm 2.32$ ) while female students dominated the Components Noticing ( $9.22 \pm 0.98$ ) and Reflecting ( $7.05 \pm 0.91$ ) dimensions.

**Table 1. Pre and Post Simulation on the Clinical Judgment of Saudi Nursing Students using the LCJR**

Competencies	Total	Gender	Pretest	Posttest
NOTICING	40	Male	6.30 $\pm$ 2.28	8.93 $\pm$ 1.35
	60	Female	7.05 $\pm$ 2.49	<b>9.22* <math>\pm</math> .98</b>
	<b>100</b>		<b>6.75 <math>\pm</math> 2.42</b>	<b>9.10 <math>\pm</math> 1.14</b>
INTERPRETING	40	Male	4.25 $\pm$ 1.45	<b>6.40* <math>\pm</math> 1.13</b>
	60	Female	4.52 $\pm$ 1.35	6.17 $\pm$ 1.12
	<b>100</b>		<b>4.41 <math>\pm</math> 1.39</b>	<b>6.26 <math>\pm</math> 1.12</b>
RESPONDING	40	Male	8.68 $\pm$ 3.18	<b>13.05* <math>\pm</math> 2.32</b>
	60	Female	10.20 $\pm$ 2.85	12.55 $\pm$ 1.74
	<b>100</b>		<b>9.59 <math>\pm</math> 3.06</b>	<b>12.75 <math>\pm</math> 2.00</b>
REFLECTING	40	Male	4.00 $\pm$ 1.36	6.60 $\pm$ 1.24
	60	Female	5.50 $\pm$ 1.52	<b>7.05* <math>\pm</math> .91</b>
	<b>100</b>		<b>4.90 <math>\pm</math> 1.63</b>	<b>6.87 <math>\pm</math> 1.07</b>

Table 2. Effect of Simulation on the Clinical Judgment of Nursing Students using the LCJR

Competencies	Time*Gender						p-value
	Total	Gender	Pretest	Range	Posttest	Range	
NOTICING	40	Male	6.30 ±2.28	3-12	8.93 ±1.35	6-12	.413
	60	Female	7.05 ±2.49	3-12	<b>9.22* ±.98</b>	7-12	
	<b>100</b>		<b>6.75 ±2.42</b>	<b>3-12</b>	<b>9.10 ±1.14</b>	<b>6-12</b>	
INTERPRETING	40	Male	4.25 ±1.45	2-8	<b>6.40* ±1.13</b>	4-8	.161
	60	Female	4.52 ±1.35	2-7	6.17 ±1.12	4-8	
	<b>100</b>		<b>4.41 ±1.39</b>	<b>2-8</b>	<b>6.26 ±1.12</b>	<b>4-8</b>	
RESPONDING	40	Male	8.68 ±3.18	4-16	<b>13.05* ±2.32</b>	8-16	<b>0.006**</b>
	60	Female	10.20 ±2.85	4-15	12.55 ±1.74	9-16	
	<b>100</b>		<b>9.59 ±3.06</b>	<b>4-16</b>	<b>12.75 ±2.00</b>	<b>8-16</b>	
REFLECTING	40	Male	4.00 ±1.36	2-7	6.60 ±1.24	4-8	<b>0.005**</b>
	60	Female	5.50 ±1.52	2-8	<b>7.05* ±.91</b>	6-8	
	<b>100</b>		<b>4.90 ±1.63</b>	<b>2-8</b>	<b>6.87 ±1.07</b>	<b>4-8</b>	
Overall	40	Male	23.23 ±8.01	11-42	<b>34.98* ±5.22</b>	22-44	<b>0.026**</b>
	60	Female	27.27 ±7.47	11-41	<b>34.98* ±3.29</b>	27-44	
	<b>100</b>		<b>25.65 ±7.90</b>	<b>11-42</b>	<b>34.98 ±4.14</b>	<b>22-44</b>	

Note. \*Gender with higher mean at posttest; \*\*p<.05.

As shown in Table 2, simulation has an effect on clinical judgment of the nursing students, both male and female, using the LCJR as an assessment method (males  $34.98 \pm 5.22$ ; females  $34.98 \pm 3.29$ ;  $p=0.026$ ). Significant effects were noted on the post-clinical simulation scores on the Responding ( $p=0.006$ ) and Reflecting ( $p=0.005$ ) dimensions of the LCJR. Post-clinical simulation scores depict higher clinical judgment for both genders on the four dimensions of the LCJR. More specifically, male students portrayed advanced clinical judgment, compared to females, in the Interpreting ( $6.40 \pm 1.13$ ), Responding ( $13.05 \pm 2.32$ ) dimensions. Concurrently, females ruled in the Noticing ( $9.22 \pm 0.98$ ) and Reflecting ( $7.05 \pm 0.91$ ) dimensions. Significant effects of simulation on the clinical judgment after *post hoc* comparisons are reported at the  $p \leq 0.05$  level.

#### 4. Discussion

Clinical judgment allows the learners to assess the needs of the patients and infer appropriate course of action based on the factual data. Such perspective can be achieved through the use of simulation. This study portrays that simulation has a significant effect on the clinical judgment of Saudi nursing students. The finding is corroborated by the investigation of Johnson et.al [10] where nursing students develop their clinical judgment through simulation. Clinical judgment is developed through the application of nursing practice, with the integration of nursing science and evidence-based practice, in a low risk environment [2,8]. Students in this study has demonstrated the enhancement of clinical judgment as a result of simulation. This implies that simulation can contribute in meaningful ways as preparation for independent practice. Indeed, simulation enhances reasoning of the students and bridges the complexities of theory and practice. In this case, using simulation will teach the learners to adjust to complex and varied situations. The findings of this study are corroborated by previous researches. Jeffries [20] confirms that simulation provides learners the chance to links amongst concepts

over their active commitment in the learning process. Norman [21] agrees that simulation creates a learning environment that promotes knowledge, skills, safety and confidence. Also the findings of Rhodes and Curran [22] which demonstrate that human patient simulators can assist learners to improve their knowledge, assist in skill acquisition, can reduce anxiety, and stimulate clinical judgment in a safe environment.

While post-clinical simulation scores depict higher clinical judgment for both genders on the four dimensions of the LCJR. The male students portrayed advanced clinical judgment, compared to females in some dimensions. In this study, gender has shown no significant difference to noticing and interpreting clinical judgment. In McCormick [23] study, it has found out that gender is not correlated to clinical judgment as regards high-fidelity human patient simulation experiential learning approach. On the other hand, the significant difference on the responding and reflecting competencies of the learners show that learners have been provided a learning environment for their development. To Lasater [14] the results of the accomplishment offer the basis for the nurse's reflection afterward on the appropriateness of the response and clinical learning for future practice. Nielsen et al. [24] used the clinical judgment mode to guide students' reflection and found that a structured guided reflection can potentially enhance thinking and move students toward increased nursing competence as well as facilitate progression in the development of student thinking and clinical judgment. Further, Jeffries [20] confers that guided reflection as integrated into simulation enhances the self-awareness required for the development of clinical judgment. As such, it fosters the quality patient care. In this study, the learners were directed to appreciate their error while acknowledging the needed areas for improvement. To Tanner [1] and Dreifuerst [25] reflection-on-action demonstrates what the learners achieve from their experience and adds to the progress of pertinent knowledge and clinical skills. Equally, reflection on practice is precarious for the advancement of clinical knowledge and enhancement in clinical reasoning.

## 5. Limitation

This study is limited to Saudi nursing students in the northwestern region of Saudi Arabia. Furthermore, only Medical-Surgical nursing scenarios were included in the simulation process.

## 6. Conclusion

The clinical judgment of Saudi nursing students in simulation procedures may suggest effectiveness of simulation as a pedagogical strategy. The LCJR may be utilized in the determination of the students' clinical judgment. Further studies are recommended for other specialties in Nursing such as Maternity, Psychiatric, Pediatric, to ascertain the applicability of the LCJR in other subject matters.

## Disclosure

The author has nothing to disclose. This research has not been presented to any conference proceedings.

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