



Nurse Educators' Knowledge and Perception of Clinical Reasoning at Nursing Technical Institutes

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Abstract:

Background: Clinical Reasoning is a complex process that involves a combination of knowledge, skills, and experience. It is important for nurses to work effectively as part of a healthcare team. **Aim:** Was to assess nurse educators' knowledge and perception of clinical reasoning at nursing technical institutes. **Design:** A descriptive research design was used. **Setting:** Three nursing technical institutes included Nursing Technical Institute in Cairo University in Giza. Nursing Technical Institute at the Health Technical Institute in Imbaba in Giza. In addition, all Institutes of the General Organization for Hospitals, and Educational Institutes in Cairo, and Giza that contain 10 nursing technical institutes. **Subjects:** All nurse educators in previous settings were included (n=160). Two tools were used for collecting data. 1st tool was Nurse Educators' Knowledge of Clinical Reasoning Questionnaire and 2nd one was Nurse Educators' Perception of Clinical Reasoning Questionnaire. **Results:** More than two-thirds of nurse educators had an unsatisfactory level of total knowledge of clinical reasoning. In addition, more than two-thirds of them had positive perceptions about clinical reasoning. They also perceived role of nurse educators in clinical reasoning positively. **Conclusion:** More than two-thirds of nurse educators had an unsatisfactory level of knowledge of clinical reasoning. Additionally, the nurse educators had positive perceptions of clinical reasoning and their perceived role in clinical reasoning. **Recommendation:** Provide a training program for nurse educators about clinical reasoning to help them to be able to apply it .

Keywords: Clinical reasoning, Nurse educators, Nursing education.



Introduction

Nurse educators should have broad experience of knowledge, abilities, and characters to adopt and apply new nursing education approaches. Hence, nurse educators must continuously maintain and update the qualities and competencies with further information and technologies in line with technological advancement. They should use creative and inventive strategies to promote a learning environment that supports flexible opportunities based on learners and enables professional development and competence by providing education and assessment of learners' priorities and clinical skills (Simmons, 2022).

Sound clinical reasoning is the most important qualification required to achieve the expected outcomes in professional and clinical nursing education. Besides, nursing experts believe that being competent in clinical reasoning is essential in newly graduated nurses who will engage in independent decision-making in clinical practice. Therefore, clinical reasoning is expected to be considered a high-level cognitive thinking process throughout the nursing education program as an essential and fundamental topic (Simmons, 2010; Menezes et al., 2019; Rencic, et al., 2020).

Clinical reasoning is an essential competence for nurses' professional practice. It is considered crucial that its development begins during training. Facilitating the development of reasoning is a challenge for educators due to its complexity and multifaceted nature. Using a strategy in which the student actively participates is a way to facilitate this process (Gerog et al., 2020).

Perception and knowledge of clinical reasoning are vital components of effective clinical decision-making. Understanding how nursing students and novice nurses perceive clinical reasoning and how they acquire knowledge about it can provide valuable insights into how best to educate and train them. By conducting a study on perception and knowledge of clinical reasoning nurse educators can better understand the factors that influence the development of clinical reasoning skills and identify strategies to enhance nursing education and practice (Kuivila et al., 2022; Ramazanzadeh, 2023).

Significance of the study:

Clinical reasoning empowers nurse educators to be role models in effective nursing practice for nursing students. By demonstrating their own CR skills, nurse educators can inspire students to adopt a critical-thinking approach to patient care. This modeling reinforces the importance of CR and encourages nursing students to incorporate these skills into their practice. Moreover, clinical reasoning helps nursing students gain confidence to make informed decisions and take responsibility for their actions. This autonomy is essential for effective nursing practice (Gonzalez et al., 2021).

The prevalence of CR studies in nursing is relatively low. A 2023 review of the literature found that only 10 studies had been published on CR in Egyptian nursing journals between 2018 and 2022. The majority of these studies focused on the development of CR in nursing students. The low prevalence of CR studies in Egypt is likely due to a number of factors. While, the prevalence of CR studies in nursing in Egypt has been increasing in recent years. This represents a significant increase from the previous five years, when only five CR studies were published (El-Sherif & Al-Aziz, 2023).

Clinical reasoning is crucial for learning and improvement. Recent reviews offered insights into how various theories of clinical reasoning may be reflected in current teaching and assessment practices. While, there are limited research studies about clinical reasoning in the field of nursing. Also, there is 38% of papers in medicine used the term clinical reasoning, 27%



Vol. 3, Issue 5, Month: March 2024, Available at: <https://hijnrp.journals.ekb.eg/> in nursing, 23% in dentistry, 83% in physical therapy, and 81% in occupational therapy (Young et al., 2019; El-Sherif & Al-Aziz, 2023). However, the current study aims to assess nurse educators' knowledge and perception of clinical reasoning at nursing technical institutes.

Aim of the study:

The aim of this study was to assess nurse educators' knowledge and perception of clinical reasoning at nursing technical institutes through:

1. Assess nurse educators' knowledge about clinical reasoning at selected settings.
2. Identify nurse educators' perception of clinical reasoning at selected settings.
3. Determine perceived role of nurse educators in clinical reasoning.

Research questions:

1. Are the nurse educators at nursing technical institutes have sufficient knowledge about clinical reasoning?
2. What is the nurse educators' perception of clinical reasoning at nursing technical institutes?
3. How the nurse educators at nursing technical institutes perceive their role in clinical reasoning?

Subject and methods

Research design:

A descriptive research design was used in this study.

Setting:

The sample was selected from three nursing technical institutes including Nursing Technical Institute in Cairo University in Giza. Nursing Technical Institute at the Health Technical Institute in Imbaba in Giza. In addition, all Institutes of the General Organization for Hospitals, and Educational Institutes in Cairo, and Giza that contain 10 nursing technical institutes.

Subjects:

All nurse educators including both genders with a bachelor degree or above (Postgraduate Diploma, Master degree, and Doctorate degree) and had at least six months of experience in teaching. While excluding those who attended previous courses about clinical reasoning. The total number of nurse educators were (n=160).

Tools for data collection:

Two tools were used for collecting data included:

First tool: Nurse Educators' Knowledge of Clinical Reasoning Questionnaire: This tool was developed by the researcher after reviewing the relevant literature (Leoni et al., 2019; Linn et al., 2019; Kononowicz et al., 2020) and consulting experts in related field.

It consisted of two parts:

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Part I: Personal data of the nurse educators: This part included age, gender, level of education in nursing, years of teaching experience, number of teaching subjects, attended previous courses about clinical reasoning.

Part II: Nurse Educators' Knowledge about Clinical Reasoning: This part consisted of (23) questions about clinical reasoning e.g., definition of clinical reasoning, importance of clinical reasoning, uses of clinical reasoning.....etc.

Scoring system:

The questions were scored as (1) for correct and (Zero) for incorrect. So, the total scores were (23), and the cut point was done at 70% = 16 grades. The total knowledge score was calculated as follows:

- Satisfactory level ($\geq 70\%$).
- Unsatisfactory level ($<70\%$).

Second tool: Nurse Educators' Perception of Clinical Reasoning Questionnaire: This tool was developed by the researcher after reviewing the relevant literature (Ali et al., 2018, Thampy et al., 2019 & Haraldsei.d et al., 2020) and consulting experts in related field.

It consisted of two parts:

Part I: Nurse Educators' Perceptions about "Effects of Clinical Reasoning for Nurse Educators and Students" (19 items), for nurse educators (13 items), while for students (6 items).

Part II: Nurse Educators' Perceptions about "Perceived Role of Nurse Educators in Clinical Reasoning" (15 items).

Scoring system:

Nurse Educators' responses were measured on a 3-point Likert scale ranging from 1= disagree, 2= neutral and 3= agree, total score (34).

All perception questionnaire items were positively worded which made a score (28) except items (6, 8, 12, 14, 15, and 17) which were reversed items with score (6), and the cut point was done at 70% = 63 grades. The score was perceived:

- Positive ($\geq 70\%$).
- Negative ($< 70\%$).

Validity:

Face and content validity for the study tools were done. Tools were translated into Arabic and were tested by a jury group of three experts specialized in nursing education through an opinionnaire sheet.

Reliability:

Tools were examined through assessing their internal consistency by Cronbach's alpha.

- **First tool:** Nurse educators' knowledge questionnaire yield Cronbach's alpha showed (0.76) which indicated an acceptable reliability.
- **Second tool:** Nurse educators' perceptions questionnaire showed (0.75) which indicated an acceptable internal consistency.

Ethical considerations:

Prior study conduction, approval was obtained from the scientific research ethical committee at Faculty of Nursing Helwan University. In addition, an approval was obtained from every institute manager for data collection. The educators were informed about the aim of the study, and anonymity and confidentiality were guaranteed. Written consent was obtained from the educators before inclusion in the study. Educators were informed that they were allowed to participate or not in the study and that, they had the right to withdraw from the study at any time.

Pilot study:

A pilot study was conducted on 10% of the study subjects (16 nurse educators) they were selected randomly. From the beginning of March 2022 to the end of April 2022. The aim of the pilot study was to confirm the clarity, and applicability of the tools and to estimate the time required for fulfilling the questionnaire sheets.

Fieldwork:

The actual field work started at the beginning of May 2022 and was completed by the end of July 2022. The researcher met the manager of each institute to explain the aim of the study to gain approval for data collection. The researcher collected data by herself through meeting nurse educators and explaining the purpose of the study to them in the study settings. The questionnaire sheets were completed by nurse educators. The researcher went to each institute two days per week and was present to answer any questions related to the study. The time needed by nurse educators to complete both of the study tools ranged between (25 – 30) minutes.

III- Administrative Item

Approval obtained through an official letter was issued from the faculty of nursing at Helwan University to every institute manager. Then the researcher met the institute manager and explained the purpose and the methods of data collection. Individual written consent was also obtained from each educator in the study.

IV- Statistical Item

Data collected from the studied sample was revised, coded, and entered using a PC. Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version (20.0). Numbers and percentages were calculated for qualitative variables and mean and standard deviations were calculated for quantitative variables. Pearson correlation coefficient was used for relations between quantitative variables while Chi-square correlation was used for relations between qualitative variables. Any test was considered significant if $p\text{-value} < 0.05$.

Results

Table (1) shows that the majority 85.0% of the studied subjects were female and only 15.0% were males. Also, shows that more than two-fifths 43.1% of the studied subjects were in the age group from 31 <41 years while, more than one third 36.2% was in the age group 21-< 31 years with mean \pm SD 34.6 ± 7.11 .

Regarding their level of education in nursing, more than half 52.5% of studied subjects had a bachelor degree, while more than one-third of them 33.8% had a master degree, and only 11.9% had a doctorate degree. Meanwhile, more than two-fifths 42.5% of studied nurse educators had more than 10 years of experience while only 25.6% had 5-<10 years of experience with mean \pm SD 8.1 ± 4.2 . Also, more than one-third 34.4% of studied nurse educators were teaching two subjects, and most of them 99.4% did not attend previous clinical reasoning training.

Table (2) presents that the majority 83.1% of nurse educators had correct knowledge about the uses of clinical reasoning and more than half of them (54.3%, 51.3% & 50.6%) had correct knowledge about the methods of clinical reasoning, factors influencing clinical reasoning and importance of clinical reasoning with mean \pm SD (0.83 ± 0.36 , 0.54 ± 0.47 , 0.51 ± 0.50 &

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0.50±0.44) respectively. While more than half of them 54.4% had incorrect knowledge about the definition of clinical reasoning, its stages, and its principles with mean \pm SD 0.45±0.50. In addition, more than half of them 53.8% had incorrect knowledge about the characteristics of clinical reasoning with mean \pm SD 0.46±0.42.

Regarding total knowledge, the table presents that more than half 50.6% of nurse educators had correct knowledge, while less than half of them 49.4% had incorrect knowledge in general. The total mean \pm SD of knowledge was 11.6±1.1.

Fig. (1) illustrated that more than two-thirds 68.8% of nurse educators had an unsatisfactory level of total knowledge, while less than one-third of them 31.2% had a satisfactory level of total knowledge.

Table (3) clarifies nurse educator's perception of clinical reasoning. Items are classified into items related to nurse students and other to nurse educators. Regarding nurse students, most of them (98.1% & 95.6%) agreed upon those items clinical reasoning is an effective way to improve student knowledge and skills and clinical reasoning helps students to take correct action in critical situations with mean \pm SD (2.98±0.14 & 2.96±0.21) respectively. While the majority of them 83.1% disagreed that clinical reasoning is time-consuming for nurses with mean \pm SD 2.80±0.47. It was recognized that most of them 95.4% had a positive perception of clinical reasoning with mean \pm SD 2.95±0.2.

Regarding nurse educators' items, most of them (96.3% & 93.1%) agreed upon those items clinical reasoning helps the nurse educator to evaluate nurse students' clinical practice and clinical reasoning helps the nurse educator to make meaningful connections between nursing research, critical thinking, and practice with mean \pm SD (2.96±0.19 & 2.93±0.30) respectively. Also, the majority of them (88.8%, 86.9% & 83.8%±) agreed upon those items clinical reasoning helps in managing time effectively for nurses, clinical reasoning encourages the use of innovative teaching strategies, clinical reasoning helps nurse educators to monitor nurse students in clinical practice and errors in clinical reasoning are commonly associated with habits of thinking and practice with mean \pm SD (2.88±0.34, 2.86±0.36 & 2.80±0.49) respectively.

While most of them 93.8% disagreed that clinical reasoning affects patient's outcomes poorly with mean \pm SD 2.91±0.36. In addition, more than two-thirds of nurse educators 65.4% had a positive perception of clinical reasoning, while less than one-fifth of them 19.5% had a negative perception with mean \pm SD 2.78±0.43. The total mean \pm SD of perception was 2.81±0.41.

Table (4) states that the nurse educators had a positive perception of their role in clinical reasoning for all items. The percentage of agreement on most items was above 90%. It was recognized that (96.3%, 95.6% & 93.8%) of the nurse educators agreed upon those items ensuring nursing students provide high-quality and effective care, encourage nurse students to be an active learner, develop valid measures of clinical reasoning for student assessment and develop new teaching skills such as team building and engage students in authentic clinical learning experiences with mean \pm SD (2.96±0.23, 2.96±0.19, 2.96±0.21 & 2.94±0.24) respectively. The total mean \pm SD of perception was 2.91±0.30.

Table (5) describes that the nurse educators had positive perceptions about clinical reasoning. In addition, they perceived role of nurse educators in clinical reasoning positively. Perceived role of nurse educators in clinical reasoning had a higher mean percentage 96.9%, while the nurse educators' perception of clinical reasoning had a mean percentage 93.8%.

Table (6) shows that there was a statistically significant correlation between total knowledge score and total perception score $P= 0.02$, $r= 0.2$.

Table (1): Frequency and percentage distribution of nurse educators' personal data (n=160).

Items	No	%
Age/years		
21 < 31	58	36.2
31 < 41	69	43.1
41-55	33	20.7
Mean ± SD	34.6 ± 7.11	
Gender		
Male	24	15.0
Female	136	85.0
Level of Education in Nursing		
Bachelor	84	52.5
Postgraduate Diploma	3	1.9
Master degree	54	33.8
Doctorate degree	19	11.9
Years of Experience		
1 >5 years	51	31.9
5 >10 years	41	25.6
Above 10 years	68	42.5
Mean ± SD	8.1±4.2	
Number of teaching subjects		
One subject	22	13.8
Two subjects	55	34.4
Three subjects	40	25.0
Four subjects	25	15.6
Five subjects	12	7.5
Six subjects	5	3.1
Seven subjects	1	.6
Clinical Reasoning Previous Training		
Yes	1	.6
No	159	99.4

Table (2): Frequency and percentage distribution of nurse educators' knowledge about clinical reasoning (n=160).

Nurse educators' knowledge items about clinical reasoning	Correct		Incorrect		Mean	SD
	N	%	N	%		
Definition of clinical reasoning	73	45.6	87	54.4	0.45	0.50
Importance of clinical reasoning	81	50.6	79	49.4	0.50	0.44
Uses of clinical reasoning	133	83.1	27	16.9	0.83	0.36
Stages of clinical reasoning	73	45.6	87	54.4	0.45	0.50
Five rights of clinical reasoning	76	47.5	84	52.5	0.47	0.49
Needs for clinical reasoning	76	47.5	83	52.5	0.47	0.47
Principles of clinical reasoning	73	45.6	87	54.4	0.45	0.50
Characteristics of Clinical Reasoning	74	46.25	86	53.8	0.46	0.42
Methods of clinical reasoning	87	54.3	73	45.7	0.54	0.47
Factors Influencing Clinical Reasoning	82	51.3	78	48.8	0.51	0.50
Total knowledge	81	50.6	79	49.4	0.50	0.45
Mean ± SD	11.6±1.1					

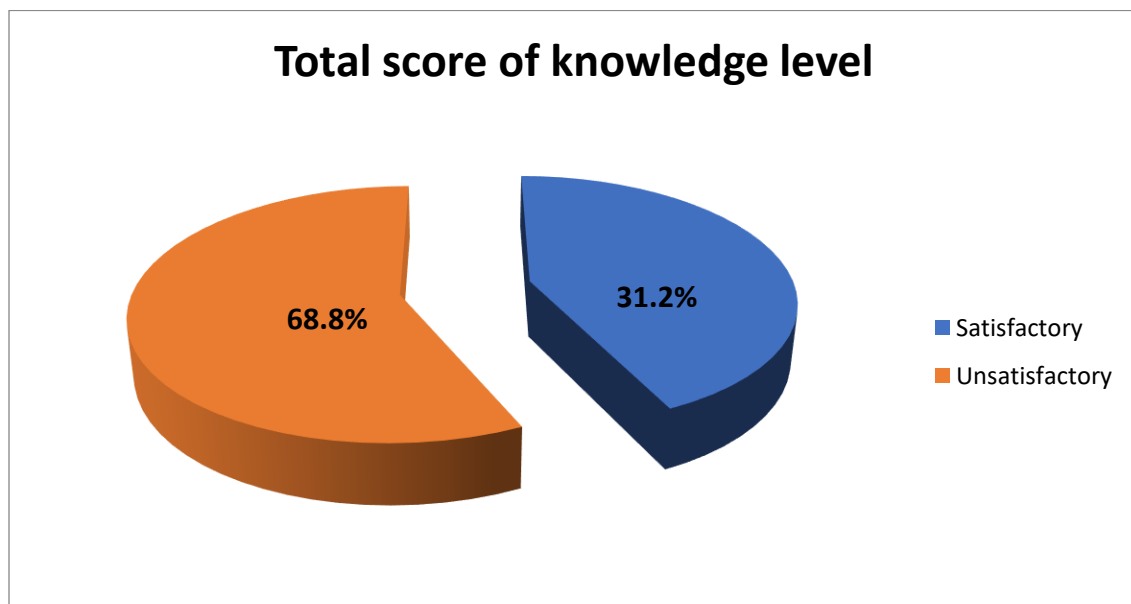


Figure (1): Distribution of nurse educators total score of knowledge level of clinical reasoning (n= 160).

Table (3): Percentage distribution of nurse educators' perception of clinical reasoning (n= 160).

Items	Agree		Neutral		Disagree		Mean	SD
	No.	%	No.	%	No.	%		
Related to nurse students								
1-Clinical reasoning is an effective way to improve student knowledge and skills.	157	98.1	3	1.9	0	0.0	2.98	0.14
2-Clinical reasoning helps students to take correct action in critical situations.	153	95.6	7	4.4	0	0.0	2.96	0.21
3-Clinical reasoning improves the nurse student's performance in clinical practice.	148	92.5	12	7.5	0	0.0	2.93	0.26
4- Clinical reasoning is difficult in application.	3	1.9	31	19.4	126	78.8	2.77	0.47
5-Clinical reasoning is time-consuming for nurses.	5	3.1	22	13.8	133	83.1	2.80	0.47
6-Poor clinical reasoning environment can have adverse effects on nursing students.	138	86.3	17	10.6	5	3.1	2.83	0.45
Total	153	95.4	7	4.6	0	0	2.95	0.2

Table (3): Percentage distribution of nurse educators' perception about clinical reasoning (n= 160) cont.

Items	Agree		Neutral		Disagree		Mean	SD
	No.	%	No.	%	No.	%		
Related to nurse educators								
1-Clinical reasoning helps in managing time effectively for nurses.	142	88.8	17	10.6	1	0.6	2.88	0.34
2-Clinical reasoning helps nurse educators to monitor nurse students in clinical practice.	139	86.9	20	12.5	1	0.6	2.86	0.36
3-Clinical reasoning helps the nurse educator to make meaningful connections between nursing research, critical thinking, and practice.	149	93.1	10	6.3	1	0.6	2.93	0.30
4-Clinical reasoning helps the nurse educator to evaluate nurse students' clinical practice.	154	96.3	6	3.8	0	0.0	2.96	0.19
5-Clinical reasoning makes nurse educators and nurse students feel confident.	141	88.1	19	11.9	0	0.0	2.88	0.32
6-Clinical reasoning encourages the use of innovative teaching strategies.	142	88.8	17	10.6	1	0.6	2.88	0.34
7-Clinical reasoning isn't an innate ability but rather a professional skill to be developed.	130	81.3	27	16.9	3	1.9	2.79	0.45
8- Clinical reasoning errors aren't linked to the lack of knowledge.	17	10.6	31	19.4	112	70.0	2.59	0.68

9-The clinical reasoning framework is difficult to establish.	10	6.3	58	36.3	92	57.5	2.51	0.61
10- Clinical reasoning is used only to teach students about cognitive biases.	22	13.8	36	22.5	102	63.8	2.50	0.73
11-Clinical reasoning affects patient's outcomes poorly.	4	2.5	6	3.8	150	93.8	2.91	0.36
12-Clinical reasoning difficulties have a variety of root causes that need to be differentiated.	114	71.3	39	24.4	7	4.4	2.67	0.56
13-Errors in clinical reasoning are commonly associated with habits of thinking and practice.	134	83.8	20	12.5	6	3.8	2.80	0.49
Total	105	65.4	24	15.0	31	19.5	2.778	0.43
Total mean score = 2.81								
SD = ± 0.41								

Table (4): Percentage distribution of perceived role of nurse educators in clinical reasoning (n=160).

Perceived Role of Nurse Educators in Clinical Reasoning	Agree		Neutral		Disagree		Mean	SD
	No.	%	No.	%	No.	%		
1- Develop new teaching skills such as team building.	150	93.8	10	6.3	0	0.0	2.94	0.24
2- Teaching students how to develop their clinical reasoning.	146	91.3	12	7.5	2	1.3	2.90	0.34
3- Ensure nursing students provide high-quality and effective care.	154	96.3	5	3.1	1	0.6	2.96	0.23
4- Improve students' decision-making skills.	149	93.1	10	6.3	1	0.6	2.93	0.29
5- Engage students in authentic clinical learning experiences.	150	93.8	10	6.3	0	0.0	2.94	0.24
6- Identify and utilize teaching and learning strategies to introduce clinical reasoning.	147	91.9	13	8.1	0	0.0	2.92	0.27
7- Facilitate the development of clinical reasoning skills in the classroom environment.	146	91.3	14	8.8	0	0.0	2.91	0.28
8- Decrease bias in collecting cues.	143	89.4	14	8.8	3	1.9	2.88	0.38
9- Encourage nurse students to be an active learner.	154	96.3	6	3.8	0	0.0	2.96	0.19
10- Develop valid measures of clinical reasoning for student assessment.	153	95.6	7	4.4	0	0.0	2.96	0.21
11- Supervision is crucial to the development of clinical reasoning.	139	86.9	18	11.3	3	1.9	2.85	0.41

12- Allow students to undertake intervention in the suitable time.	144	90.0	15	9.4	1	0.6	2.89	0.33
13- Encourage personal reflection.	137	85.6	19	11.9	4	2.5	2.83	0.44
14- Reduce unnecessary investigation and costs.	135	84.4	24	15.0	1	0.6	2.84	0.39
15-Improve patient satisfaction.	148	92.5	12	7.5	0	0.0	2.93	0.26
Total	146	91.4	12	7.9	1	0.66	2.91	0.3
Total mean score = 2.91								
SD = ±0.30								

Table (5): Total mean and mean percentage of nurse educators' perception of clinical reasoning (n= 160).

Perception	Total Mean	SD	Mean (%)
• Nurse educators' perception about clinical reasoning.	2.81	0.41	93.8
• Perceived role of nurse educators in clinical reasoning.	2.91	0.30	96.9
Total perception	2.85	0.85	95.31

Table (6): Pearson's correlation coefficient between nurse educators' total knowledge scores, and their total perception scores (n= 160).

Variables	Correlation coefficient	p-value
• Knowledge & perception scores	0.2	0.02*

* Significant at p-value<0.05.

Discussion

The study aimed to assess nurse educators' knowledge and perception of clinical reasoning at nursing technical institutes by assessing nurse educators' knowledge of clinical reasoning at selected settings, identify nurse educators' perception of clinical reasoning at selected settings, and determine perceived role of nurse educators in clinical reasoning.

Also, the current study results presented that the majority of nurse educators had correct knowledge about the uses of clinical reasoning, and around half of them had correct knowledge about the methods, importance, and factors influencing clinical reasoning. This result was in accordance with **El-Sayed et al., (2020)** who highlighted that a high percentage of their study sample were satisfied with the uses of clinical reasoning.

On the other hand, these findings were contrasted with **Kononowicz et al., (2020)** who found that most of their study sample were lack awareness of the importance of clinical reasoning.

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As regard to **Carvalho et al., (2017)** who found that clinical reasoning in nursing is essential for safe and effective care. However, it faces the challenge of finding teaching strategies and learning experiences to promote the development of this skill in the learner.

Also, the present study results showed that more than half of the study sample had incorrect knowledge about the definition of clinical reasoning, its stages, and its principles. In addition, more than half of them had incorrect knowledge about the characteristics of clinical reasoning. These findings were contrasted with **El-Sayed et al., (2020)** who found that a high percentage of the studied nurse educators had correct knowledge about the concept of clinical reasoning. From the researcher point of view, this result may be due to clinical reasoning process is dependent upon a critical thinking disposition and is influenced by a person's attitude, philosophical perspective, and preconceptions. Also, clinical reasoning is not linear but can be conceptualized as a series or spiral of linked and ongoing clinical encounters.

As regard to **Rencic et al., (2020)** who defined clinical reasoning as a complex ability, requiring both declarative and procedural knowledge, such as physical examination and communication skills. Moreover, **Simmons, (2010)** who showed that clinical reasoning is a complex cognitive process that uses formal and informal thinking strategies to gather and analyze patient information, evaluate the significance of this information, and weigh alternative actions.

Additionally, the current study showed that more than half of the study sample had incorrect knowledge about the definition of clinical reasoning. These findings were in accordance with **Tyo & McCurry, (2019)** who found that there was a lack of the adjunct faculty's understanding of the concept of clinical reasoning and a lack of recognition of clinical reasoning.

Moreover, the present study results showed that more than half of the study sample had incorrect knowledge about the stages of clinical reasoning. These findings were consistent with **Smith et al., (2022)** who reported that the participants exhibited misconceptions and lacked an accurate understanding of the sequential progression of clinical reasoning stages.

While, these findings were contrasted with **Tekin et al., (2022)** who showed that the clinical reasoning stages are used adequately by the students in medical education. From the researcher's point of view, this result may be due to the different levels of understanding among nurse educators regarding critical aspect of nursing practice and inadequate educational programs about clinical reasoning in their workplace.

Also, the present study results showed that more than half of the study sample had incorrect knowledge about the principles and characteristics of clinical reasoning. From the researcher's point of view, there are two reasons that could be contributed to this phenomenon. Firstly, nurse educators may face challenges in keeping up with the rapidly evolving field of healthcare. Secondly, nurse educators may struggle to stay updated due to time constraints, heavy workloads, and limited access to professional development opportunities.

In addition to nurse educators' total score of knowledge level about clinical reasoning, the current study results showed that more than two-thirds of nurse educators had an unsatisfactory level of total knowledge, while less than one-third of them had a satisfactory level of total knowledge. These findings were in accordance with the study conducted by **Anderson et al., (2022)** who illustrated that the studied nurses were not always aware of their clinical reasoning and associated influences until they actively reflected on the process.

While, it was contrasted with **Alfaro-Lefevre, (2016)** who illustrated that clinical reasoning enhances nursing students' problem-solving abilities in increasingly complex clinical situations. Clinical reasoning competence is regarded as a unique and dynamic process facilitating in-depth analysis of patient's health problems, enabling safe nursing care. From the

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researcher's point of view, the unsatisfactory knowledge of nurse educators could be attributed to two reasons. Firstly, the nursing faculties' curricula still did not give enough emphasis to clinical reasoning as an innovative teaching approach. Secondly, there is a lack of continuing education activities in nursing technical institutes.

Regarding nurse educators' perception of clinical reasoning, the current study results clarified that regarding nurse students, most of them agreed upon those items clinical reasoning is an effective way to improve student knowledge and skills and clinical reasoning helps students to take correct action in critical situations. While the majority of them disagreed that clinical reasoning is time-consuming for nurses. Also, most of them had a positive perception of clinical reasoning. This result was in accordance with the study conducted by **Leon et al., (2022)** who found that the studied nurses reported clinical reasoning to have the clinical nursing knowledge and have knowledge about the clinical situation.

In addition to, nurse educators' perception items, most of them agreed upon those items clinical reasoning helps the nurse educator to evaluate nurse students' clinical practice and clinical reasoning helps the nurse educator to make meaningful connections between nursing research, critical thinking, and practice. Also, the majority of them agreed upon those items clinical reasoning helps in managing time effectively for nurses, clinical reasoning encourages the use of innovative teaching strategies, clinical reasoning helps nurse educators to monitor nurse students in clinical practice, and errors in clinical reasoning are commonly associated with habits of thinking and practice.

On the same line, the study conducted by **Herron et al., (2019)** who showed that the majority of participants indicated they believed their nursing instructors focused on the learning needs of their students, clinically reason is one of the intended outcomes of nursing education and is important in the development of safe clinical practice, and increase feelings of confidence.

While, the present study results showed that most of them disagreed that clinical reasoning affects patient outcomes poorly. In addition, more than two-thirds of nurse educators had a positive perception of clinical reasoning, while less than one-fifth of them had a negative perception. This result was supported by **Tyo & McCurry, (2019)** who found that nurse experts agree that clinical reasoning is an essential skill that can have a positive impact on patient outcomes.

Furthermore, perceived role of nurse educators in clinical reasoning, the present study results stated that the nurse educators had a positive perception of their role in clinical reasoning for all items. This result was in accordance with the study conducted by **White, (2022)** who highlighted that nurse educators agree that a model is needed for clinical teaching but still cannot agree on any method. Perhaps the reality is that many best practices exist and a combination of activities, assessments, rubrics, and authentic self-reflection tools, compiled by educator to address their students' needs on an individual level is best.

Also, this result was in accordance with the study conducted by **White, (2022)** who showed that nursing scholars agree that not all students are created the same. Each student has diverse learning needs and faculty must be able to adjust bringing the student to their full potential. This important work highlighted multiple methods of teaching clinical practice that can help produce strong graduates if nurse educators can meet students where they are.

According to the total mean and mean percentage of nurse educators' perceptions about clinical reasoning, the present study results showed that the nurse educators had positive perceptions of clinical reasoning. In addition, they perceived the role of nurse educators in clinical reasoning positively. These findings were contrasted with **Abdel-Samea et al., (2020)** who found that more than half of the nurse educators had an acceptable level of perception about clinical reasoning for technical nursing students. From the researcher's point of view, this result may be due to years of experience, educational qualification and satisfactory level of total knowledge among nurse educators.

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As related to the relation between nurse educators' total knowledge scores and their total perception scores, the current study results illustrated that there was a statistically significant relation between total knowledge scores and total perception scores. These findings were supported by **Teni, (2019)** who found that there was a statistically significant relation between the level of knowledge and level of perception.

Conclusion

In the light of the current study findings, it can be concluded that:

More than two-thirds (68.8%) of nurse educators had an unsatisfactory level of knowledge about clinical reasoning, while only (31.2%) of them had a satisfactory level of knowledge about clinical reasoning. Additionally, the nurse educators had positive perceptions about clinical reasoning and their perceived role in clinical reasoning. Moreover, there was a statistically significant correlation between total knowledge score and total perception score about clinical reasoning.

Recommendation

Based on the current study findings, the following recommendations were proposed:

1- Nurse educators should:

- Provide nursing students with clinical reasoning sessions prior the real clinical training.
- Apply clinical reasoning methods to enhance the students' achievement in different nursing subjects.
- Create a safe and supportive environment for students to practice clinical reasoning.
- Teach students about the different steps of the clinical reasoning process.
- Encourage students to reflect on their clinical experience to help them develop their clinical reasoning skills.

2- Educational institutions should:

- Integrate clinical reasoning methods in the nursing curriculum for positive patient outcomes.
- Provide training programs for nurse educators about clinical reasoning to help them to be able to apply it.
- Allocate resources that help nurse educators in implement clinical reasoning in their practice.

3- Further studies are needed to:

- Examine the impact of clinical reasoning training on nursing students' competencies and confidence in clinical practice.
- Identify the barriers to develop clinical reasoning skills in nursing education.
- Determine the challenges that face students in developing clinical reasoning skills.
- Compare the effectiveness of different teaching methods for clinical reasoning in nursing education.
- Use new tools and technologies to support clinical reasoning in nursing.
- Investigate the impact of clinical reasoning on patient outcomes.

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