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Assessment Of Clinical Reasoning Competencies Among Undergraduate Nursing Students

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Abstract
Background: Clinical reasoning is a crucial skill in nursing education, enhancing problem-solving abilities and facilitating in-depth analyses of patients' health problems, thereby ensuring safe nursing care.Objective: the aim of the study was to evaluate the level of clinical reasoning competencies among nursing students.
Methodology: The study design was cross-sectional survey conducted in nursing institutes of khber pukhtankhwa, having sample size of 340 using convenient sampling technique. The data was collected using adopted valid and reliable CRC for data collection, while data were analyzed through SPSS 24 as descriptive and inferential statistics.Informed were obtained from the study participants while the study was approved by ethical review committee.
Results: In this study, the majority of the students were male, with 229 (85.3%), and 165 (48.5%), age range were 23 to 26 years. The overall mean score of CRC was 59.7 ± 8.98, while the mean score in which the students mentioned that their CRC were high were; I can evaluate and assess if patient condition is improved (4.27 ± 0.72), I can set goal according to the problem of patient (4.17 ± 0.78), I know how to collect patient information correctly (4.16 ± 0.78), and i can provide accurate intervention according to the problem of patient (4.11 ± 0.88). Moreover the CRC were weakly positive correlated with gender, age, semester, and clinical experience while negative weakly correlated with clinical experience.
Conclusion: The study concluded that clinical reasoning is a comprehensive and recurrent cognitive process. It enables nursing students to appropriately assess the circumstances of their patients and select the best course of action from the available options.

Keywords: : students; nursing; clinical reasoning; clinical practicum; nursing education research

Introduction

In Pakistan the Pakistan nursing council (PNC) is regulatory authority that regulate the nursing institutes and practices within the health care industry, while Higher education commission (HEC) supervisor and regulate degree program all over the country, so every institute that announce admission or to operational nursing program have to be registered from these two organization and affiliation with provincial university [1]. Nursing is both an art and a science; nursing institutes apply theoretical knowledge as science in the form of lectures, discussion and interaction, while art encompasses the ability to care for patients, understand them, communicate with them, and demonstrate empathy and compassion. The integration of art and science distinguishes nurses from other medical professionals [2].
Clinical reasoning competencies (CRC) improves nursing students' ability to solve problems in increasingly complex clinical situations. It is believed that CRC is a special and dynamic process that makes it possible to assess patients' health issues in depth and provide safe nursing care [3]. In order to create a health care plan, a patient's history is looked into, a physical examination is done, and the findings are evaluated. This cognitive process is known as CRC [4]. In order to help patients with their problems, nurses gather information and use their expertise to help them make decisions about their care [5]. CRC integrates critical thinking with the patient's background and the therapeutic setting [6]. Meta-cognition is a key component of clinical reasoning [7], which helps students use a multidimensional method to seek and consider an expanded range of solutions to the problem while taking context into consideration [8].
Inadequate CRC among nurses lead to poor clinical judgement, which compromises patient safety [9, 10]. To provide quality care and promote patient safety in health care setup, nurses must have CRC to deliver timely care to patient [11]. Nursing education that emphasizes CRC can enhance nurses' ability to handle complex and unstable situations when interacting with patients [12]. Modern teaching and learning methods do not always foster a sufficient level of clinical reasoning skills. CRC is an essential analytical skill in nursing practice. Testing clinical reasoning in nursing education is challenging due to the lack

of reliable criteria to accurately assess nursing students' CRC. However, at the time, the patient's formative and summative evaluations consisted solely of a combination of short and multiple-choice questions that didn't really test the students' ability to use clinical reasoning. It appears that using clinical reasoning assessments, such as the script concordance exam, can significantly improve students' comprehension and learning outcomes [13]. Therefore, the aim of the study was to evaluate the level of CRC among undergraduate nursing students.

Methodology

Between April and June 2024, a cross-sectional survey served as the study design. The nursing institutes of Khyber Pukhtankhwa served as the study setting. The study participants comprised nursing students enrolled in a four-year nursing program. The Raosoft online calculator calculated the sample size with a 95% confidence level and a 5% margin of error of 340, using the convenient sampling technique. The students enrolled in 4-year nursing programme registered with the Pakistan Nursing Council and had at least 1 month of clinical experience were the inclusion criteria, while students who were absent during data collection or were not willing to be participants were excluded from the study.

The data collection process in two steps using a valid and reliable questionnaire. Step one contained socio-demographic data of the participants, I.e gender, institute status, clinical exposure, age, and semester of the participants, while step one was a 15-item clinical reasoning competencies checklist with a 5-point Likert scale ranging from 1 strongly disagree to 5 strongly agree. The Cronbach alpha of the study instrument was 0.90 [14].

The data were analyzed using SPSS 24 for both descriptive and inferential statistics. We calculated frequency and percentages for categorical variables and mean and standard deviation for continuous variables. We applied an independent t-test and ANNOVA to identify differences within the groups, and used Pearson correlation to explore the association of clinical reasoning competencies with the participants' demographic variables.

The ethical review committee approved the study and obtained informed consent from each participant. We obtained approval from each institute prior to data collection, assuring each participant that we would only use their data for data analysis and that they could withdraw from the study at any time.

Results

In this study, the majority of the students were male, with 229 (85.3%), while there were 50 (14.7%) females. The majority of students, 165 (48.5%), were in the age range of 23 to 26 years, followed by the age group of 17–22 years, 130 (38.2%). The higher number of students, 167 (49.1%), were in their 4th semester, while 99 (29.1%) were in their 2nd semester. The majority of students, 294 (86.5%), and those from government sector institutes were 46 (13.5%). See table 1.

Table 1: Socio-demographic data of the participants

Domain	Categories	Frequency (n-340)	Percentages
Age	17-22 years	130	38.2
	23 - 26 years	165	48.5
	27 and above	45	13.2
Gender	Male	290	85.3
	Female	50	14.7
Semester	2nd	99	29.1
	3rd	4	1.2
	4th	167	49.1
	6th	39	11.5
	7th	4	1.2
	8th	27	7.9
Institute Status	Private	294	86.5
	Government	46	13.5
Clinical experience	1-3 months	153	45.0
	4 to 6 months	84	24.7
	7 and above months	103	30.3

CRC of nursing students

The mean score in which the students mentioned that their CRC were high were; I can evaluate and assess if patient condition is improved (4.27 ± 0.72), I can set goal according to the problem of patient (4.17 ± 0.78), I know how to collect patient information correctly (4.16 ± 0.78), I can provide accurate intervention according to the problem of patient (4.11 ± 0.88), I can properly assess patient current information (4.07 ± 0.85), and I can administer the prescribed medication properly (4.03 ± 0.85) were the factors that contributes to the CRC. The students also mentioned that the lowest mean score was reported in identification of problems from patient data (3.67 ± 1.17) and identification and collection of patient abnormalities (3.67 ± 1.17).

Table: CRC of the participants

#	Items	Mean ± SD
C14	I am able to precisely assess a patient's condition and recognize when it has improved.	4.27 ± 0.72
C9	In light of the patient's recognized challenges, I am able to formulate nursing goals that are	4.17 ± 0.78

	suitable.	
C1	I am good at quickly obtaining medical records for patients who have been admitted.	4.16 ± 0.78
C10	For the patient issues that have been discovered, I am able to offer the proper nursing intervention.	4.11 ± 0.88
C2	I am able to gather up-to-date medical records for patients by using appropriate assessment techniques.	4.07 ± 0.85
C13	I am able to carry out the doctor's prescription as per the patient's request.	4.03 ± 0.85
C5	I am able to identify potential early warning when a patient's condition declines.	3.99 ± 0.82
C12	Based on the patient's current state, I am able to recognize and clearly convey to the doctors the important information.	3.97 ± 0.87
C6	When a patient's health deteriorates, I am able to describe the mechanism and development linked to the early indicators.	3.97 ± 0.79
C15	In the event that the patient's condition does not improve, I am aware of what to do next.	3.94 ± 0.84
C7	I am capable of effectively managing and prioritizing any observable patient issues.	3.94 ± 0.87
C8	I am able to accurately describe the process underlying a patient's issues.	3.81 ± 0.97
C11	I am aware of every nursing intervention that is offered.	3.80 ± 0.96
C3	With the patient data that has been gathered, I am able to spot irregularities.	3.78 ± 0.97
C4	I am able to determine a patient's medical issues based on the data gathered.	3.67 ± 1.17
Overall		59.7 ± 8.98

Comparison of CRC within the groups

Table 3 report that their were significant difference within the groups of gender (0.006), while their were no significant difference within the groups of age (0.065), semester (0.530), institute status (0.252) and clinical experience (0.405) of CRC .

Table 3: Comparing CRC within groups

	Mean	SD	F	P-value
Gender				
Male	3.97	0.61	7.698	0.006
Female	4.02	0.43		
Age				
17-22 y	3.90	0.68		
23 - 26 y	4.00	0.58	2.756	0.065
27 and above y	4.12	0.25		
Semester				
2nd	3.97	0.60		
3rd	3.76	0.27		
4th	3.97	0.60		
6th	3.91	0.63	0.829	0.530
7th	4.28	0.35		
8th	4.14	0.55		
Institute status				
Private	3.99	0.60	1.318	0.252
Government	3.93	0.59		
Clinical exposure				
1-3 m	3.95	0.62		
4 to 6 m	3.95	0.56	0.906	0.405
7 and above months	4.04	0.58		

Correlation of CRC with demographic data

Table 4 reveals that clinical reasoning competencies were weakly positive correlated with gender, age, semester, and clinical experience while negative weakly correlated with clinical experience.

Table 4: Correlation of clinical reasoning competencies with demographic data

	1	2	3	4	5	6
1-Gender	-	.056	.046	.321[b]	.139[a]	.030
2-Age		-	.038	-.237	.514	.1271
3-Semester			-	-.072	.104	.051
4-College				-	-.224	-.030
5-Clinical_exposure					-	.066
6-CRC						-

[a]Correlation is significant at the 0.05 level, .[b]Correlation is significant at the 0.01 level. CRC: clinical caring competenices

Discussion

The study was conducted with the aim to explore the CRC among undergraduate nursing students. In the current study majority of the participants were male compare to female students that is because in the private sector institution majority of the students are male due to cultural restrictions but these factors are minimizing with the passage of time and more awareness. In the current study majority of the participants belong to private institutes, that is because in last 10 years the federal and provincial government have encourage and recognized new private institutes to produce more nursing to overcome on the nurses shortage. The findings also shows that students from 4th and second semester was in majority that reflects on the generalizability of the study for better representation of the undergraduate students. A similar study conducted in Pakistan demonstrated that majority of the participants age group were 22-25 years 125 (48.5%), male 221 (85%) and students who belong were enrolled in 4th semester 127 (48.8%), and from private institute 226 (86.9%) [15]. A study conducted in south Korea demonstrated that most participants were female (86.4%), and their mean age was 22.38 years (SD = 1.68) [16]. Other study also show different demographic variables from our study where the maximum number of participant were female 442 (91.5), mean age of 31.43 ± 5.52 [17].

The range of nursing CRC of the 15 items was range from 36-75 score. In the current study the mean overall score of CRC was 59.7 ± 8.98, that reflects good score. It may be due to start of students in clinical areas from second semester and the supervision of their faculty members and nursing staff to interact with patients. A similar study reveals that mean score of the participants were 60.0 ± 8.9, the mean score was high because most Khber Pukhtankhwa students do their clinical practicum in government-run hospitals, where they are free to give care while surrounded by knowledgeable and experienced nursing personnel [15]. A study conducted in 2021 revealed different findings that 134(89.3%) of the students had average CRC followed by poor CRC score 16 (10.6%) and none of the student had good CRC. The mean CRC score was 25.4± 3.86 [13].The results of another study, also released by Damodaran et al. (2017), indicate that students' CRC are, respectively, intermediate and low (53.33% and 46.67%). Not a single student have strong clinical reasoning abilities. The average score for clinical reasoning abilities was 24.58 [18].The results of a study conducted in South Korea showed comparable results, with students' CRC being 50.90 ± 0.79 [16]. The average CRS score for the entire sample was 50.83 ± 9.82. The mean NCRS score for enrolled nurses was 53.76 ± 7.6, which was higher than that of non-enrolled nurses (49.85 ± 10.28) [19]. Nursing students have a problem in the space that still persists between what they learn in the classroom and what they experience in the practice [20, 21] Students' ability to recognize and remember disease patterns has been aided by their clinical experience, which they have obtained by witnessing a range of clinical cases [22].

In the current study their were difference between the groups of gender, while no difference were founds within the groups clinical exposure, age, semester, and college status of CRC. Moreover the study demonstrated that CRC were weakly positive correlated with gender, age, and semester, while negative weakly correlated with clinical experience. A study's results, which support our findings, revealed no association between the participants' clinical reasoning ability and the socio-demographic characteristics [13]. A study conducted in 2017 revealed that their is no correlation between socio-demographic and CRC among dental students and moreover there is no association with the academic performance and socio-demographic factors [23].

Most researchers believe that CRC is a critical skill and one of the most crucial competences for successful nursing practise in order to guarantee the best possible patient outcomes [29] and to effectively identify and manage patient deterioration. Nonetheless, clinical reasoning relies heavily on efficient communication. Building a relationship with patients, performing health assessments, working together to make decisions, and talking about clinical cases with coworkers and superiors are all necessary. During training, nursing professionals must acquire clinical reasoning skills in order to improve their practice. Simulations should be incorporated into nursing curricula at all levels of instruction to improve clinical reasoning skills and, ultimately, patient care. Enhancing nursing students' readiness will have an effect on the standard of patient care. Furthermore, cutting-edge, technologically-based instructional approaches may serve as a catalyst for motivation in nursing clinical reasoning [22].

The study is certain limitation such as its design is cross-sectional that doesn't identify causal relationships between the variables examined. The sampling technique was convenient that affect the generalizability of the findings.

Conclusion

Proficiency in CRC is essential for resolving a wide range of issues that arise in clinical nursing environments. The study concluded on the basis of their findings that nursing students CRC was good, while female score was better than male students. Moreover as the age, clinical experience and Long-term viewpoints and approaches are needed in nursing education to support nursing students' clinical reasoning competency. Nursing education must incorporate teaching and learning strategies that increase self-efficacy and improve the student's capacity for problem-solving in clinical settings.

References

1. Sultan A, Ali S, Jamal H, Ahmed F. Correlation of Perceived Stress on the Academic Achievement of Undergraduate Nursing Students of KPK. Esculapio Journal of SIMS. 2022 Dec 30;18(4):473-7.
2. Sultan A, Khanum S, Naz N, Khan S, Ali S. The caring competencies of nursing students: Comparing the four and two-year Bachelor of Nursing Programme. Journal of Pakistan Medical Association. 2024 Jan 31;74(1):123-.
3. Alfaro-Lefevre R. *Critical Thinking, Clinical Reasoning, and Clinical Judgment: A Practical Approach*. 6th ed. Elsevier Health Sciences; Philadelphia, PA, USA: 2016.
4. Soh M, Konopasky A, Durning SJ, Ramani D, McBee E, Ratcliffe T, et al. Sequence matters: patterns in task-based clinical reasoning. Diagnosis (Berl). 2020;7:281–9. https://doi.org/10.1515/dx-2019-0095.

5. Levett-Jones T, Hoffman K, Dempsey J, Jeong SY, Noble D, Norton CA, et al. The 'five rights' of clinical reasoning: an educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. Nurse Educ Today. 2010;30:515–20. https://doi.org/10.1016/j.nedt.2009.10.020.
6. American Nurses Association. Nursing: scope and standards of practice. 3rd ed. Silver Spring: American Nurses Association; 2015.
7. Simmons B. Clinical reasoning: concept analysis. J Adv Nurs. 2010;66:1151–8. https://doi.org/10.1111/j.1365-2648.2010.05262.x.
8. Kuiper RA, Pesut DJ. Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: self-regulated learning theory. J Adv Nurs. 2004;45:381–91. https://doi.org/10.1046/j.1365-2648.2003.02921.x.
9. Holder AG. Clinical reasoning: a state of the science report. Int J Nurs Educ Scholarsh. 2018;15:20160024. https://doi.org/10.1515/ijnes-2016-0024.
10. Tanner C.A. Thinking like a nurse: A research-based model of clinical judgment in nursing. *J. Nurs. Educ.* 2006;**45**:204–211. doi: 10.3928/01484834-20060601-04.
11. Gonzalez L. Teaching clinical reasoning piece by piece: A clinical reasoning concept-based learning method. *J. Nurs. Educ.* 2018;**57**:727–735. doi: 10.3928/01484834-20181119-05.
12. Kuiper R.A., O'Donnell S., Pesut D., Turrise S. *The Essentials of Clinical Reasoning for Nurses*. Sigma Theta Tau International; Indianapolis, IN, USA: 2017.
13. Kaur G. Assessment of Clinical Reasoning Skills among BSc Nursing Students: Script Concordance Test. Nursing Journal of India. 2021 Jul 1;112(4):153-6.
14. Liou, Shwu-Ru; Liu, Hsiu-Chen; Tsai, Hsiu-Min; Tsai, Ying-Huang; Lin, Yu-Ching; Chang, Chia-Hao; Cheng, Ching-Yu (2016). The development and psychometric testing of a theory-based instrument to evaluate nurses' perception of clinical reasoning competence. Journal of Advanced Nursing, 72(3), 707–717. doi:10.1111/jan.12831
15. Atif Khan, Fazal Haq, Saeedullah, & Nouman Khan. (2024). FACTORS THAT AFFECT THE CLINICAL REASONING COMPETENCIES AMONG UNDERGRADUATE NURSING STUDENTS : A CROSS-SECTIONAL STUDY. Journal of Population Therapeutics and Clinical Pharmacology, 31(2), 651–657. https://doi.org/10.53555/jptcp.v31i2.4460.
16. Hong S, Lee J, Jang Y, Lee Y. A cross-sectional study: What contributes to nursing students' clinical reasoning competence?. International journal of environmental research and public health. 2021 Jun 25;18(13):6833.
17. Bae J, Lee J, Choi M, Jang Y, Park CG, Lee YJ. Development of the clinical reasoning competency scale for nurses. BMC nursing. 2023 Apr 25;22(1):138.
18. Damodaran L, Sreelekha B, Mahendra J, Aruna S. Assessment of clinical reasoning in B.Sc Nursing students. IJSR 2017; 6(8): 1792-94.
19. Chan A. The association between nursing students' perceptions of their clinical reasoning ability and their background of clinical experience: A cross-sectional correlation study. Journal of Nursing Education and Practice [Internet]. Sciedu Press; 2023 Oct 18;14(2):5. Available from: http://dx.doi.org/10.5430/jnep.v14n2p5
20. Gunay U, Kilinc G. The transfer of theoretical knowledge to clinical practice by nursing students and the difficulties they experience: A qualitative study. Nurse Educ Today. 2018; 65: 81–86. PMid:29547811 https://doi.org/10.1016/j.nedt.2018.02.031
21. Saifan A, et al. Managing the theory-practice gap in nursing education and practice: Hearing the voices of nursing students in the United Arab Emirates. J Nurs Manag. 2021; 29(6): 1869–1879. PMid:34217148 https://doi.org/10.1111/jonm.13407
22. Liu Y, Li Y, Cui X, et al. Clinical study on flipped classroom and mind map in newly recruited nurses' pre-job training. BMC Nurs. 2022; 21(1): 72–72. PMid:35351110 https://doi.org/10.118 6/s12912-022-00843-z
23. Postma TC, White JG. Socio-demographic and academic correlates of clinical reasoning in a dental school in South Africa. European Journal of Dental Education. 2017 Feb;21(1):58-65.
24. Hong, S.; Yu, P. Comparison of the effectiveness of two styles of case-based learning implemented in lectures for developing nursing students' critical thinking ability: A randomised controlled trial. Int. J. Nurs. Stud. 2017, 68, 16–24.
25. Blanié, A.; Amorim, M.-A.; Benhamou, D. Comparative value of a simulation by gaming and a traditional teaching method to improve clinical reasoning skills necessary to detect patient deterioration: A randomised study in nursing students. BMC Med. Educ. 2020, 20, 53.