

Development of clinical reasoning skills through strategic questioning

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A B S T R A C T

Introduction: The ability of healthcare professionals to use clinical reasoning skills effectively is essential for making decisions in clinical settings. It is a general observation that nursing graduates possess adequate knowledge, but they lack clinical reasoning skills. This study aimed to assess the effectiveness of strategic questioning in improving the clinical reasoning skills of nursing students.

Methodology: A quasi-experimental study was conducted at a private-sector university in Islamabad, Pakistan. In total, 24 students were included in the study who were enrolled in the Medical and Surgical Nursing course in the undergraduate nursing program. The students were allocated to an experimental (12) and a control (12) group. The experimental group was provided with strategic questioning developed based on Bloom's taxonomy and the comparison group was taught through traditional questioning methods. The intervention was done for two weeks and post-intervention scores of clinical reasoning were compared in both groups.

Results: After the intervention, the mean score on the Nurse Clinical Reasoning Scale (NCRS) for the experimental group was 63.50 to the comparison group which had a mean score of 57.25 and the mean difference was statistically significant.

Conclusion: Strategic questioning is an effective teaching-learning strategy that improves the clinical reasoning skills of nursing students in the clinical areas.

Keywords: Clinical reasoning, strategic questioning, quasi-experimental.

Introduction

The scope of nursing has expanded during the last decades which has brought huge responsibility as well.¹ Nurses make decisions that can affect patients' health. These decisions must be evidence-informed to ensure patient safety and quality care. To connect the dots and make the links to understand the patient's condition, and make the right clinical decisions, nurses must possess clinical reasoning. It is a unique dynamic process that facilitates a deeper analysis of patient's health issues thus enabling safe nursing care. Nurses develop these skills

during their studies in nursing schools and colleges. Therefore, the responsibility of developing clinical reasoning skills among the students is on the nursing educators.¹ Nurses with clinical reasoning skills can provide timely individualized care which is vital for patient safety therefore they need to possess these skills before entering the clinical field.^{2, 3} Nurse educators play an important role in developing clinical reasoning skills among students through the effective utilization of teaching-learning strategies in their teaching practices.⁴ A focused

approach to nursing education on clinical reasoning skills can improve the ability to deal with complex clinical situations.⁵ Clinical reasoning is defined as the thinking processes related to making a judgment or a decision.⁵

Clinical reasoning models in medical education elaborate clinical reasoning into three different contexts that are as a cognitive skill, knowledge formation, and a complex process.^{6,7} Similarly, in nursing education clinical reasoning is viewed as a logical thinking process to analyze a clinical situation and the application of the thinking process in clinical situations.⁸ These concepts of clinical reasoning are utilized by educators in their teaching and learning practices to develop clinical reasoning skills in students. Hence, a focused approach to nursing education on clinical reasoning skills can improve the ability of nurses to deal with complex clinical situations.⁹

Table 1: Strategic Questions

1. What significant findings did you find on interviewing/history taking?
2. What are your assumptions about the medical diagnosis of this patient based on history findings?
3. What additional assessment considerations are required to confirm your assumption about the medical diagnosis of this patient?
4. What lab investigations are required to monitor the overall functional status of a patient with liver disease?
5. Why spironolactone is being administered to this patient?
6. The dietitian has advised 3 egg whites daily for breakfast to your patient. What type of diet it is?
7. Your patient's serum albumin is 3. What dietary interventions are required to improve albumin levels?
8. What will be the priority patient education point?
9. How these functions of normal kidneys are affected as a result of renal failure?
10. How dialysis will help to manage a patient's clinical manifestations of renal failure?
11. Your patient's Hb is 10. What interventions are required to improve the Hb level?
12. The consultant has ordered to monitor the daily weight and intake output of this patient. Do you agree with this order /what could be the outcome?

Strategic questioning involves the purposeful and deliberate formulation of questions to stimulate the critical thinking of students.⁹ The effective use of this strategy not only facilitates students' engagement in learning but also inculcates curiosity and critical thinking in them.¹⁰ Use of memorization questions in teaching can hinder the clinical reasoning skill of the students and educators are suggested to use strategic questioning as a strategy to develop higher-order thinking among the students.¹¹ Therefore, this research aimed to study the effectiveness of strategic questioning based on Bloom's Taxonomy in

improving the clinical reasoning skills of nursing students during clinical teaching.

Hypothesis

Ho: There is no significant difference in mean clinical reasoning between the groups.

H1: There is a significant difference in mean clinical reasoning between the groups.

Methodology

A post-test-only quasi-experimental method was used to conduct the study. The sample size included 24 students and was calculated using open epi, using CI 95%, Power of 80, and difference in group mean of 5. The students were doing medical-surgical clinical rotations in two groups and two clinical facilitators were supervising a group of 12 students. The group was selected conveniently. The 12 students rotating in Unit A were considered as the

experimental group and the 12 others rotating in Unit B were considered as the comparison group. PI accompanied the clinical facilitator of the intervention group to implement a strategic questioning strategy, whereas other clinical facilitators used a questioning strategy without any preparation.

As shown in Table 1, the PI developed strategic questions keeping in mind the potential clinical cases and learning objectives by utilizing Bloom's taxonomy. These questions were asked by the students in the interventional group during clinical teaching. This intervention lasted for two weeks. After two weeks, through a self-administered

clinical reasoning scale, each clinical facilitator received students' responses in their post-conference. The clinical reasoning scale is an adapted 15-item scale with a Likert scale 1- strongly disagree, to 5-strongly agree. The score on the scale ranges from 15-75, higher score shows a high level of clinical reasoning. This scale was opted for since the items were relevant and applied in clinical teaching of the Adult Health Nursing course in year II. Furthermore, it is a valid and reliable tool with a Cronbach's alpha of 0.94.¹² The data obtained from the two groups were analyzed with the help of SPSS.

Approval was obtained from the head of the department. Written consent was taken from the study participants and verbal consent was obtained from one clinical facilitator. In addition, codes were used to maintain the confidentiality of the participants. All data were kept in locked files to ensure the privacy of the participants.

Results

The participants were second-year nursing students, twenty (20) of them were female and only four (4) were male with a mean age of 20. The data on clinical reasoning was analyzed using SPSS. A T-test for two independent samples was applied to compare the mean scores of clinical reasoning. The mean score for the experimental group was 63.50 with the total score being 80, with a standard deviation of 4.52. On the other hand, the comparison group had a mean score of 57.25 with a standard deviation of 5.66.

Table 2: Group Statistics

Clinical Reasoning	Grouping	N	Mean Score	Standard Deviation
	Interventional Group	12	63.50	4.52
Comparison Group	12	57.25	5.66	

The t value is 2.89 with a Standard Error Difference of 2.0 at the confidence interval (CI) of 95%. The p-value is 0.007 which is less than 0.05 which means that the mean difference in NCRS core between the experiment group and comparison group is statistically significant, therefore we reject our null hypothesis.

Discussion

Nurses need to make bedside decisions for patients that can be critical for their health outcomes. These clinical decisions require sound clinical reasoning. Bedside nurses must have clinical reasoning skills to provide safe and quality care to their patients. This skill must be learned by every nursing student at the nursing college and it is the educators' responsibility to instill this skill in them.

However, nursing educators in Pakistan are rarely equipped with the nuances of teaching and learning. Most of the educators have switched to teaching without any additional degrees in education. On top of it, continuous faculty development programs are non-existent. Therefore, nursing educators aren't aware of the importance of strategic questions in enhancing critical thinking and clinical reasoning skills. The results of this study depicted that strategic questioning can be instrumental in developing clinical reasoning among students. Our results correspond with other findings in the literature.⁹⁻¹¹

It is recommended that the universities and colleges must develop their faculty members through diploma and certificate courses in education and teaching-learning exclusively to instill essential skills into the students. It is the only way to produce nurses with sound clinical reasoning to ensure safe nurses and safe patient care to the minimum.

Limitations

Self-administer scale was used to evaluate the clinical reasoning skills of the nursing students whereas, more objective assessment tools can be utilized from the educator's end as well. Approval from the ethical review committee was not obtained, however, approval from the head of the department was taken. The sample size was small and the study was limited to a single setting and course, thus the results are far from generalization.

Conclusion

In conclusion, this research project found that strategic questioning improved the clinical reasoning scores of the students. However, large-scale multi-setting studies are required to establish its effectiveness.

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Table 3: Independent Samples Test

Clinical Reasoning		Levene's tests for equality of variances				t-test for quality of means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error. Difference	95% Confidence interval of difference	
									Lower	Upper
	Equal variances assumed	0.279	0.603	2.989	22	0.007	6.25000	2.09120	1.91312	10.586
	Equal variances not assumed			2.989	20.980	0.007	6.25000	2.09120	1.9008	10.5991

References

- Alfaro-Lefevre R. *Critical Thinking, Clinical Reasoning, and Clinical Judgment: A Practical Approach*. 6th ed. Elsevier Health Sciences; Philadelphia, PA, USA: 2016.
- Gonzalez L. Teaching clinical reasoning piece by piece: A clinical reasoning concept-based learning method. *J Nurs Educ*. 2018; 57(12):727-35. DOI: <https://doi.org/10.3928/01484834-20181119-05>.
- Kuiper R, Heinrich C, Matthias A, Graham MJ, Bell-Kotwall L. Debriefing with the OPT model of clinical reasoning during high fidelity patient simulation. *Int J Nurs Educ Scholarsh*. 2008; 5(1):000010220215489231466. DOI: <https://doi.org/10.2202/1548-923X.1466>.
- Kuiper R, O'Donnell SM, Pesut DJ, Turrise SL. *The essentials of clinical reasoning for nurses: using the outcome-present state test model for reflective practice*. Sigma Theta Tau; 2017.
- Merisier S, Larue C, Boyer L. How does questioning influence nursing students' clinical reasoning in problem-based learning? A scoping review. *Nurse education today*. 2018; 65:108-15. DOI: <https://doi.org/10.1016/j.nedt.2018.03.006>
- Ho YR, Chen BY, Li CM. Thinking more wisely: using the Socratic method to develop critical thinking skills amongst healthcare students. *BMC Med Educ*. 2023; 23(1):173. DOI: <https://doi.org/10.1186/s12909-023-04134-2>
- Lintangsari AP, Emaliana I, Kusumawardani IN. Improving learners' critical thinking and learning engagement through Socratic Questioning in nominal group technique. *Stud Eng Lang Educ*. 2022; 9(2):705-23. DOI: <https://doi.org/10.24815/siele.v9i2.22352>
- Liou SR, Liu HC, Tsai HM, Tsai YH, Lin YC, Chang CH, et al. The development and psychometric testing of a theory-based instrument to evaluate nurses' perception of clinical reasoning competence. *J Adv Nur*. 2016; 72(3):707-17. DOI: <https://doi.org/10.1111/jan.12831>
- Makhene A. The use of the Socratic inquiry to facilitate critical thinking in nursing education. *Health SA Gesondheid*. 2019; 24. DOI: <https://doi.org/10.4102/hsag.v24i0.1224>.
- Hunter S, Arthur C. Clinical reasoning of nursing students on clinical placement: Clinical educators' perceptions. *Nurs Edu Pract*. 2016; 18:73-9. DOI: <https://doi.org/10.4085/1062-6050-43.3.284>
- Barnum MG. Questioning skills demonstrated by approved clinical instructors during clinical field experiences. *J Athl Train*. 2008; 43(3):284-92. DOI: <https://doi.org/10.4085/1062-6050-43.3.284>
- Yazdani S, Hoseini Abardeh M. Five decades of research and theorization on clinical reasoning: a critical review. *Advances in medical education and practice*. 2019 Aug 27:703-16.