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Correlations Between Critical Thinking and Problem-Solving Skills in Critical Situations Among Nursing Students

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ABSTRACT

Background: Critical thinking and problem-solving skills are essential for making decisions in challenging situations in healthcare system and enhancing professional competency. The nursing education system in India has evolved from informal to formal and emphasizing the importance of evidence-based teaching methodologies in developing these skills. The study aims to assess the correlation between critical thinking and problem-solving skills in nursing students, as they are crucial for providing safe and effective patient care.
Objective: This paper aims to identifying the correlation between critical thinking and problem-solving skills in nursing students.
Method: In the present study, an experimental approach with a randomization crossover design was used, and samples were selected using consecutive sampling techniques. Data was collected using socio-personal data sheets, QPSS, and HCTSR, with a flipped classroom approach and a case-based lecture approach.
Result: The present study found a significant positive correlation between critical thinking and problem-solving skills scores in both case-based lectures with r = 0.860 (P<0.001) and flipped classroom approaches with r = 0.682 (P<0.004). The majority of students were female, with 62.5% preferring self-study methods. The findings suggest a strong positive correlation between critical thinking and problem-solving skills.
Discussion: The study emphasizes the significant connection between critical thinking, problem-solving skills, and professional competencies in nursing education, highlighting the importance of innovative teaching methods.
Conclusion: The study's findings showed a significant and strong correlation between nursing students' critical thinking and problem-solving skills. In order to improve nursing students' critical thinking and problem-solving abilities in a clinical setting, innovative teaching and learning strategies can be extremely important for enhancing nursing students' critical thinking and problem-solving skills in a clinical setting.

Keywords: Critical Thinking, Problem-Solving Skills, Critical Situations, Nursing Students

INTRODUCTION

Critical thinking and problem-solving abilities are important skills needed by clinical students, which is considered one of the main components in the healthcare profession. According to Kaeppel (2021), the primary objective of education nowadays is to produce people who can think critically and learn on their own, rather than people who only possess basic

knowledge. Being a part of the 21st century skill set is higher order thinking, which includes the ability to assess, evaluate, and develop levels for the updated Bloom taxonomy that enable people to go beyond the ordinary and interpret data, adapt it to new situations, analyse it, and produce original work (Anderson et al., 2001) Critical thinking and problem-solving abilities are necessary for the practice of nursing. In the actual field of clinical nursing, a nurse should be able to solve problems with ease and apply competent nursing practices. Critical thinking and problem-solving abilities are crucial traits or behaviours that nurses need to develop (Ericksen, 2017).

Critical thinking involves intentional, higher-level thinking to define a client's problem, examine evidence-based practices, and make choices in care delivery (Alfaro-LeFevre, 2014). Critical thinking is crucial for professional nurses to solve patient problems and innovate decision-making, enhancing safety, efficiency, and skillful nursing interventions, often emphasized in nursing education (Papathanasiou et al. 2014). Critical thinking is crucial for identifying client issues, implementing interventions, and improving nursing practice. It involves cognitive skills and mental habits (Victor-Chmil 2013)

Reasoning and establishing cause-and-effect relationships are among the complex cognitive skills involved in PS (Açıkgöz, 2016). While PS aims to change an undesirable situation for the better, CT's primary goal is not only to solve an issue but also to gather proof to support opinions, assertions, and judgements, assess the origin of logical presentation of the gathered data (Hickman, 1993). As a result, while PS seeks to resolve the issue at hand, CT transcends and goes beyond PS (Meyers, 1998). In PS, the outcome is crucial, but in CT, the process is what matters most. CT is required for the entire PS procedure. Paul and Elder (2001) state that CT skills are used in problem definition, explanation of the underlying assumptions and motivations, comparison of various approaches to its solution, gathering of information, data, and evidence to support a solution, and assessment of the information, data, and evidence's source. Fisher (2005) asserts that the PS process uses both CT and creative thinking abilities.

Professional nurses require effective problem-solving skills, requiring creative thinking. Students should integrate theoretical knowledge with practical experience, encourage critical thinking, and receive an education promoting critical thinking. By solving one scenario, the nurse gains more experience in problem-solving in comparable circumstances. Improving students' critical thinking and problem solving skills is crucial for shaping the students bedside practice and safe and effective patients care

METHOD:

The approach used for the present study was experimental approach with a randomization crossover design was selected with two randomly allocated groups of 16 nursing students each for the study to accomplish the objective of the study. The target population was the Nursing students of selected nursing college, Uttarakhand, India. Sample was drawn out by using the consecutive sampling techniques. The data collected by using tools consisting of Socio personal data sheet, Questionnaire for problem solving skill (QPSS) to assess the subject specific problem solving skills and The Holistic Critical Thinking Scoring Rubric (HCTSR) to evaluate the subject Specific critical thinking levels on critical situations. Flipped classroom approach and case-based lecture approached were used as a intervention methods.

Ethical Consideration:

Ethical approval was obtained from the concerned authority. The study participants were the nursing students. Written informed consent was taken from the subjects. The study participants were assured that the

obtained findings would be used for research purpose only.

RESULTS

In the present study, the majority of 68.8% students were female and 31.3% students were male in case-based lecture approach group. The majority of 100% students were female in flipped classroom approach group in this study. The majority of 75% students were belonged to greater than 22 year's age group in case-based lecture approach group. The majority of 81.3% students were belonged to greater than 22 years age group in flipped classroom approach group in this study. The majority of 81.3% students was day scholar whereas 18.8% stayed at hostel in case-based lecture approach group. The majority of 62.5% student stayed at hostel whereas 37.5% was day scholar in flipped classroom approach group in this study. Finding revealed statistical significance association between case-based lecture approach & flipped classroom approach with Gender and Place of stayed with $P<0.05$.

Figure: 1 show that the majority of 68.8% students were female and 31.3% students were male in case-based lecture approach group. The majority of 100% students were female in flipped classroom approach group in this study

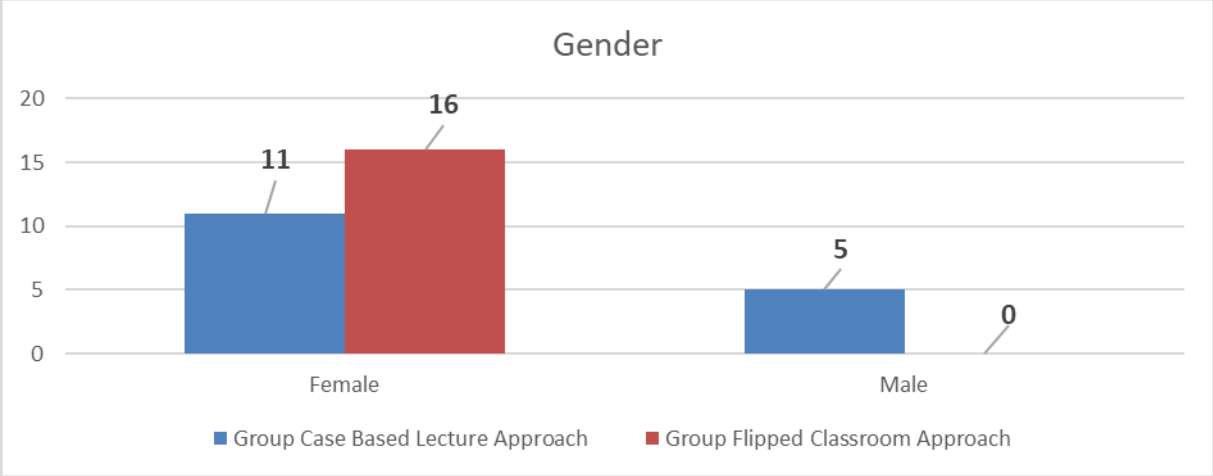

Figure 2. Shows that the majority of 62.5% students preferred self-study method whereas 31.3% preferred both method and 6.3% preferred group method for study in case-based lecture approach group. The majority of 50% students preferred self-study method whereas 37.5% preferred both method and 12.5% preferred group study method for study in flipped classroom approach group in this study.

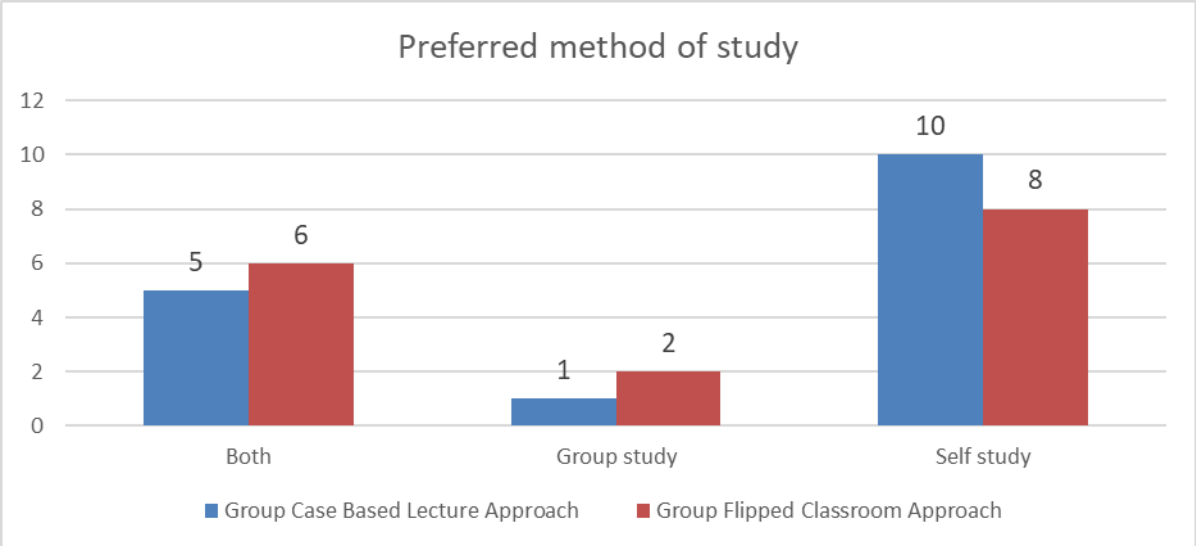

Figure:3 comparison between post 1 test and post 2 tests for problem solving skills and critical thinking in case base lecture approach

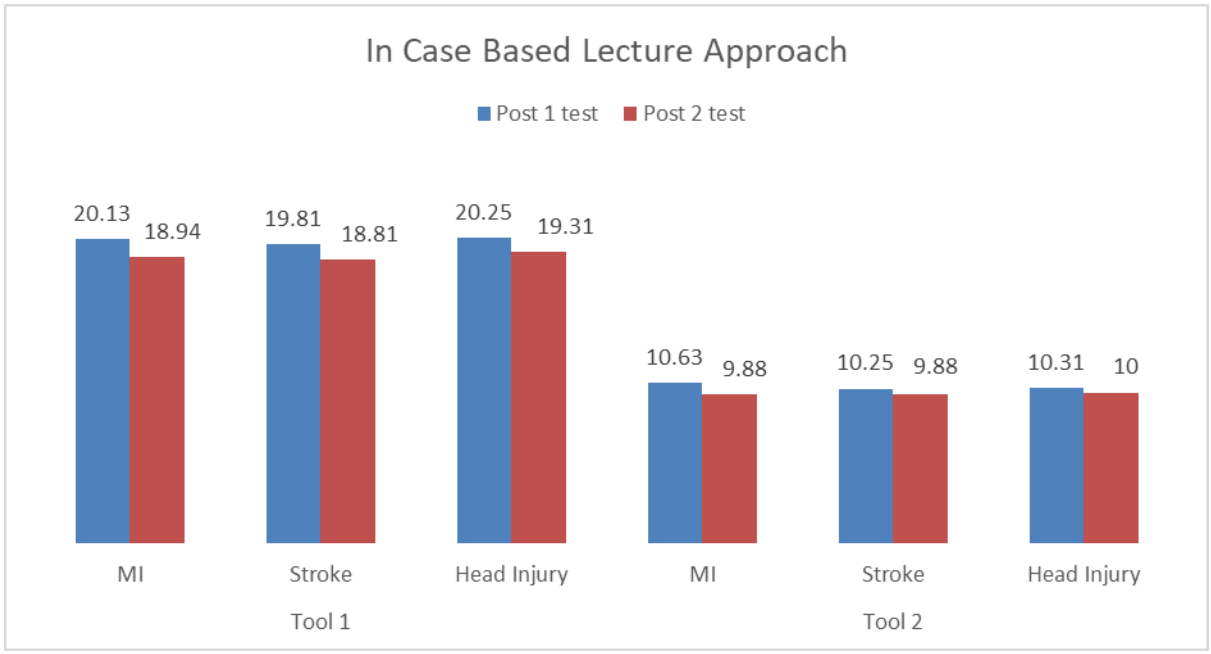

Figure: 2 comparisons between post 1 test and post 2 tests for problem solving skills and critical thinking in Flipped Classroom Approach.

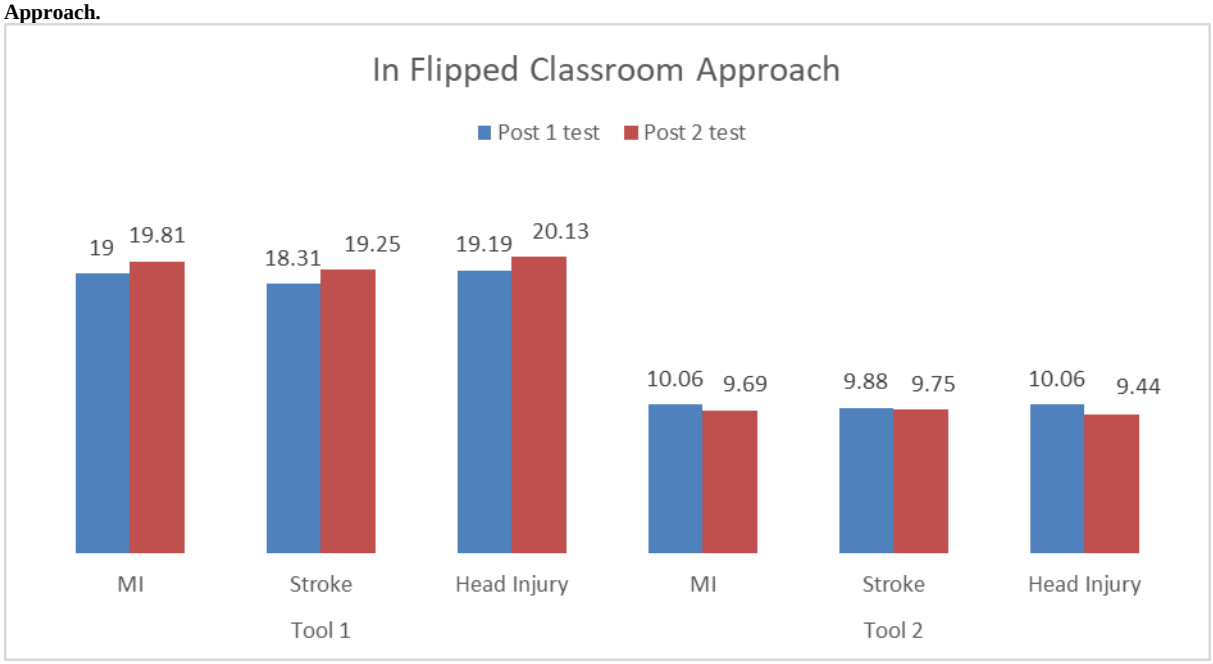

Table-1 Correlation between problem solving skills and Critical thinking in Case Based Lecture Approach

Case Based Lecture Approach		
Correlation variables	**Correlation value (r)**	**P-value**
Problem solving skills		
Post Test-1 MI Vs Post 1 Stroke	0.786	0.001
Post test -1 MI Vs Post 1 head injury	0.743	0.001
Post test- 1 stroke Vs Post 1 head injury	0.571	0.021
Critical thinking		
Post test- 1 MI Vs Post test- 1 Stroke	0.860	0.001
Post test- 1 MI Vs Post test- 1 head injury	0.667	0.005
Post test- 1 stroke Vs Post test-1 head injury	0.448	0.082

There was statistical significance positive strong correlation between MI score & stroke score with r=0.786 (P<0.05) and MI score & head injury score with r=0.743 (P<0.05) and positive correlation between stroke & head injury with r=0.571 (P<0.05)

in Problem solving skills of case Based Lecture Approach.

There was statistical significance positive strong correlation between MI score & stroke score with r=0.860 (P<0.05) and positive correlation between MI score & head injury score with r=0.667 (P<0.05) and positive weak correlation between stroke & head injury with r=0.448 (P>0.05) in Critical thinking of case Based Lecture Approach.

Table 2: Correlation between problem solving skills and Critical thinking in Flipped Classroom Approach

Flipped Classroom Approach		
Correlation variables	**Correlation value (r)**	**P-value**
problem solving skills		
Post test-1 MI Vs Post test-1 Stroke	0.773	0.001
Post test- 1 MI Vs Post test- 1 head injury	0.647	0.007
Post test -1 stroke Vs Post 1 head injury	0.704	0.002
Critical thinking		
Post test-1 MI Vs Post test- 1 Stroke	0.682	0.004
Post test -1 MI Vs Post test 1 head injury	0.555	0.026
Post test-1 stroke Vs Post test- 1 head injury	0.715	0.002

There was statistical significance positive strong correlation between MI score & stroke score with r=0.773 (P<0.05) and positive correlation MI score & head injury score with r=0.647 (P<0.05) and positive strong correlation between stroke & head injury with r=0.704 (P<0.05) in post-test-1, problem solving skills of flipped Classroom Approach.

There was statistical significance positive correlation between MI score & stroke score with r=0.682 (P<0.05) and positive correlation between MI score & head injury score with r=0.555 (P<0.05) and positive strong correlation between stroke & head injury with r=0.715 (P<0.05) in post test-1 Critical thinking of flipped Classroom Approach.

DISCUSSION

Critical thinking and problem solving skills are crucial aspect of nursing education, involving the formulation and examination of information for autonomous assessment and decision-making. It involves verifying accuracy and factual content, resulting in patient-centered nursing actions. Critical thinking and problem solving skills involves attitude, knowledge, and abilities, essential for nurses in healthcare settings. Critical thinking and problem-solving skills are becoming more and more necessary in the increasingly complex healthcare system. In time-constrained clinical settings, nurses must apply what they have learned in the classroom to ensure safe and effective patients care. Critical thinking and problem solving skills in nursing are crucial in the rapidly evolving healthcare system, as it allows nurses to provide safe and effective care while navigating the complexities of current healthcare systems.

The study aimed to evaluate the correlation between critical thinking and problem-solving skills among nursing students. In present study most of students were female and majority of students were students preferred self-study method. The majority of 75% students were belonged to greater than 22 years age This study revealed significant strong positive correlation between critical thinking and problem-solving skills scores in both case-based lectures with r = 0.860 (P<0.001) and flipped classroom approaches with r = 0.682 (P<0.004). The result supported by Huang, L., Li, X., Meng, Y. *et al (2023)* who investigated path relationships of self-directed learning ability, critical thinking ability, learning engagement, and problem-solving ability among nursing students. The study result showed that critical thinking ability was positively associated with problem-solving ability of nursing students. Additionally, critical thinking ability (0.581) was more prominent than learning engagement (0.361) on problem-solving ability. This result is in accordance with Perdani, A.S., Hernani,

H.,& Raalis, T. R. (2023) who studied "Examining the Correlation between Critical Thinking and Problem-Solving Skills of Junior High School Students Against Climate Change" who stated that the students obtained an average score of 42.82 for critical thinking and 43.53 for problem solving skills.

The finding of this study is consistent with the findings of Song Yeoungsuk ,Lee Yoonmi, Lee Junghoon (2021) that conducted to examine relationship among critical thinking, self-directed learning, and problem-solving in student nurses and to determine whether self-directed learning could mediate the relationship between critical thinking and problem-solving. Study revealed significant positive correlations among critical thinking, self-directed learning, and problem-solving. In the same line GOGUS, A.,GOGUS, N. G., & BAHADIR, E. (2020) who conducted a study to investigates the relationship between critical thinking skills and the reflective thinking skills toward problem-solving. The study concludes that there were Positive correlations between reflective thinking between critical thinking skills.

The result supported by Rabaa Ali El sayed Ibrahim et al (2020) reported a study with aimed to assess the relationship between critical thinking dispositions and Problem solving abilities among nursing students. The study conclude that There were statistically significant positive correlation between total critical thinking dispositions and total problem solving abilities among nursing students with p- value = 0.001. This result is similar to result of Tajvidi, M., Moghimi Hanjani, S (2019) who studied "relationship between critical thinking and clinical competence in nurses" who stated that students showed a positive correlation between the total scores of critical thinking and clinical competences. Tümkaya S., Aybek, B., & Aldağ, H. (2009) investigated a study on critical thinking disposition and perceived problem solving skills. The result of this study revealed better disposition towards critical thinking was associated with greater problem solving skills. Study concludes that Problem solving skills are related to critical thinking dispositions.

Declaration by Authors

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REFERNECES

1. Ahmady S, Shahbazi S. Impact of social problem-solving training on critical thinking and decisionmaking of nursing students. BMC Nurs. 2020;19(1):1–8. https://doi.org/10.1186/s12912-020-00487-x.
2. Alfaro-Lefevre, R. (2019). *Critical thinking, clinical reasoning and clinical judgment. A practical approach.* (7th ed.). Elsevier Health Sciences.
3. Badry Gargari R, Fathi Azar S. [A comparison of the effect of the group problem based learning and traditional teaching on critical thinking of teacher students]. Stud Educ Psychol. 2007;8(2):27–42. Persian.
4. Çalışkan, N., Karadağ, M., Durmuş İskender, M., Aydoğan, S., & Gündüz, C. S. (2020). The effect of critical thinking course on nursing students' critical thinking tendencies and critical thinking motivations. *Turkey Clinics Journal of Nursing Sciences*, **12**(4), 544–551. https://doi.org/10.5336/nurses.2020-75126
5. Choi E, Lindquist R, Song Y. Effects of problem-based learning vs. traditional lecture on korean nursing students' critical thinking, problem-solving, and self-directed learning. Nurse Educ Today. 2014;34(1):52–6. https://doi.org/10.1016/j.nedt.2013.02.012.
6. Joung J, Ryu Y. The influence of humanity, problem solving ability on clinical competence in nursing students. Korean Association For Learner-Centered Curriculum And Instruction. 2019; 19:193–211. https://doi.org/10.22251/jlcci.2019.19.16.193
7. Kanbay Y, Okanli A. The effect of critical thinking education on nursing students'

problem-solvingskills. ContempNurse.2017;53(3):31321. https://doi.org/10.1080/10376178.2017.1339567

8. Kim HR, Song Y, Lindquist R, et al. Effects of team-based learning on problem-solving, knowledge and clinical performance of korean nursing students. Nurse Educ Today. 2016; 38:115–8. https://doi.org/10.1016/j.nedt.2015.12.003.
9. Paryad E, Javadi N, Atrkar Roshan Z, Fadakar K, Asiri SH. [Relationship between critical thinking and clinical decision making in nursing students]. Iran J Nurs. 2011;24(73):63–71. Persian.
10. Shakurnia A, Fazelinia T, Khajeali N. The trend of critical thinking disposition in medical students and its relationship with their academic performance. *J Educ Health Promot.* 2021; 10:479.
11. Tajvidi, M., Moghimi Hanjani, S. The Relationship Between Critical Thinking and Clinical Competence in Nurses. *Strides in Development of Medical Education*, 2019; 16(1): -. doi: 10.5812/sdme.80152.
12. Terzioglu F. The perceived problem-solving ability of nurse managers. J Nurs Manag. 2006;14(5):340–7. https://doi.org/10.1111/j.1365-2934.2006.00551.x
13. Tümkaya S., Aybek, B., & Aldağ, H. (2009). An investigation of university students' critical thinking disposition and perceived problem-solving skills. Egitim Arastirmalari-Eurasian Journal of Educational Research, 36, 57-74.
14. Wang Y, Li MX, Zhang Q, et al. The mediating role of professional commitment between the clinical learning enviornment and learning engagement of nursing students inclinicalpractice:across-sectionalstudy.NurseEduToday. 2023; 121:105677. https://doi.org/10.1016/j.nedt.2022.105677.
15. Paryad E, Javadi N, Atrkar Roshan Z, Fadakar K, Asiri SH. [Relationship between critical thinking and clinical decision making in nursing students]. Iran J Nurs. 2011;24(73):63–71. Persian.

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