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PERSPECTIVES OF FIRST & SECOND-YEAR MEDICAL STUDENTS ABOUT INNOVATIVE INSTRUCTIONAL STRATEGIES VERSUS TRADITIONAL CLASSROOM-BASED TEACHING AT REHMAN MEDICAL COLLEGE, PESHAWAR: A CROSS-SECTIONAL STUDY

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ABSTRACT

BACKGROUND: Innovative instructional strategies such as Problem-Based Learning (PBL), Case-Based Learning (CBL), and seminars are increasingly being adopted in medical education to promote active learning, self-directed learning, critical thinking, and clinical reasoning.

OBJECTIVE: To explore and compare the perspectives of first and second year medical students regarding innovative instructional strategies (PBL, CBL, and seminars) versus traditional classroom based teaching at Rehman Medical College, Peshawar.

METHODOLOGY: A total of 181 first and second-year medical students were purposively selected for this cross-sectional study. A 19-item questionnaire was used to collect data about students' perception of innovative instructional strategies, including problem-based learning, case-based learning, and seminars. The age range was between 18 and 20, and they had experience with PBL, CBL, and seminars.

RESULTS : Out of the 181 participant students 49.1% (n=88) were male and 51%(n=92) were female with a mean age range of 19.8+/-1.0. Most of the participants agreed with benefits of (CBL, PBL), (mean=1.69 – 2.67). Highest agreement (mean=1.69) for inclusion of PBL/CBL, and neutral to slight disagreement (mean=2.67) for classroom teaching was observed. Female students (mean=2.69) were more inclined towards innovative teaching than male students (mean=2.95). Positive correlation between CBL/PBL and communication skills, retention of knowledge ($r = 0.519$, $p < 0.01$), self-study skills ($r = 0.547$, $p < 0.01$) & critical thinking ($r = 0.304$, $p < 0.01$), participation ($r = 0.524$, $p < 0.01$) and improvement in confidence levels ($r = 0.244$, $p < 0.01$) were observed. Negative correlation was observed between traditional teaching and cognitive thinking ($r = -0.315$, $p < 0.01$) and correlation of knowledge to practice ($r = -0.292$, $p < 0.01$)

CONCLUSION: CBL/PBL/seminars were considered effective for critical thinking, participation, application & retention of knowledge, enhanced student confidence, and communication skills. Better organization of PBL/CBL was recommended.

KEYWORDS : Innovative teaching, Problem based learning, Case based learning, Traditional classroom teaching

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INTRODUCTION

The purpose of education is not merely to impart knowledge but also to cultivate an environment that promotes innovation and critical thinking among students. In medical education, traditional strategies such as didactic lectures have long been regarded as the gold standard for content delivery and knowledge dissemination.[1] However, these traditional teacher-centered approaches are increasingly being compared with innovative, student-centered strategies that emphasize active participation, problem-solving, and integration of knowledge. [1,2,3]

Innovative instructional methods, including the flipped classroom, case-based learning (CBL), and problem-based learning (PBL), encourage learners to become active participants in the learning process rather than passive recipients of information. The flipped classroom, for instance, has been shown to enhance students' creativity, particularly in fluency, flexibility, and originality of ideas.[4] Similarly, research on CBL highlights its acceptability and effectiveness among undergraduate students and faculty, as it fosters clinical reasoning, motivation, and deeper understanding through student-focused interaction.[5] Active learning strategies such as CBL and PBL are also recognized as ideal for promoting the applied aspects of basic sciences, nurturing autonomous learning, and strengthening critical thinking.[6,7,8] Evidence from various studies demonstrates that when students participate actively in instructional sessions, they report higher levels of engagement, motivation, and metacognitive awareness compared to traditional didactic teaching.[9] PBL, in particular, has been identified as an effective tool for developing problem-solving skills and self-directed learning habits.[10]

Students have further reported that interactive sessions enhance information retention, academic performance, teamwork, and

clinical reasoning skills, while fostering practical understanding and integration of knowledge.[11,12,13] Moreover, innovative teaching strategies are associated with increased self-support in learning and greater ability to identify and bridge knowledge gaps—key competencies in professional education, such as medicine.[14 15]

Despite these benefits, literature also identifies several challenges in implementing innovative strategies.[4,7,8] These include the greater time, planning, and effort required compared to traditional lectures, and initial resistance from students accustomed to passive learning. However, with proper orientation, structured planning, and accountability, participation and performance can significantly improve.[16] When effectively implemented, such approaches enhance student confidence, satisfaction, and ability to apply knowledge.[17]

At Rehman Medical College, a hybrid modular education system was introduced in 2011, incorporating PBL, student-based seminars, and CBL across all professional years. Although faculty feedback has indicated that these innovative instructional methods are resource-intensive and may not consistently sustain student interest, systematic student perspectives have not yet been explored. Therefore, this study aims to assess students' perceptions of these innovative strategies compared to traditional didactic teaching, addressing a key research gap in understanding how medical students at this institution value and experience these evolving educational methods.

METHODOLOGY

A quantitative cross-sectional study was conducted using a newly developed questionnaire. Non-probability purposive sampling was done of 1st and 2nd year medical students at Rehman Medical College (RMC) who had experience of CBL, PBL, Didactic lectures and student seminars. The sample size was 181. The questionnaire was piloted on 10% of the population for internal consistency reliability. 10% pilot data was not included in overall data collected. The Cronbach came as an acceptable 0.78. The questionnaire used a 5-point Likert scale for student responses. The collected questionnaires were kept in Department of medical education ensuring confidentiality through sole access of the primary researcher.

The questionnaire had 19 items and was distributed and collected on site. The process was completed within 3 months Consent was obtained within the questionnaire. The questionnaire had closed ended questions with “1” meaning maximum agreement and “5” the least agreement.

Ethical approval was obtained from Rehman Medical Institute-Research Ethics Committee (vide Ref No: RMI/RMI-REC/Approval/144, dated: January 30, 2025). Confidentiality of the data was ensured by exclusive data analysis in the Department of Medical Education, Rehman Medical College, Peshawar.

RESULTS

The 181, 1st year & 2nd year medical students included in the study had a mean age of 19.8+/- 1.00. There were 49.1% (n=88) male students and 51% (n=92) female students. 48.1% (n=87) 1st year and 51.9% (n=94) 2nd year students. The data for the questions were collected in a 5-point Likert scale and analyzed using SPSS version 22.

The results obtained for descriptive statistics (frequencies, Means & Std Deviation) and comparative analysis of means between Genders for traditional versus innovative teaching are shown in Table 1 & 2 respectively. The value of $p<0.05$ was considered a significant difference between groups for different variables. Table 3 summarizes the Pearson's correlation coefficient for relationship between variables of innovative and classroom-based teaching keeping “r” between -1 to +1 & $p<0.05$.

Table 1: Descriptive Statistics for Responses of all Students regarding Innovative teaching methods

	Question	N	Minimum	Maximum	Mean	Std. Deviation
1	It's easy to learn new concepts through multidisciplinary sessions like CBL and PBL	181	1	5	2.27+/-1.163	
2	Traditional teaching methods are more convenient as compared to CBL and PBL	181	1	5	2.67+/-1.154	
3	A professor teaching you in a traditional way is effective in developing your concepts.	181	1	5	2.35+/-1.119	
4	CBL, PBL, and seminars facilitate greater participation of students in class	181	1	5	2.07+/-1.085	
5	CBL and PBL give a diverse approach to medical problems during teaching	181	1	5	2.01+/-0.949	
6	CBL, PBL, and seminars help improve the communication skills of medical students	181	1	5	1.81+/-0.874	
7	Innovative instructional techniques improve the presentation skills of students	181	1	5	1.94+/-0.932	
8	CBL, PBL, and seminar help understand a subject in depth	181	1	5	2.45+/-1.051	
9	CBL and PBL encourage self-study before, during, or after the session.	181	1	5	2.22+/-1.029	
10	CBL and PBL involve higher cognitive skills than traditional classroom-based learning	181	1	5	2.26+/-1.035	
11	CBL and PBL enable students to correlate knowledge with practice	181	1	5	2.00+/-1.006	
12	CBL and PBL enhance the confidence levels of students through interaction with each other and teachers.	181	1	5	1.88+/-0.896	
13	Traditional teaching methods should be introduced instead of innovative CBL, PBL, and seminars	181	1	5	2.81+/-1.251	
14	Retention of knowledge through CBL and PBL is more as compared to the traditional teaching method	180	1	5	2.47+/-1.111	
15	Innovative strategies in medical education develop critical thinking among students	181	1	5	2.02+/-0.888	
16	A particular topic should be approached from different perspectives to explore its diverse aspects	180	1	5	1.87+/-0.969	
17	An interactive study session is more effective and interesting	179	1	5	1.83+/-0.851	
18	A mutual discussion with classmates over a topic helps in understanding it better	180	1	5	1.69+/-0.833	
19	Medicine is a dynamic field and requires innovative study techniques to be introduced	181	1	5	1.67+/-0.810	
	Valid N (listwise)	176				

The descriptive analysis demonstrates an overall positive perception of innovative instructional strategies such as CBL, PBL, and seminars among medical students. Lower mean scores across most items indicate strong agreement that these methods enhance participation, critical thinking, communication skills, self-directed learning, and integration of theory with clinical practice. In contrast, statements favoring traditional teaching methods yielded relatively higher mean scores, reflecting neutrality or disagreement. The findings suggest that students perceive innovative teaching approaches as more effective than conventional didactic lectures for meaningful learning in medical education.

Table 2: Independent Samples T-test for Male and Female students.

Question	Theme	t-value	p-value	Interpretation
Q1	Learning new concepts via CBL/PBL	–2.59	**0.011**	Males agreed more strongly
Q8	Understanding subject in depth	–2.73	**0.007**	Males perceived deeper understanding
Q15	Critical thinking development	–2.07	**0.040**	Males reported greater benefit
Q17	Interactive sessions effectiveness	–2.31	**0.022**	Males found sessions more effective

Table 2 summarizes the data comparing male and female perceptions of various teaching methodologies. Independent samples t-tests were conducted to examine gender differences in perceptions of traditional and innovative instructional strategies. 15 out of 19 questions had no significant difference between gender perceptions. It shows major areas where male students reported significantly stronger agreement that multidisciplinary CBL/PBL sessions facilitated learning of new concepts ($t = -2.59$, $p = 0.011$), promoted deeper understanding of subjects ($t = -2.73$, $p = 0.007$), enhanced critical thinking ($t = -2.07$, $p = 0.040$), and made interactive sessions more effective and interesting ($t = -2.31$, $p = 0.022$). No statistically significant gender differences were observed for the remaining items, including communication skills, self-study, confidence, retention of knowledge, and perceptions of traditional teaching methods. Overall, the findings indicate minimal gender-based differences, with both male and female students demonstrating largely comparable and favorable perceptions of innovative instructional approaches.

Table 3: Correlation between innovative instructional strategies and traditional teaching

Category	Question	Question	Pearson's Correlation "r"	Inf
Traditional Classroom Based teaching vs CBL, PBL	Traditional teaching methods are more convenient as compared to CBL and PBL",	"CBL and PBL involve higher cognitive skills than traditional classroom-based learning"	r = -0.315, p < 0.01).	-ve correlation
	Traditional teaching methods are more convenient as compared to CBL and PBL",	CBL and PBL enable students to correlate knowledge with practice"	r = -0.292, p < 0.01).	
	"Traditional teaching methods should be introduced instead of innovative CBL, PBL, and seminars"	"Retention of knowledge through CBL and PBL is more"	(r = -0.168, p < 0.05).	
	"Traditional teaching methods should be introduced instead of innovative CBL, PBL, and seminars"	"Traditional teaching methods are more convenient"	(r = 0.454, p < 0.01).	+ve Correlation
Communication and Participation	"CBL, PBL, and seminars help improve communication skills"	with participation	r = 0.524, p < 0.01	+ve Correlation
	CBL, PBL, and seminars facilitate greater participation of students in class"	with learning new concepts	r = 0.469, p < 0.01	
Retention and Critical Thinking	"Retention of knowledge through CBL and PBL is more as compared to traditional methods"	"CBL and PBL help understand a subject in depth"	(r = 0.519, p < 0.01).	+ve Correlation

	"Retention of knowledge through CBL and PBL is more as compared to traditional methods"	"Innovative strategies develop critical thinking"	(r = 0.304, p < 0.01	
Confidence and Self-Study	"CBL and PBL encourage self-study"	"CBL and PBL involve higher cognitive skills"	(r = 0.547, p < 0.01).	+ve Correlation
	"CBL and PBL encourage self-study"	"CBL and PBL enhance confidence levels through interaction"	(r = 0.244, p < 0.01).	

Table 3 summarizes the correlation between innovative instructional strategies (CBL, PBL & seminar) and traditional classroom-based teaching. Correlation analysis shows significant relationships between students' perceptions of traditional and innovative teaching strategies. Preference for traditional classroom-based teaching showed significant negative correlations with higher cognitive skills, theory–practice integration, and knowledge retention associated with CBL and PBL. In contrast, participation, communication skills, retention, critical thinking, self-study, and confidence demonstrated moderate to strong positive interrelationships, highlighting the educational synergy of innovative instructional approaches. These findings suggest that while traditional teaching is perceived as convenient, CBL and PBL are more strongly associated with deeper learning, engagement, and skill development.

DISCUSSION

In this study a self-designed questionnaire was used to find the perspectives of 1st & 2nd year medical students about innovative instructional strategies like PBL, CBL and student seminars at RMC. The study shows 70% of the 181 students surveyed a preference for innovative instructional strategies as compared to 30% who rendered traditional classroom-based teaching more effective in learning then the innovative ones. Male students show slight inclination towards the effectiveness and convenience of classroom-based teaching than girls although both genders agree on the practical knowledge gain and mutual discussion opportunities in CBLs, PBLs and seminars than didactic teaching. This is in line with the literature reviewed for the study which showed higher creative thinking abilities and improved communication skills in students who learn through CBL/PBLs.[4,18] Although retention of knowledge [11,12] was considered a major benefit of CBL/PBLs our study showed neutrality to slight disagreement by both genders (Male, mean=2.38, females mean=2.57).

Students considered interaction (mean=1.83), mutual discussions (mean=1.69) during PBL/CBL very effective than didactic classes like findings of other researchers who conducted studies on similar cohorts [13,10,12] increase in depth of understanding of concepts was also agreed upon unanimously by both male and female students, similar findings were reported by Jessica 2022. [9,17] When the relationship between the different variables were analyzed most variables had moderate to weak correlation except those mentioned in Table 1.3. including participation, retention of knowledge, critical thinking, self-study and improved communication which showed positive correlation. Negative correlation was observed between traditional teaching and retention of knowledge, critical thinking and application of theory to practice via CBL/PBL. Literature cited also points at the enhanced effectiveness of CBL / PBL in developing the mentioned skills as compared to traditional teaching only.[19,20]

The study provides good evidence that the students favour innovative instruction like PBL / & CBL but the slight predilection of male students towards traditional teaching necessitates that a hybrid and balanced approach is adopted by institutes in implementing different modalities for teaching.

CONCLUSION

The perspective of students of 1st & 2nd year is more positive for innovative and interactive teaching strategies like CBL, PBL & student seminars. The study also addresses the faculty's concern about the lack of student interest in these active learning strategies. However, a slight disagreement in male students who favored traditional classroom teaching as convenient and effective was observed. An exploration of the perception through a qualitative study would help understand the shortcomings of CBL, PBLs and seminars to improve the instruction methodology.

A single private institute-based study representing only a single cohort reduces the generalizability of the results. The inclusion of public sector medical colleges and faculty perspective in the research will increase the credibility and generalization of findings.

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