Original Article

Perspectives of Undergraduate Medical Students of Rawalpindi Medical University regarding Effective Learning of basic medical knowledge: A Qualitative Phenomenological Study

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[1,2,3,4,5] *Conception of study*
[1,2,3,4] *Experimentation/Study Conduction*
[1] *Analysis/Interpretation/Discussion*
[1,2,4] *Manuscript Writing*
[1,2,3,5] *Critical Review*
[1,2] *Facilitation and Material analysis*

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Article Processing

Received: 15/05/2025
Accepted: 01/08/2025

Cite this Article: ***Raza S, Basharat MA, Batool Z, Munawar S, Mughal AM. Perspectives of undergraduate medical students of Rawalpindi Medical University regarding effective learning of basic medical knowledge: a qualitative phenomenological study. SJRMC. 2025;S2:25.***

Conflict of Interest: *Nil*
Funding Source: *Nil*

Access Online:

Abstract

Background: Basic medical sciences are integral to the development of clinical reasoning and professional competence in medical students. While several teaching approaches are in use, their effectiveness remains variable and often underexplored. This study explores students' views at Rawalpindi Medical University to inform improvements in medical teaching practices.

Objective: To explore the perspectives of undergraduate medical students at Rawalpindi Medical University regarding effective learning strategies and identify the factors influencing learning outcomes.

Materials and Methods: This qualitative descriptive (Husserlian) phenomenological study at Rawalpindi Medical University involved 18 second-year MBBS students selected through purposive sampling. Participants were divided into three groups based on academic and regional backgrounds: Day Scholars (F.Sc.), Hostellites (F.Sc.), and O/A Level students. Data was collected via focus group discussions using a self-administered questionnaire. Discussions were recorded, transcribed, and analyzed in MAXQDA 24.

Results: Thematic analysis identified eight themes: collaborative learning, resources, educational environment, work–life balance, sociocultural context, academic support, conceptual understanding, and application. Group discussions enhanced retention, with a preference for conceptual over rote learning supported by videos, mentorship, and self-study. Institutional resources facilitated learning, whereas commuting and time constraints were key barriers.

Conclusion: The study underscores the multifaceted nature of effective learning in undergraduate medical education. Collaborative learning, institutional support, and mentorship play pivotal roles in fostering academic success. Addressing barriers like work-life balance and promoting tailored, student-centered teaching strategies can significantly enhance learning outcomes and professional competency.

Keywords: Undergraduate Medical Education, Qualitative Research

Introduction

Education is a basic necessity of every being. Little attention has been paid to assessing the effectiveness of the methods used to deliver such knowledge. Without an effective methodology, the knowledge will be passed over, not absorbed, heard, and not efficiently applied.

The foundation of medical education lies in a comprehensive understanding and retention of basic medical knowledge, which is essential for developing competent and confident healthcare professionals. Undergraduate medical students at Rawalpindi Medical University are tasked with mastering an extensive and complex curriculum, which includes anatomy, physiology, biochemistry, and other fundamental subjects. These areas of study not only provide the essential groundwork for clinical practice but also shape the critical thinking and problem-solving skills necessary for future medical challenges. However, the effectiveness of the learning methods employed and the factors that influence students' ability to assimilate this knowledge can significantly affect their academic success and professional competence. This study aimed to explore the perspectives of undergraduate students at Rawalpindi Medical University regarding the most effective approaches to learning basic medical knowledge, identifying key challenges, preferred learning strategies, and potential areas for educational improvement. By understanding these perspectives, educators can tailor their teaching methods to meet the needs of their students better.

Medical students tend to use different methodologies when it comes to learning new concepts and grasping them to the core. Inevitably their cultural, social, and educational backgrounds have a profound influence on their learning methods. Conventionally, self-directed learning and multimedia lectures are in fashion. However, recent studies have shown that the most preferred teaching methodologies were task-based and small-group discussion. The teaching methodologies that kept them more attentive and engaged were task-based and case-based learning.[1] Moreover, the role of demonstrators and teachers in regard to enhancing the effectiveness of concept building can never be denied. According to studies, students understood and admired those teachers who made the subject easy, simple, and fun to understand.[2] It has been noticed that demographic factors also play a pivotal role, as students who are exposed to more competitive and advanced educational backgrounds stand more active toward learning new skills and grasping information effectively.[3] Despite growing interest in improving medical education, there remains limited qualitative research capturing students' own experiences and insights regarding what helps or hinders their learning of basic sciences. Understanding these perspectives is crucial for designing student-centered and effective teaching strategies. Therefore, this study aims to explore the perspectives of undergraduate medical students regarding the effective learning of basic medical knowledge, including their preferred

learning methods, perceived challenges, and suggestions for educational improvement.

Materials and Methods

This study was conducted at Rawalpindi Medical University. Ethical approval was obtained from the Ethical Review Board of Rawalpindi Medical University(Ref Letter No: EDU 3-49-22).The study population was 2nd-year MBBS students. This was a qualitative descriptive (Husserlian) phenomenological study. Qualitative phenomenological approach was used because the study aimed to understand lived experiences and perceptions rather than just measure variables or outcomes. Bracketing was employed by acknowledging and setting aside researchers' prior assumptions to ensure that findings reflected participants' lived experiences. Purposive sampling was used in this study. Eighteen participants were included in the study, which were divided into three groups based on their academic and regional backgrounds. The study groups were Day Scholars F.Sc., Hostellites F.Sc., and O/A Level students. Participants were purposively grouped as these factors shape students' daily study environments, peer interactions, and adjustment to the medical curriculum. This grouping helped capture differences in how students experience and approach learning. Informed consent was obtained from all the participants before their inclusion in our study. Interviews were continued until "data saturation" was reached, meaning that no new themes or insights emerged from subsequent interviews and participant responses became repetitive.

A semi-structured focus group discussion guide was specifically designed to fulfill the objectives of this study after discussion with the co-authors and supervisors. Data was collected through three focus group discussions, one for each participant group.The FGD guide was prepared by aligning questions with the study objectives and themes identified from relevant literature. It was reviewed by our supervisor to ensure content validity and appropriateness. Discussions were conducted in person and audio recorded. The recordings were then transcribed into PDF files. The files were imported into MAXQDA 24 for thematic analysis. Multiple authors coded the transcripts, and discrepancies were resolved through discussion to reach consensus. This approach was used to enhance the credibility and reduce individual researcher bias in the thematic analysis. The transcripts were read and re-read to ensure their familiarity with the data. Then, we started with coding, and the segments of text were tagged with short keywords. Once completed and reviewed, the codes were organized into a hierarchical system, grouping the codes into subgroups so that the themes began to appear. Overlapping and redundant codes are merged to form coherent themes. The themes were reviewed and refined separately by three authors, and conflicts were resolved through discussion. MAXQDA's visual tools helped to ensure the accuracy of the themes.

Results

The factors that affected the effective learning of medical students were collaborative and interactive learning, learning methods and resources, educational environment, work-life balance, social and cultural context, academic support and resources and Thorough Understanding and Practical Application. (**Table 1**)

Table 1 *Factors affecting the effective learning of medical students*

Theme	Codes
Collaborative & Interactive Learning	Group Study; Discussions as a Source of Learning
Learning Methods & Resources	Memorization (summarizing, repetition); Self-Study; Video Learning; Conceptual Study
Educational Environment	Good Labs; Private Institutions; Well-Rounded Curriculum; More Work in Less Time
Work-Life Balance	Balancing Social & Academic Life; Travel Time Limitations
Social & Cultural Context	Competitive Environment; Joint Family Distractions; Environmental Accountability; Family Support; Supportive Culture; Social Networks' Impact; Cultural Variability
Academic Support & Resources	Early Access to University; Extracurriculars; Quality Teaching; Pre-Testing; Study Highlighting; Resource Availability; Peer-Assisted Learning; Mentorship Programs
Thorough Understanding & Practical Application	Long-Term Learning; Learning Skills; Understanding; Application; No Cramming; Practical Learning; Freedom in Learning Resources

Discussion

The findings underscore the multifaceted nature of effective learning among undergraduate medical students. Collaborative and interactive learning included “Group Study” and “Discussions as a Source of Learning.” Group study involves students

working together to deepen understanding, generate new ideas, and solve problems. This practice was common across all backgrounds, whether F.Sc. or A Levels, urban or rural.[4,5]

"I think students must be encouraged towards group discussions. As when I was in school, they really focused on interactive sessions and group discussions."

Social and cultural influences greatly impacted students' effective learning. A "competitive environment" among peers could motivate or cause anxiety, affecting learning. "Distractions in a joint family" described challenges to focused study. "Environmental accountability" refers to individuals' responsibility toward their learning spaces. "Family support" emphasized how encouragement and a peaceful home environment improve academic and non-academic performance by providing peace of mind and validation.[6-9]

"I would say that there were some gaps in my educational background, but because of my family and close friends and all those relatives, etc., I was able to gap these demerits."

"Supportive cultural factors" means broader societal values prioritizing education to create a more conducive learning environment.[10] Lastly, "Social Network's impact" acknowledges how wide social connections influence learners' attitudes. It was revealed that those studying in institutions with "varied cultural impacts" had a better understanding of ideas, study methods, and ways to cope and find solutions.

"I got so many friends from different regions and cities, and they really helped me shape my personality".

"Memorization methods (summarizing and repetition)" were found most effective.[11] Summarization through tables, flowcharts, and diagrams helped retain information longer. Repetition further reinforced the summarized knowledge.[12] Many students emphasized self-study for thorough understanding.[13] "Video learning" resources greatly aid in creating a clear mental picture of concepts. "Conceptual Study" focuses on understanding principles and relationships rather than memorizing facts; students noted that conceptual learning leads to longer retention in memory.[14]

"In MBBS, I usually do these things, videos, and all of the stuff that really helped me to visualize things. Secondly, I mostly retain MBBS by short-listing."

"Good labs" highlight the importance of well-equipped practical spaces for subjects.[15] Practical work in such labs was key to effective learning. "Proper institutions" signifies the value of well-managed educational bodies. A "well-rounded educational curriculum" refers to a balanced blend of science, literature, arts, and space for innovation and creativity. "Studying all in less time" points to time constraints and the need for efficient learning strategies.

"But we had this research and lab culture in our college. So, we used to practice everything like vernier calipers".

"Work-life balance" emphasizes the importance of managing these competing demands to ensure well-being and sustained learning engagement. Imbalances can lead to stress, burnout, and reduced learning effectiveness. Moreover, traveling time, especially for day scholars, limits this effective learning by causing unnecessary fatigue.[16]

"*Effective study for me basically means that we have to accommodate our available time. We have to make study schedules in a way that they are adaptable, and we must go for different studying strategies and motivations*".

"Facility to approach university beforehand" refers to the value of pre-enrollment preparation, which helps shape students' learning and skills. "The quality of teaching" underscores the importance of effective instruction; delivery methods and tools like AI and multimedia significantly impact outcomes. Interactive teaching enhances understanding far more than traditional lecture-based methods.[17]

"*And the quality of teaching, again is a key factor. My college had many knowledgeable teachers that helped me a lot in building my concepts and supportive learning environment*".

Extracurriculars are equally important as academics for fostering both academic and non-academic growth. "Pré-testing" gauges prior knowledge to guide instruction. "Highlighting details of study" stresses clear objectives and marks key points for better retention. "More available resources" like e-libraries and labs positively impact learning. "Peer-assisted learning" encourages collaboration, while mentorship programs support linking education with career goals. "Learning skills" involve transferable abilities that aid lifelong learning; skilled individuals retain knowledge better and adapt more easily.

"*I believe that a person should be able to learn skills when they are learning a specific topic instead of learning new details that you may forget in a short period of time.*"

"Understanding" highlights the value of grasping concepts beyond memorization.[18] "Application" emphasizes using knowledge in real-world contexts. "Practical Learning" focuses on hands-on experience and active engagement. "Cramming" is viewed as ineffective and unstable for long-term learning. "Freedom in learning" stresses learner autonomy and pursuing personal academic interests.[19]

Hence, the participants highlighted the significance of collaborative and interactive learning, particularly through group studies and discussions, which fostered a deeper understanding of complex concepts. These interactive sessions have bridged gaps across diverse educational backgrounds, suggesting that peer engagement can act as a powerful equalizer in medical education. Furthermore, the impact of social and cultural influences, including family support, cultural expectations, and competitive academic environments, was substantial. Students from families and regions that prioritized education demonstrated greater motivation and academic resilience.

The findings can be interpreted through the framework of social constructivism, which asserts that learning transpires through social interaction, dialogue, and the creation of shared meanings. The emphasis on group studies, peer discussions, and culturally diverse peer interactions exemplifies the co-construction of knowledge that this framework highlights. Furthermore, the students' focus on self-study, time management, adaptability, and the strategic utilization of learning resources corresponds with the principles of self-regulated learning, wherein learners actively plan, monitor, and evaluate their learning processes.

Equally important were the learning methods and institutional resources available to students. The use of visual aids, self-directed studies, and video resources have emerged as the dominant strategies to reinforce conceptual understanding. A well-rounded educational environment, characterized by good labs, balanced curricula, and competent faculty, is instrumental in enhancing student engagement and comprehension. Moreover, work-life balance, including challenges such as commuting time and social responsibilities, played a critical role in shaping students' ability to sustain effective learning. Academic support mechanisms, such as mentorship programs, access to learning materials, and pre-testing, further empowered students to navigate their academic journey with clarity and purpose.

These findings align with educational theories that emphasize student-centered learning and the importance of contextual and environmental factors. The emphasis on practical application and understanding of rote memorization resonates with the current global shift toward competency-based medical education. Moreover, students reiterated the importance of autonomy, supportive environments, and skill development in fostering long-term learning retention and personal growth.

The reliability of this qualitative study was ensured by employing consistent data collection methods and thematic analysis. Participants' responses were coded and categorized systematically to extract recurrent themes. Credibility and dependability were ensured through comprehensive interviews, verbatim quotations, and consistent data collection, all analyzed systematically through thematic analysis. Confirmability and transferability were supported by reflexive coding, maintaining an audit trail, and providing rich contextual descriptions of both participants and the study setting. However, this study had some limitations. Since the data were collected from a single institution, the findings may not be generalizable to all undergraduate medical students across different regions or educational systems. Additionally, self-reported data can introduce recall and social desirability bias. Despite these limitations, this study provides valuable insights into student-perceived facilitators and barriers to effective learning in the medical education context.

At the curricular level, integrating structured peer-assisted learning, concept-based teaching,

and early exposure to practical applications can enhance basic sciences learning. For policy, institutions should prioritize resource allocation toward learning spaces, e-libraries, and student support systems. In terms of faculty development, training programs should emphasize interactive teaching strategies, formative assessment, and the effective use of digital and AI-supported educational tools. In the domain of basic medical sciences, educational approaches should transition from simple memorization to a thorough understanding of concepts, facilitated by visual resources, experiential lab activities, and integration with clinical practice. Faculty development programs should prioritize teaching strategies that focus on the learner, mentorship capabilities, and culturally aware instruction. Particularly in LMICs, it is vital to enhance institutional learning environments by employing affordable digital technologies, encouraging collaborative learning methods, and fostering supportive academic atmospheres to enhance learning outcomes despite limited resources.

Conclusion

In conclusion, this study reveals that effective learning in undergraduate medical education is a complex interplay of pedagogical strategies, institutional support, cultural context, and personal circumstances. Collaborative learning, access to quality resources, supportive environments, and skill-based education have all emerged as critical enablers. Addressing factors such as work-life balance and enhancing mentorship and academic support structures can significantly improve learning outcomes. These insights offer a strong foundation for medical educators and policymakers to design learner-centered strategies that not only improve academic performance but also support the holistic development of future healthcare professionals.

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