https://doi.org/10.29309/TPMJ/2026.33.09.10456 www.theprofesional.com

ORIGINAL ARTICLE

Benefits and Barriers of Vertically Integrated Learning: Exploring Medical Students' Perspectives - A Qualitative Study From Larkana, Pakistan.

Preh Ayub Abro[1], Ayesha Junaid[2], Junaid Sarfraz Khan[3]

ABSTRACT… Objective: To explore medical students' perceptions of VIL, focusing on perceived benefits, barriers, and suggestions for improvement. **Study Design:** Qualitative study. **Setting:** Chandka Medical College, a Constituent College of Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan. **Period:** September 2025 to December 2025. **Methods:** Fifty MBBS students from all academic years, including both genders, participated. Data were collected using an open-ended questionnaire through printed forms and Google Forms, according to student preference and availability. Participation was voluntary, and responses were confidential. Data were analyzed using NVivo software (version 15), following Braun & Clarke's thematic analysis framework, including familiarization, coding, theme identification, triangulation, member checking, and iterative refinement to ensure credibility and trustworthiness. **Results:** Thematic analysis identified six major themes: (1) Overall experience of VIL, (2) Integration of basic and clinical sciences, (3) Improvement in learning style and clinical reasoning, (4) Perceived benefits, (5) Barriers, and (6) Suggestions for improvement. Students reported positive experiences, highlighting enhanced understanding, better subject correlation, early clinical exposure, and improved correlation between subjects. Barriers included heavy workload, limited opportunities for clinical practice, inconsistent integration across departments, and time management difficulties. Suggestions included increasing clinical exposure, structured case-based sessions, and improved coordination between departments. **Conclusion:** Medical students perceive VIL positively, particularly for linking theory with practice, enhancing clinical reasoning, and fostering early clinical exposure. Effective implementation, however, requires careful curriculum planning, structured integration, and coordinated departmental support. These insights can inform curriculum development and policy decisions in Pakistan and similar educational contexts.

Key words: Clinical Reasoning, Curriculum Integration, Early Clinical Exposure, Medical Education, Qualitative Study, Pakistan, Student Perceptions, Vertically Integrated Learning.

Article Citation: Abro PA, Junaid A, Khan JS. Benefits and Barriers of Vertically Integrated Learning: Exploring Medical Students' Perspectives - A Qualitative Study From Larkana, Pakistan. Professional Med J 2026; 33(09):1815-1819. https://doi.org/10.29309/TPMJ/2026.33.09.10456

INTRODUCTION

The word "curriculum" comes from Latin and means "a plan of study." A group of medical educators, looking at the ideas of Flexner, suggested a new approach called "integrated learning." This approach helps students remember what they learn in different subjects. It is a good way to teach students the skills they will need in the future.[1] The integrated teaching method is used worldwide. It was first started in 1952 in Cleveland, USA. The UK's General Medical Council and India's Medical Council have also adopted this method for teaching medicine. This means that medical students learn different subjects in a connected way, rather than separately.[2]

In Pakistan, not many medical schools have switched from the old way of teaching to the new, integrated way. There are two ways to integrate subjects: Horizontal integration: This means that different departments teach together at the same time. Vertical integration: This means that subjects that are usually taught separately at different times are now taught together in a connected way.[3]

The integrated teaching method has many benefits, such as: Teaching important health topics in a logical order, avoiding repetition, Making better use of teachers. However, it also has some limitations, mainly that it focuses more on what the teacher wants to teach rather than what the student needs to learn.[4,5] While integrated teaching has been widely adopted in other countries, there is a lack of qualitative research exploring students' perspectives on vertical integration in Pakistani medical schools.

1. BDS, MSPH, MSHPE, Lecturer, Department of Oral Medicine, Bibi Aseefa Dental College, SMBB Medical University Larkana, Pakistan, MSHPE, Health Services Academy, Islamabad, Pakistan.
2. M.Phil, Ph.D (Linguistic), Assistant Professor Linguistic, Department of English Language & Literature, College of Sciences & Humanities, Prince Sattam Bin Abdul Aziz University, Kingdom of Saudi Arabia.
3. MBBS, FCPS, FRCS, PGD, MSc, Ph.D (PAK), PhD (UK), Post Doctoral (UK), Professor, Rector/Director Academics, Health Service Academy, Islamabad.

Correspondence Address:
Dr. Preh Ayub Abro
SMBB Medical University Larkana.
abro.drpreh@gmail.com

Article received on:
09/03/2026
Date of revision:
13/04/2026
Accepted for publication:
14/05/2026

This study addresses this gap by providing first-hand insights from students, highlighting perceived benefits, barriers, and suggestions for improvement, which can guide curriculum development in similar educational contexts.

METHODS

This qualitative study was conducted at Chandka Medical College, a constituent college of Shaheed Mohtarma Benazir Bhutto Medical University, Pakistan, from September 2025 to December 2025. Purposive sampling was employed to select participants, as this method enables an in-depth exploration of the phenomenon of interest.

Participants were drawn from all five MBBS batches (1st year to final year) to ensure diverse perspectives from students who had experienced integrated teaching. A demographic questionnaire with closed-ended questions was used to collect basic information about participants, including gender and academic year. Six open-ended questions were included to allow students to share their perceptions of vertically integrated learning (VIL) in their own words. Students were given the option to complete the questionnaire on paper or online via Google Forms according to their preference. Participation was entirely voluntary, and responses were kept confidential.

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Institute (IRB F:No: 002-26/06-08-2025). Responses were analyzed using NVivo software (version 15), following Clarke & Braun's thematic analysis framework.[6] This approach was chosen for its ability to explore participants' subjective experiences and identify patterns across textual data. The analysis involved six steps: 1. Familiarization: All responses were read multiple times to gain a comprehensive understanding of the data. 2. Coding: Meaningful units of text were assigned codes reflecting key ideas and concepts expressed by participants. 3. Theme Identification: Related codes were clustered to form initial themes, capturing recurring patterns in students' perceptions of VIL. 4. Triangulation: Responses were compared across academic years and genders to ensure that themes reflected diverse perspectives. 5. Member Checking: Preliminary themes were shared with a subset of participants to verify the accuracy of interpretations and clarify ambiguities. 6. Iterative Refinement: Themes were discussed and refined by the research team until consensus was reached, ensuring the trustworthiness and reliability of findings.

RESULTS

A total of 50 participants provided responses to open-ended questions exploring their perceptions of vertically integrated learning in medical education. Thematic analysis identified six major themes and multiple sub-themes, reflecting students' experiences, perceived benefits, and challenges associated with the vertically integrated curriculum. Participant Characteristics.

Participants included MBBS students from different academic years at Chandka Medical College, a constituent institution of Shaheed Mohtarma Benazir Bhutto Medical University. The distribution of participants across academic years was as follows: 1st Year MBBS (23.8%), 2nd Year MBBS (14.3%), 3rd Year MBBS (23.8%), 4th Year MBBS (4.8%), and Final Year MBBS (33.3%). The sample included 52.4% female and 47.6% male participants, indicating a relatively balanced gender representation.

Overall, vertically integrated learning was perceived positively, particularly for enhancing conceptual understanding, clinical reasoning, and application-based learning. However, organizational challenges, workload issues, and limited clinical practice opportunities highlight the need for improved departmental coordination and structured implementation strategies.

DISCUSSION

This study explored medical students' perceptions of vertically integrated learning (VIL), revealing predominantly positive experiences alongside notable barriers. Participants reported that vertical integration enhanced their understanding of basic and clinical sciences, fostered clinical reasoning skills, and made learning more relevant and engaging. These findings align with existing literature on integrated curricula in health professions education.

TABLE-I

Themes, sub-themes, representative quotes, and % of participants reporting

Theme	Sub-Theme	Representative Quotes	% of Participants Reporting
1.Overall Experience of VIL	i. Positive Learning experience ii. Mixed Experience due to workload	"It helped in better understanding of clinical relevance of basic sciences." "Learning became more interesting and practical." "Adjusting to workload was sometimes challenging."	Positive learning experience: 80% Mixed workload: 40%
2.Integration of Basic and Clinical Sciences	i.Improved conceptual understanding Better subject correlation ii.Application-based learning	"Basic concepts became clearer when linked with clinical cases." "It helped connect theory with patient management." "Integration was inconsistent across some departments."	Conceptual understanding: 76% Subject correlation: 68% Inconsistent integration: 30%
3. Improvement in Learning Style and Clinical Reasoning	i.Enhanced analytical thinking ii.Better problem-solving skills	"It improved clinical thinking." "Case-based discussions helped develop diagnostic skills." "No major difference compared to traditional teaching for some students."	Analytical thinking: 60% Problem-solving: 50% No difference: 20%
4. Perceived Benefits of Vertical Integration	i.Early clinical exposure Better retention of knowledge ii.Application-based understanding	"Early clinical exposure helped in understanding disease management." "Concepts are easier to remember when applied clinically."	Early exposure: 72% Better retention: 64% Application-based understanding: 68%
5. Barriers in Vertically Integrated Curriculum	i.Heavy academic workload ii.Poor coordination between departments Limited clinical practice time iii.Time management difficulties	"Workload increased due to integration." "Better coordination between departments is needed." "Limited time for hands-on clinical practice."	Workload: 58% Poor coordination: 42% Limited practice: 36% Time management: 30%
6. Suggestions for Improvement	i.Increase clinical exposure ii.Improve teaching strategies iii.Better curriculum organization iv.Structured case-based sessions	"More clinical cases should be included." "Integration should be better planned across subjects." "Case-based sessions need to be more structured and consistent."	Increase exposure: 70% Improve teaching: 50% Better organization: 40% Structured sessions: 60%

*Percentages indicate the proportion of participants mentioning each sub theme; participants could report multiple sub-themes.

The majority of students appreciated the integration of basic sciences with clinical application, noting that contextual learning helped them relate theoretical knowledge to patient care situations. This observation concurs with a Research that found that students exposed to integrated curricula perceived better linkage between basic and clinical knowledge, particularly when the learning design included case-based and supervised clinical practice elements.[7] Similar Study emphasized that embedding basic sciences within clinical contexts supports meaningful learning by aligning classroom education with real-world professional practice.[8]

Enhancement of clinical reasoning and problem-solving skills emerged as another central theme. This is consistent with studies showing that vertical integration supports knowledge retrieval and application by bridging the divide between foundational sciences and clinical exposure.[9] Early clinical exposure, a key component of vertical integration, has been shown to improve student engagement and reinforce biomedical concepts as students encounter authentic clinical problems. Structured curriculum interventions, such as the VICE activity, have demonstrated successful implementation of clinical integration to facilitate understanding and application of basic science knowledge during clerkship.[10]

Despite positive perceptions, participants reported barriers including increased academic workload, insufficient coordination between basic and clinical disciplines, and limited structured clinical exposure.

These findings mirror faculty-reported challenges during transitions to integrated curricula, such as uneven workload distribution, communication barriers, and resource constraints.[11] Similar issues have been highlighted in quasi-experimental studies, where students expressed mixed satisfaction with self-study time and emphasized the need for careful curricular planning and student support mechanisms.[12,13]

Overall, vertical integration was associated with positive learning outcomes, including deeper understanding and preparation for future clinical practice. The findings support the broader perspective that vertical integration should be viewed not merely as a curriculum schedule modification, but as an educational philosophy that enhances student motivation, professional identity formation, and lifelong learning potential.[14]

CONCLUSION

This study provides first-hand insights into medical students' perceptions of vertically integrated learning in Pakistan. Overall, students reported positive experiences, particularly improved conceptual understanding, enhanced clinical reasoning, and stronger linkage between basic and clinical sciences. Early clinical exposure and application-based learning were identified as key strengths. However, barriers such as increased academic workload, inconsistent coordination across departments, and limited structured clinical exposure were also noted. These findings indicate that while vertical integration promotes meaningful and clinically relevant learning, its success depends on systematic planning, coordinated implementation, and faculty support. The study highlights the need for context-specific strategies to optimize the benefits of vertical integration in medical education.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

1. Lajber M, Mahboob U, Imtiaz-ud-Din LF, Khan M, Bukhari SW. **Student's perception regarding an integrated curriculum at a public sector medical college.** Pak J Med Health Sci. 2020; 14(3):1196-9.
2. Wajid RA, Asher AB, Tariq JU. **Perception of undergraduate medical students about integrated modular curriculum and factors affecting.** Pak J Med Health Sci. 2022 Jul; 16(7):63-5.
3. Khan AA, Asher A, Ahmad A, Iqbal S, Khan NA. **Frame factors for implementation of integrated curriculum in public sector medical college-faculty's perspective.** Pakistan Armed Forces Medical Journal. 2016 Dec 31; 66(6):891-97.
4. Das S, Pasha C A. **Students perception regarding integrated pathology teaching programme for medical laboratory science curriculum: An institutional study.** Indian Journal of Pathology and Oncology. 2019 Nov 15; 6(4):568-73.
5. Shaheen N, Khan RA, Yasmeen R, Sajid MT. **Probing in the complexities of the integrated undergraduate medical curriculum: A qualitative exploratory study.** J Pak Med Assoc. 2022 Mar 1; 72(3):452-6.
6. Braun V, Clarke V. **Using thematic analysis in psychology.** Qual Res Psychol. 2006; 3(2):77-101.
7. Prince KJ, Van De Wiel M, Scherpbier AJ, can der Vleuten CP, Boshuizen HP. **A qualitative analysis of the transition from theory to practice in undergraduate training in a PBL-medical school.** Advances in Health Sciences Education. 2000 May; 5(2):105-16.
8. Dolmans DH, De Grave W, Wolfhagen IH, van der Vleuten CP. **Problem-based learning: future challenges for educational practice and research.** Med Educ. 2005 Jul; 39(7):732-41.
9. Kulasegaram KM, Martimianakis MA, Mylopoulos M, Whitehead CR, Woods NN. **Cognition before curriculum: Rethinking the integration of basic science and clinical learning.** Acad Med. 2013 Oct; 88(10):1578-85.
10. Yardley S, Littlewood S, Margolis SA, Scherpbier A, Spencer J, Ypinazar V, et al. **What has changed in the evidence for early experience? Update of a BEME systematic review.** Medical Teacher. 2010 Sep 1; 32(9):740-6.
11. Irby DM, Cooke M, O'Brien BC. **Calls for reform of medical education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010.** Academic Medicine. 2010 Feb; 85(2):220-7.
12. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. **Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world.** The Lancet. 2010 Dec 4; 376(9756):1923-58.
13. Raza A, Khaliq T. **Students dreem from pre-clinical to clinical years-a cross sectional analysis from Rehman Medical College, Peshawar.** J Ayub Med Coll Abbottabad. 2022 Jan-Mar; 34(1):145-53.
14. O'Sullivan PS, Irby DM. **Reframing research on faculty development.** Acad Med. 2011 Apr; 86(4):421-8.

AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Preh Ayub Abro:** Methodology, Data analysis, Data interpretation, Drafting.
2	**Ayesha Junaid:** Manuscript revision.
3	**Junaid Sarfraz Khan:** Supervised the study.