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Original Article



Evaluating Perception of Undergraduate Medical Students About Integrated Modular System

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ABSTRACT

The Integrated Modular System (IMS) is a structured program that begins with basic medical concepts and integrates all medical science components both horizontally and vertically. Objectives: To assess total perception scores, sub-variable scores, and the associations between research and demographic variables. Methods: An analytical cross-sectional study was conducted at Gomal Medical College using a quantitative approach with undergraduate students. Stratified random sampling was applied. The sampling frame comprised official $enrollment \ lists from \ GMC's \ registrar. \ Strata \ were \ defined \ by \ a cademic \ year (Year 1-Final \ Year) to$ ensure proportional representation. Within each stratum, students were randomly selected using Google Sheets' RAND function to generate random numbers assigned to roll numbers. The top 40 unique random numbers per year were selected. A self-administered questionnaire, scored on a five-point Likert scale, assessed student perceptions across four sub-variables and three demographic variables. Scores were categorized as poor, fair, or good using Bloom's criteria. SPSS version 27.0 was used to compute frequencies, percentages, and perform chisquare and Fisher's exact tests. Results: Out of 200 participants, 72.5% had fair perception, 16.5% good, and 11.5% poor. No significant association was found between gender or residence and total perception score. However, a significant association existed between students' year of study and their perception score. Conclusions: Students generally had an average yet cautiously positive perception of IMS, especially regarding learning behaviour and future outcomes. Concerns remain about achieving IMS goals and resource availability. DME should enhance evaluation guidelines and time allocation, while administration must improve selfdirected learning resources.

INTRODUCTION

The medical education system, supported by adequate resources and proper implementation, directly influences students' learning habits, clinical skills, critical thinking, and research capabilities [1]. With great advancement in every field of science and technology, medical sciences have also been going through a tremendous amount of upgrading and refinement by shifting toward an interdisciplinary approach [2]. The outdated conventional system failed to match expanding curricula, prompting the need for a modern, well-planned, and efficiently timed learning approach [1, 3]. Strengthening the integration of basic science education with clinical practice is

recognized as an effective approach to improving medical education and can serve as a foundational strategy for curriculum development [4]. An integrated modular system is a structured program which starts with the basic concepts of medicine and incorporates all components of medical sciences in a horizontal as well as vertical manner [5, 6]. The Integrated Modular System promotes coordinated, system-based teaching, where departments align content like physiology and pathology in a liver module requiring cross-departmental and institutional collaboration [7]. Integrated curricula blend early clinical exposure with continued science teaching, unlike

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traditional models that separate science and clinical training by years [8]. This approach broadens professional knowledge and skills, while also supporting better career guidance and employability for graduates [9]. The evaluation of the effectiveness of the integrated modular system among students in every medical college is essential to find out the advantages, drawbacks and areas that need further improvement [3]. The majority of students appreciated the integrated modular system of teaching in a study conducted at a public sector medical college [10]. Another research concluded that the majority of students were satisfied with the integrated curriculum but were not satisfied with the time allocation for each module [11]. A clear institutional vision is essential for adopting an integrated curriculum, but the rapid rise of medical colleges and the lack of experienced educators in Pakistan may stall progress [12]. As a new system, the Integrated Modular System may face challenges during adaptation, which can be addressed by incorporating student feedback to reveal its effectiveness and underlying issues [13]. No prior research has explored students' perceptions of the Integrated Modular System (IMS) at Gomal Medical College, Dera Ismail Khan.

This study aims to assess whether IMS meets its objectives, the adequacy of available resources, and its impact on learning and career readiness. Findings guide improvements in curriculum, resource allocation, and policy, helping enhance the system's effectiveness and aligning it with students' educational needs.

METHODS

The study used a quantitative, cross-sectional design at Gomal Medical College (GMC), Dera Ismail Khan, from October to December 2024. Ethical approval was obtained from the Ethical Review Committee of GMC, MTI, Dera Ismail Khan (144/GJMS/JC). A sample of 200 students was selected using stratified random sampling via Google Sheets, with 40 students chosen from each year. Five strata were created, each representing an academic year, and students were randomly selected from each stratum using their assigned roll numbers. The sample size was determined using the Raosoft calculator, assuming a 95% confidence level, 5.40% margin of error, and 63% response distribution, based on a population of 571 students. Inclusion criteria included all undergraduate students at GMC; those who did not consent were excluded. Data were collected using a self-administered, validated questionnaire approved by the Community Medicine Department and piloted with 20 students. The Cronbach alpha value was calculated as 0.745. A five-point Likert scale was used for responses (1 = Strongly Disagree to 5 = Strongly Agree). The primary variable was student perception, divided into four subdomains: achievement of aims/objectives, resource availability, learning behaviour, and future outcomes each with five items. Demographic data (gender, residence, year) was also recorded. Mean scores calculated based on Likert scores for perception and subdomains were calculated and categorized using Bloom's criteria: <3 as "Poor," 3–3.9 as "Fair," and 4–5 as "Good." Statistical analysis was done using SPSS version 27.0, which included frequencies, percentages, chi-square and/or Fisher's exact test, with a significance level of p<0.05 and 95% confidence interval.

RESULTS

The demographic characteristics of the participants are presented in table 1.

Table 1: Demographic Characteristics of the Participants

Years	Male	Female	On-campus	Off-campus	Total
1 st Year	26	14	31	9	40
2 nd Year	24	16	28	12	40
3 rd Year	28	12	30	10	40
4 th Year	26	14	33	7	40
Final Year	29	11	33	7	40
Total	133 (66.5%)	67(33.5%)	155 (77.5%)	45 (22.5%)	200

After analyzing students' perceptions of the Integrated Modular System (IMS), 22 students (11%) had a poor overall perception, 145(72.5%) had a fair perception, and 33(16.5%) had a good perception. The first sub-variable, "achievement of aims and objectives," showed 19.5% poor, 57.5% fair, and 23% good perception. For "availability of resources," 40% had a poor perception, 46.5% fair, and only 13.5% good, indicating concerns about resource adequacy. The third sub-variable, "improvement in learning behaviour," revealed a more positive outlook, with 12% poor, 47.5% fair, and 40.5% good perception. The final subvariable, "future outcomes," showed 14% poor, 41% fair, and 45% good perception, reflecting optimism about longterm benefits. These findings collectively highlight cautious acceptance of the IMS, with particular concerns about resources but hope for future outcomes and learning improvements, as mentioned in figure 1.

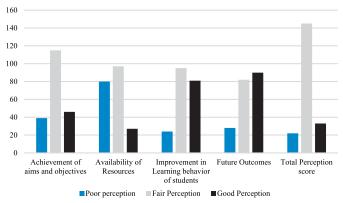


Figure 1: Students' Perceptions of the Integrated Modular System

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Chi-square analysis showed no significant association between total perception score and gender (p=0.435) or residence (p=0.254). A significant association was found with year of study (p=0.026). Confidence intervals were calculated to generalize perception scores to the population, as mentioned in table 2.

Table 2: Chi-Square Analysis Between Total Perception Score and Gender

Perception Category	Group	Lower	Upper
Poor Perception	Overall	5%	18%
	Male	7%	21%
	Female	2%	13%

	On-campus	5%	18%
	Off-campus	4%	16%
	Overall	64%	81%
	On-campus 65%	80%	
Fair Perception	Female	63%	81%
	On-campus	65%	83%
	Off-campus	53%	73%
	Overall	10%	25%
	Male	8%	23%
Good Perception	Female	12%	27%
	On-campus	7%	22%
	Off campus	16%	33%

The analysis shows how often each of the sub-variables

was rated on a 5-point Likert scale, from "Strongly Agree" to "Strongly Disagree," based on responses from 200 people. The frequency of students was represented as n. Explore the data to see how each item was rated and uncover the trends in the responses, as in table 3.

Table 3: Sub-Variables Rated on A 5-Point Likert Scale, Based on Responses from 200 People

Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Sub-variable 1: Achievement of Aims	and Objectiv	es of IMS			
The integration of basic medical sciences and their clinical correlates strengthens both your medical concept and clinical skills.	93	75	19	7	6
Learning objectives are precise, clear and delivered accurately.	14	93	50	30	13
The end-of-modular assessments are according to the learning objectives, and are graded timely manner.	37	80	41	28	14
The subjects among the modules are integrated Properly and no repetition of topics is observed.	41	75	31	42	11
The teacher's evaluation and the curriculum feedback are taken regularly at the end of the module by the DME.	22	28	35	66	49
Sub-variable 2: Availability of	of Resources		1	1	
The resources for self-directed learning, like the library, are always available to the students.	28	46	27	42	57
The number of faculty available for each The department is enough.	38	93	40	22	7
The faculty is well-trained according to the requirements of IMS.	24	64	50	44	18
IMS provides ample Opportunities for high-quality research.	24	58	57	44	17
The time allotted to each module is sufficient to cover all topics completely.	26	45	26	67	36
Sub-variable 3: Improvement in the Learn	ing Behaviou	r of Students	3		
Scenario-based learning helps you apply your theoretical knowledge and in critically.	88	72	21	14	5
Small group discussions enhance collaboration, participation and communication skills among students.	78	71	24	15	12
Students prefer to prepare the whole syllabus rather than focusing on frequently asked questions.	37	66	49	32	37
IMS fosters collaboration and teamwork among students.	38	80	49	25	8
IMS promotes lifelong learning habits.	30	75	56	24	15
Sub-variable 4: Future 0	utcomes				
Students find the IMS very relevant to real-world practice.	45	44	43	16	12
The integrated modular system accommodates different learning styles and preferences.	32	99	39	22	8
IMS prepares the students very well for the professional exams.	56	72	44	19	9
The IMS prepares you very well for future specialization or residency programs.	41	71	58	17	13
The students of GMC would like to recommend IMS to future medical students.	73	70	27	14	16

DISCUSSIONS

The concept of an integrated curriculum in medical education with an organ system approach was introduced in the Case Western University School of Medicine in 1952 and quickly gained widespread acceptance. It has been studied in China since the 1990s [14]. Subsequently, Khyber Medical University, Peshawar, adopted this approach in its affiliated colleges in 2018, aligning with global trends to improve the quality and coherence of medical education. The purpose of our study was to evaluate the perceptions of medical students currently enrolled at Gomal Medical College regarding the modern educational system introduced at their institution. In our study, most students (72.5%) exhibited a Fair response based on their total perception scores. This finding was consistent with Masood et al. findings, which also reported a satisfactory or impartial level of perception among 45.4% students [15]. 72.6% students strongly affirmed that integrated teaching helps in clinically applying basic knowledge in a study by Wajid et al. This finding WAS consistent with the responses to the first item of our questionnaire [16]. Studies have also shown that the integrated PBL curriculum model positively influences the development of clinical thinking skills in undergraduate medical students. The PBL group showed similar pre-test high-level clinical thinking as the control group (82.81% vs. 81.43%) but significantly higher post-test results (92.13% vs. 85.71%), indicating the PBL curriculum's effectiveness [17]. 58% of our participants were positive about the proper integration of subjects in each module, while 52% participants felt that it was well to very well integrated in a study conducted in Ethiopia [18]. Additionally, 40% of our students were satisfied with assessment strategies, while 51.3% of respondents in a study conducted by Atta et al. were dissatisfied with assessments [19]. Students were utterly dissatisfied with the role of DME in teachers' evaluation and curriculum feedback, as observed in our study. No relevant study was found that evaluated the role of DME in the effective implementation of IMS. Aziz et al. highlighted in a qualitative study about the challenges in curriculum development and interdepartmental collaboration within integrated modular curricula [11]. Regarding satisfaction with faculty, 32% of our students agreed, and 25% were neutral, which contrasts with a study of Atta et al. where 46.3% were strongly satisfied with the teaching strategy [19]. A significant portion (33.5%) disagreed and (29.8%) strongly disagreed with the time allotment for each module, according to our study, aligning with findings by Jalil and Usmani, in which 21.9% strongly disagreed and 29.8% disagreed when asked about the appropriate time given for module completion [20]. Over half of the students were concerned about learning resource availability,

similar to Masood et al. findings, where 34.4% students were not satisfied with computers and internet access, but 44.4% students agreed with the availability of other resources [15]. Scenario-based learning was deemed helpful by over 70% of students, compared to only 24.2% who found it useful in the study by Jalil and Usmani [20]. Small group discussions were also greatly appreciated by the respondents of our research 97.1% participants found it useful in another study, and also 55.1% participants acknowledged the role of IMS in encouraging teamwork and collaboration among students in a study by Fatima et al. [3]. No statistically significant difference in perception by gender was observed in our study, which is in accordance with the analysis carried out by Wajid et al. [16]. There was a significant difference in students' perception by year of study as analyzed in our study, which was in conformance with the study conducted by Jalil and Usmani. [20]. Additionally, there was no significant difference observed in the perception of on-campus and off-campus students. No relevant article could be found that associated the residence status of students with their perception of IMS.

CONCLUSIONS

GMC students show a generally positive perception of IMS, consistent with earlier studies. IMS is valued for enhancing learning behaviour and professional development, with significant differences by year but not gender or residency. However, students expressed concerns about DME's evaluation role and poor support for self-directed learning. Positive feedback was noted for scenario-based learning and teamwork, highlighting the system's alignment with real-world practice and diverse learning needs.

Authors Contribution

Conceptualization: FUR

Methodology: NF, MUB, MS, NM, UU, ZUH

Formal analysis: NF, MS, NM

Writing review and editing: NF, MUB, MAYK, UU

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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REFERENCES

 Munir R, Ghafoor N, Niazi IM, Saeed I, Yousaf A. Approach of MBBS Students Receiving Modular Vs Students Receiving Conventional Mode of Education Towards Health Research: A Comparative Study. Journal of Rawalpindi Medical College. 2021 Sep; 25(3). doi: 10.37939/jrmc.v25i3.1456.

- [2] Qiu K, Zeng T, Xia W, Peng M, Kong W. Interdisciplinary Medical Education Practices: Building A Case-Driven Interdisciplinary Simulation System Based on Public Datasets. BioMed Central Medical Education. 2025 Jul; 25(1): 1037. doi: 10.1186/s12909-025-07631-8.
- [3] Fatima U, Naz M, Zafar H, Fatima A, Khan RR. Student's Perception About Modular Teaching and Various Instructional Strategies in the Subject of Obstetrics and Gynecology. The Professional Medical Journal. 2020 Jan; 27(01): 40-5. doi: 10.29309/TPMJ/ 2019.27.01.3162.
- [4] White B, Ghobadi A, Roehmholdt BF, Nkonde-Price C, López GE, Rasgon S. The Physician Experience Teaching an Integrated Curriculum to First-Year Medical Students. The Permanente Journal. 2023 Jan; 27(1): 133. doi: 10.7812/TPP/22.138.
- [5] Wijnen-Meijer M, Van den Broek S, Koens F, Ten Cate O. Vertical Integration in Medical Education: The Broader Perspective. BioMed Central Medical Education. 2020 Dec; 20(1): 509. doi: 10.1186/s12909-020-02433-6.
- [6] Youm J, Christner J, Hittle K, Ko P, Stone C, Blood AD et al. The 6 Degrees of Curriculum Integration in Medical Education in the United States. Journal of Educational Evaluation for Health Professions. 2024 Jun; 21. doi: 10.3352/jeehp.2024.21.15.
- [7] Husain M, Khan S, Badyal D. Integration in Medical Education. Indian Pediatrics. 2020 Sep; 57(9): 842-7. doi: 10.1007/s13312-020-1964-x.
- Šoša I. Perspective on a Vertical Integration Using Electives—Not with a Bang, but a Whimper. Trends in Higher Education. 2022 Dec; 1(1): 30-40. doi: 10.3390 /higheredu1010003.
- [9] Snegireva YY, Gurtskoy LD, Tsoriev AE. The Integrated Programs in Medical Education: Modern Trends and Development Prospects. Problems of Social Hygiene, Public Health and History of Medicine. 2024; 32(4). doi: 10.32687/0869-866X-2024-32-4-833-837.
- [10] Bukhari BA. Student's Perception Regarding an Integrated Curriculum at A Public Sector Medical College. Pakistan Journal of Medical and Health Sciences. 2020; 14(3): 1196-9.
- [11] Aziz S, Wajid G, Khan RA, Zaidi FZ. Dimensions of Challenges in Transformation from Traditional to Integrated Modular Curriculum-Experiences from Pakistan. Pakistan Journal of Medical Sciences. 2023 Nov; 39(6): 1730. doi: 10.12669/pjms.39.6.6730.
- [12] Hafeez A, Jamil B, Khan AF. Roadblocks to Integration; Faculty's perspective on transition from Traditional to Integrated Medical Curriculum. Pakistan Journal of Medical Sciences. 2021 May;

- 37(3): 788. doi: 10.12669/pjms.37.3.3217.
- [13] Tariq M, Ikram A, Farooq M, Sabir Z, Ashfaq A, Imam HS et al. Qualitative Phenomenological Exploration of Perspective of Medical Students Regarding Integrated Modular System. Medical Science Educator. 2025 Mar: 1-2. doi: 10.1007/s40670-025-02364-1.
- [14] Zhang P, Ji L, Zhou G, Yao X. A Commentary on the Practice of Integrated Medical Curriculum in the Interdisciplinary Field of Medical Engineering, Annals of Medicine. 2022 Dec; 54(1): 812-9. doi: 10.1080/0785 3890.2022.2050421.
- [15] Masood A, Sharif S, Imran I, Najeeb W, Masood MK, Zakir A. Perceptions of Students Regarding Teaching and Learning Methodology for an Integrated Modular System. The Professional Medical Journal. 2022 Jun; 29(07): 1078-83. doi: 10.29309/TPMJ/2022.29.07.6
- [16] Wajid R, Asher A, Tariq J. Perception of Undergraduate Medical Students About Integrated Modular Curriculum and Factors Affecting. Pakistan Journal of Medical and Health Sciences. 2022 Jul; 16(07): 63. doi: 10.53350/pjmhs2216763.
- [17] Zhou F, Sang A, Zhou Q, Wang QQ, Fan Y, Ma S. The Impact of an Integrated PBL Curriculum on Clinical Thinking in Undergraduate Medical Students Prior to Clinical Practice. BioMed Central Medical Education. 2023 Jun; 23(1): 460. doi: 10.1186/s12909-023-04450-
- [18] Gebremickael A and Mulu A. Implementation Status of the Nationally Harmonized Competency-Based, Integrated, Modular Medical Curriculum in Ethiopia: Opportunities and Challenges. BioMed Central Medical Education. 2024 Jul; 24(1): 799. doi: 10.1186/s 12909-024-05796-2.
- [19] Atta IS, El-Hag MA, Shafek SI, Al-Ghamdi HS, Al-Ghamdi TH. Drawbacks in the Implementation of an Integrated Medical Curriculum at Medical Schools and Their Potential Solutions. Education in Medicine Journal. 2020 Mar; 12(1). doi: 10.21315/eimj2020.12.
- [20] Jalil SA and Usmani A. Integrated Modular System of Teaching: Evaluation by Student's at an Undergraduate Medical College. Journal of Pakistan Orthopedic Association. 2022 Dec; 34(04): 141-4.