ORIGINAL ARTICLE

Medical Students' Perspectives on the Integrated Modular System: Insights from Multiple Institutions in Karachi

Muhammad Luqman[1*], Muhammad Tanveer Alam[1], Warda Yawar[2], Muhammad Adil Ramzan[3] and Aqsa Tehreem[4]

[1]*Department of Medicine, Dr. Ruth K.M. Pfau Civil Hospital/ Dow University of Health Sciences, Karachi, Pakistan*
[2]*Patel Hospital, Karachi, Pakistan*
[3]*Department of Medicine, Abbasi Shaheed Hospital/ Karachi Medical & Dental College, Karachi, Pakistan*
[4]*Dr Ishrat - ul - Ibad Khan Institute of Oral Health Sciences / Dow University of Health Sciences, Karachi, Pakistan*

Abstract

Background: By encouraging multidisciplinary teaching, the integrated modular system (IMS) is revolutionising medical training; nonetheless, more research is needed to understand student effectiveness and satisfaction to enhance medical education.

Objective: To assess the undergraduate medical students' perspectives regarding the integrated-modular system.

Methods: A descriptive cross-sectional survey was carried out in public sector medical colleges throughout Karachi over a period of six months (July 2023 – December 2023). Using a modified questionnaire taken from a previously published study, data were gathered. It centred on four essential elements: module content, teaching and learning, module support, and assessment with feedback. To guarantee widespread participation, the survey was conducted in person at many universities. The gathered data was analysed systematically with Microsoft Excel.

Results: A total of 400 replies were looked at. The participants' average age was around 21 ± 2.31 years. Female respondents made up the majority (68.8%, n = 275). The research showed that Module Content garnered the highest satisfaction rate at 68.9% (275 students), signifying robust endorsement of the material. With a moderate satisfaction level of 53.8% (215 students), Module Support indicates potential areas for enhancement. Nonetheless, Module Teaching and Learning and Module Assessment and Feedback encountered greater dissatisfaction, with 51.5% (206 students) and 53.4% (213 students) respectively.

Conclusion: Although students appreciate the content of the modules, the efficacy of the modular approach has to be increased *via* better instruction, evaluations, and assistance.

Keywords: *MBBS, medical students, perception, modular system.*

INTRODUCTION

Over time, medical education has undergone a significant transformation, moving away from traditional lecture-based learning toward a more integrated conceptual approach. Earlier, medical colleges adhered to a conventional annual system, characterised by a teacher-centred educational approach where students passively received lectures. This system involved teaching all the subjects of basic medical science separately, with evaluations conducted through yearly examinations. The integrated modular system is characterised by the combination of knowledge, skills, attitudes, and values within subject areas, as well as the relevant connection of curriculum components by students and teachers [1, 2]. Early data have shown conflicting results, indicating a certain level of achievement and pointing out obstacles to this transition [3, 4]. In order to give students the finest education possible that enhances their knowledge without placing an undue load on them, ideas on the purpose, framework, and method of medical education have been debated [5, 6].

**Corresponding author: Muhammad Luqman, Department of Medicine, Dr. Ruth K.M. Pfau Civil Hospital/ Dow University of Health Sciences, Karachi, Pakistan, Email: luqman.sanghi@gmail.com*
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Providing information and disciplinary material, as well as developing fine learning, communication, and teamwork skills, are the objectives of the modular system. It is essentially a combination of basic and clinical sciences. Early clinical experience enhances the development of clinical abilities in medical students [7, 8].

Inappropriate evaluation methods can cause students to overanalyse and adopt the incorrect approach to learning, and some students tend to emphasise essential information about a subject that may not be related to the idea. A higher degree of knowledge *via* interconnected theme study and the removal of unnecessary information may be facilitated by regular formative evaluation with constructive comments, which may also assist these students in correcting their approach [9-11]. They would also be able to comprehend the subtleties of a certain condition in various contexts. Rapid developments in the delivery of medical services have had a special impact on the area of medical education, prompting adjustments in it [12].

This study aimed to assess the undergraduate medical students' perspective regarding the integrated modular system. The results of this study

might thus aid in efficiently preparing for any potential local implementation as well as in simplifying teaching and learning techniques and enhancing the educational experience for students.

MATERIALS AND METHODS

This cross-sectional descriptive study was carried out using convenience non-probability sampling in public medical colleges in Karachi, including Jinnah Sindh Medical University, Shaheed Mohtarma Benazir Bhutto Medical College, Dow University of Health Sciences, and Karachi Medical and Dental College.

The study lasted for six months, from July 2023 to December 2023. In all, 400 willing MBBS students enrolled in the integrated modular system, from first-year to last-year students, participated in the study. The research did not include students who did not provide their consent or those who were enrolled in the traditional system. Using Raosoft, the sample size was determined using the following parameters: a population size of 20,000 students, a 95% confidence level, a 5% margin of error, and a 50% response distribution. Although 377 individuals were the estimated sample size, 400 people were added to guarantee adequacy [13]. The Ethical Review Board (IRB) of Karachi Medical and Dental College (KMDC) granted ethical permission for the study (Ref #057/2023). The administrations of each participating institution provided essential acknowledgement before data collection. The students were then given the proper instruction on data protection, and their written informed consent was obtained.

An in-person survey was used to gather data. A pre-tested English-language questionnaire that was modified from the NWFP-UET Student Course Evaluation Questionnaire and the University Module Evaluation Questionnaire (2018-19) was used as the study tool [7]. The questionnaire, which included 20 items total and was broken down into 4 sections - Module Content (5 items), Teaching and Learning Strategies (5 items), Module Support (5 items), and Feedback with Assessment (5 items) - was altered to meet the particular goals of the research. The first 30 answers were used to reassess and adjust the questionnaire in order to guarantee internal validity. The content validity was verified by an expert assessment, and Cronbach's alpha was used to assess the questionnaire's reliability. Following changes, the questionnaire's Cronbach's alpha was over 0.7, showing strong internal consistency. Data was then collected from the entire sample using the completed questionnaire. A 4-point Likert scale - Strongly Agree, Agree, Disagree, and Strongly Disagree - was used to score the replies. If a student chose "Agree" or "Strongly Agree," their reaction was considered positive; if they chose "Disagree" or "Strongly Disagree," their response was considered negative. The combination of "Strongly Agree" and "Agree" indicated satisfaction with the results, whereas "Disagree" and "Strongly Disagree" indicated dissatisfaction.

Microsoft Excel was used to analyse the data, and the findings were then presented to assess students' satisfaction with the modular curriculum across four main categories. The primary aim of the study is to evaluate undergraduate medical students' perspectives on the Integrated Modular System (IMS), including their satisfaction with various aspects of its delivery.

RESULTS

A total of 400 replies were looked at. The participants' average age was around 21 ± 2.31 years. A quarter (n=100) of these students were chosen from each of the four public medical universities. There were 125 (31.25%) men and 275 (68.75%) women among the participants.

Module Content

Overall, the feedback on the module content was quite positive. In contrast to 42.6% (170 students) who disagreed, 57.5% (230 students) agreed or strongly agreed that they received clear direction. 78% (312 students) said their understanding of the subject had increased, whereas 22% (88 students) disagreed. While 32.2% (129 students) disagreed, 67.8% (271 students) supported career skill development. 40.3% (161 students) disagreed, whereas 59.8% (239 students) thought the material was current. Of the students, 81.3% (325) agreed that the module was relevant to their study, while just 18.8% (75) disapproved. This was the greatest level of agreement (**Table 1**).

Module Teaching and Learning

Divergent views were expressed in the Module Teaching and Learning comments. 43.3% (173 students) thought the subject was fascinating, while 56.8% (227 students) thought it was uninteresting. 183 students, or 45.8%, thought the instruction was good, but 217 students, or 54.3%, disagreed. 39.8% of the students (158) disagreed with the 60.3% (242) who thought the module was intellectually stimulating. In a similar vein, 52.3% (209 students) disagreed with the 47.8% (191 students) who thought the teaching methodology aided education. For 45.8% of students (183), teaching staff answers were unambiguous; however, 54.3% of students (217) disagreed. According to these findings, while some students benefited from the teaching strategy,

enhancements are required to improve clarity and engagement (**Table 1**).

Module Support

Feedback on the Module Support was favourable. While 53.3% (213 students) disapproved, 46.3% (185 students) thought it was well-organised. 51.6% (206 students) disagreed with the statement that learning materials were useful, while 48.6% (195 students) agreed. While 41.8% (167 students) disapproved, 58.2% (233 students) thought the reading list was beneficial. While 34.3% (137 students) had trouble contacting the teaching personnel, 65.8% (263 students) found it easy. 49.3% (197 students) disagreed, whereas 50.7% (203 students) felt they received adequate assistance and direction. These findings imply that although certain support components were successful, organisation, educational materials, and direction still require work (**Table 1**).

Module Assessment and Feedback

Responses to the Module Assessment and Feedback were mixed. 53.8% disagreed with the statement that the marking standards and assessment requirements were clear, whilst 46.3% agreed. For 39.3% of students, the

Table 1: Module evaluation summary (n=400).

Section	Statement	Strongly agree	Agree	Disagree	Strongly disagree
1. Module content	a. IMS gave clear instructions and guidance on its content.	44 (11)	186 (46.5)	105 (26.3)	65 (16.3)
	b. IMS has improved my comprehension of the topic.	32 (8)	280 (70)	76 (19)	12 (3)
	c. My abilities in career development were improved by the module.	44 (11)	227 (56.8)	115 (28.7)	14 (3.5)
	d. The module's material was updated.	24 (6)	215 (53.8)	121 (30.3)	40 (10)
	e. My course was relevant to the module.	55 (13.8)	270 (67.5)	64 (16)	11 (2.8)
2. Module teaching and learning	a. Teachers have infused the module's content with interest.	28 (7)	145 (36.3)	163 (40.8)	64 (16)
	b. The staff were good at explaining things	19 (4.8)	164 (41)	169 (42.3)	48 (12)
	c. The module was thought-provoking.	30 (7.5)	211 (52.8)	129 (32.3)	30 (7.5)
	d. This module's instructional strategies aided my learning.	24 (6)	167 (41.8)	153 (38.3)	56 (14)
	e. This module's instruction has been of high quality.	28 (7)	155 (38.8)	170 (42.5)	47 (11.8)
3. Module support	a. The module was structured effectively.	24 (6)	159 (39.8)	159 (39.8)	58 (14.5)
	b. The study materials on the module website, Blackboard, and other platforms were beneficial to my education.	25 (6.3)	169 (42.3)	155 (38.8)	51 (12.8)
	c. The reading list was helpful	26 (6.5)	207 (51.7)	139 (34.8)	28 (7)
	d. When necessary, I have been able to get in touch with the module teachers.	32 (8)	231 (57.8)	112 (28)	25 (6.3)
	e. I have gotten enough counsel and direction on my module.	29 (7.2)	174 (43.5)	162 (40.5)	35 (8.8)
4. Module assessment and feedback	a. The marking criteria and evaluation standards were unambiguous.	26 (6.5)	159 (39.8)	145 (36.3)	70 (17.5)
	b. The assessment task and related marking criteria were promptly made available.	16 (4)	141 (35.3)	142 (35.5)	101 (25.3)
	c. There was a suitable ratio of independent learning to teaching (lectures, seminars, online).	13 (3.3)	156 (39)	157 (39.3)	74 (18.5)
	d. I felt well-prepared for the assessment challenges by the program.	26 (6.5)	187 (46.8)	146 (36.5)	41 (10.3)
	e. Throughout the module, I received feedback that improved my learning.	22 (5.5)	187 (46.8)	145 (36.3)	46 (11.5)

Data is expressed as n(%)

timely availability of marking criteria was satisfactory; nevertheless, for 60.8% of students, it was inadequate. 57.8% disagreed with the 42.3% who thought the ratio of instruction to self-directed learning was suitable. While 46.8% of students disagreed, 53.3% of students felt well-prepared for tests. Last but not least, while 47.8% did not find feedback helpful, 52.3% did. These findings imply that although certain students expressed satisfaction, clarifying assessments, providing prompt feedback, and striking a balance between teaching methods all require improvement (**Table 1**).

The study as a whole showed that the Module Content garnered the highest level of satisfaction (*i.e*., Agree + Strongly Agree), demonstrating a robust endorsement of the material. The satisfaction level for Module Support was moderate, indicating that there is room for enhancement. However, the Module Teaching and Learning and Module Assessment and Feedback experienced greater dissatisfaction. This implies that students find teaching methods and the fairness or clarity of assessments more challenging. Tackling these aspects could greatly improve the overall learning experience (**Table 2**).

Table 2: Student satisfaction levels with modular curriculum components (n =400).

Module component	Number of students satisfied (out of 400)	Satisfaction (%)
Module content	275	68.9
Teaching and learning	194	48.5
Module support	215	53.8
Assessment and feedback	186	46.6

DISCUSSION

Conventional teaching approaches frequently result in little interaction between students and professors since they mostly rely on didactic lectures that concentrate on a particular field. But as it becomes clearer that medical education has to change, IMS is becoming more and more popular. Clinical teaching that integrates a variety of disciplines improves learning outcomes, according to research. A student-centred approach and an integrated medical curriculum are both promoted by the WHO [14].

With 275 students (68.9%) expressing satisfaction, our analysis revealed that the Module Content received the greatest degree of satisfaction, indicating a strong endorsement of the subject matter. There is potential for improvement as seen by the moderate 53.8% satisfaction percentage for Module Support (215 students). But there was dissatisfaction with the Module Teaching and Learning, 51.5% (206 students).

Luchko *et al*. [15] revealed a wide range of attitudes among students toward the IMS: 39.5% responded favorably, 20.9% thought negatively of the innovation, and 30.2% said they were neutral. 9.3% of students think that IMS should be made better. The suggested assessment and evaluation technique, which grades students according to their degree of course achievement, was seen favorably by 51.2% of poll participants, compared to just 13.9% who were against it. The intricacy of the problem is demonstrated by the noteworthy 34.9% of the students, who were still unsure. A more sophisticated and student-centred approach is required, since our analysis showed that a startling 53.4% (213 students) were unhappy with the current module assessment and evaluation process.

According to Jalil *et al*. [13] from Karachi, students were somewhat satisfied, 46.0% believing the curriculum was adequate for their level, and 36.3% agreeing that module goals were clearly described. Furthermore, 46.5% of respondents said IMS helped with learning disorders and pathologies, and 48.4% thought it enhanced their comprehension. Conversely, our study showed far more student satisfaction, with a stunning 78% reporting enhanced topic comprehension and 57.5% agreeing they got clear instructions. Additionally, 59.8% of respondents thought the material was current, and 67.8% endorsed the module's contribution to the development of career skills. Regarding the module's applicability to their studies, there was the greatest degree of agreement (81.3%). Our research showed more support for curriculum clarity and relevance. Their study revealed that 48.4% of students thought lectures were only moderately helpful, 58.6% thought tutorials were useless, and 47.4% thought CBL (Case-based learning) was only marginally helpful. According to our study, 60.3% thought the module was intellectually challenging, 52.3% thought the teaching methods did not help students learn, and 56.8% thought the subject was boring. Although both studies point out areas that require work, our findings show widespread dissatisfaction with engagement and overall instructional effectiveness.

Our study revealed a higher preference, with 78% of students reporting greater knowledge, while Qurban *et al*. [5] from Rawalpindi Medical College found that 45.6% of students chose IMS over traditional techniques. Our study discovered difficulties because 53.8% of students felt that assessment requirements were unclear, and 52.9% of students in our study perceived integrated teaching to be simpler. However, our study showed a greater acceptance, with 81.3% thinking the module was relevant to their academics, whereas 61.3% of students in the Rawalpindi-based study had a good assessment of

the integrated system when analysing overall attitudes. These results imply that although both studies emphasise the advantages of integration, our study showed higher levels of perceived efficacy and student satisfaction.

According to 78% of students in our study, IMS enhanced their comprehension, which is consistent with 61.3% in the Tariq *et al*. [16] study that supported IMS. While 52.9% in their research found IMS simpler to study, 53.3% felt well-prepared for tests. 50.4% cited research advantages, whereas 58.2% approved study resources. However, in our study, 53.8% of respondents felt that assessments were imprecise, which echoed 44.3% concerns regarding patient interaction. Both studies commend IMS for conforming to international standards and promoting a clinically focused, exam-efficient, and concept-driven learning environment in spite of obstacles.

In our study, 48.4% thought lectures were "little useful," whereas 47% thought the same in a study by Sharif *et al*. [17], with 78.3% attending only to be there. PBL was preferred for research by 85.1% in their study, where 50.4% reported research benefits, which is consistent with 74.2% in our study. The preference for practical learning was 89% in their research and 43.3% in our study. 49.8% in our study and 87.8% in their study demonstrated great support for integration, highlighting its efficacy and the necessity of its correct execution (87.4%).

The preference for integrated and problem-based learning (PBL) over traditional lectures is highlighted by the analysis of several studies [18-20]. By tying courses together coherently, students considered integrated teaching to be more successful in improving conceptual clarity, retention, and clinical readiness. PBL was praised for encouraging critical thinking, active learning, and research abilities. However, issues with training methods and evaluation, such as restricted patient involvement and time limits, were observed. Even if conventional approaches are still useful, a systematic transition to integrated learning is required to guarantee a medical education system that is more efficient, useful, and competitive worldwide.

LIMITATIONS

A limitation of our study was that faculty feedback was excluded, even though they are key stakeholders in medical education. A qualitative research, including focus groups or in-depth interviews, with teachers and students from both public and private universities, is advised in order to fill in these gaps and enhance knowledge.

CONCLUSION

It can be summed up that although students greatly value the organised content of the IMS, there are notable difficulties regarding its teaching approaches, assessment, and overall support systems. The remarkable satisfaction regarding the Module Content indicates a well-structured and pertinent curriculum, but the dissatisfaction with Teaching and Learning and Assessment and Feedback highlights the necessity for creative teaching methods, improved evaluation standards, and bolstered academic assistance. A faculty-driven transformation that emphasises modern pedagogical techniques, clear assessment frameworks, and robust student support services is essential for raising the effectiveness of IMS.

ETHICAL APPROVAL

Ethical approval was obtained from the Ethical Review Board of Karachi Medical & Dental College, Karachi (REF letter No. 057/23 Dated: 24 June 2023). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/ or national research committee and the Helsinki Declaration.

CONSENT FOR PUBLICATION

Written informed consent was taken from the participants.

AVAILABILITY OF DATA

The data set may be acquired from the corresponding author upon a reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

Dr. Muhammad Luqman: Data analysis, Data Collection, Manuscript writing.

Dr. Muhammad Tanveer Alam: Literature review, final approval of manuscript to be published.

Dr. Warda Yawar: Data Collection, final approval of manuscript to be published.

Dr. Muhammad Adil Ramzan: Data Collection, final approval of manuscript to be published.

Aqsa Tehreem: Data Collection.

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