

Original Research Article

An overview of students in integrated teaching in undergraduate medical education in Bangladesh

Ridwana Rahman^{1*}, M. Imtiaz Pervez²

¹Department of Physiology, Ad-din Women's Medical College Hospital, Bangladesh

²Department of Paediatrics, Ad-din Sakina Women's Medical College, Bangladesh

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*Correspondence:

Dr. Ridwana Rahman,

E-mail: ridwana_rahman@yahoo.com

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ABSTRACT

Background: Integrated teaching denotes the integration of different subjects of corresponding phases as well as successive phases of medical education. This newly launched DGME-initiated teaching-learning (T-L) methodology aims to bring evolution to traditionally practiced medical education for undergraduate medical education in Bangladesh. Furthermore, this method is supposed to modify and improve students' perception of basic knowledge along with prudent association of clinical assessment and expertise. Aim of the study was to evaluate the impact of integrated teaching on first-year MBBS students in terms of academic outcomes and perceptions.

Methods: This cohort study was conducted at the Department of Physiology, Ad-Din Women's Medical College Hospital, Moghbazar, Dhaka from January 2023 to September 2023. The undergraduate MBBS students (session 2022-23) were enrolled in the study. The outcome of the students was assessed after integrated teaching sessions and the data were recorded through a semi-structured questionnaire. Informed written consent from students was taken. The data from the questionnaires was statistically analyzed and results were obtained using statistical package for the social sciences (SPSS) version 26.

Results: All participants were female, aged 18–21 years, with 39% being international students. Students rated the sessions positively, with 98% agreeing that topics were well-known and 96% confirming sequential delivery by departments. Audio-visual aids (87%) and effective clinical applications (72%) were highlighted as strengths. Areas for improvement included the use of simulated patients (60%) and understanding clinical correlations (58%).

Conclusions: Integrated teaching significantly enhanced students' academic performance and interest in medical education. However, refinement in practical teaching elements, such as simulated patient use, is necessary to maximize its efficacy. These findings support the broader implementation of integrated teaching methodologies in undergraduate medical education.

Keywords: Integrated teaching, Undergraduate medical education, MBBS, Academic outcomes, AWMC

INTRODUCTION

International medical education always keeps abreast of newly evolved medical emergencies to meet the needs of humanity in terms of health issues. Undergraduate medical education in Bangladesh comprises of basic, paraclinical and clinical subjects to be learned in five years in four

divided phases. Phase 1 includes basic subjects, phases 2 and 3 for paraclinical subjects. Finally, phase 4 for clinical subjects succeeding to one year of clinical apprentice as an internship. Gradual advancements in medical education have always aimed for clinically oriented knowledge in basic and paraclinical subjects. The medical colleges of Bangladesh accepted the national undergraduate medical

curriculum which was first developed in 1988 through the Centre for Medical Education (CME) and supported by United Nations Development Programme (UNDP) and World Health Organization (WHO).¹ The undergraduate medical curriculum was aimed to provide community health services to the mass people. Integrated teaching has thus been introduced in medical education in Bangladesh to improve students' skills and knowledge. Integration means "The organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments" as defined by Harden.² Undergraduate medical education in Bangladesh developed a formal curriculum since 1988, but earlier, our system was more traditional: teacher-centred and lecture-based.³ Over the past few decades medical education had a lot of amendments.^{4,5} An integrated teaching system aims at effective learning with a better perception of content and organization. The coordinators instigated problem-solving abilities, by arranging an organized framework in lectures rather than all the traditional details and factual information. The results are supported by a study where the students acquired competency in the core abilities of neurosciences with the help of guiding principles given in lectures to promote the acquisition of knowledge.

The undergraduate medical students are the doctors of tomorrow. They must manage their patients with their expert skill and knowledge. In the aim of guiding them in a perfect manner, integration is achieved through illustration and deliberation of different views related to experiences which is responsible for the retention of facts and enhances the recall and activation of knowledge to develop diagnostic reasoning skills.

Integrated knowledge can be delivered in many ways like: horizontal and vertical. When two or more departments are teaching their topics together- it is horizontal type; but when integration is done with different disciplines in different curriculum it is said to be vertical. Different components also signify this method precisely.⁶ But for effective planning and evaluating medical curriculum Harden described 11 steps of the integration ladder.⁷

The undergraduate medical education demands constant upgradation in learning medicine, for standardizing medical sciences. A medical student must become an efficient and intellectually capable doctor by acquiring academic achievements which is imperative in medical science. Medical students need to bridge their theoretical knowledge and clinical training and thus gain enough confidence as good clinicians to establish proper diagnoses as they come out as efficient doctors, particularly after completing their internship, successfully, enough. Evidence-based success stories among undergraduate medical students have been proven to play a pivotal role in preparing and bringing up competent healthcare professionals- a force that should match with our communities/country to serve the patients in a much better way, clinically utilizing proper investigational methods.⁸

The student development process essentially requires the assessment of students during any kind of learning program. Based on the teaching-learning program and the curriculum for undergraduate medical students, there are different modes of assessment for students. Summative assessment is carried out to judge the students on their performance and skills, carried out at or towards the end of a course and produce remarkable grades. Whereas, formative assessment is carried out during a course or programming of study,

Most teachers agreed that the weak points were identified through formative assessment, motivating the students for comprehensive learning and regular study. However, frequent formative assessment hampers the free learning of students which produces negative effects in summative exams. Formative assessment has a profound effect on summative assessment.⁹

During the clinical classes, most students learned to take history, and examine the patients; but had difficulties making a provisional diagnosis. The clinical teaching in the evening session was found to be neglected. Teachers could not ensure students' learning of optimum skills and attitudes. The study recommended reviewing the curriculum. Course burden should be reduced by removing redundant content. Emphasis is required to be given to behavioral science, communication skills, and medical ethics.¹⁰

Integrated teaching is more admired than traditional discipline-based teaching regarding the future MBBS course.¹¹

To assess the medical educational attitudes, the educational environment in Bangladeshi medical schools is being revised sequentially. In Bangladesh, a total 8700 students are admitted each academic year in government and private medical colleges. A total of 8700 students are admitted each academic year in these colleges. In government colleges, intake is around 2900 students, and in private, around 5800. Medical education must always be ameliorated otherwise it will not progress to cope with upcoming health challenges. Bangladesh has been reviewing the national curriculum for medical education for the past few years. Moreover, modifications in the curriculum are very required for a definite change in the long viva-voce system and to save enormous teaching hours.¹²

An important aspect of higher education consists in improving the quality of student outcomes. Different factors influence these outcomes. Among these factors is the quality of teaching, the materials used, and the student's expectations of the institution. Part of this perception is reflected in what students expect from their teachers. It is a fact that students' performance depends on teachers' exigencies, teachers' perception of students' expectations, and how the teachers fit with these expectations. Sincerity towards effective teaching, sound

knowledge of the topic, conducting classes with adequate preparation, and punctuality- all these factors will lead to effective teaching for better professional guidance of the student. Addressing these issues by the teachers and administrators is quite important to be executed in the future in every medical college to bring about the best out of students. The students' expectations of the study were the reflection of all the students of undergraduate medical education in Bangladesh.¹³

METHODS

After receiving approval from the Institutional Review Board (IRB), this prospectively designed cohort study has been conducted in the Department of Physiology, Ad-din Women's Medical College Hospital, Moghbazar, Dhaka from January 2023 to September 2023. Around 82 (eighty-two) undergraduate first-year MBBS students (session 2022-23) of Ad-Din Women's Medical College were enrolled in the study. As per exclusion criteria, the students from the old curriculum and other phases (phase 1, 2, 3 and 4) were excluded from the study. The integrated teaching method was implemented in phase one of the medical college as it was implemented as per the rule of Director General of Medical Education (DGME) and Bangladesh Medical and Dental Council (BMDC). All departments of phase one: anatomy, physiology, biochemistry, and phase four: departments of medicine, cardiology, paediatrics, surgery, endocrinology, and hepatology have taken part in different sessions. Single case-based sequential discussion with PowerPoint presentation and simulated patients was conducted by all the respective teachers of different students. Outcomes of the students were assessed after the integrated teaching session, and recorded through a written semi-structured questionnaire. Informed written consent from students was taken. After enrolment data were analyzed by statistical package for the social sciences (SPSS) version 26.

RESULTS

The study enrolled 82 first-year MBBS students aged 18–21 years, all of whom were female, reflecting the demographic profile of a women's medical college. Among the participants, 39% were international students, while 61% were Bangladeshi, showcasing a diverse cohort for assessing the integrated teaching methodology (Figure 1). Student perceptions of integrated teaching were evaluated through a structured questionnaire (Table 1).

The majority of students expressed overwhelmingly positive feedback on several aspects of the integrated teaching-learning sessions. Specifically, 98% of participants agreed that the topics were familiar, and 96% noted that the sessions were delivered sequentially by different departments. Furthermore, 97% acknowledged the effective combination of subjects during the sessions, while 89% highlighted that the teachers were well-prepared. Tools such as audio-visual aids were widely appreciated, with 87% of students agreeing they enhanced the learning experience. Clinical applications were well-explained according to 72% of the participants, indicating a strong link between theoretical knowledge and practical applications. Despite these positive outcomes, certain areas for improvement were identified (Table 2). Only 60% of students reported the use of simulated patients during the sessions, and 58% found clinical correlations easier to understand through integrated teaching. The sessions were rated highly for their impact on fostering student interest in medical education, with 79% agreeing that their interest was significantly enhanced. Additionally, 83% of participants were satisfied with the overall arrangement and execution of the integrated teaching-learning sessions.

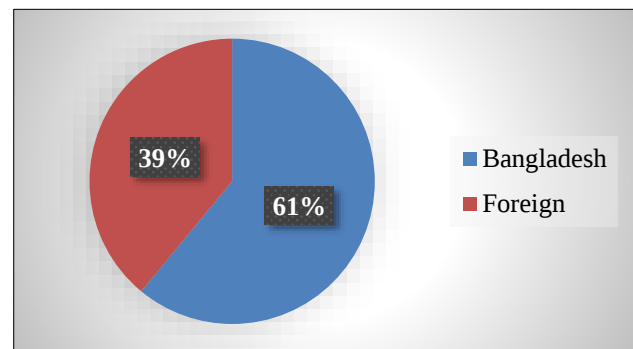


Figure 1: Distribution of students by nationality (n=82).

Table 1: Demographic variables of the study subjects (n=82).

Demographic data	Range	Frequency (%)
Age (years)	18-21	
Sex	Female	100
Nationality	32	39
Subjects	50	60

Table 2: Views on integrated teaching-learning activities (n=82).

S. no.	Views of integrated teaching-learning activities	Agree (%)	Disagree (%)	No opinion (%)
1	The topics of integrated teaching are well-known to me	98	2	0
2	Topics were delivered sequentially by different departments	96	4	0
3	Topics were not repetitive	88	10	2
4	Combination of different subjects was observed	97	3	0
5	Teachers were well-prepared for integrated sessions	89	9	2
6	All students actively participated in integrated teaching-learning session	79	15	6

Continued.

S. no.	Views of integrated teaching-learning activities	Agree (%)	Disagree (%)	No opinion (%)
7	Audio-visual aids were used	87	10	3
8	Simulated patients were used	60	30	10
9	Clinical applications were well explained by respective teachers	72	20	8
10	Clinical correlations were easier to understand	58	35	7
11	Integrated teaching sessions were helpful for better understanding of the topic	60	30	10
12	Assignments on the topics were helpful	74	20	6
13	All teachers of each department participated in the sessions	82	15	3
14	Integrated teaching increased my interest in medical education	79	18	3
15	Overall arrangement of integrated teaching-learning session was satisfactory	83	14	3

Table 3: Key features and effectiveness of integrated teaching (n=82).

Feature	Observation	Percentage (%)
Use of audio-visual aids	Frequently implemented	87
Inclusion of simulated patients	Moderately used	60
Improved clinical application understanding	Reported by most students	72
Enhanced interest in medical education	Positively influenced student perception	79
Satisfaction with teaching methodology	Students were mostly satisfied	83

DISCUSSION

Integrated teaching (IT) is an educational approach that bridges the gap between basic and clinical sciences, ensuring a comprehensive understanding of medical concepts.¹⁴ Unlike traditional siloed teaching methods, IT promotes collaborative learning, interdisciplinary knowledge integration, and clinical application, which are crucial for modern medical education.¹⁵ In the context of Bangladesh, the adoption of IT has gained momentum as medical institutions strive to align their curricula with global educational standards. In our study, we explored the views of undergraduate medical students regarding integrated teaching-learning activities in Bangladesh. The results indicate a positive reception toward the integration of multiple subjects, with high percentages of students agreeing that topics were well-known and delivered sequentially across different departments. This suggests that the structure of integrated teaching in our study aligns with previous reports that emphasize the importance of a coordinated and non-repetitive curriculum to facilitate better learning.⁷ A noteworthy finding is that the vast majority of students reported that the combination of different subjects was well-implemented (97%), which is consistent with the notion that integration fosters a more holistic understanding of medical knowledge.¹⁶ In addition, 89% of students agreed that teachers were well-prepared for the integrated sessions, indicating that faculty members in our study were adequately equipped to handle the multidisciplinary approach, as supported by earlier research.¹⁷ In our study, 79% of students actively participated in the integrated teaching sessions, a finding that aligns with other studies showing that active student engagement is a critical factor for successful integrated learning.¹⁸ However, the 6% of students who reported no

participation. However, the use of audio-visual aids was frequent (87%), and the inclusion of simulated patients (60%) was moderately employed.¹⁹ These teaching tools have been recognized for their role in bridging the gap between theoretical knowledge and clinical practice, as outlined by Nayak et al.²⁰ Regarding the clinical application of the integrated curriculum, 72% of students believed that clinical applications were well explained, and 58% found clinical correlations easier to understand. These results are promising, as they highlight the importance of providing relevant clinical context in teaching medical students, which has been shown to improve clinical reasoning and the ability to apply theoretical knowledge.²¹ However, the relatively lower percentage of students (58%) who found clinical correlations easier to understand indicates that there might be room for improvement in the clarity and depth of these correlations. Moreover, 79% of students expressed increased interest in medical education due to integrated teaching, supporting the notion that interdisciplinary teaching strategies can boost student engagement and enthusiasm for learning.²²

Additionally, 74% of students found assignments on integrated topics helpful, which suggests that assessment methods aligned with integrated learning can further reinforce students' understanding.²³ The overall satisfaction with the integrated teaching arrangement was high, with 83% of students reporting satisfaction. This reflects the positive impact of a well-structured integrated curriculum on student experience, consistent with findings from international studies.¹⁶ However, the inclusion of simulated patients (60%) and the use of clinical applications (72%) could be areas for future enhancement to ensure that these methods are fully utilized in the curriculum.

Limitations

This study was conducted in a medical college in Dhaka city only, so it does not represent the whole country. It was conducted among phase 1 students of a medical college, so the effects of the newly launched integrated teaching in other phases could not be assessed. As the institute constitutes all female students, views of the male students could not be achieved.

CONCLUSION

Although the present study is not a representative one, it can be concluded that clinical case-based integrated teaching was significantly effective for the students. Although the overall standards of this teaching methodology have more scope to bring about improvements in Bangladesh, the outcome is still quite satisfactory. Integration and coordination between basic and clinical subjects and advancements of teaching tools and materials can result in a more efficacious outcome. Problem-oriented education can also provide a better perception of clinical conditions and will eventually lend a hand to become a skilled and competent physician in future generations.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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