

TEACHING PATHOLOGY TO MEDICAL UNDERGRADUATES IN AN INTEGRATED MODULAR CURRICULUM

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ABSTRACT

Objective: To assess the perceptions of students and faculty regarding teaching of pathology in an integrated modular curriculum at Shifa College of Medicine.

Materials & Methods: This cross-sectional survey was conducted at Shifa College of Medicine, Islamabad, between June 2011 and July 2017. Students of 3rd Year MBBS for seven consecutive years along with the faculty of pathology were asked to respond to structured questionnaires based on a 3-point Likert scale regarding delivery of pathology in the integrated modular curriculum being followed in the college. Simple descriptive statistics were used to calculate frequencies and percentages for each variable in the questionnaire. Enrolment in the study was voluntary and anonymous.

Results: A total of 537 students and 66 faculty members responded to the questionnaires. Most of the students had a positive perception of integrated modular system, which they felt provides good clinical relevance (75%) and understanding of pathology (73%), allowing them to achieve their learning objectives (89%), promotes critical thinking (68%), self-learning (68%) and communication skills (66%), and is a student-friendly and interesting learning strategy (67%). The faculty also preferred integrated modular system (76%), as it encourages active learning (80%), and provides better clinical relevance (85%) and understanding (64%) of the subject than the traditional system. However, they had concerns regarding standardization in course delivery and logistic facilities.

Conclusion: Integrated modular curriculum has wide acceptability among the students and faculty of pathology, who feel that it is student-centred, promotes critical thinking, and provides good clinical relevance and subject understanding.

Keywords: Education, Medical, Undergraduate; Models, Educational; Competency-based education; Curriculum; Pathology

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INTRODUCTION

Traditional medical education is based on didactic teaching of medical disciplines taught in isolation. This fragmented and passive approach to learning does not fulfil the modern requirements of producing doctors, who are professionally competent and responsive to the needs of the patients and society at large. Recognition of this has led to new innovations in curriculum development and teaching strategies. The consensus among medical educationists is to shift towards a patient-centred teaching approach, where medical disciplines are vertically and horizontally integrated to give a better understanding of subjects. Such a curriculum allows medical students to integrate knowledge and skills in a coherent manner, which they can apply more effectively as doctors. The emphasis is on promotion of analytical thinking and problem solving with active involvement of students in the learning process [1-4]. Although the need for adoption of an integrated

curriculum is now widely accepted, until recently, no roadmap for its development and implementation was available. In the last few decades, several integration models have been proposed. Among these, Harden's '11 Steps of Integration Ladder' [5], have gained wide acceptance among medical educationists, as basic guiding principles for achieving integration [1].

At the same time, it was also recognized that in an increasingly globalized and interconnected world, with frequent movement of doctors to other countries, medical training needed to be standardized. This led the World Federation for Medical Education to develop global standards for medical education and to advocate the need for integration of undergraduate medical curriculum [6]. These recommendations have been accepted by many countries including Pakistan, where Pakistan Medical & Dental Council has instructed all medical colleges to adopt an integrated curriculum [7]. Shifa College of Medicine, Islamabad, was one of the first medical colleges in Pakistan to recognize the modern needs of medical education and adopted an integrated modular curriculum in 2008 [2,8]. The development and implementation of the new curriculum at Shifa College of Medicine is a dynamic

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process subject to regular institutional review and feedback from students and faculty. The purpose of this study was to assess the perceptions of students and faculty regarding the delivery of pathology in the integrated modular curriculum.

MATERIALS AND METHODS

Setting: The study was conducted at Shifa College of Medicine, Islamabad, between June 2011 and July 2017. The college follows a five-year MBBS programme with an integrated system-based modular curriculum. Each class consists of a hundred students with roughly equal number of males and females. The first three years are divided into three spirals consisting of modules based on anatomical systems, while the final two years consist of clinical clerkships. Anatomy, physiology and biochemistry are taught in the first two spirals, while pathology, pharmacology and forensic medicine are delivered in 3rd spiral. The curriculum is integrated both horizontally as well as vertically. Longitudinal themes like behavioral sciences, ethics and research run concurrently in all five years. Students are provided with study guides for each module, which consist of clinical themes with case scenarios, critical questions and clearly defined learning objectives. Instead of the traditional division of curriculum into subjects, the students are taught diseases and their management in a clinical context. Small group teaching is the principal mode of curriculum delivery. Small groups are facilitated by instructors and supervised by senior faculty. Other teaching methodologies such as lectures, problem-based learning, practical sessions, case presentations, self-directed learning, etc., are also utilized. Promotion of active learning and problem solving are the driving objectives of the teaching strategy.

Participants: Students of 3rd Year MBBS for seven consecutive years from 2011 to 2017, along with the faculty of pathology were invited to participate in the study. Enrolment was voluntary and anonymous.

Data collection and analysis: Study participants were requested to respond to separate structured questionnaires based on a 3-point Likert scale (yes, neutral and no) regarding delivery of pathology in the integrated modular curriculum. There were ten variables in each questionnaire. Simple descriptive statistics were used to analyze the data, and frequencies and percentages were calculated for each variable in the questionnaire

RESULTS

A total of 537 students and 66 faculty members responded to the questionnaires. The

faculty included 13 senior faculty members (assistant professors and above) and 53 instructors. Most of the students had a positive attitude towards the integrated modular system, which they felt provides good clinical relevance (75%) and understanding of pathology (73%). It allows them to better achieve their learning objectives (89%), while promoting critical thinking (68%), self-learning (68%) and communication skills (66%). They considered it to be a student-friendly and interesting way of learning (67%). Majority of them (76%) wanted the college to continue with the integrated modular curriculum (Table-1). The faculty also preferred the integrated modular system over conventional system (76%), as it encourages active learning (80%), provides clinical relevance (85%) and gives a better understanding of the subject compared to the traditional system (64%). More than half of the faculty felt that the modular system was more demanding for them in terms of time and effort (56%) but they still felt comfortable with it (70%). The faculty's main concerns were regarding standardization in course delivery and availability of logistic facilities (Table-2).

Table-1: Students' perceptions of integrated modular system (n=537).

Question	Yes	Neutral	No
Is integrated modular system better in achieving course objectives than conventional system?	477 (89%)	39 (7%)	21 (4%)
Does it give a better understanding of concepts of pathology?	390 (73%)	113 (21%)	34 (6%)
Does it provide better clinical relevance to the subject of pathology?	401 (75%)	108 (20%)	28 (5%)
Is it a better way of retaining knowledge?	343 (64%)	128 (24%)	66 (12%)
Does it help you build upon knowledge already gained?	340 (63%)	138 (26%)	59 (11%)
Does it promote critical thinking?	364 (68%)	135 (25%)	40 (7%)
Does it promote self-learning?	365 (68%)	126 (23%)	46 (9%)
Do you think it is a more student-friendly & interesting way of learning?	360 (67%)	135 (25%)	42 (8%)
Does it promote group interaction and communication skills?	357 (66%)	124 (23%)	56 (11%)
Should this system of learning be continued?	407 (76%)	99 (18%)	31 (6%)

Table-2: Faculty's perceptions of integrated modular system (n=66).

Question	Yes	Neutral	No
Is integrated learning strategy a better delivery tool than the conventional system?	50 (76%)	12 (18%)	4 (6%)
Does it encourage active learning?	53 (80%)	12 (18%)	1 (2%)
Does it give better understanding of pathology?	42 (64%)	21 (32%)	3 (4%)
Does it provide better clinical relevance to the subject of pathology?	56 (85%)	9 (14%)	1 (2%)
Does it achieve learning objectives in a standardized manner?	29 (44%)	26 (39%)	11 (17%)
Can the entire pathology curriculum be delivered through small group teaching?	27 (41%)	18 (27%)	21 (32%)
Are logistic facilities adequate for integrated modular system?	12 (18%)	20 (30%)	34 (52%)
Is it more demanding for you in terms of time and effort?	37 (56%)	14 (21%)	15 (23%)
Do you feel comfortable with this learning strategy?	46 (70%)	14 (21%)	6 (9%)
Should this system of learning be continued?	48 (73%)	15 (23%)	3 (4%)

DISCUSSION

The wide acceptability of integrated curriculum among our students is consistent with the experience of other medical colleges following this learning strategy [9-13]. Most of our students felt that it helped them better achieve their learning objectives. The modular curriculum at Shifa College of Medicine is case-based, where concepts of pathology and other subjects are taught within a clinical context. By bringing together basic and clinical sciences on one platform instead of learning different subjects in isolation, integration allows students to correlate knowledge, making it easier to apply it in a clinical setting [13]. Seventy-five percent of our students felt that the clinical context of integrated curriculum provided better understanding of basic concepts of pathology. The importance of clinical relevance to understanding basic concepts by medical students has been reported by several authors [12-15]. Integration and clinical relevance also lead to better retention of knowledge and improved learning outcomes [9-14,16,17]. Two-thirds

of our students agreed that integrated modular teaching was a better way retaining knowledge.

Active learning requires processing of information and not just receiving it. Cognitive activity is essential for integrating basic and clinical knowledge [15]. This is not possible by the old didactic method of teaching, where the flow of information is in one direction only. At our college, the primary tool of curriculum delivery is small group discussion. Small group sessions are facilitated by instructors and supervised by senior faculty. The students are provided case-based scenarios with learning objectives, which they achieve through discussion. Instead of a single source of information in the form of a lecturer, they get input from multiple sources including other group members and resource material in the shape of books, journals and internet. This builds their cognitive skills and gives them a more comprehensive understanding of the subject matter.

Small group dynamics encourage active participation of all students, who get the opportunity to discuss, debate and solve problems. It gives them greater control over the learning process, making it more student-friendly and interesting [18]; as most of our students agreed. They also found integrated teaching in small groups conducive to active learning and critical thinking. Active participation of students in the teaching process builds up their confidence and improves their communication skills, while problem solving exercises in a team increase their motivation and stimulate self-learning [18-23]. Our students also felt that the modular system promoted self-learning and improved their communication skills.

The new approach of student-centred learning has changed the role of the faculty from a teacher to a facilitator of learning. Harden has characterized a good teacher as someone, who besides fulfilling the traditional roles of information provider, planner and evaluator, also acts as a facilitator of active learning, develops and provides learning resources and acts as a mentor and role model for the students [24]. This requires a readjustment in the outlook of the faculty, who must adapt to the changing needs of modern education. At the same time, the modular system can be more challenging and demanding for the faculty, who must spend considerable time and effort in planning, coordinating, conducting and evaluating teaching programmes. Despite this, our faculty had a positive view about the integrated modular system and they felt comfortable with this learning strategy. Most of them preferred it over the conventional system and

agreed that it encouraged active learning and provided better clinical relevance to the subject. Faculty of other medical colleges following the integrated curriculum have also endorsed the new learning methodology [9,10,12,14].

Although our faculty had a positive opinion of integrated modular system, almost half of them did not believe that the entire pathology curriculum could be delivered through small group learning. A good teaching programme should not restrict itself to a single learning strategy but employ different methods to achieve optimum results [14], which is why we continue to use other teaching strategies, besides small group learning. The faculty also had concerns regarding standardization in attaining learning objectives among different groups. We have tried to address these concerns by holding regular faculty development seminars and active involvement of senior faculty in the small group discussions. Implementation of an integrated modular curriculum can be resource intensive, requiring trained faculty, learning aids and proper space. Our faculty had reservations regarding logistic facilities available at the college. However, many of these concerns have now been addressed after shifting of the college to a new campus.

Shifa College of Medicine has come a long way since it adopted the integrated modular system in 2008. The positive feedback of our students and faculty regarding the delivery of pathology in the new curriculum is most encouraging. As is the excellent performance of our students in United States Medical Licensing Examination (USMLE) Step 1 & 2, which can serve as an informal gauge for assessing the performance of an undergraduate medical education programme [14]. But we still have far to go in achieving the trans-disciplinary integration proposed by Harden [5]. However, we believe that with the experience that we have gained and the system that we have put in place, we are well on our way towards achieving this goal.

CONCLUSION

Integrated modular curriculum has wide acceptability among the students and faculty of pathology, who feel that it is student-centred, promotes critical thinking, and provides good clinical relevance and subject understanding.

AUTHORS CONTRIBUTION

Rifat Nadeem Ahmad: Conception, design & drafting of the article.

Mahwish Majid Bhatti: Collection & analysis of data.

Asna Haroon Khan: Conception & design.

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