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Evaluation of integrated modular & traditional curriculum learning environment in medical education

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ABSTRACT

BACKGROUND & OBJECTIVE: Most medical schools in Pakistan follow a traditional teaching methodology but a newer and refined method named Integrated teaching methodology has been introduced and proven to be more effective than the former method. The study aims to evaluate the pros and cons of integrated modular & traditional curriculum learning environments.

METHODOLOGY: A total of 214 students from 1st year and 2nd Year MBBS were enrolled in the study using the convenience sampling technique. 1st Year students were grouped as Group A undergoing an Integrated learning environment and 2nd Year students as Group B undergoing a traditional learning environment at Abwa Medical College, Faisalabad. A pre-validated John Hopkin's Proforma was distributed to collect data and was analyzed in SPSS 26 using the student's t-test. The P-value <0.05 was considered as statistically significant.

RESULTS: Out of 214, a total of 180 participants recorded their responses. 58% of the total were male and 42% were female. The responses favored the integrated learning environment as it is conducive, supportive, and provides better opportunities in terms of leadership and career options. The curriculum design was also student-centered and designed according to the student's needs as compared to the traditional learning environment. The participants recorded a healthy and positive relationship with the faculty with a statistically significant P-value <0.05.

CONCLUSION: SGLT The integrated modular system fosters the ability of critical thinking and innovation among students. The curriculum design offers an integrated modular system that is flexible and student-centered which also yields positive outcomes and change among the students.

KEYWORDS: Curriculum, Integrated Delivery System, Medical Education, Undergraduate.

INTRODUCTION

The design of medical education curricula is a critical aspect of preparing future healthcare professionals. Curriculum development is a multifaceted process that involves careful planning, implementation, and evaluation This process may serve as a template for medical educators looking to design their medical education curriculum [1]. Learning approaches impact the student's ability to perceive and comprehend knowledge [2]. However, there has been a growing trend towards integrated, student-centered approaches that incorporate elements of modular and problem-based learning. The conventional teaching methodology has very little interaction in the lectures and emphasizes rote learning, leading to a lack of critical thinking and problem-solving skills [1,3].

On the other hand, the integrated modular curriculum fosters the interdisciplinary applied learning approach which nurtures active participation and collaboration among students [4]. The active modular-based program has now become the preferable choice for faculty and medical schools across the globe. This approach stimulates efficient and high-order skills in students such as critical thinking, analysis, synthesis, evaluation, and application. This novel approach provides a better opportunity for the students to ensure a better collaborative picture of basic medical science knowledge and clinical knowledge. However, the traditional curriculum still has its merits, as it provides a structured, comprehensive foundation in the basic sciences that are essential for clinical practice [5].

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The integrated modular curriculum fosters a healthy and interactive relationship among the learners and teachers to nurture critical thinking, in-depth analysis, and practical application of knowledge. The curriculum can be designed by interdepartmental teams such as the faculty members of the concerned discipline and medical educationists. The planning and implementation involve frequent discussions for constructive alignment of learning objectives which ensures the delivery of relevant and up-to-date content by appropriate learning methodologies in a calculated time frame [6].

The outcomes of students' assessments, their comments, and their points of view following the conclusion of a module with little integration signaled the need for a curriculum redesign. The pivot of our study revolves around the learning environment in both traditional and integrated curriculum. The traditional learning environment has insufficient resources which compromises the quality of education. The interaction among the faculty and the students is scarce and limited. The traditional learning environment lags behind the ideology of social and cultural context. Identification of all these limitations and elaboration of the added set of advantages in the integrated learning environment needs to be addressed [7,8].

The two teaching methodologies carry their own pros and cons but literature evidences are required to implement the system with more efficacy in order to improve the education delivery system. The study aims to compare the characteristic learning environments in two teaching methodologies using John Hopkin's learning environment scale.

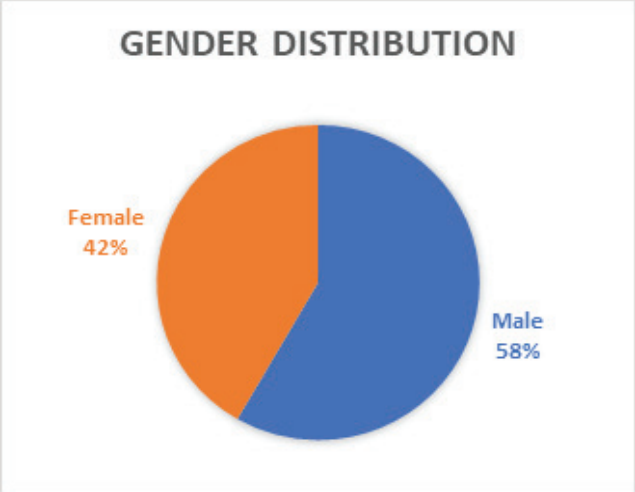
METHODOLOGY

A cross-sectional study was conducted at the Abwa Medical College, Khurrianwala, Faisalabad from 3rd October 2023 to 6th March 2024 after obtaining approval from the Institutional Ethical Review Committee of Abwa Medical College, Faisalabad via letter no ABWA/MC/DME/869-A/2023. A convenience sampling technique was used. A total of 214 students of 1st and 2nd year MBBS were enrolled in the study. 1st Year medical students were enrolled in an integrated modular system while the students of 2nd year were taught according to the traditional teaching methodology.

Students of the 1st year MBBS were grouped in Group A (Integrated teaching methodology) and Students of 2nd year MBBS were in Group B (traditional teaching methodology). After taking the informed consent, students were enrolled in the study and a validated John Hopkins learning environment scale [9] was used to collect data from the students enrolled in a private medical college who are enrolled with a traditional teaching methodology and those who have been enrolled in the modular teaching methodology. Out of 214 students, 34 students didn't fill out the proforma completely and were excluded from the study. The data collected was analyzed in SPSS 22 using the t-test. The P value calculated <0.05 was considered statically significant. The students of 3rd Year to 5th Year MBBS and allied health sciences were excluded from the study.

RESULTS

A total of 214 participants were enrolled in the study, 34 proforma were excluded from the study due to missing information as the remaining proformas were reported to be 90 participants from both classes. Data collected from the rest of 180 students was analyzed. Figure-I indicates the gender distribution of the students.



The total participants were divided into two equal groups with Group A containing 90 students comprising of those only who are undergoing integrated modular system belonging to 1st-year MBBS and Group 2 containing second-year students who are undergoing traditional teaching methodology.

Table-I indicates the response collected from the students of both Group A and Group B comprising of responses dictating a better learning environment as the integrated learning model fosters the student to innovation, and creativity, develops a better sense of understanding of the social and cultural contexts and provides a better opportunity as compared to the traditional learning environment. The statistical value recorded was less than 0.05 which was considered a significant.

The relationship of students with the faculty was also assessed in both the learning environments, (Table-II). P value < 0.05 was considered statistically significant. Table-III indicates the characteristics and design of the curriculum between the two learning methodologies.

Table-I: Learning environment among the integrated and traditional learning systems.

Sr.no	Statement (Question)	Group A (Integrated Learning) Mean± SD	Group B (Traditional Learning) Mean± SD	P-value
1	The learning environment is supportive of diversity and respects individual differences.	3.56 ± 0.925	3.81± 0.898	0.062
2	The learning environment encourages active participation by students.	3.51 ±0.939	3.96± 0.970	0.002*
3	The learning environment promotes teamwork and collaboration among students.	3.49 ±0.986	3.98 ±0.861	0.001*
4	The learning environment provides opportunities for self-directed learning.	3.49 ±1.008	3.91 ±0.895	0.003*
5	The learning environment fosters a sense of community and belonging.	3.46 ±0.962	3.92 0.824	0.001*
6	The resources and facilities are adequate to support learning.	3.56± 1.007	3.90 ±0.937	0.019*
7	The learning environment is conducive to learning.	3.48 ±0.986	3.89 ±0.917	0.004*
8	The learning environment fosters lifelong learning.	3.50 ±1.019	3.94 ±1.021	0.004*
9	The learning environment promotes a safe and respectful learning environment	3.49 ±1.019	3.98 ±0.936	0.001*
10	The learning environment provides opportunities for professional development.	3.37 ±1.054	3.79 ±0.966	0.006*
11	The learning environment encourages innovation and creativity.	3.30 ±1.126	3.76± 1.020	0.005*
12	The learning environment encourages innovation and creativity.	3.31± 1.118	3.89± 0.917	0.000*
13	The learning environment prepares me for my future career.	3.33± 1.112	3.79 ±0.966	0.004*
14	Overall, the learning environment in this program is of high quality.	3.37 ±1.075	3.88 ±0.981	0.001*
15	The learning environment is engaging and stimulating	3.41 ±1.121	3.83± 1.008	0.009*
16	The learning environment promotes an understanding of the social and cultural contexts of health care.	3.27± 1.068	3.76 ±0.998	0.002*
17	The curriculum includes opportunities for inter-professional education.	3.28± 1.039	3.79± 1.022	0.001*

Table-II: Relationship of students with the faculty among the integrated and traditional learning environment.

Sr.no	Statement (Question)	Group A (Integrated Learning) Mean± SD	Group B (Traditional Learning) Mean± SD	P-value
1	Faculty are knowledgeable and enthusiastic about teaching	3.48 ± 1.094	3.81 ± 1.016	0.035*
2	I feel comfortable asking questions in this learning environment	3.49 ± 0.951	3.88 ± 0.832	0.004*
3	There are ample opportunities for hands-on learning in this environment	3.52 ± 0.951	4.03 ± 0.854	0.000*
4	Faculty are available and approachable outside of class.	3.46 ± 1.007	3.98 ± 0.887	0.001*
5	Feedback from faculty is timely and constructive.	3.51 ± 0.974	3.96 ± 0.923	0.002*
6	Faculty provide clear expectations and guidelines for learning.	3.49 ± 1.019	3.98 ± 0.924	0.001*
7	Faculty demonstrate a passion for teaching and a commitment to student learning.	3.38 ± 1.107	3.79 ± 1.000	0.010*

Table-III: Curriculum design between the two teaching methodologies.

Sr.no	Statement (Question)	Group A (Integrated Learning) Mean± SD	Group B (Traditional Learning) Mean± SD	P-value
1	The curriculum is well-organized and structured	3.47 ± 1.051	3.76 ± 1.009	0.062
2	The curriculum challenges me to think critically and apply knowledge.	3.42 ± 0.983	3.93 ± 0.884	0.001*
3	The curriculum is relevant and applicable to current practice.	3.51 ± 0.986	3.80 ± 0.902	0.042*
4	The curriculum is flexible and responsive to student needs.	3.47 ± 1.073	3.83 ± 1.008	0.019*

DISCUSSION

The integrated learning approach in medical education is now widely accepted across the globe. Medical schools all over the world are now adopting this new teaching methodology. However, the transition from a traditional teaching methodology to an integrated learning approach fosters the health care providers and students to nurture critical thinking to yield better results in terms of learning outcomes. According to the literature students' perceptions of the educational context, not the context itself, have the greatest impact on their learning. In our study, the responses recorded favored the integrated learning environment among students as they reported that the learning environment is supportive of diversity and encourages the students to have active participation with teachers and students themselves too. The conducive learning environment provides a safe and respectful learning environment that nurtures innovation and creativity among students. Literature evidence is suggestive that integrated learning environments are better than conventional learning environments in terms of integrating innovation, fostering creative and critical thinking, along a more supportive learning environment [10].

A study conducted suggests a significant difference in perception regarding faculty knowledge and enthusiasm between the preclinical and clinical environments. Similarly, according to a study conducted to evaluate the outcomes of integrated and traditional learning, that integrated teaching module provides an opportunity for the students to actively participate and collaborate with their classmates and students which results in higher retention of learning and knowledge [11]. A study conducted by Saadia S, revealed a significantly high mean score of efficacies of learning environment in public sector medical colleges using the same JHLES score. The findings were consistent with our study students thought integrated curriculum to be more flexible (p=0.019), more relevant (p=0.04), and also fosters the students to think critically (p=0.001) [12]. Another study conducted in Malaysia, concluded a better faculty relation, mentoring, safety and inclusion, and physical space [13].

In our study, students as well as the faculty members advocate the efficacy of the learning environment in the integrated teaching methodology. This teaching methodology nurtures the sense of creativity and development of leadership skills and opportunities to endeavor for the future career of their own choice. According to literature evidence, the students undergoing integrated clerkships rated the quality of education as better in terms of providing constructive feedback and need-oriented curriculum design than the traditional teaching methodology. Another study advocates the difference in establishing a mentoring program, physical space, community of peers, and meaningful engagement not only with peers but also with faculty in private and public sector medical colleges [12]. The integrated teaching methodology students reported a strikingly flexible and providing them more career opportunities than the traditional teaching environment [14].

One of the major concerns regarding the integrated learning environment among both traditional and integrated learning methodologies is the design and sustainability of the curriculum. The learning strategies and curriculum devised were centered on the student's needs and perceptions [15]. In another study, integrated study designs were reported to yield long-term learning capabilities. A study conducted in India reported a significant difference between high and low academic scores among students with integrated teaching methodology with a positive perception of faculty and academic atmosphere [5]. A study conducted in Bangladesh on clinical & paraclinical students reported more social self-perceptions among the female students ($p<0.05$) along with a positive learning experience and appropriate teaching method. The findings were similar to our study as reported that an integrated learning environment provides more learning strategies, problem-solving solving, and memorization skills rather than traditional learning environments. Problem-based learning and interactive sessions with students are the highlighting features of the integrated learning environment [16].

The integrated learning environment provides a meaningful engagement between the students and the faculty. The literature review advocates the positive outcomes related to

the implementation of the integrated learning environment in Indonesia. The study suggests the implementation and application of an integrated learning environment provides the opportunity to create a mentor-mentee relationship between the teacher and student [17].

The competent implementation of an integrated learning environment not only refines the perception of knowledge but also changes the dynamic approach toward teaching. The integrated modular system is far better than the traditional learning environment. Our study reports a significant statistical value for conducive and creative learning [18]. One of the most highlighting features discussed is the relationship of students with the faculty as the faculty reports a positive learning environment and relationship between the students and the teacher. A comparative analysis was conducted between two groups with one taking traditional classrooms and the other an integrated modular system. The results were inclined towards the positive outcomes of the integrated modular system [19].

CONCLUSION

The integrated learning environment is widely accepted and implemented across the globe. Literature evidence suggests that an integrated learning environment provides greater flexibility, creativity, and chances for creative thinking. It additionally fosters deeper learning and boosts student-teacher connections. The curriculum designed is not limited to textbook knowledge but also to experiential learning. It brings together different disciplines and focuses on the clinical application of basic sciences. Moreover, the inclusion of the latest technology like simulation-based training and virtual patients makes learning more engaging and effective.

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Authors' Contribution:

Uzma Kausar: Substantial contributions to the conception and design of the work.
Mohammad Sohail Anjum Noor: The acquisition of data for the work.
Muhammad Usama Sohail: Analysis and interpretation of data for the work.
Muhammad Hamza Rana: Drafting the work and reviewing it critically for important intellectual content.