Evaluation of Undergraduate Integrated Modular Teaching System.

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ABSTRACT

Objective: To assess the integrated modular system of teaching of Karachi Medical and Dental College.
Methods: This cross-sectional study was y conducted in Karachi Medical and Dental College from 1st May 2021 to 31st May 2021.Data was collected from first year and second year MBBS students of Karachi Medical and Dental college through a self-administered questionnaire which contained variable regarding participant's demographics, their views regarding various modes of teaching and different aspects of integrated system of teaching by using a 5 point Likert scale. The questionnaire was validated through a pilot study.
Results: The questionnaires were filled by 215 students**.** Some students (48.4%, n=104) found lectures a little useful. Majority(58.6%,n=126) students were of the opinion that tutorials were not useful. About 99(46.0%) students agreed that the curriculum taught was at the level of their understanding. A large number 104(48.4%) of students agreed that it helped them understanding topics. Most(51.6%,n=111) were not satisfied with the time allocation for module completion.
Conclusion: Majority of the students were satisfied with the curriculum but were not satisfied with the time allocation for each module. Modular system of teaching also helped students in better learning of pathologies.
Keywords: Integrated learning, Integrated modular system, Medical education.

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INTRODUCTION

Development of curriculum is a dynamic process.[1] Changing pattern of diseases, epidemiology, demography and socio-economic realities necessitates that the medical curriculum should be updated periodically. Failure to this will cause deterioration of doctor's skills and competency ultimately resulting in poor health outcome.[1,2] Conventional disciplined-based curriculum had been heavily criticized due to overloaded study program, teaching of irrelevant information, lack of motivation for students, promotion of passive learning and it also discourage critical thinking.[3] Knowledge is strongly compartmentalized and disintegrated.[4] The traditional discipline-based learning involves teaching of basic sciences first and then students learn clinical sciences due to which they lack relevance between clinical and basic sciences.[5] An Integrated teaching system was introduced in Cleveland USA in 1952.[3] An integrated curriculum is the one which synchronize subjects which are taught in separate academic courses and is focused on syndication of central concepts.[6, 7] The goal for this integration is to devise a curriculum that doesn't overburden students and they are taught those skills which help them in patient care instead of those that will be rarely used in patient care.[3] Integrated system can be horizontal, vertical or spiral. A horizontal integrated system refers to integration between basic sciences disciplines. Vertical integrated modular system confers to integration of clinical medicine and basic sciences. Spiral integration refers to combination of horizontal and vertical integrated systems. This allows break of traditional divide between preclinical and clinical studies.[5, 8] Medical colleges around the world have transformed their curriculum from lecture based learning to integrated program. Problem based

learning, small group format, seminars and model system has been successfully adapted in teaching students.[2, 9, 10]

Karachi Medical and Dental College had been following the traditional disciplined-based teaching system since its very beginning but two years ago they have replaced their previous system with integrated modular system. Therefore this study was being carried out to get feedback from students regarding this newly adopted system of teaching and asses its pros and cons.

METHODs

This cross-sectional study conducted in Karachi Medical and Dental college. The duration of study was one month extending from 1st May 2021 to 31st May 2021. Non-probability convenience sampling technique was used and a sample size of 215 was calculated using confidence level of 95% and alpha error 5% using Raosoft sample size calculator.[11] Students of First year and Second year MBBS currently studying at Karachi Medical and Dental College studying integrated modular system and willing to participate were included. The study was approved by Ethical Committee of our college. The questionnaire was validated through a pilot study on 20 MBBS students of first and second year. Cronbach alpha was found to be 0.823. Data was collected through a self-administered questionnaire made after careful evaluation of related research. Ten questions were asked from each participants regarding usefulness of different modes of teaching ,understanding, time allocation, objectives, understanding of pathologies, practical learning, understanding of topics, integration of clinical and basic sciences and continuation of integrated modules .A 5 point Likert scale. (1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree,4=Agree and 5=Strongly agree) was used to record the responses. Data was analyzed through SPSS version 24. Qualitative data was expressed as counts and percentages. Quantitative data was expressed as mean and standard deviation. Data was presented in tables where necessary.

RESULTS

In this study a total of 215 MBBS students of first and second year participated. Out of these 215 students 127(59.1%) were first year students while the remaining belonged to second year MBBS. The mean age of the participants was 19.3±0.89 years. Most of the students were females 166(77.2%) while male students were 49(22.7%). Majority(56.7%,n=72) of the first year MBBS students believed that lectures were only a little useful while majority(43.2%,n=38) of the second year students found lectures very useful. An analysis of usefulness of various teaching methods(table I) revealed that 104(48.4%) students thought that lectures are little useful, 126(58.6%) thought tutorial re not useful at all and 102(47.4%) students thought that CBL is little useful.

Most (46.0%, n=99) of the students agreed that the curriculum taught was at the level of their understanding. Majority(29.8%,n=64) students disagree to the question that time allocation for module completion is appropriate. (table II)

Table I: Usefulness of different teaching methods

Usefulness	Lectures (n, %)	Tutorials (n, %)	Case based learning (n, %)
Not at all useful	28 (13.0)	126 (58.6)	61 (28.4)
A little useful	104 (48.4)	61 (28.4)	102 (47.4)
Very useful	83 (38.6)	28 (13.0)	52 (24.2)

Table II: Response regarding time allocation for module completion.

Question	Opinion	Response (n, %)
Time allocated for module completion is appropriate.	Strongly disagree	47 (21.9)
	Disagree	64 (29.8)
	Neither agree nor disagree	45 (20.9)
	Agree	41 (19.1)
	Strongly agree	18 (8.4)

Most students (36.3%, n=78) agreed that the objectives of the modules were well defined.

Majority(46.5%,n=78) agreed that integrated teaching helped them in learning pathologies.

A total of 104(48.4%) students agreed that it helped them understanding topics. About continuing integrated curriculum in future 76(35.3%) students responded that they agree with the statement.

The integration of lectures and problem based learning (PBL) was favored by majority(49.8%,n=117) while 116(54%) students agreed that integration of basic and clinical sciences is useful. Among the respondents 93(43.3%) agreed that integrated learning helps in practical learning.

DISCUSSION

The medical curriculum is always transforming from didactic lecture based traditional teaching to student centered integrated learning. Traditional method of teaching has been largely criticized for giving irrelevant knowledge, compartmentalization and over burdening the students and less interaction between teachers and students.[12,13].The faculty and students feels difficulty in adapting this new integrated modular system over traditional system.[14] Karachi medical and dental college since its inception has been following traditional mode of teaching until 2017 when it diverted its curriculum from old lecture based teaching to integrated teaching system. As it was a completely different experience for teachers as well as students who had not been exposed to this teaching system previously,it was deemed necessary to evaluate this newly incorporated system and get students views regarding this system.

Traditionally lectures were the only method of knowledge transfer from teacher to student. Subsequently tutorials were introduced. In problem based learning (PBL) a vignette is given to students and they have to identify the problem and its solution. Case based learning (CBL) is a new method of teaching in which students discuss a problem after preparation.[15] In our study we observed that among different mode of teaching students still found lectures most useful. But studies show that some students still prefer lecture based learning. [16] This could be due to their first experience with other formats like CBL or tutorial. They were more inclined towards their previously known method of teaching. Other reason could be that tutorials and CBL requires active participation of the students and hence require active learners. Our results in this regard are similar to what was reported by other studies.[4,9]

In our study students found tutorials not at all useful. This finding is contrary to previous studies conducted at other private medical college where most of the students favored small group formats. [2] Integrated modular system implementation requires equipped teaching and learning environment. Lack of these facilities affects the achievement of the intended learning outcome in all domains of learning.[17] Therefore such limitations may results in developing such perception about tutorials.

A positive finding in our study was that majority (46%,n=99)) of students believed that the curriculum taught was at the level of their understanding. This result negates the objections raised against integrated curriculum that it burdens the students and the curriculum is not at the level of understanding of the students. It will also encourage the curriculum developer of our institute to continue devising such curriculum which are easy to understand. Most of the participants in our study were not satisfied with the time allocated for completion of each module. Previous studies have reported the same experience of students.[3, 4, 8, 18]This finding needs to be highlighted and steps should be made so as to ensure students satisfaction regarding time allocation. Other than this students should be taught how to manage their time wisely so to overcome this problem. Majority of the participants agreed that integrated teaching helped them in understanding pathologies. In another study an overwhelming 82.28% of students said that integration helped them in understanding pathologies.[6] Students in large reported that integrated system resulted in better understanding of topics. Work by other researchers have shown similar findings where students have claimed that integrated system helped in better understanding of the topics and made learning easier.[6, 8,19]This could be due to active participation required by students and small group formats where students can clear their thoughts and misconception which in large group formats or lectures was not possible.

Continuing integrated modular system in future was favored by majority of students. This shows effectiveness of this system that in its initial phase students favored its incorporation in the future. Multiple studies published the students feedback about the integrated modular system. They found positive feedback about the system. [2,8,20,21] One of the key feature of integrated modular system is that it integrates basic and clinical knowledge and this integration was found useful by majority of the students in our study. The integration of basic sciences and clinics helps student to better understand topics because it allows them to learn and practically implement their knowledge at the same time, which previously was not possible in traditional model because basic sciences were taught

in the first two years and clinical rotations were used to start in the third year of education, but some researchers reported the disadvantages of the integrated curriculum.[22,23]

Medical education in today's era is changing rapidly therefore medical students need to be updated to cope up with the changing world. Integrated teaching system provides students learn smartly and effectively. It also allows them to incorporate their knowledge from the very beginning of their education so that they can make decisions quickly and wisely. This system also helps them to think rationally and improves their brainstorming capabilities.

Our study was a single center but we suggest that multi center study will give a more better feedback regarding this system of teaching. We included only first year and second year MBBS students. A study with students from all medical professional years would have given a better idea of the lacking and room for improvement in the system.

CONCLUSION

Majority of the students were satisfied with the curriculum but were not satisfied with the time allocation for each module. Modular system of teaching also helped students in better learning of pathologies. However, a large number of students did not found CBL and tutorials useful which is alarming as they are one of the corner stones of modular teaching system. Therefore, more studies should be done to find the cause of this dissatisfaction and make initiatives make them useful for the students.

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