INTEGRATED-MODULAR SYSTEM FOR UNDER GRADUATE MEDICAL STUDENTS: FACULTY'S PERCEPTION

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ABSTRACT

Objective: To explore perception of Pakistani faculty working in medical college of Saudi Arabia regarding their experience of teaching in integrated modular system.

Study Design: Constructivist approach using qualitative phenomenological design.

Place and Duration of Study: Rabigh Medical College, King Abdul Aziz University Jeddah Saudi Arabia, from Nov 2016 to Apr 2017.

Material and Methods: Perception of 11 Pakistani faculty working in Rabigh, Saudi Arabia regarding integrated modular system (IMS) was explored through interviews. Interviews were audiotaped, transcribed and analyzed through thematic analysis. Triangulation of themes was done through audit by second author and content analysis by relating to their respective frequency of quotes.

Results: Overall the participants considered integrated modular curriculum a better system to provide holistic approach in teaching and learning. They believe the system provides relevance to basic and clinical sciences with real life situations in clinical context. The participants support the view that integrated system can create long-lasting professional foundations for future doctors. They emphasized the importance of faculty development, faculty and student training to increase the awareness of this system and considered it fundamental for successful implementation of integrated modular system.

Conclusion: The findings suggest that if integrated modular system is implemented in true spirit, it is more effective than other teaching systems. IMS facilitates contextual and applied learning thus it not only enhances students' levels and depths of knowledge, but also develop learners' critical thinking to perceive in a diverse and wide range of situations.

Keywords: Integrated curriculum, Medical education, Modular system.

INTRODUCTION

The prevailing trends around the world are now towards integration of basic science curriculum both horizontally among the disciplines and vertically between basic and clinical sciences[1-3]. Integrated curriculum refers to fusion of knowledge from different disciplines to make a whole, which is meaningful[4,5]. This interconnectedness and interrelationship among the disciplines enables the learner to deal with real-life situations and perceive the patient as a whole[6,7]. On the other hand, non-integrated approach offers a high degree of compartmentalization of basic and applied subjects[8]. Thus students face a burden of dispersed and incoherent information leading to rote memorization rather than deeper level of understanding[2] and does not prepare the students for complex tasks they are expected to perform as doctors[7,9].

Despite the awareness, Medical Education team is facing the challenge of inherent resistance of some faculty members towards change of curriculum. The Pakistani faculty working on site is unique in its experience for being exposed to a well established integrated modular system (IMS) in Saudi Arabia and had been working in traditional system in their homeland, Pakistan. The goal of this study is to explore how faculty, with previous traditional curriculum teaching experience, perceives the experience of integrated modular curriculum?

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During the past decade, a number of institutes in the sub-continent including Pakistan are trying to move towards integrated curriculum[10]. Initial evidence from these institutes has mixed feedback showing some degree of success and identifying factors resisting this change[10,11]. The evidence suggests that a contextualized study to explore the perceptions of faculty members will help in identifying potential factors promoting and hindering implementation of integrated curriculum. Thus the findings of this study may help in effectively preparing for any possible implementation at a local level, considering how gaps and redundancies can be addressed. This study will generate an evidence about a debatable topic[12] among researchers to convince those who find it difficult to implement integrated system.

MATERIAL AND METHODS

This qualitative study was conducted in constructivist paradigm to explore in-depth subjective experiences of faculty to understand the phenomenon of integrated curriculum for undergraduate medical students, including advantages, disadvantages, challenges and how it can be further improved. So that the researcher, through data analysis and interpretations, can compare and contrast different constructions of knowledge to achieve a consensus[13]. Accordingly, this is a phenomenological study design in constructivist paradigm, because the researcher has attempted to build the essence of the lived experiences of participants about a phenomenon and construct a detailed description of that central phenomenon[13].

The study was conducted from November 2016 to April 2017 in Rabigh Medical College, King Abdul Aziz University, Jeddah, Saudi Arabia, where an integrated modular system for undergraduate medical students has been implemented and during the last five years going through evolutionary phases. Following purposive sampling strategy[14] inclusion criteria of participants of the study was Pakistani national faculty members, who have been teaching in medical colleges of Pakistan for minimum 3 to 5 years as well as teaching in Rabigh medical college since minimum 5 years. All participants were males (45-55years of age) belonging to different departments. The ethical considerations were kept on high priority. The study was conducted after the approval of research proposal from the institutional review board at College of Physicians and Surgeons of Pakistan, and formal permission from the head of institution from where the data was to be collected. Voluntary nature of participation of faculty members has been emphasized. Written informed consent was taken from the participants before the interviews. Respect and autonomy were assumed without any biases during the whole procedure[15]. Questionnaire was validated by ensuring content validity through literature review and was vetted by experts to ensure construct validation. Same process was adopted for interview questions as well. After piloting some questions were modified for easy interpretation.

The interviews were digitally recorded and discarded after transcription as well as during the transcribing process all measures were taken to assure privacy and confidentiality of participants.

In this "thematic analysis" qualitative data was analyzed by identification and refinement of themes from the transcripts without making assumptions[16]. The researcher has been clear and purposeful about each step and to be able to defend those steps[17]. Then recurrent themes were identified by constant comparative content analysis, reducing number of themes by grouping and creating links between the themes, demonstrating how one emerged theme or concept may influence another. Finally data was organized/categorized into key themes and inferences. The analysis was supported by direct quotes to illustrate how a situation or process interpreted and expressed by the participants. Data validated as it is collected, to judge that the questionnaire is measuring what it intends to measure as well as discussing with co-author to understand whether it is comprehensive enough

to collect all the required information to address the purpose of the study.

The transcripts were reviewed by two independent investigators for accuracy. Moreover interviewees were invited to review their interviews to check the accuracy of their documentation, where applicable. Finally, conclusions were drawn by adopting a constant iterative process by re-visiting research questions and transcriptions by the researcher.

RESULTS

The results were presented according to the COREQ criteria for reporting qualitative research guidelines[18]. The themes which emerged in each area of the interview, were classified into benefits of the integrated system, challenges in implementation, and suggestions for improvement in our context. Table indicates the prevalent themes and subthemes, where n=total number of 11 participants and the frequency of respective quotes is represented by n.

Table: Frequency of themes identified during analysis.

S.No.	Benefits	
1.	Holistic approach in learning	11/11
2.	Contextual learning	11/11
3.	Student-centeredness	9/11
	Challenges	
4.	Faculty resistance	8/11
5.	Planning & coordination	9/11
	Suggestions	
6.	Faculty training /development	11/11
7.	Student awareness	7/11

Effectiveness of implementing integrated modular system in medical colleges was appreciated by almost all the participants. As stated by one of the participants:

"I have come to the conclusion that there has to be integration throughout undergraduate medical curriculum at all levels…"

Among most of the benefits mentioned by the participants regarding their experience about this system, some are mentioned here:

Benefits

Holistic Approach in Learning

Holistic approach in learning and teaching was considered one of the benefits by all participants. They acknowledged that IMS enables the students to identify and relate the features of basic science concepts with clinical sciences by simultaneous application of those concepts in clinical scenarios. As described by one of the participants:

"Structure, function, pathology, pharmacology and how these are related to disease…that's how they (students) can make an understanding and a link between all those things, to have a better understanding".

They supported the view that IMS intends to develop students' critical thinking not only in an isolated subject, but as a continuous process to deal with diverse nature of clinical problems in medical profession. Hence, students learn to apply their knowledge appropriately and flexibly in different circumstances.

Contextualization

The holistic approach also reflects on how the patients present in clinical settings. As one of the interviewees stated

"when they (students) become doctors, they work in an integrated scenario. Therefore, at the end of the medical course it should be integrated knowledge that the students acquire…"

Almost all of the participants expressed their dissatisfaction with the previous system of providing fragmented knowledge, without relevance to clinical applications. They emphasized that information presented without giving an opportunity to apply that knowledge simultaneously has proven difficult for students to recall after the transition to clinical clerkships. Some of the participants compared the integrated system with the traditional system from their undergraduate days:

"Previously in first two years we used to be lost that we were here to become doctors but we are not doing anything related with medicine". "It was difficult for us to decide how we are going to use this particular information…" "best thing is the relatedness and relevance that comes out when you apply the knowledge gained immediately to the clinical context."

They believed that such a shift from discipline based curriculum towards integrated one is imperative to deal with the lack of interest in unnecessary volume and replication of content. They believed that with the integration students relate their subject to the patients in real world scenarios, which promotes students' interest enhancing long lasting retention of meaningful knowledge. This leads to transferability of basic concepts into applicable/useable cognitive knowledge. As knowledge is most effective when organized in a way that matches how the knowledge is being used[9]. As mentioned by a faculty member:

"Students learn at an early age the relevance…relationship of basic sciences to their practical life what they are going to do in future".

"From the day one when they see the patients there is relatedness and that is the basic principle for adult learning"

Student-centeredness

Participants highlighted that students' engagement in educational environment was improved and they became more responsible of their own learning.

"It pushes the student to enhance his own learning skill this is actually a shift from teacher centered to the student centered and it hands him over his own learning through integration."

They supported the view that incorporating student-centered activities like discussing the abstract concepts with peers, and social inquiry of real clinical problems helps to improve their team work and communication skills. These, according to the participants, can also be attributed to the integrated system of teaching.

They emphasized that students' perception of their role has been influenced by their exposure to the real life scenarios from the day they enter the medical college.

"I think in integrated system, students feel more connected to their final goal of becoming a doctor. Because in purely integrated system, right from the beginning students have a feeling of becoming a doctor…""This sense of belonging towards our professional commitments was lacking previously, in other educational systems".

Challenges

Faculty Resistance

The participants acknowledged that the faculty resistance is an ongoing challenge regarding curriculum changes in medical education. However, the underlying causes of resistance may emerge from varied factors in a given context. First, the senior faculty members who have been following traditional learning approach since many years are usually bound to their disciplines. They not only resist the change, but do not appreciate the need for change. Second, lack of time and experience to implement changes are among some other factors which contribute to faculty resistance.

"if the faculty is not ready to do it and you try to implement it by force then it will never be successful because faculty has to be on board"

"probably not all faculty members are on board and fully understand the demands of this modular system and what are their

responsibilities in delivering the modular system"

Planning and Coordination

Planning was one of the emerging themes and all of the participants suggested that before implementation all stakeholders should be taken on board to avoid the state of polarization. They agreed that generic way of integrated curricula without an in-depth exploration and planning may lead to discrepancies in the curriculum as well as in learning and teaching process. Thus a meticulous analysis, thorough discussion among the active partners, contribution from trained faculty members from all disciplines in formulation of curriculum and a friendly, interactive environment between different departments, was suggested.

"for teachers usually it is not an easy thing to do because you have to do more work and you have to come out of your normal routine"

"faculty collaboration and faculty sharing the responsibility in sharing the knowledge"

Suggestions

Faculty Training

There is need for preparation of teachers for the integrated modular system, not only in terms of making good outcomes of each module but also in terms of aligning those outcomes with assessment methods, which should be individually investigated and collaboratively discussed.

"I think teachers' training is one of the most important aspects. As a medical educationist, I see a lot of people struggling with modular system because they don't completely understand the requirements of modular system…"

Regarding the need of adequate logistics, they suggested that faculty should be encouraged to discuss and be trained to search for integration options within available resources.

"…resistance from faculty or administration so we must coordinate and that needs training of faculty."

Students' Awareness

Most of the participants suggested that the students should be aware and trained about the teaching system as well as about the learning goals and assessment plan. As suggested by the participants:

"Priming up of students and the faculty should be there…"

"We need some awareness and some training of students as well"

DISCUSSION

Harden defines integration as "the organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments."[19] There is ongoing discussion that integration in medical education creates dynamic development in teaching and learning process[8,20].

In this study, integrated teaching approach is considered by faculty to be more meaningful and relevant. Since basic science learning starts in the context of clinical practice and allows for less fragmented learning opportunities for students, they can benefit from a more holistic learning approach which facilitates deep learning. They suggested the best way of integration is to create fortified concepts of basic sciences in relevance with clinical sciences within the available resources, followed by an assessment to determine the level of comprehension of the content and its practical application with reason. These findings are in-line with the published studies which reveal that integration is a better approach[21-23] to link the course learning outcomes of one unit to the entire program outcomes[18].

Although the participants agreed on several advantages of this systems but they do believe that accurate planning within the available resources, collaboration of faculty members and faculty training are some of the challenges which need to be addressed[21].

The faculty members emphasized that due to continuous changes in community needs, medical students need to gain meaningful, organized and

practical knowledge. Moreover it requires better planning of integrated curricula to reflect those changes and rearrangement of various curricular contents[20]. According to the participants while focusing on implementing a curriculum in medical education we need to understand the context and organizational structure of medical college, where it is to be implemented.

Unfortunately while reviewing the literature on integration, its success and impact has not been established over a long period of time. Most of the literature revealed that their results were merely the reflection of the personal opinions of the faculty and perception of students[24,25]. Thus, some of the participants suggested that comparative analysis between integrated and traditional curriculum are required in future to elucidate this debatable topic.

In this study, the participants' experience has several implications. First, implementing integrated curriculum in medical education is both difficult and challenging, but in-depth understanding of the emerging issues in a particular setting in which it is being implemented, may help the academic stakeholders to succeed in the new curriculum. Second, without comprehending the gist of this phenomenon, faculty development/training, bringing all stakeholders on the same page for planning and transformation of academic stakeholders' learning perspective, implementation of IMS can be detrimental to the students' development[20].

There were a few limitation of this study. The number of Pakistani faculty in Rabigh Faculty of medicine is small therefore; research using in-depth interviews has been selected as the design. The study will provide perception of a selected group of teachers belonging to one particular nationality and in one institute, therefore, the results could not be generalized. The results may only be transferrable in similar contexts and comparable socio-cultural background. There are some relevant aspects like "Comparison of two teaching systems" i.e. traditional teaching system and integrated modular system was another relevant question but this study will be limited only to explore experiences regarding integrated system. Furthermore, students remain important stakeholders and their educational needs as well as perception hold great importance in any educational activity.

CONCLUSION

The findings suggest that if integrated modular system is implemented in true spirit, it is more effective than other teaching systems. IMS facilitates contextual and applied learning thus it not only enhances students' levels and depths of knowledge, but also develop learners' critical thinking to perceive in a diverse and wide range of situations.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

1. Gullo C, Dzwonek B, Miller B. A Disease-Based approach to the vertical and horizontal integration of a medical curriculum. Med Sci Educ 2016; 26(1): 93-103.
2. Hani S, Atwa, EMG. Curriculum Integration in Medical Education: A Theoretical Review. Intellect Prop Rights Open 2014; 1(1): 1-2.
3. Brauer DG, Ferguson KJ. The integrated curriculum in medical education: AMEE Guide No. 96. 2015; 1(96): 312–22.
4. Quintero GA, Vergel J, Arredondo M, Ariza M, Gómez P. Integrated Medical Curriculum: Advantages and Disadvantages. J Med Educ Curric Dev 2016; 2016(3): 133-7.
5. Prasad U, K R, Prasad U. Student's perception about integrated teaching in an undergraduate medical curriculum. Indian J Basic Applied Med Res 2015; 4(2): 47-52.
6. Ramalingam P, Muthukrishnan R, Palaian S, Parasuraman S, Md ZI. Challenges and opportunities in integrated curriculum of health professions education – A critical view. Indian J Pharm Educ Res 2016; 50(3): 502–3.
7. Naqvi AS, Fatima S. Hybrid Semester System in MBBS Program - Ziauddin Medical College Experience. Pak J Med Dentist 2015; 4(1): 78-80.
8. Basu M, Chowdhury G, Das P. Introducing integrated teaching and comparison with traditional teaching in undergraduate medical curriculum: A pilot study. Med J Dr. D.Y. Patil University 2015; 8(4): 431-38.
9. Khalid DT. Curriculum integration; a strategy for better patient care. JUMDC 2015; 6(1):1-4.
10. Nasim M. Medical education needs to change in Pakistan. Short Communication. J Pak Med Assoc 2011; 61(8): 808-11.
11. Ghosh S, Pandya H. Implementation of integrated learning program in neurosciences during first year of traditional medical course: Perception of students and faculty. BMC Med Educ 2008; 8: 44.
12. Wahid M. Integrated Medical Teaching – Current Scenario. Anatomy Physiol Biochem Int J 2016; 1(1): 555551.

13. Creswell J. Research design: Qualitative, quantitative and mixed methods approaches. 4nd ed. Thousand Oaks CA: Sage, 2014.
14. Creswell J, Guetterman T. Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research, 6th Edition. 2018.
15. Eikelboom JI, ten Cate OT, Jaarsma D, Raat JA, Schuwirth L, van Delden JJ. A framework for the ethics review of educational research. Med Educ 2012; 46(8): 731-3.
16. Illing J. Thinking about research: Theoretical perspectives, ethics and scholarship. In: Swanwick, T. (ed), Understanding Medical Education: Evidence, Theory and Practice, 2nd edn. The Association for the Study of Medical Education, Wiley Blackwell, 2014; 331-49.
17. Darlington Y, Scott D. Qualitative Research in Practice: Stories from the Field. 1st ed. Singapore: Allen & Unwin; 2002.
18. Tong A., Sainsbury P, Craig, J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. 2007; 19(6): 349-57.
19. Malik AS, Malik RH. Twelve tips for developing an integrated curriculum. Med Teach. Taylor & Francis 2011; 33(2): 99–104
20. Yamani N, Rahimi M. The core curriculum and integration in medical education. Res Dev Med Educ 2016; 5(2): 50-4.
21. Shehnaz SI, Sreedharan J, Gomathi KG. Faculty and Students' Perceptions of Student Experiences in a Medical School Undergoing Curricular Transition in the United Arab Emirates. Sultan Qaboos Univ Med J 2012; 12(1): 77–85.
22. Brynhildsen J, Dahle L, Behrbohm M, Rundquist I, Hammar M. Attitudes among students and teachers on vertical integration between clinical medicine and basic science within a problem-based undergraduate medical curriculum. Med Teach 2002; 24(3): 286-88.
23. Singh S, Singh P, Sheth S. Case based learning" as a teaching learning method in an integrated "gastrointestinal system" module. Intl J Med Sci Edu 2015; 2(1): 1-7.
24. Vyas R, Jacob M, Faith M, Isaac B, Rabi S, Sathis. An effective integrated learning programme in the first year of the medical course. Natl Med J India 2008; 21(1): 21-6.
25. Kate MS, Kulkarni UJ, Supe A, YA, D. Introducing integrated teaching in undergraduate medical curriculum. Intl J Pharma Sci Res (IJPSR) 2010; 1(1): 18-22.