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Original Research Article

Knowledge and practice of medical faculties regarding alignment and integration in medical education: a cross-sectional study

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ABSTRACT

Background: The term integration has gained importance in medical education over the last two decades. Integration is one of the major changes incorporated in the new competency-based curriculum for the undergraduate medical program. However, the concept of integration/integrated curriculum lacks significant clarity as, how to implement it in medical institutions. Many medical faculties are not clear about the concept. Therefore, the present study was planned to assess the knowledge and practice of medical faculties regarding various methods of Integration.
Methods: This was a cross-sectional, questionnaire-based study conducted at a tertiary care teaching hospital after approval from the institutional ethics committee. Respondents were around 100 medical faculties specialties who have consented to participate in the study. The study instrument was a self-developed, pre-validated semi-structured questionnaire consisting of both open and closed items. Two focus group discussions were conducted with faculties and medical students.
Results: Data was expressed as percentages. The majority of the faculties were aware of the term integration; however, they had poor knowledge regarding the types of integration and the difference between alignment and integration. Practice regarding integration was poor.
Conclusions: Knowledge and practice among medical faculties regarding alignment and integration were poor. There is a need to have training of medical faculties for better implementation of this concept in the CBME curriculum.

Keywords: Alignment, Integration, Knowledge, Medical faculties, Practice

INTRODUCTION

Alignment is the component of the same organ system or a disease when taught concurrently at the same phase but under different subjects. The term integration has gained importance in medical education over the last two decades. Integration is one of the major changes incorporated in the new competency-based curriculum for undergraduate medical programs in India. Integration is the arrangement of teaching content in a manner that brings together concepts that are typically taught in different academic departments or courses and therefore likely to reduce fragmentation of the medical course.[1] Alignment motivates students towards better learning and aims to improve medical education by bridging the traditional barrier between basic and clinician sciences.[2]

It is recommended that undergraduate medical education should be organized in such a way that it brings together various aspects of the curriculum into meaningful association to focus upon broad areas of study.[3] Integrated teaching is the integration of the concepts wherein various subject-based knowledge or aspects of one theme or topic are assimilated to provide a holistic

approach. Various methods of integration are temporal co-ordination, sharing, nesting, and co-relation.[2] Based on the work of Jacobs, Fogarty and Drake, integration ladder was created by Harden which has 11 steps from subject-based to integrated teaching and learning.[4]

The proposed methods balance the thoroughness of independent subjects and association of concepts between subjects across various professional years.

Wherever possible, GMER-2019 recommends sharing or correlating topics by using an integration or linker session within the curriculum. The objective is to ensure achievement of phase specific objectives wherein integration is embedded to provide adequate recall and conceptual understanding of the clinical/basic science applications.[5]

However, the concept of integration/integrated curriculum lacks significant clarity as how to implement it in medical institutions. Many Medical faculties are not clear about the concept. In addition, there is added paucity of literature on this important topic.

Therefore, the present study was planned with the objective to assess the knowledge and practice of medical faculties regarding various methods of alignment and integration.

METHODS

This was a cross-sectional, questionnaire-based study conducted at a tertiary care teaching hospital after approval from the institutional ethics committee. Respondents were around 100 medical Faculties including assistant professors, associate professors, and professors of different specialties have consented to participate in the study. They were explained the nature and purpose of the study. The study was conducted from March 2024 to September 2024, over a period of six months.

Inclusion criteria

Medical faculty members (assistant professors, associate professors, and professors) from various departments of the institution.

Faculties who were actively involved in undergraduate medical teaching.

Faculties who provided informed consent to participate in the study.

Exclusion criteria

Faculty members who did not provide consent to participate. Faculty members who were not involved in undergraduate teaching activities. Incomplete or partially filled questionnaires were excluded from analysis.

The study instrument was a self-developed, pre-validated semi-structured questionnaire consisting of both open and closed items. The questionnaire was first piloted by five experts in the field and suitable modifications were made. The final version of the questionnaire was distributed to respondents. Appropriate instructions about filling out the questionnaire were given. The following information was obtained: demographic characteristics, KAP of integration, and alignment. The questionnaire consisted of around 15 questions related to the knowledge and practice of participants regarding alignment and integration.

In addition to this, a focus group discussion (FGD) was conducted. The group comprised around ten faculties from the medical education unit from all three phases. Participants for FGD were selected by convenience sampling.

Statistical analysis

Data was expressed as counts and percentages.

RESULTS

Table 1 shows demographic characteristics. Around 22.72% of participants were between the ages 25-35 years, 38.63% were of the ages 36-45 years, 31.81% between 46-55 years, 6% between the age 56-65 years respectively. Amongst the participants 20.45% were professors, associate professors (38.63%) and assistant professors (40.90%).

Table 1: Demographic characteristics (n=98).

Parameters		Observations (%)
Age-wise distribution (years)	25-35	20 (22.72)
	36-45	34 (38.63)
	46-55	28 (31.81)
	56-65	6 (6.81)
Designation	Professor	18 (20.45)
	Associate professor	34 (38.63)
	Assistant professor	36 (40.90)

Table 2 shows the knowledge of respondents regarding Integration in the medical curriculum. Most respondents (93.18%) were aware that the new CBME curriculum has introduced the concept of alignment and integration and 79.54% knew the meaning of alignment and integration. Awareness regarding the concept of vertical and horizontal integration (34.09%), the difference between alignment and integration (28.4%), and the advantages of integration in medical education (38.63%) were less. The advantages mentioned were saving of time (18.18%), Better understanding (14.77%), helpful to student (21.59%), makes concept easy to remember (7.95%) and gives conceptual clarity (18.18%). Almost 31% of the participants did not respond.

Table 2: Responses to knowledge items.

Knowledge questions	Correct (yes) (%)	Incorrect (no) (%)	Do not know (blank) (%)
Do you know that the new CBME curriculum has introduced the concept of alignment and integration?	82 (93.18)	06 (6.82)	0
Do you know the meaning of alignment and integration?	70 (79.54)	18 (20.46)	0
Are you aware of the concept of vertical and horizontal integration	30 (34.09)	14 (15.90)	44 (50.01)
Do you know what is alignment?	36 (40.90)	04 (4.54)	48 (54.56)
Do you know the difference between alignment and integration?	25 (28.4)	07 (7.95)	56 (67.06)
Do you know the advantages of integration in medical education?	34 (38.63)	05 (5.68)	49 (55.69)

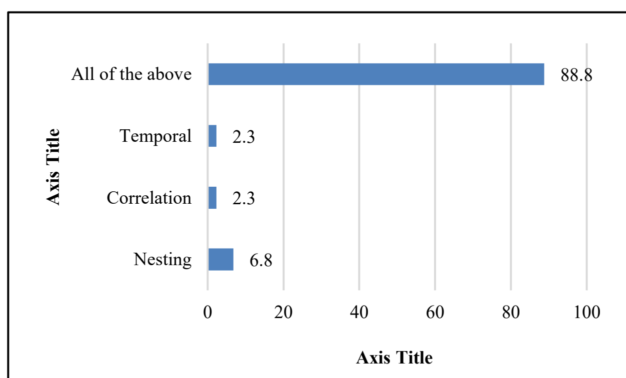

Figure 1: Types of integration.

Most respondents (88.88%) were aware of the type of integration (Figure 1).

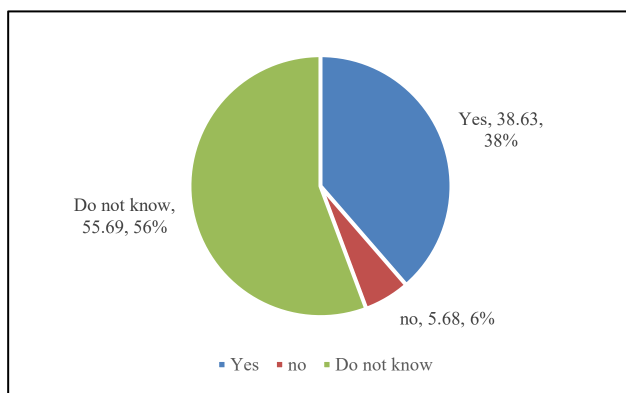

Figure 2: Knowledge of respondents regarding the advantages of integration in medical education.

Practice of respondents regarding alignment and integration in medical education is shown in Table 3. Half of the participants have practiced alignment and integration and 77.77% admitted that integration of topics reduced the fragmentation of the syllabus in various phases.

When asked about the challenges faced by faculties in implementation of integration and alignments based on their practice, following were the responses, operationally difficult and lack of measurability (13.64%), lack of resources, improper sharing (3.40%), increased workload (4.5%) and exhaustion of students towards the end of integrated teaching (2.27%).

Table 3: Responses on practice-based questions.

Practice-based questions	Yes (%)	No (%)
Have you ever practiced alignment and integration?	50 (56.81)	38 (43.18)
Did the integration of topic reduce the fragmentation of the syllabus in various phases?	68 (77.27)	20 (22.72)

DISCUSSION

The present study was conducted to assess the knowledge and practice of medical faculties regarding various methods of alignment and integration. A well-formulated curriculum is important for its effective implementation and to achieve the desired 13 goals of education, according to Asebiomo.[6] Teacher's attitude have been emphasized as crucial in determining the success or failure of an innovation like integration, therefore it is important to understand their perceptions.[7]

Results of our study regarding knowledge of the faculties showed that majority of the respondents were aware that the new CBME curriculum has introduced the concept of Alignment and Integration and knew the meaning of Alignment and Integration which was encouraging. A study by Dashputra et al reported 92% awareness of integrated curriculum which is similar to our study.[8] However, awareness regarding the concept of vertical and horizontal integration, the difference between alignment and integration, and the advantages of integration in medical education was less. Surprisingly most of them were aware of the type of Integration. The majority (82%) of the teachers in another study agreed that the introduction of an integrated curriculum resulted in relevant learning experiences and facilitated higher-order learning.[9]

The present study showed that half of the respondents had practiced Integration and alignment. Although awareness regarding the concept was high, practice of the concept was very less which shows that implementation of the concept was very less. When asked to specify the type and phase of integration, it was seen that very few have practiced vertical and horizontal integration (n=4), phase-wise (n=7).

Amongst those who practiced integration majority of them believed that integration of topic reduces the fragmentation of the syllabus in various phases. Some of the advantages of integration quoted by those who practiced integration were better understanding and conceptual clarity, holistic development of topics, easy-to-correlate subjects, covering of the syllabus of various phases, reduction of overlap, repetition redundancy. Some of the challenges in the implementation of integration mentioned by those who practiced integration were, it needs coordination and time to plan and implement, operationally difficult, lack of measurability, lack of resources, increased workload, exhaustion of students towards the end of integrated teaching

In a study conducted in Nigeria, inadequate faculty training and interdepartmental issues were found to be the most common challenges in implementation of Integration.[10] While another study mentioned time constraints and temporal restrictions as the main issues faced by the faculty in curriculum implementation.[11]

As a part of qualitative research to know the perception of medical faculties regarding alignment and Integration in Medical education a focus group discussion (FGD) was conducted. The group comprised of around 10 faculties from medical education unit from all the three phases. Participants for FGD were selected by convenience sampling.

Participants were contacted personally, through mobile phones, and via WhatsApp messages. An invitation explaining the study and requesting the participation to participate in FGD was shared and those willing to participate were conveyed the details regarding time and place of the FGD. The duration of FGD was almost an hour. Data was collected through interview subtilizing a semi structured interview guide. Various themes were identified. Themes thus reached individually were matched. Prevalent themes regarding integrated curriculum included: 1) teachers and students' issues, 2) barriers in implementation, 3) Suggestions for proper implementation.

Theme 1: teachers and student's issues

Teachers' issues

Almost all of the faculties believed that there are various difficulties for teachers in integrated systems like they did not get enough time.

"*Many of the faculties are not versed with the integrated system, initially find it difficult to adapt*".

Ten (100%) of medical teachers believe that proper training is mandatory for the integrated curriculum to be successfully implemented.

"*Every new member of faculty must be trained, and the system can only be effective if there is proper training of teachers first*".

Student's issues

Most of the faculties believe that there is a lack of interest on the part of students. Due to a greater number of assignments and internal assessments, students find it difficult to manage all classes.

Theme 2: barriers in implementation

Faculty highlighted some important obstacles in the implementation of integrated curriculum in this study. Faculties revealed that due to workload few of the faculty members take teaching as a secondary task.

"*Without proper planning and better resources, we cannot achieve our goals in this system of teaching, lot of financial resources are still required for proper implementation of strategies used in integrated system*".

Both the basic and clinical science faculty mentioned that due to more internal assessment exams/assignments students are not interested in attending sessions as they are busy with it as well as logbook completion. In addition, students bunk the classes before internal assessment exam mostly at the time when integration or alignment sessions are planned.

Some faculties quoted lack of cooperation from clinical departments.

"*There are major issues related to coordination among several faculty members which results in lack of teamwork*".

Faculties opined that vertical integration is more difficult to practice than horizontal integration due to lack of proper coordination between various phases.

Theme 3: Suggestions for proper implementation

Some of the suggestions recommended by the faculties for proper implementation of integration in CBME curriculum were as follows

Faulty training workshops on teamwork need to be an ongoing activity. Provision of required resources and technical support should be taken as a priority.

Planning of timetable by timetable and curriculum committee for coordination and collaboration with various department.

Topics to be integrated and aligned should be decided prior to prevent overlapping of the content through various phases and subjects.

Internal assessments and assignments should be reduced in number so that the students bunk will be reduced and their interest in attending such activities will be enhanced.

Panel discussions can be a mode of integrating various topics to increase the interests amongst faculties and students.

"*Continuous monitoring of implemented curriculum can help identify weaknesses and rectify these without affecting student performance*".

Thus, the findings of this study suggest that there are various concerns amongst faculties regarding implementation of integrated curriculum. In our study faculty highlighted some important obstacles in implementation of integrated curriculum. These are faculty resistance, lack of training to faculties, limited collaboration and coordination amongst various departments, faculty time limitation. A well-approached change process is required for the successful implementation of integrated curriculum. Almost similar results are reported in another study.[12]

The study was conducted at a single tertiary care teaching institution, which may limit the generalizability of the findings to other medical colleges or healthcare settings. The sample size may not fully represent the diversity of medical faculty across different regions and institutions. Being a cross-sectional study, it captures perceptions at a single point in time and does not reflect changes over time or after training interventions. The focus group discussion (FGD) participants were selected using convenience sampling, which may introduce selection bias and limit the representativeness of qualitative findings.

CONCLUSION

It can be concluded from the above study that knowledge of the faculties regarding integration and alignment was fair, but they were lacking on the implementation aspect. Faculties agreed to the fact that curriculum integration is beneficial and essential for student's learning but needs proper planning and implementation but at the same time expressed various concerns and challenges regarding its implementation. Hence it is recommended that more work is needed to tackle current issues in implementation of integration and seek some practical solutions to the challenge.

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

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