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Original Research Article

Assessment of students' perception on self-directed learning, alignment and integration in competency-based medical education curriculum among first year medical undergraduate students

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ABSTRACT

Background: The introduction of competency-based medical education curriculum in India has endorsed many new concepts, like foundation course, self-directed learning, early clinical exposure, etc. There has been paradigm shift from teacher centered to student centered learning. Integration of the curriculum has been evolved as an important strategy in the current system of Competency based medical education and SDL is essential to enable medical students to develop independent learning skills, increased responsibility, assertiveness and accountability which are key attributes to a medical professional's career. Literature search could not retrieve many studies in Indian context, hence this study was conducted to determine the perception of students' on self-directed learning, alignment and integration in CBME curriculum among first year medical undergraduate students.

Methods: It was a cross sectional study conducted among first year medical students. After obtaining informed consent, data was collected using a pre-validated questionnaire having SDL instrument and proforma to assess the students' perception on alignment and integration. Students were asked to rate on a 5-point Likert scale. A total of 174 students completed the questionnaire. The data is expressed as means and percentages.

Results: In the present study students opined that SDL helped them to establish their learning goals. Students also opined that alignment and integration is beneficial for in depth understanding of the subject and also to prepare for exams.

Conclusions: Incorporation of SDL and aligning and integrated curriculum has helped students in better understanding and correlation of subjects across the phase. The joint efforts by the facilitators and students themselves may be helpful to make students independent and lifelong learners.

Keywords: Alignment, Integration, Self-directed learning, Medical undergraduates

INTRODUCTION

The introduction of competency-based medical education (CBME) Curriculum in India has endorsed many new concepts, like foundation course, early clinical exposure, self-directed learning (SDL), etc. Emphasis is being given to active teaching-learning approaches. One such approach is SDL. It is an active learning approach in which the students are responsible for their own learning outcome, with teacher acting as a facilitator of learning.[1] Self-directed learning (SDL) is an important educational principle in higher education that has been promoted by various institutions due to its value in developing professionals to become lifelong learners. SDL is

generally defined as learning on one's own initiative, with the learner having primary responsibility for planning, implementing, and evaluating the effort.[1]

In medical education, SDL is that process during which medical students take the initiative, with or without the help of others (e.g. instructors and colleagues), determine their learning needs, set learning goals, identify resources for learning, choose and implement learning strategies to acquire knowledge and at last resulting in evaluation of learning outcomes.[2] In a constantly changing environment, SDL is important to enable medical students to develop independent learning skills, increased responsibility, assertiveness and accountability which are key attributes to a medical professional's career.[3] Drawbacks with previous system of learning in undergraduate medical curriculum were unnecessary repetition, disjointed approach to teaching and hence the subject as a whole is never grasped by the students. This discourages students from learning and they get disinterested in applying the knowledge achieved into clinical practice.[4] Hence there is a need to reintroduce integrated approach of teaching for better learning and to increase the bonding between the students and teachers. Subject specific learning with appropriate alignment increases the competency of a medical graduate and here comes the importance of integration.[5] Integration is defined as organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments.[6] Integration can be done in the following ways: horizontal integration means that departments in the same phase integrate and in vertical integration departments in different phases integrate.[7] Curriculum integration has therefore been evolved as an important strategy in the current system of Competency based medical education. There has been a recent paradigm shift in the Indian Medical Education from teacher centered to student centered learning with the inception of CBME-based curriculum. CBME lays great focus on integrated approach from the first-year level of bachelor of medicine and bachelor of surgery (MBBS). It includes various new concepts like early clinical exposure, AETCOM, electives, integration, self-directed learning etc.[8] SDL is an educational concept that has been receiving increasing attention since the implementation of CBME. [9] Dedicated time has been allotted to SDL in CBME curriculum in each speciality. A study done by Bhandari et al. showed that Students scored high in most of the SDL skills. However, they felt the need for improvement in time management and finding resources.[10] Few studies done by Puja D et al. and Neeli et al. have shown significant results for learning outcomes by integrated teaching, horizontal as well as vertical.[11,12] There is little known about how different stakeholders perceive this curriculum change. Literature search could not retrieve many studies in Indian context that assess perspectives of undergraduate medical students on SDL and integration in their curriculum. Hence the present study has been planned to determine the perception of students' on self-directed learning, alignment and integration in CBME among first year medical undergraduate students.

METHODS

It was a cross sectional study, which was conducted over a period of 5 months (Jan 2022 to May 2022) in KAHER's JN medical college, Belagavi. A total of 200 students who were studying in first year medical under graduation were included in the in the study, out of which 174 students answered the questionnaire. The students were included in the study after obtaining informed consent from each student. Confidentiality and anonymity of the participants was maintained. The current study was conducted to evaluate the perception of students' on self-directed learning, alignment and integration in CBME among first year medical undergraduate students. Data was collected using a questionnaire. Perception of students on SDL was assessed using SDL instrument (SDLI). Alignment and integration were assessed using another pre-validated questionnaire. The questionnaires consisted of two types of questions: *1*) questions with a 5-point Likert scale, and 2) open-ended question. SDL instrument (SDLI), a pre-validated questionnaire by Shen et al.[13] was used in the study. The questionnaire consists of 20 items, of which the first 6 items explore their learning motivation; 7–16 explore their planning and implementation abilities, and the remaining deals with interpersonal communication skills. The participants will be asked to select from a Likert scale 5-point rating: "strongly disagree," "disagree," "neutral," "agree," and "strongly agree." The qquestionnaire has been validated and used previously in various studies. All of the items of the questionnaire are reviewed and are found suitable to be used among undergraduate medical students. It also included open-ended questions in which students were asked to share their views on SDL, different ways to promote it, and the role of the teacher in self-directed learning. Another questionnaire to assess the students' perception on alignment and integration [11] was also administered to all the participants and the participants were asked to rate on a 5-point Likert scale. Responses to the questions were recorded. Quantitative analysis was done using Microsoft excel Software. The data expressed as means and percentages.

RESULTS

A total of 174 students completed the questionnaire. The students' responses to perception on SDL using SDLI are summarized in (Table 1). The maximum mean score was 4.47 for the item 3 that states, I strongly hope to constantly improve and excel in my learning. The minimum score of 2.91 was given to item 2 that states, 'regardless of the result or effectiveness of my learning, I still like learning.' Students are aware of their strengths and weaknesses for learning (mean 3.78), students get motivated for learning by their success and failures and they inspire them to continue learning (mean 4.17). More than 94% of the students were hopeful of continuously improving and

excelling in their learning. Around 73% of students believed that they are aware of their strengths and weaknesses, they are capable of monitoring their learning, and successes and failures inspire them to continue learning.

Table 1: Perception of first year medical undergraduate students on self-directed learning in CBME curriculum.

Question no.	Items	Response (%)					Mean Score
		5	4	3	2	1	
1	I know what I need to learn.	18.5	60.1	17.9	3.5	0.6	3.91
2	Regardless of the result or effectiveness of my learning, I still like learning.	24.9	55.5	16.8	2.9	0.6	2.91
3	I strongly hope to constantly improve and excel in my learning.	50.6	44.3	5.2	0.6	0	4.47
4	My successes and failures inspire me to continue learning.	31.6	56.9	10.3	1.1	0	4.17
5	I enjoy finding answers to questions.	33.5	45.7	19.7	0.6	0.6	4.09
6	I will not give up learning because I face some difficulties.	34.5	47.1	13.8	4.6	0	4.11
7	I can proactively establish my learning goals.	20.8	55.5	21.4	2.3	0.6	3.93
8	I know what learning strategies are appropriate for me in reaching my learning goals.	16.2	49.7	30.6	2.9	0.6	3.76
9	I set the priorities of my learning.	21.3	44.8	27.6	4.6	1.7	3.79
10	In the classroom or on my own, I am able to follow my own plan of learning.	11.5	40.8	36.2	10.3	1.1	3.51
11	I am good at arranging and controlling my learning time.	6.4	34.1	38.2	19.7	1.7	3.22
12	I know how to find resources for my learning.	11.5	55.7	23.6	8	1.1	3.69
13	I can connect new knowledge with my own personal experiences.	20.1	54	20.1	5.2	0.6	3.88
14	I understand the strengths and weakness of my learning.	16.4	56.7	22.8	3.5	0.6	3.78
15	I can monitor my learning progress.	11.5	54	25.9	8	0.6	3.68
16	I can evaluate on my own learning outcomes.	12.1	55.7	23.6	8.6	0	3.71
17	My interaction with others helps me plan for further learning.	8.6	49.4	22.4	4	15.5	3.32
18	I would like to learn the language and culture of those whom I frequently interact with.	28.2	47.7	20.7	3.4	0	4.01
19	I am able to express messages effectively in oral presentations	13.8	44.8	29.3	10.9	1.1	3.60
20	I am able to communicate messages effectively in writing.	20.7	52.9	21.8	3.4	1.1	3.88

5-point Likert scale, where 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree.

Table 2: Perception of first year medical undergraduate students on Alignment and Integration in CBME curriculum.

Question no.	Items	Response (%)				
		5	4	3	2	1
1	Alignment of topics allowed better understanding of the coordinated action of several systems	25.4	48.6	23.1	2.9	-
2	You found integration of topics non-repetitive as compared to lectures	13.9	43.4	34.1	8.1	0.6
3	You better understood the topic by integrated teaching as compared to lectures	16.8	42.8	32.9	5.8	1.7
4	Integration of topics enabled you to relate with clinical implication better	18.6	55.2	21.5	4.1	0.6
5	The teacher/teachers provided guidance for self-learning	15.6	50.3	28.9	4	1.2
6	Alignment and Integration helped you to score better in examinations	9.8	31.8	46.8	7.5	4
7	Time table was well structured, that helped you to link the content across the subjects.	16.8	41	31.2	8.1	2.9

**5-point Likert scale, where 1 -strongly disagree, 2 - disagree, 3 - neutral, 4 - agree, and 5 - strongly agree.

Similarly, a majority of students expressed that they are capable of expressing themselves in writing. Sixty five percent of students agreed that they could monitor their learning progress, and sixty seven percent of students agreed that they are capable of evaluating their learning outcomes. However only 58% students expressed that, interaction with others helped them plan for further learning. Students also felt that they need improvement in

time management, and they are required to develop their interpersonal communication skills further. Students also responded to open ended questions on SDL. Students expressed different ways to promote SDL viz webinars, online group discussions and debates, Student formed quiz's, riddles, puzzles and Flashcards for quick revision. Students felt that, conducting regular events in which students can actively participate and assess the learning outcome themselves may help in promoting SDL among them. Role of teacher in SDL: All of the students felt that teachers should act as a facilitator, motivator, mentor, and evaluator during SDL sessions.

Perception of students on alignment and integration (Table 2) showed agreement by 74% of students for the technique and they also supported that alignment of topics allowed better understanding of the topic, whereas 73% agreed that session enabled them to relate it with the clinical implication in a better way. While 60% of students agreed that they understood the topic better and 58 % agreed that topics were non-repetitive by integration as compared to lectures. 51% students felt that the time table was well structured, that helped them to link the content across the subjects. However only 41% expressed that alignment and Integration helped them to score better in examinations. Some of the opinions expressed by the students obtained in the form of open-ended questions on alignment and integration are given below: 'It helped us see and study the human body as a whole and try to apply our knowledge', 'Integrated learning is beneficial for in depth understanding the subject and also to prepare for exams.'

DISCUSSION

There has been a recent paradigm shift in the Indian medical education from teacher centered to student centered learning with the incorporation of CBME-based curriculum. CBME has incorporated various active and student centered teaching learning strategies like Integration and SDL.[14] Integrated teaching is an innovative feasible education program to meet the current demands of training and hence curriculum integration has been evolved as an important strategy in medical education. Self-directed learning (SDL) is an imperative student-centered approach; where early introduction of this approach will help the medical students to become lifelong learner. Being a lifelong learner is one of the goals of an Indian medical graduate.[9] The present study illustrates students' perceptions about alignment, integration and SDL. In-depth understanding of the application of course content was achieved other than that it encouraged students' intellectual curiosity.

The findings highlighted the importance of integration in the curriculum horizontally and vertically so that they will be able to understand the concepts in a better manner, moreover, as the related topics are taught simultaneously, it will help students to integrate topics within their mind although they are taught separately under different subject heads. Students wanted to have these sessions frequently and for various other topics. A study done by Kate et al showed that the results for learning outcome for integrated learning were significant and students showed better clinic-pathological correlation along with improvement in cognitive and psychomotor domains.[15] Another study done by Ali et al concluded in their study that the experience of integrating clinical teaching with basic sciences not only improved students' clinical experience reflected by evaluation but also rewarding in improving the results of various modules related to anatomy and physiology.[16]

Students expressed that with incorporation of SDL, they can monitor their own learning progress, identify the areas where they are lacking, and make efforts towards self-improvement. It also assessed students' perception on multiple dimensions of SDL including management of learning skills, personality characteristics of the learner, the learning environment, and the communication skills of the learner. A study done by Premkumar et al evaluated the self-directed learning readiness of medical students across the training years and found the importance of SDL in medicine, the current curriculum may require an increase in learning activities that promote SDL.[17] One of the potential problems the faculty may encounter during SDL session is ensuring uniformity, as students are from diverse backgrounds with varying capabilities of self-directed learning. To overcoming these issues, the facilitators and students have to work together to enhance students' SDL skills, especially time management and intercommunication skills. Limitation of this study is that it was conducted it at one institution and only in first-year medical student course and may not generalize to other courses and settings. We recommend evaluation of the medical students for SDL activities and implementation of activities that enhance their SDL skills across all phases of CBME undergraduate students.

CONCLUSION

The present study illustrates students' perceptions about alignment, integration and SDL and it adds to the emerging literature focused on improving student learning and experience. Incorporation of SDL aligned and integrated curriculum has helped students in better understanding and correlation of subjects. In-depth understanding of the application of course content was achieved as well as it was helpful in encouraging students' intellectual curiosity.

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