

**ORIGINAL RESEARCH**

# Faculty perception regarding Case based learning -a Qualitative study

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**ABSTRACT**

Case-based learning (CBL) is a type of problem-based learning (PBL) that centres around the learner and guides them as they explore through the clinical cases. These cases merge theory with practice, allowing the learner to apply the acquired knowledge, thereby, preparing them for future clinical practice. Conventionally, didactic lectures are the mainstay for teaching Pharmacology to undergraduate medical students in most medical colleges. This study was conducted to introduce CBL as a T-L method to maintain student interest with contextual understanding of topics in the discipline of pharmacology. In the present study, CBL sessions were conducted during Pharmacology teaching hours. At the end of each session, feedback was collected from all the teaching faculty using a validated questionnaire followed by structured in-depth interviews. Thematic analysis was done for analysing data collected, transcripts were reviewed and codes were categorized into key themes. Majority of the faculty found this method interesting and were of the view that if CBL is conducted over a period of time, it will refine student skills. At the same time, the faculty were of the opinion that there are a few barriers to case based teaching, with particular focus on planning and effort required to conduct such sessions.

**Key words:** Case based learning, problem-based learning, thematic analysis.

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**INTRODUCTION**

Case-based learning (CBL) is a type of problem-based learning (PBL) that centres around the learner and guides them as they explore through the clinical cases. These cases merge theory with practice, allowing the learner to apply the acquired knowledge, thereby, preparing them for clinical practice. CBL was introduced in a variety of disciplines as early as 1908, often in the form of face-to-face teaching and group teaching.

Harvard Business School (HBS), one of the pioneer institutions to adopt case based learning technique in its curriculum has quoted "*when students are presented with a case they place themselves in the role of decision maker, followed by analysis, discussion about their findings with other groups. CBL helps students to probe underlying issues, find alternatives, and suggest courses of action in light of the organization's objectives.*"

An overall improvement in the academic performance of learners can be effected by focussing on their progress of learning, their retention, recall and how they apply what they have already learnt.<sup>[1-2]</sup> In the discipline of Pharmacology, considerable emphasis is

needed in routine teaching and learning to develop the skill of rational prescribing, and this mandates active involvement of the learner. CBL comes forth as a simple approach to facilitate learner participation. This technique is known to aid in development of analytical and communication skills along with encouraging critical thinking.<sup>[3-5]</sup> CBL also helps students retain knowledge of basic sciences through applicability to clinical situations.<sup>[6]</sup> Conventionally, didactic lectures are the mainstay for teaching Pharmacology to undergraduate medical students in most medical colleges. This study makes an attempt to qualitatively explore faculty perceptions with regard to adopting CBL and ways in which its future use can enhance critical thinking, clinical reasoning and metacognition in the learners.<sup>[7-8]</sup>

**MATERIAL & METHODS**

The present study was conducted on 135 Second professional (3<sup>rd</sup> semester) undergraduate medical students of a Medical College in North India, after obtaining clearance from the Institutional Ethics Committee, based sessions on four topics- *Pharmacological management of Hypertension,*

*Malaria, Tuberculosis and Peptic ulcer* were conducted during Pharmacology teaching hours. At the end of each session, feedback was collected from all the seven teaching faculty using a validated questionnaire. Also, faculty perception on CBL was explored by structured in-depth interviews conducted after three days. The in-depth interviews dealt with details on CBL teaching methodology, construction of CBL case scenarios, execution of CBL sessions, the benefits felt and the challenges encountered by the faculty, the importance of CBL and potential ways to promote learning in the discipline of Pharmacology.

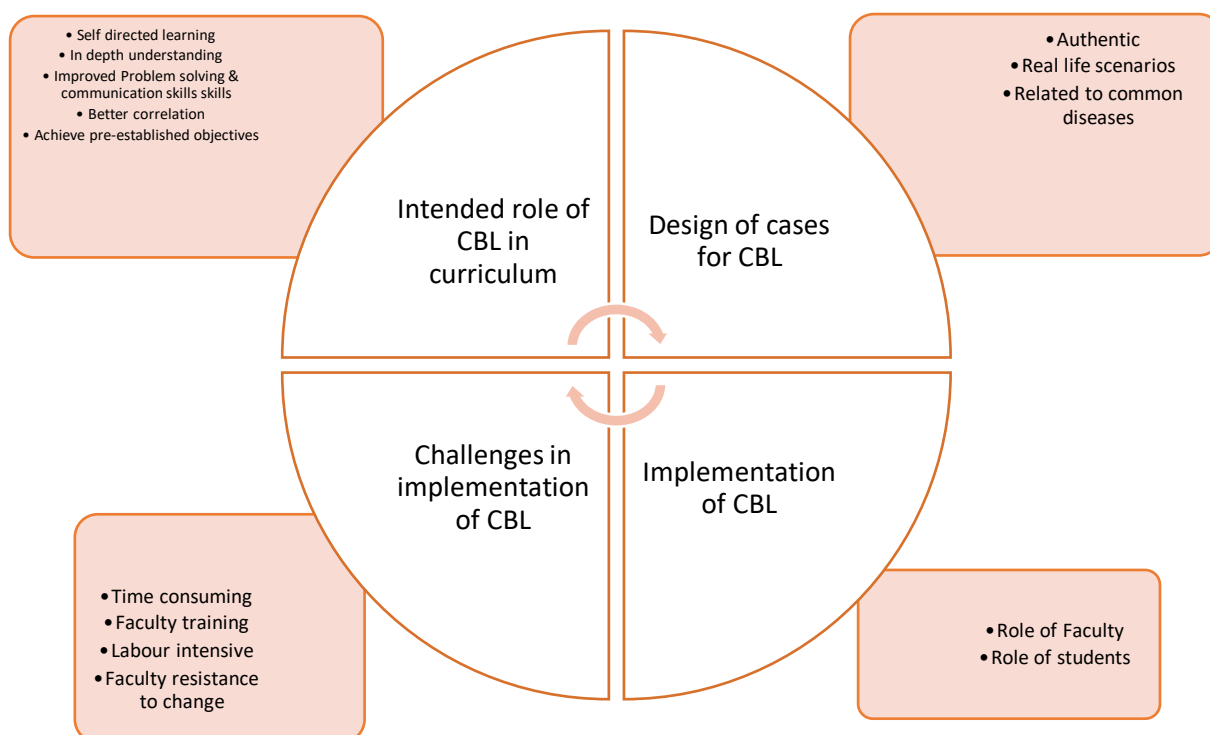
## QUALITATIVE ANALYSIS

Thematic analysis was done for analysing data collected from In-depth interviews so as to examine the perspectives of different faculty participants & to bring out the similarities and differences for generating insights.

The audio-recorded Interviews were transcribed. Written interviews were read and re-read to ensure that data has been correctly transcribed so as to ensure data-familiarity.

Transcripts were then reviewed, and codes were developed to include all concepts indicated in faculty perceptions. The codes were categorized into key themes.

A thematic map was generated to allow for a better understanding in research analysis (Fig-1)



**Figure 1: Thematic Map on the identified overarching themes in faculty perceptions on CBL**

## RESULTS

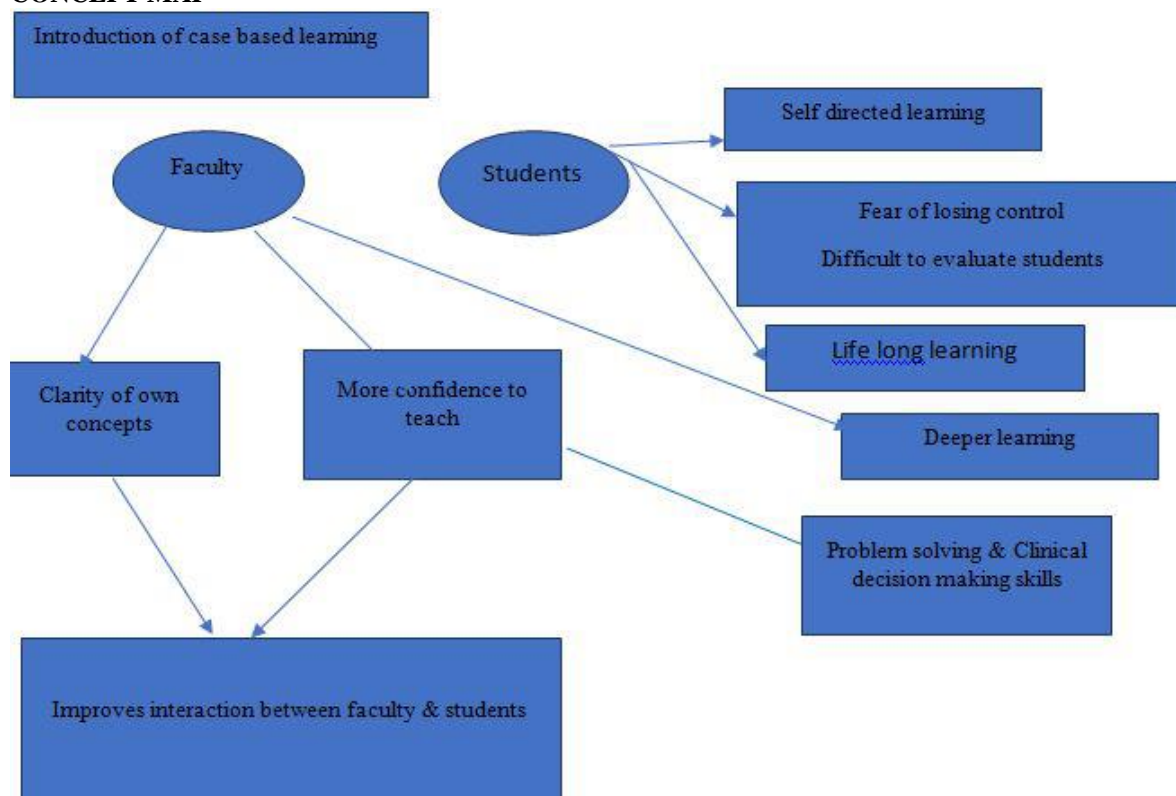
### PERCEPTION OF FACULTY

Majority of the faculty found this method interesting and were of the view that if CBL is conducted over a period of time, it will refine student skills. At the same time, the faculty were of the opinion that there are a few barriers to case based teaching, with particular focus on planning and effort required to conduct such sessions.

On transcribing the in-depth interviews, following themes were shortlisted;

### THEMES

1. Intended role of CBL in the curriculum,
2. Design of cases
3. Implementation of CBL- Role of students and faculty
4. Challenges in implementation of CBL

**CONCEPT MAP****I. INTENDED ROLE OF CBL IN THE CURRICULUM**

Faculty perception on the role of CBL in curriculum focussed on bringing in clarity of concepts leading to deeper understanding of the topic. The faculty felt that it helps make the learning experience more contextual by encouraging the students towards self-directed learning aiming to be lifelong learners. The students were motivated to gather in depth knowledge, critically analyse the given case, discuss with their peers and bring about the relevant answers. It was perceived that the communication, problem solving and team learning skills can be specifically targeted among the students.

As a faculty member quoted; *“Pharmacology is an interesting subject, but students often disregard it because of its theoretical content which is voluminous. They will be able to relate to it more when we present a case as a trigger. Their understanding and interest could be felt through this teaching technique.”*

Another faculty mentioned, *“As a Pharmacology teacher, I felt that engaging with the content was more interesting when I correlated the content with a case. Inclusion of this method in the curriculum can help in better retention.”*

Faculty opined that the students became more open to different perspectives of the same scenario which sets in higher order thinking skills. CBL can help improve analysis of the given facts and figures & logical association between principles and cases.

**1. DESIGN OF CASES FOR CBL**

The faculty was of the view that the cases need to be authentic, mimicking real life situation, related to the diseases commonly encountered by the students in their daily life around them or on topics they have prior knowledge about. So, that they can relate better and be able to identify the relevance of this learning. The case should be presented in a manner that key learning outcomes are easily deciphered within the given time frame.

One faculty member quoted, *“When the relevant matter was presented to the students in a structured manner, they were inspired to explore more.”*

One of the faculty commented, *“Constructing a good case is a complex art which requires patience and planning. Review and feedback from learners and facilitators both helps improve the utility of CBL. We chose important topics like hypertension, tuberculosis, which are highly prevalent in our community. Still, taking the students opinion while choosing topics for CBL would be a better idea I suppose. They will want to explore the cases they find interesting and real.”*

**2. IMPLEMENTATION OF CBL- ROLE OF STUDENTS**

In CBL, the students formulate their learning objectives first and then look for solutions through research, direct instruction, group discussions and hands-on activities.

One faculty member said, *“It was amazing to see the students discussing and working together. They were actively engaged in seeking answers.”*

Another faculty member asserted , *“The students after understanding the problem at hand involved themselves in active discussions , coming up with so many queries now and then throughout the session. The more they look for answers, more will be their depth of learning ”*

Students will become more efficient with differential diagnosis as a result of deeper exploration of concepts and ideas to reach the pre-established objectives.

**ROLE OF FACULTY**

Not all but a few faculty members were trained, prepared with the topic and confident in their role as a facilitator . They made efforts to keep the discussion healthy and on the right track. They made it a point to give due recognition to the learners for their efforts, and encouraged them further.This will motivate the students towards life long learning.

One faculty expressed,*“I watched a few youtube videos on CBL, read a few articles also on the internet to gain confidence for conducting the sessions. This brought clarity to my own concepts about CBL.”*

Another faculty said, *“It was fun to watch the students enthused with so much energy working together as a team towards attainment of their common goals. But it was quite an effort to keep them engaged all the time. I enjoyed these sessions since I did not have to teach them everything and now the onus of their learning was on them. This will encourage them to come forward and take responsibility of their own learning.Readymade answers should not be provided , rather the students should be probed to look farther and dig deeper to resolve the issue involved. ”*

**1. CHALLENGES IN IMPLEMENTATION OF CBL**

In the beginning of the session , all the faculty members were quite apprehensive. It was the first session and everybody was new to it. Mostly we hesitate to try something new. Like, one faculty commented ,*“If you are a person not open to change then it is going to be difficult for you. I think the biggest challenge is that the teachers are scared to let go of the old methods. Some of them have been teaching the same way for so many years, which has worked till now . But what they don’t realize is that it is not working anymore. They donot want to let go of their hold. ”*

A few members were of the view that students are scoring well even with the traditional teaching learning methods, so why put in so much extra effort? Also, according to them ,if this exercise is not going to be given in exams, the students wont take much interest.

One faculty expressed, *“Time was a big constraint. Firstly we did not have time to make cases, collect resource material and validate them. Once this was done , we had difficulty completing the sessions within the stipulated time , had to keep track of time side by side. Our time table was already packed, hence, CBL sessions were difficult to squeeze in. ”*

One faculty member quoted, *“Taking up CBL sessions is not everybodys cup of tea. It takes both subject-matter competence and the ability to keep the conversation on topic while being adaptable. We need more faculty with more training. For this , regular Faculty Development Programmes should be conducted in our institute to train maximum faculty.”*

S. No.	Theme	Subtheme / Codes	Faculty perceptions
1.	<b>Intended role of CBL in the curriculum</b>	<b>Clarity of concepts</b>	<i>I liked the fact that its more of a hand on exercise, so the learners get involved and retain more. I think knowledge is more sustainable now. CBL had an added benefit that because it is student-led, students are in charge of their own learning .It empowered students to make choices and decisions.</i>
		<b>Confidence building</b>	<i>It increased students’ confidence to tackle challenging assignments, thereby improving their academic success.</i>
		<b>Improved communication skills</b>	<i>The main target was to see more students collaborated in groups, communicating and articulating complex information and using creativity to solve the problem at hand.</i> <i>The students were more keen to attend CBL sessions. There was a visible increase in attendance and more number of students coming to class on time.</i>
		<b>Impact on behaviour</b>	<i>When students are in the driver seat of their learning, it gives them choices, makes them more accountable, and ultimately they self-regulate their own learning.</i>
		<b>Better patient outcome</b>	<i>I could see more of teamwork, collaboration and sharing of ideas.CBLwill help prepare students for the real world and future job opportunitiesThe more we institute CBL , the more we are connecting our future health professionals to real world.</i>
2.	<b>Design of cases</b>	<b>Real life scenarios</b>	<i>One student told his grandfather is a diabetic. Now, he was able to correlate why s/c insulin is given three times a day after meals in specified doses only.</i> <i>Another student , after attending CBL sessions claimed that now, he has got to know the significance of low salt diet and regular exercise</i>

			<i>in control of Hypertension.</i>
3.	<b>Implementation of CBL</b>	<b>Role of students – Active engagement</b>  <b>Role of faculty- Act as a facilitator</b>	<i>The students knew how to "think" and where to look for information. This will help in future learning when as clinicians they will have to rely on their judgement to determine important takeaways from the data provided and extract the useful information.</i>  <i>Some faculty was skilled so as to take a backseat and let the students do the research. They navigated the discussion with active interaction between the students themselves and the faculty and the students, in a conducive environment.</i>  <i>To help build confidence in a few faculty members who were a bit hesitant, I briefed them about CBL, gave additional resource material and held regular discussions with them. A list of potential questions of increasing difficulty was made and answers provided beforehand.</i>
4.	<b>Challenges in implementation of CBL</b>	<b>Time &amp;labour intensive -</b>	<i>It was satisfying but took up so much of my time that I was able to finish the sessions just in time everytime. I had to spend considerable time to prepare and plan. CBL cant be taken up anytime. It needs proper preparation.</i>
		<b>Training of faculty</b>	<i>Some faculty members were resistant to adopt newer teaching learning methods (TLM). It was cumbersome to convince them towards adoption of novel TLM.</i>  <i>It was quite challenging to keep the faculty motivated. Also, it was difficult to provide individualized feedback and to assess learning difficulty in group learning.</i>
		<b>Not exam oriented</b>	<i>Students were interested in the beginning but lost interest later, probably because in university examination, the pattern of questions will be different.</i>

## DISCUSSION

This study was conducted with the aim to qualitatively analyse faculty perceptions to Case Based Learning in Pharmacology. Traditionally, Pharmacology has been taught in Indian medical colleges using a didactic lecture approach, with limited attempts at clinical relevance to amass student interest. With the implementation of Competency Based Medical Education (CBME) since 2019, innovative teaching learning (T-L) methods like case-based learning have provided the medical educators with an opportunity to engage students in ways that can lead to greater comprehension and understanding of the subject. This study was conducted to introduce CBL as a T-L method to maintain student interest with contextual understanding of topics in the discipline of pharmacology.

Similar to our study, earlier studies have reported evidence of the effectiveness of CBL as a T-L method in achieving defined learning objectives.<sup>[9]</sup> In our study, faculty was making use of this method for the first time and were enthused with its novel approach to engage the students. Most of the faculty were of the perception that CBL helped promote better understanding of the subject with clinical correlation, improved communication and analytical skills, and encouraged towards team work and self-directed learning. A study conducted by **Elissa**, the faculty opined that CBL sessions have helped students to

integrate their knowledge and recommended applying this method to other basic medical courses.<sup>[10]</sup>

Quite understandably, it was also observed in our study that while most faculty members were actively interested in this novel method, some faculty members remained passive and resisted the use of CBL for student teaching. The main concerns being that it was time-consuming and required detailed planning prior to each teaching session. While appreciating the importance of CBL, a few faculty members felt that more training is needed to bring in uniformity in the style of instruction of all faculty members before taking up CBL as a routine T-L technique. Similar observations have been reported by other studies introducing new T-L techniques.<sup>[11-12]</sup> Student-centric T-L methods like CBL make an attempt to bridge the gap between theoretical knowledge and its clinical application and are so designed to provide students case details including history of present illness, past history, clinical signs and symptoms & laboratory investigations to aid in disease diagnosis. Students are engaged and involved actively in the discussion; interact with each other in a group and work together on the case. The facilitator assumes the role of driving the discussion using the principles of group-dynamics, while maintaining focus on achieving the learning objectives. Due emphasis is therefore kept on correlating the clinical case findings with the most appropriate pharmacological application to make the students

comprehend the subject in context to the clinical presentation in the case. In this manner, students are exposed to simulated real life like case scenarios, enhancing their analytical and thinking processes by this student-centric learning approach.<sup>[13]</sup>

Case-based learning (CBL) approach has in earlier studies shown improved understanding and clinical comprehension of the subject.<sup>[14]</sup>

In our study, the major challenges perceived by the faculty was inadequate training for proper implementation of CBL and shortage of teachers for small group teaching sessions as may be required for conduct of CBL.

Qualitative results from this study provides us an in-depth understanding of faculty perspectives on case studies as a T-L method. These results can serve as a scaffolding for building future research on faculty viewpoint on implementation of CBL in undergraduate medical teaching.

As the Indian Medical Graduate (IMG) is expected to be clinically competent and globally relevant, introduction and implementation of student-centric T-L methods such as CBL may be the long-sought answer to enhancing students' learning process in terms of their self-directed learning skills, analytical thinking, clinical correlation, and knowledge retention.

## CONCLUSIONS

The findings of our study provide insight into faculty concerns and perception on use case based learning (CBL) approach as a student-centric educational tool to motivate and promote students' learning. It is recognised and acknowledged that CBL provides a novel opportunity to the students to learn better through active participation, critical thinking, and clinical reasoning & enhances their conceptualization, knowledge retention leading to better examination preparation. Nevertheless, in order to remove any discrepancy in the instruction styles and for its effective implementation, capacity building of faculty needs an urgent consideration so as to orient them towards newer interactive teaching learning methods. The new CBME curriculum being rolled out, CBL as an effective T-L method promises to be of utmost relevance as an adjunct compliment to other teaching methods.

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