Original Research Article

Learner's perspectives on competency-based medical education in pharmacology at a tertiary care teaching hospital in South India

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ABSTRACT

Background: Competency based medical education (CBME) was implemented recently in India. The study was conducted to evaluate the perspectives of undergraduate medical students towards CBME curriculum in pharmacology at a tertiary care medical college in South India.
Methods: After the completion of the curriculum, feedback was taken in a semi-structured, validated questionnaire. It was based on Kirkpatrik's level 1 model of evaluation. Majority of the questions were framed on a 5-point Likert's scale (1 being poor to 5 being excellent). Qualitative data was collected by open ended question on additional comments.
Results: The response rate was 72.8%. Majority of the participants rated the theory classes, practical classes, small group discussions, self-directed learning, integration, and assessments as good and excellent. More than 80% participants rated role play as an innovative and worthwhile concept towards mastering prescription communication. They felt that role play ignites team work, and provides confidence. Close to 90% of the participants rated the overview on emergency use authorization, orientation on drug regulators, perspectives on hydroxychloroquine prophylaxis as effective and excellent. More than 85% participants felt that AETCOM provided them insight on ethical issues, patient communication, and perspective of doctors as caregivers. 9.8% (16) participants provided comments to open ended question for feedback.
Conclusions: The study provided an insight of medical undergraduates towards CBME curriculum. Further studies can be designed to look into the effectiveness of teaching learning methods based on the performance of the students, perspective of faculties with focus faculty development, and role of various stakeholders.

Keywords: CBME, Medical education in pharmacology, SGD, Integration, Competency based medical curriculum

INTRODUCTION

The Government of India launched the globally recognized Competency Based Medical Education (CBME) curriculum for the Indian medical undergraduates. The curriculum seeks to step away from the previous content based traditional curriculum to a more practical based holistic one. The overall goal is to generate life-long learners with competence in empathy, sociocultural aspects, communication skills, critical thinking, and creative approach towards handling healthcare needs. The curriculum was first rolled out for first year courses like anatomy, physiology, and biochemistry in the year 2019, and then for the subsequent years. The CBME curriculum document lists the teaching outcomes for the topics as competencies. An undergraduate medical student is supposed to master the competencies through suitable teaching–learning and assessment methods (TLAM).[1,2] The CBME curriculum for pharmacology was implemented from the year 2021.

In comparison to the traditional curriculum, CBME requires mastering the subject based on the competencies for theory, practical classes, small group discussions (SGD), and self-directed learning (SDL). Common topics are supposed to be addressed through nesting, horizontal integration (HI), and vertical integrations (VI) across various pre-clinical, para-clinical, and clinical departments. There are topics, like P-drugs, adverse drug reaction (ADR) reporting, prescription audits, interaction with pharmaceutical representative etc. introduced especially in practical syllabus that requires assessment of skills. A pandemic module is introduced in view of recent coronavirus disease.[3] In the pandemic module for pharmacology, drug discovery, development, role of regulatory authorities, and pharmacovigilance in the light of pandemic are stressed. There are AETCOM (attitude, ethics, and communication) modules introduced for various phases. For pharmacology, two modules were allotted by the Institution. The modules focus on clinical decision making directed towards various case scenarios from perspectives of doctors, in handling emergencies, decisions regarding life support, and viewpoint of caregivers.[4] The curriculum also emphasizes on case-based learning (CBL). Hence, the overall focus of the curriculum shifted from traditional didactic lectures to more of self-directed and peer assisted learning.[2,5] As the experience is recent, there are published studies only from first year disciplines to provide an impetus to the CBME curriculum. The studies pointed to the fact that CBME when meticulously adopted inspires student enthusiasm for learning. Studies pointed towards role-play (RP), CBL, and reflective writing, to be valuable and effective modes of TLAM.[5-9] They also stressed on the need of team-based learning, and use of skits with RP for AETCOM module.[10,11] A recent review suggested that feedback combined with reflection can significantly contribute to SDL and reflective practice.[12] Also, it is evident from studies that majority of learners (78.3% to 100%), appreciated the concept of integrating different subjects and specialties. They provided feedback that integration and SGD are good ways to learn medical concepts.[5] Yet another study indicated that CBL in pharmacology will be successful endeavor.[8] Previous studies conducted on second year medical students stressed on the need of RP as an indispensable tool to acquire effective communication skills regarding drug therapy. These were conducted much before the introduction of CBME curriculum.[9,13] The authors had the first-time experience of rolling the CBME curriculum in pharmacology, from March 2021 till December 2021. A lot of discussions and planning culminated in the successful delivery of the curriculum. The classes were made interesting through RP, invited-lectures from pharmaceutical industry and super-speciality departments, and collaborative teaching through HI and VI. Students were scored based on formative assessments and summative assessments on various skills. All details were entered into their log book. They were also required to document reflections after AETCOM sessions. They were invited to provide feedback on the sessions on a timely manner, and those were incorporated in the conduct of classes. Also, the department tried best to incorporate appropriate TLAM. With this background, this study was conducted to understand the perspectives of undergraduate medical students towards CBME curriculum in ppharmacology at a tertiary care medical college in South India.

METHODS

The cross-sectional, mixed method study was performed at the department of pharmacology. It was conducted on second year CBME batch medical undergraduates. It was conducted after completion of the syllabus, and all assessments (Formative, summative, and skills). Students were invited to participate just before they were provided study leave to prepare for university examination. A semi-structured questionnaire (including both open-ended and closed-ended questions) was developed. It was based on Kirkpatrik's level 1 model of evaluation.[14] The objective was to elicit the learners' perception on various facets of new curriculum. Majority of the questions were framed on a 5-point Likert's scale (1 being poor to 5 being excellent). There were a total of 50 questions in the questionnaire. The questionnaire was validated for its feasibility of content, construction, and language. A pilot study was conducted to validate the questionnaire and eliminate all ambiguous words. There were questions regarding the usefulness of various TLAM. Qualitative data was collected by asking the students to write down their opinions and suggestions about the TLAM as additional comments.

All students were oriented first towards the feedback process during their practical classes. They were then requested to volunteer for participation. Forms were placed at a side table in the class room. And a drop box was placed at the exit. Students were instructed not to write their names or roll numbers. This ensured that the identity of the participants was kept anonymous. Data from feedback forms were exported and analyzed in Microsoft Excel. Responses to the questions was expressed as percentages and tabulated. The authors also coded the log-books for reflections on AETCOM. The reflections were screened for key words like socio-economic issues, ethical issues, medico legal aspects, role play, panel discussion, doctors' perspective on ethics, doctor-patient communication, patient rights, empathy, etc. Also, the additional comments from feedback form were compiled, and presented.

RESULTS

Out of the batch of 224, 163 students participated in the feedback process. The response rate was 72.8%. All 163 forms were complete. A total of 72 males, and 91 females participated in the study. 9.8% (16) participants provided additional comments on the feedback form.

Perspectives on pharmacology classes and assessments based on CBME curriculum

Majority of the participants 85.3% (139) graded theory classes as good/excellent. Overall, more than three-fourth (>75.0%) participants rated the practical classes, SDL, SGD, VI, HI, formative assessment, and class tests as good/excellent. The results are shown in Figure 1.
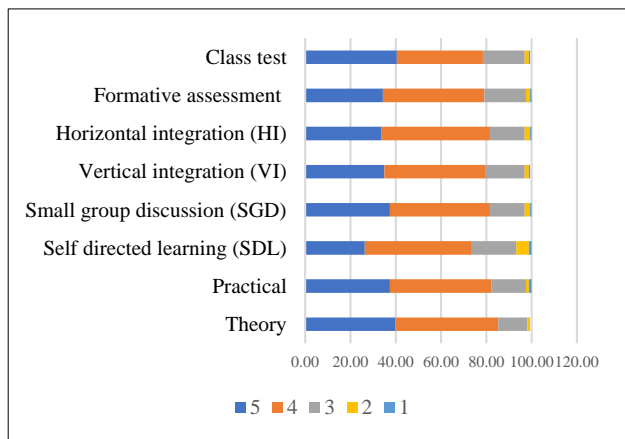

Figure 1: Perspectives on class and assessments based on CBME curriculum.

Perspectives on pharmacology practical topics that were included recently in CBME curriculum: Majority of the participants (>80%) graded the classes on prescription communication, ADR, EML, P-drug, interaction with pharmaceutical representative, and prescription audit as good/excellent. The results are shown in Figure 2.
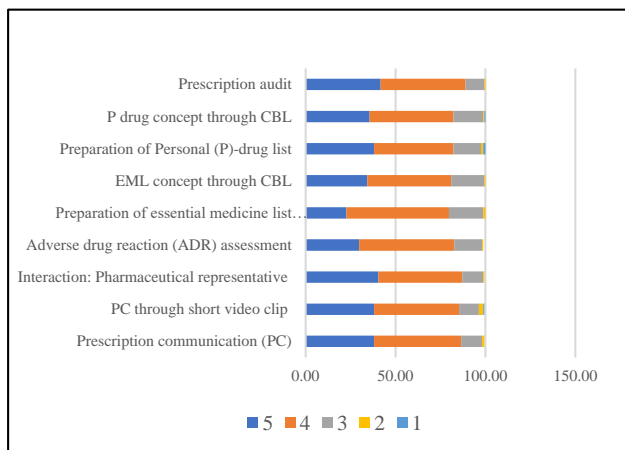

Figure 2: Perspectives on the new topics included in practicals in CBME pharmacology.

Perspectives on RP as a TL aid for prescription communication: More than 80% participants rated RP as an innovative and worthwhile concept. They felt that the inclusion of RP towards prescription communication sessions ignites team work, and provides confidence. And that it is a useful TL tool, and not waste of time. The results are shown in Figure 3. Perspectives on pandemic

module: Close to 90% of the participants rated the overview on emergency use authorization, orientation on drug regulators, perspectives on hydroxychloroquine prophylaxis as good/excellent. 83.4% (136) participants rated the inclusion in curriculum as good and excellent. 85.3% (139) rated the module as waste of time.
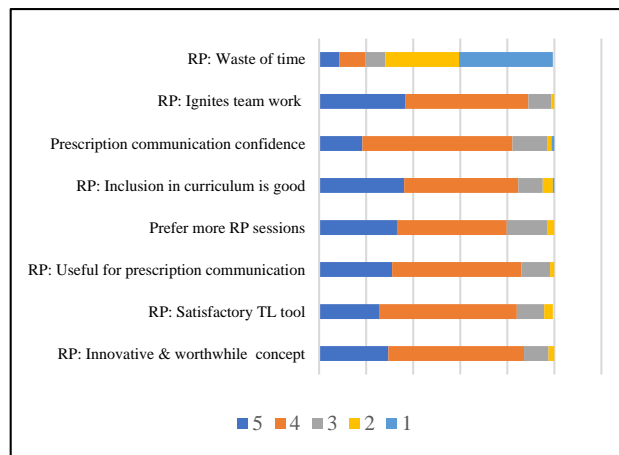

Figure 3: Perspectives of role play (RP) as teaching learning tool (TL) on prescription communication.
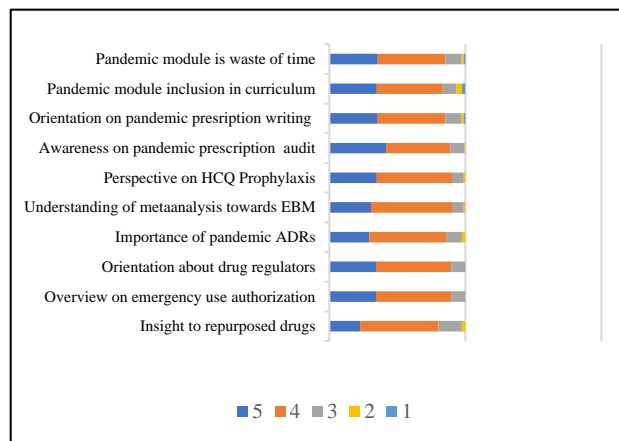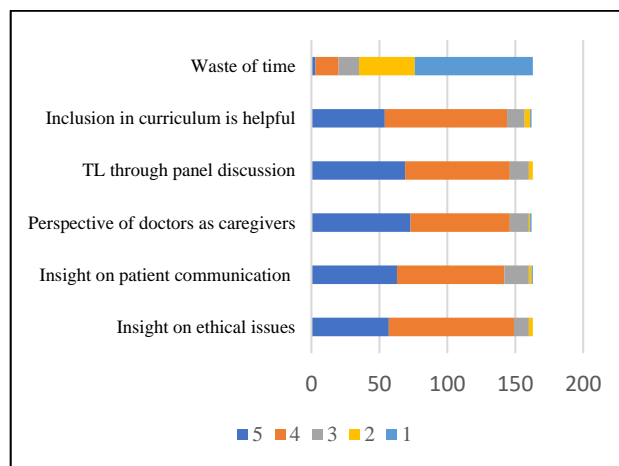

Figure 4: Perspectives on pandemic module.

Figure 5: Perspectives on AETCOM.

Table 1: Reflection key points and open-ended question for additional feedback.

Mention of key point in narrative reflection	% (N)
Socioeconomic issues	82.1 (184)
Ethical issues	91.9 (204)
Medico-legal aspects	87.9 (197)
Role play/team work	37.9 (85)
Panel discussion	62.5 (140)
Doctors' perspective	47.8 (107)
Doctor-patient communication	67.9 (152)
Life support	20.9 (47)
Patient rights	78.5 (176)
Empathy	11.6 (26)
Additional comments	
TL process was very informative and fruitful. Helped learn concepts better	
Theory classes need to be more question oriented rather than use of more power point presentation, and more texts in presentations. Using MEMEs make classes interesting	
Overall teaching and interactions were good. Sessions were informative and learnt a lot in classes	
The integration classes and guest lectures were very informative	
The sessions will help me in becoming a better doctor in future	
Over all very good experience	
Sessions were very good	9.8 (16)
Can be made more interesting, but as a first try with new curriculum, it was perfect	
Everything was conducted properly	
MEMEs help us to remember concepts better	
Time was allotted for records and log book entries during class hours. And that was very helpful	
Sessions were okay	
Some classes were oriented towards students' perspectives	
Able to apply knowledge gained	
Learnt a lot	
Liked the way few teachers presented the topics in class	

The results are shown in Figure 4. Perspectives of AETCOM: More than 85% participants felt that AETCOM provided them insight on ethical issues, patient communication, perspectives of doctors as caregivers. They rated the inclusion of AETCOM in curriculum, TL through panel discussion as good/excellent, only few, 12.3% (20) felt that AETCOM was waste of time. The results are shown in Figure 5. Reflections and additional comments: Majority of the key points that were coded from the log book were socioeconomic issues (82.16%), ethical issues (91.9%), and medico-legal aspects (87.9%). Only 11.6% mentioned about empathy. Also, 9.8% (16) participants provided comments to open ended question for feedback. The results are shown in Table 1.

DISCUSSION

CBME curriculum in medical education has been recently introduced in India. As faculties of the department of Pharmacology, the authors implemented the curriculum with various TLAM. Specific learning objectives were customized based on the competencies, and sessions were conducted after regular brainstorming amongst faculties. Support was also provided by the medical education unit of the institution. Lot of deliberations and brainstorming between inter-department and intra-departmental colleagues culminated in successful completion of the classes for first CBME batch for second year MBBS students. Informal feedback was taken at regular intervals. The idea was continuous improvement, and to lay a road map for future reforms. The final feedback data is presented here as there is very limited information available till date about overall CBME curriculum.[5] And as there's no other published study in CBME pharmacology based on our literature search. In this study, theory, practical, SDL, SGD, HI, VI, and formative assessments were found to be useful by most students. Previous studies conducted on first year CBME batch medical students in India mentioned that weekly assessments were extremely helpful for them during their preparation for the final examination. And integration was found to be an effective way to retain and correlate information.[5] A study conducted on medical students in USA assessed their perception of formative assessment. It was conducted on 140 medical students through validated online questionnaire. It mentioned that students appreciate the use of formative assessments to evaluate their medical knowledge and their SDL skills. And that SDL prepares students as life-long learners.[15] In this study majority participants provided good feedback about VI classes. The results coincide with a previous study conducted in India in 31 final MBBS students before rolling of the CBME curriculum. Majority (>80%) found the classes to be useful and interesting. Participants felt that it motivated SDL, enabled correlations, improved understanding, put things in perspective, and gave confidence.[16] A study published in India had recommended competencies to train medical students on topics like preparing an essential medicine list, to orient them to the pros and cons of pharmaceutical promotion, to analyze prescriptions using the WHO prescribing indicators, to detect, monitor, and report adverse drug reactions, and to counsel patients regarding medication usage. The idea is to make them competent doctors during internship program.[17] From this study it is evident that majority of the participants felt the classes to be useful. And that CBL can be an essential tool towards orienting students to the concepts. Previous studies on peer RP for medication communication reported that TL

provides immense confidence in communicating.[9,10] In this study also, majority participants felt that RP as a TL method provides confidence towards prescription communication. It's worthwhile to note that participants liked the team approach, and provided positive feedback towards RP as a TL tool, and prefer more such sessions. The CBME batch students got oriented to the pandemic module. The module was designed to ensure that the MBBS students acquire competencies in handling not only the illness but also the social, legal and other issues arising from such disease outbreaks. The pharmacology section (module 2.5) included orientation to therapeutic strategies and new drug development, regulations, and pharmacovigilance.[3] Based on the feedback, majority found the module to be effective and useful inclusion in curriculum. But at the same time majority felt that its waste of time. This is contrasting. One way of explanation is that because of COVID, the regular curriculum was already condensed, and completed in less time. And by the time, we oriented students to the pandemic module; they were already in mode for preparation of final examination. Hence, they felt inclusion to be useful, and at the same time were not very ready for the same. Majority of the participants (>85%) felt that AETCOM provided them insight on ethical issues, patient communication, perspective of doctors as caregivers etc. AETCOM was delivered through peer assisted case-based RP sessions, and panel discussion by invited experts of preclinical, and clinical departments. Previous studies also stressed on the importance AETCOM modules, and students found them to be effective.[10,11]

Reflection means to pause and look back at the event and to learn lesson from the event. How to develop reflective competency among students is a fertile soil for further research.[12] In this study, we came up with the concept of looking for key words in the narrative reflections in log book. It was an important observation that majority of students mentioned that AETCOM helped them learn about socioeconomic issues, ethical issues, medico-legal aspects, and patient rights. There were mentions on RP, team work, and panel discussion. It is thus evident that case-based RP, and panel discussions, are effective TL methods that can be implemented for orientation to AETCOM. There is ample space to research on the characteristics of written or verbal feedback that can really stimulate students' reflective competence. And this will answer whether it requires 'immersing' oneself in a real-life situation, with a deep sense of introspection and soul-searching for effective reflection. Also, studies on whether these reflective writings can help identify the traits of learners. The response rate in the study was 72.8% (163 participants out of 224). Also, 9.8% (18) participants provided feedback to the open-ended question on additional comments. The question arises on what makes the students different in terms of communication? The answers might lie in a study of behavioural pattern.

CONCLUSION

The study thus provided insight from the perspectives of CBME batch undergraduates towards pharmacology curriculum, classes based on the curriculum, and effectivity of TL methods like RP, CBL, and peer assisted team-based learning, invited presentations, and panel discussions. The study did not look into the effectiveness of these TL methods based on the performance of the students. Also, the perspective of faculty and role of faculty development is beyond the scope of this study. But the same needs to be highlighted more than anything else as an effective implementation of a curriculum is possible only by collective involvement of all stakeholders.

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