

Evaluation of a Family Study Programme using a Competency-Based Framework in a Medical College of Delhi

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Abstract

Introduction: Diminishing Covid-19 disruptions required hurried and less well planned juxtaposition of the existing family study programme with the new competency-based curriculum for second-year medical students in Community Medicine. We evaluated the family study programme to identify its alignment with the Competency-based curriculum and the facilitators and barriers of this teaching programme.

Methodology: A mixed-methods study was conducted between March and May 2022 in the Department of Community Medicine in a medical college in North India. The Core Components Framework was used to assess the alignment of family study programmes with the Competency-based curriculum. Data collection was done using in-depth interviews and online feedback forms.

Results: It was found that teaching related to 50% of the specific learning objectives was achieved by the end of the teaching programme. Mostly knowledge-based questions were asked during assessment and no framework was used for the assessment. Interactive modes of learning and demonstrations were reported to be facilitators, whereas monotony of the teaching method and lack of certain learning aids were reported as barriers to learning. It was found that assessors could not identify the sequential progress of the specific learning objectives.

Conclusion: Even though the teaching related to the specific learning objectives was partially fulfilled, the assessment was not aligned with the expected outcomes. There is a need to develop milestones in the competency-based family study programme.

Keywords: Competency-based education, Family Health, Community Medicine, Educational Measurement

Introduction

The family study programme, also known as clinico-social case study or family health advisory services is an integral part of teaching community medicine to medical undergraduates across all the medical colleges in India (Crandall *et al.*, 2003; Krishnan *et al.*, 2017; Meleney *et al.*, 1952; WHO, 2010a; WHO, 2010b).

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According to the framework of the Commission of Social Determinants of Health, a family study should enable students to (i) identify determinants of health, (ii) understand the interplay of these determinants and (iii) provide an appropriate intervention. In most medical colleges across India, family study teaching begins in the second year of medical undergraduate course and it is expected that in the third year of course, students should be able to plan an intervention while considering the socio-cultural environment of the family (Kishore *et al.*, 2016). The National Medical Commission (erstwhile, the Medical Council of India) has mandated a Competency-based curriculum for medical undergraduates from 2019.



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The COVID-19 pandemic impacted the teaching programmes of all medical colleges and thus allowed very limited time to design a family study programme along the lines of a Competency-Based curriculum. The earlier family study programme was hurriedly juxtaposed to the new curriculum with the resumption of in-person teaching following the reopening of teaching institutions. We aimed to evaluate the family study programme in terms of its alignment with the Competency-based curriculum and explore the facilitators and barriers of the family study teaching programme so as to be able to devise strategies to improve it in future.

Methodology

A mixed methods exploratory study was conducted between March and May 2022 in the Community Medicine department of the University College of Medical Sciences, a public funded medical college in Delhi, India. The quantitative component was a cross sectional study and the qualitative component used the grounded theory design. This family study teaching programme had 22 students and a total of 30 hours of teaching. Each session was of 3 hours. A total of 12 hours were

allocated to classroom teaching sessions and 12 hours for field visits. The assessment consisted of *viva voce* and logbook assessment; 3 hours were allotted for each. The learning resources and the students' feedback form were posted on the Google Classroom on a regular basis.

In-depth interviews with the assessors were conducted immediately after they had assessed the students. The alignment of the teaching learning content, teaching learning methodology and assessment methods with the intended objectives of the family study teaching programme was evaluated. Data obtained from the in-depth interviews and the evaluation of alignment of the teaching learning related characteristics with the learning objectives of the family study programme were qualitatively analysed using the Core Components Framework for Evaluating Implementation of Competency based Medical Education (CBME) Programmes (Van Melle *et al.*, 2019). This framework consists of five components: outcome competencies, sequential progression, tailored learning experiences, competency focused instruction, and programmatic assessment. The data sources for the core components are given in Table 1.

Table 1: Data sources for the components of the Core Components Framework for Evaluation Implementation of Competency-based Medical Education Programmes (Van Melle et al., 2019)

Core components	Data sources in the present study
Outcome competencies	Specific learning objectives of the respective competencies given by the University to which the medical college is affiliated to.
Sequential progression	In-depth interviews of the assessors
Tailored learning experiences	Day to day meeting records of the facilitators which included the teaching learning content and methodology
Competency focused instruction	Day to day meeting records of the facilitators which included the teaching learning content and methodology
Programmatic assessment	Scores of the students, attendance record of the students and In-depth interviews of the assessors

The expected outcomes from the study were as follows:

(A) status of achievement of the facilitator team to be able to teach the skill based Specific

Learning Objectives (SLOs), reason for non-achievement and modifications needed for the programme;

(B) alignment of the SLOs with the teaching learning content, teaching learning methodology and assessment method.

The alignment of SLOs with the teaching learning methodology and the assessment method was studied based on 3 criteria:

(i) outcomes which are achievable in the 2nd year, i.e., year to which this study refers to,

(ii) status of achievement (by the facilitator team) of expected outcomes presented as yes/ no/ partial. If a particular outcome was not achieved or partially achieved, reasons for non-achievement were explored and these fell into the following categories: (a) non alignment of expected objectives with the teaching programme, (b) resource crunch, (c) no set framework to teach a particular objective, (d) not applicable in the 2nd year of the Bachelor of Medicine and Bachelor of Surgery (MBBS) course.

(iii) modifications needed in the programme schedule of the course itself or to be shifted to the 3rd year of the MBBS course.

(C) the facilitators and barriers of learning;

(D) the correlation of students' attendance with scores obtained in the formative assessment;

(E) satisfaction level of students.

The students' feedback form recorded their satisfaction with teaching-learning on a Likert scale ranging from 1 (highly unsatisfactory) to 5 (highly satisfactory). It also included open-ended questions on factors which facilitated and which were barriers to learning. Students were assessed on a 35 mark scale with *viva voce* (25 marks) and a logbook (10 marks). The percentage scores and the percentage of the total classes attended were calculated. Spearman's correlation coefficient was calculated to statistically test the correlation between the score percentage and attendance percentage of the students.

Results

The status of achievement of the specific learning objectives of the family study teaching programme in Community Medicine by the undergraduate student, reasons for non-achievement and modifications needed for improvement are given in Table 2.

Table 2: Achievement of skill-based learning objectives of family study programme of second year medical students

Objectives*	Outcomes achievable in 3 rd semester/ 2 nd year (Yes/No). May need shifting to 3 rd year.	Status of achievement (Yes/No)	Reasons for non-achievement.	Modifications needed (3 rd semester or to be shifted to 5 th semester)
SLO 2.1.3 Perform socio-cultural and demographic assessment	Yes	Partial	Cultural assessment not done. Demographic assessment of the family not specifically highlighted during discussions despite mentioning about the family composition.	Need to identify resources to achieve this

SLO 2.1.4 Correlate these factors at individual, family, and community level	Partially Yes i.e., Correlate these factors at family and community level	No	Due to lack of a set framework to teach this objective.	Need to develop a teaching framework for this objective
SLO 2.2.4 Assess socio-economic status of a family using appropriate socio-economic scale	Yes	Yes		Focus must also be given to BPL cut offs, health insurance, and EWS
SLO 2.3.2 Assess health status and health practices of individual, family and community	Partially yes i.e., Assess health status and health practices of family and community	No	This part is not there in the 'data collection form' and so got missed.	Can add this component in the 'data collection form' itself so that it doesn't get missed
SLO 2.3.3 Assess health seeking behaviour of individual, family and community	Yes	No	As the programme scheduled prepared for family study posting does not consist of this component as atopic, it got missed.	Can add this component in the teaching programme schedule
SLO 2.3.4 Identify the barriers to good health and health seeking behaviour of individual, family and community	Yes	No	This is because there is no set framework to teach this objective.	Need to develop a teaching framework for this objective
SLO 3.5.3 Assess the housing condition of a family	Yes	Yes		None
SLO 5.4.2 Prepare diet chart considering socioeconomic, cultural and regional availability and preferences	No	No	Not applicable	Shift to third year
SLO 5.4.3 Develop healthy diet plan for families and individuals of special groups viz. children, pregnant, lactating, geriatric population	No	No	Not applicable	Shift to third year

SLO 5.4.4 Plan a diet for individuals with diabetes, hypertension and heart disease and counsel them accordingly	No	No	Not applicable	Shift to third year
SLO 5.7.2 Assess food hygiene practices of a family	Yes	No	There is a check list to be developed by the students and its assessment is to be done by the individual and entered in the logbook.	Need to develop a teaching framework for this objective
SLO 5.2.3 Elicit, document and present nutritional history (24-hour recall) and perform a dietary recall method	Yes	Yes		None
SLO 5.2.4 Perform nutritional assessment for individuals, families and community	Partially yes. Can be done for families and community in second year	Yes		None
SLO 5.5.2 Explain and apply the principles and methods of nutritional education	No	No	Not applicable	Shift to third year

* As prescribed by the Faculty of Medical Sciences, University of Delhi.

Table 2 demonstrates that of the 10 SLOs expected to be achieved in 2nd year, 5 (50%) were achieved.

Teaching learning methods used were pair and share, buzz groups, small group discussions, demonstrations, visits to the family in the community, interaction with the family members, presentations by the students and sharing of resources on the Google Classroom and WhatsApp group. We found that the teaching learning methods were not specifically tailored according to the individual needs of the students.

The assessment methods used were *viva voce*, and assessment of the logbook. Out of 22, 21 students appeared for the assessment, and were divided into six groups. Each group included 3 or 4 students and was assessed by a single assessor by one-to-one *viva voce* method of assessment. The themes identified from the in-depth interviews with the assessors were as follows (a) Mostly knowledge-based questions were asked in the assessment - such as criteria for overcrowding, ventilation, methods of water purification at household level and others (b) No assessment rubric followed by any of the assessors and (c) The assessors could not identify the sequential progression of the specific learning objectives.

Factors that helped in learning

- (i) Pair and share and buzz groups
"We discussed the responses given by our batchmates, which gave different viewpoints and opinions and completed the picture of the community"
- (ii) Presentation by the students
"Sharing and presenting the family of the fellow group members helped me learn better"
- (iii) Digital learning platform and self-directed learning approach
"Information was not given to us directly, we were led to it through discussion and activities,

"we noticed our mistakes and corrected them on the spot"
- (iv) Sharing of reflective learning
"Discussion of everyone's observations made me learn how they perceive things differently from me", "Other students shared the details of their own family for our better understanding"
- (v) Demonstration
"The teacher shows variations in the amount of uncooked and cooked food and they made it very interactive session, full of banter without boredom",

"the real time experience to use instruments and analyse the technical errors, also real time measurements of volume and weight contained in the household utensils was very helpful"

"We learned about the measurements of different types of glasses, bowls, teaspoons. Then I also learnt how the quantity of uncooked and cooked food varies. For nutritional assessment (anthropometry), measured height by stadiometer (for adults), and infantometer (for infants), for measuring weight we used bathroom weighing scale and measured skin fold thickness."

Factors that were barriers in learning

- (i) Single predominant teaching learning method
"Only one type of teaching (discussion based) was used"
- (ii) Long duration of the teaching session,
"The length of the class was a little long, it was difficult maintain attention till the end"
- (iii) Lack of learning aids
"Lack of standard measures in the form of measuring cups, spoons, etc. while enquiring about the dietary intake of the family was a problem."

The correlation between the attendance percentage and the score percentage was not statistically significant (Spearman's rho = 0.2, P = 0.39).

Satisfaction levels of the students were high. The median (Inter Quartile Range) satisfaction scores for the various classes and the family visits ranged from 4 (4, 4) to 4.5 (4, 5).

Discussion

Our study found that out of 10 SLOs recommended by the university applicable for the second-year students, only 5 were taught in the various teaching sessions. There was no demarcation about the SLOs which were to be taught in the 2nd year and those to be taught in 3rd year. Absence of such demarcation in the SLOs may be a reason that the assessors try to assess more than needed. Delineation of specific SLOs according to MBBS phases should be done in order to allow students to have a clear understanding about which skills are to be emphasized in a given time period. By defining these achievement milestones for every stage of the course, CBME can promote horizontal and vertical integration of training programmes for undergraduate students. A milestone is an observable marker on the path to achieve a particular competency. These milestones should be criterion based and when taken together they should be able to paint a complete picture of the developmental journey

of a student towards achieving a particular competency (Harris *et al.*, 2017).

The study revealed that the teaching learning methods and assessment methods used by the assessors were not aligned. The teaching methods used in this study were more interactive and skill oriented when compared to the traditional methods, but the assessment done at the end of the family study programme was focused on the knowledge component. There was a schedule designed for teaching but there was no such rubric for the assessment of the students. Since these were practical classes, the assessment methods should have been more or equally focused on the practical aspects of the family study. Instead of a one-time assessment being done at the end of the study period, there should be regular assessment of the students. This can be done while observing the students in the community while they interact with the family. Since CBME does not specify particular learning strategies, but provides a clear description of intended outcomes, there should be a more structured framework to achieve the outcomes mentioned in the CBME guidelines to facilitate learning. Assessment of students should be in line with the teaching learning methods. CBME is a higher-order instructional design which demands new skills from teachers involved in the course (Harris *et al.*, 2010). Teaching and assessment should go simultaneously to bring positive changes in the family study programme.

The focus of assessment should be on the milestones instead of one-time assessment at the end of a particular training programme. The importance of the role of assessment in the learning process should be emphasized upon (Frank *et al.*, 2010). The lack of standardized assessment tools is among the most important reasons that CBME is being adapted slowly and facing challenges in proper implementation (Hawkins *et al.*, 2015). Along with the marks (quantitative assessment), assessment of students should include high quality informative remarks to make the learners aware of their strengths and weaknesses (Harris *et al.*, 2017). In our study, students reported that the newer methods gave them more chances for

interaction among themselves and with facilitators. We found that demonstration of various procedures first by a few students and then by the facilitators made the session interesting. Giving students a chance to observe and learn instead of memorizing seemed to be a better method. In a study conducted by Begum *et al.*, (2020) majority students (84%) felt that interactive teaching learning methods make the class more interesting. A qualitative study by Catherine P *et al.*, (2021) shows that students find those sessions boring and difficult to understand where teachers do not keep the session interactive. Students state that sessions are boring because teachers only read out from the slides. Participatory learning has proven to better enhance the skills of students when compared to the traditional methods. In a study to evaluate the participatory learning approach in medical students, Ali *et al.*, (2021) a significant improvement in objective structured clinical examination (OSCE) scores in the intervention group taught using participatory methods when compared to the group taught with traditional methods. Another study reported that most students preferred lectures as a teaching method and small group teaching for discussions and clearing doubts (Devi *et al.*, 2015).

We used Google Classroom, an online teaching platform for sharing educational materials with students to ensure long term availability of the study material provided by the facilitators. This helped students to get comfortable with facilitators by sharing their extracurricular work or achievements in the platform, however students did not utilize the resources provided online. Long duration of the teaching sessions and discussion as a teaching method in majority of the sessions reduced the interest of the students. The students were unable to pay proper attention to those topics which were taught towards the end of the session. Catherine *et al.* (2021) in a qualitative study report that students are unable to adapt and learn when the lecture duration is long and with no breaks. Students reported that they feel hungry and get distracted during long sessions. It was felt that the teaching could have been done in an improved manner if it were not for

the lack of resources such as measuring cups, spoons, etc. for dietary intake calculation. In a qualitative study conducted by Aziz *et al.*, (2020) among medical undergraduates, the most important barriers to learning were found to be distractions such as disagreements with friends, one-sided love, financial crisis, commitments, lack of attention and inability to manage time.

Attendance is considered to play a significant role in determining performance of students in exams. CBME focuses on learning rather than teaching, and therefore attendance in the classroom becomes redundant. In our study, there was no significant relationship between attendance and the scores of the students. This may be due to the small sample size and small study duration. Another reason may be the non-alignment of teaching and assessment methods. The teaching was more focused on imparting practical skills to students while the assessment done was more theory based. This could be the reason that even students who did not attend the classes scored well in the *viva voce* conducted at the end of the study. We need to create opportunities for asynchronous and self-directed learning to cater to the diverse learning needs of the students.

A study by Mohanan *et al.*, (2017) shows that significant positive correlation was found between internal assessment marks and attendance. This study was conducted among MBBS students in Thrissur. Khan *et al.*, (2003) in Pakistan among MBBS students shows a positive correlation between attendance and marks of students in the exams. The results of the study shows that the number of students who passed are higher in the group of students with more than 75% attendance.

The present study shows that satisfaction levels of students with respect to classes and family visits were high. A study conducted by Begum *et al.*, (2020) shows that around 92% of the students were overall satisfied with the introduction of newer teaching learning sessions in community medicine classes. In a study conducted by Murugavel *et al.*, (2017) among MBBS Undergraduate students found that according to majority of the students the

best way to learn the principles of community medicine is field demonstration and field visits are a good learning experience.

Competency-based medical education came to the forefront in 2019, but faced unprecedented challenges in implementation due to the COVID-19 pandemic. This study was conducted in the transition phase from the old to new curriculum for medical undergraduates at the University College of Medical Sciences, Delhi, India. It contributes to the evidence on understanding the challenges in implementation of the new curriculum.

The study duration was small and only one batch of students was considered for the evaluation. All the teachers of the department were not involved, and feedback was taken only from those who were involved in the teaching programme of this particular batch of students. Caution must be exercised while generalizing our study findings as the results are contextual.

Conclusion

We conclude that around half of the SLOs of family study programme for 2nd year medical students were not achieved. The assessment method was not aligned with the expected SLOs and did not factor in the sequential progression of the schedule. The concept of providing tailored learning experiences to the students is new to our context. Defining milestones for learning, and developing a corresponding assessment framework is needed to realize the full potential of competency-based curriculum in Family Study in Community Medicine.

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