

Process of Developing of Community Based Medical Education Programme Curriculum in Puducherry, India

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ABSTRACT

We have developed, implemented and evaluated context specific Community Based Medical Education (CBME) programme. The present CBME programme was developed and implemented in villages served by the Rural Health Training Centre (RHTC) of the Department of Community Medicine, Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), Puducherry, India. It was a programme development and evaluation design consisted of feedback from students, group interview with small group tutors and Focus Group Discussion (FGD) with community members. Five batches consisting of 629 medical students over a period of five years were exposed to the CBME programme. The following steps were used in the process of curriculum development:

Need for a CBME programme: It was observed that students had difficulty in relating health problems with social, economic and environmental conditions. Medical Council of India (MCI) envisions the curriculum to be an active process, student-centred and addressing the needs of the community.

Development of expected outcomes: We reviewed previously published needs-assessment survey and FGD findings from local community. It was followed by Delphi study with experts.

Plan for teaching and learning: In a selected village, students were allotted three to four families for family study and each small group of students were supervised by trained small group tutors.

Feedback to students and faculty reflections: Students were given feedback on their assignments. It was followed by reflections by small group tutors to further improve the teaching programme.

Team formation and training: We formed a team consisting of faculty, post-graduates in community medicine, medical interns, medical social workers and active members of 'gram-panchayat' for implementation and supervision.

Evaluation: Students perceived improved ability to identify health problems and relate them with social, economic and environmental conditions. They learned to interact with local community on common health issues. Community members felt that students could sensitise them to various environmental issues such as mosquito breeding places, stagnation water and waste disposal.

Keywords: Learning, Teaching, Small group tutors

INTRODUCTION

World Health Organization (WHO) has defined 'social accountability' of medical school as "the obligation to direct their education, research, and service activities towards addressing the priority health concerns of the community, the region, or nation they have a mandate to serve" [1]. The CBME offers an opportunity to students to understand social responsibility, relate theoretical knowledge to practical training and help in orienting doctors for community needs [2,3].

'Community based education is a means of achieving educational relevance to community needs' [4]. It is achieved through set of activities in community where the students, teacher and the community members are engaged to study the common health problems and its cultural, social and economical factors [4]. Most medical schools experience difficulties providing right quality and quantity of educational experience to students due to lack of curriculum to respond to the needs of the local community [5]. The MCI envisages the undergraduate medical education programme should be designed with knowledge, skills, and attitudes so as to function as a physician of first contact [6]. It has also recommended that the didactic lectures should be minimal and curriculum model should be predominately hands-on in actual field setting to help students to relate theoretical knowledge to real life setting in community [7].

We have developed curriculum of CBME programme at Department of Community Medicine (DCM), SMVMCH, Puducherry, India. SMVMCH is a 10-year-old private medical college annually admitting 150 students, and affiliated to the Pondicherry University of Government of India. We follow the traditional curriculum recommended by the University, where the content is arranged subject wise which is delivered predominantly through didactic lectures. We are in the process of contextualising present field based training programme for undergraduates targeting at local health needs and improve student community interaction. As a part of this process, we have developed and evaluated the curriculum for a newly initiated CBME programme. The purpose of the present article is to describe the processes in the development of this programme and reports its evaluation from students', faculty and community point of view.

MATERIALS AND METHODS

Setting

The present CBME programme was developed and implemented in villages served by the RHTC of the DCM, SMVMCH, Puducherry, India. The DCM runs free of cost Community-based Palliative Care programme, School Health Programme, Rural Mobile Clinic and Facility-based Diabetic Clinic for rural poor in its field practice villages. In addition, DCM assists in providing

primary health care through two Primary Health Centres of Government of Puducherry and actively contributes in various field activities and operational research under various national health programmes.

Design

It involved programme development and evaluation. The evaluation design consisted of feedback from students and FGD with community members. It was Kirkpatrick model of level 1, where the level 1 assesses the immediate reactions of the stakeholders such as students, faculty and community members to the course [8].

Sample Size

Over the period of five years we exposed 629 medical students of second year {303 (48.17%) males and 326 (51.82%) females} to CBME programme. The first batch consisted of 110 students and second, third, fourth and fifth batch consisted of 127,129,142 and 121 students respectively.

Process of Curriculum Development for CBME Programme

The following steps were used:

- Needs Assessment for a CBME programme,
- Development of expected outcomes,
- Plan for teaching and learning,
- Feedback to students and small group tutors' reflections,
- Permissions and preparation for the programme,
- Team formation and training,
- Evaluation from students, small group tutors and community point of view.

Needs assessment for a CBME programme: During discussion with the in-house faculty it was found that the current teaching in Community Medicine is predominantly based on lectures with limited field exposure and feedback. It was observed that students had difficulty in relating health problems with social, economic and environmental conditions. The alignment of curriculum to the local context is crucial for training primary care physicians. One of the specific recommendations for medical schools by 'WHO expert group' is that the student's competency should meet the diverse needs of the society. The instructional methods should be predominantly "hands on" and community-based experiential learning should be available [1]. We decided to develop and implement the new curriculum on CBME programme. We followed the 'descriptive model' for developing the curriculum for CBME programme which is the situational model (context specific) emphasising the importance of context in curriculum, by analysing the situation in which students are expected to work in the future [9].

Development of expected outcomes: The foremost task for the development of curriculum was to have an agreed objectives or outcomes. To achieve this, we had consultations with in-house faculty, students, community members, and experts in the field of Community Medicine. We involved all the stakeholders from the planning phase itself so as to develop their ownership and co-operation in its implementation.

To decide the expected outcome, we went through the document of MCI, published literature on similar programme in India and syllabus of Pondicherry University for medical undergraduates [5,6,10,11]. The first draft of the expected outcomes was worked out in consensus with the in-house faculty. As we were in the process of developing a context-specific curriculum for CBME programme, we decided to consult the community members

to know their current health problems. In the present process, we reviewed previously published needs-assessment survey and FGD findings from the present department in present local community. The detail of the survey and FGD findings has been reported elsewhere [12]. As found in past study, the commonly reported morbidities in local community were diabetes (39.5%), hypertension (26.8%), cardio-vascular (8.4%) and renal diseases (3.7%). The broad categories that emerged from FGD data were health problems, health facilities and their expectation. The common health problems perceived by the community were diabetes, hypertension, renal stones, appendicitis, cancer, and infertility, which are in alignment with survey findings. They also perceived that they need awareness on how to prevent these common health problems.

Hence, in order to contextualise the programme to local needs, it was decided to have educational outcomes around non-communicable diseases, in addition to other common issues such as environment, sanitation and personal hygiene, which are often ignored and rarely felt as a need by the rural community. Based on the survey and the FGD findings the first draft of expected outcomes was refined.

In the next step, we did two rounds of online Delphi survey with panel of public health experts (n=8) to further refine the expected outcomes. The Delphi panel experts recommended adding some more outcomes on leadership, team-building, organisation, communication, and decision-making, in addition to pre-decided outcomes related to screening for diabetes, hypertension, ischaemic heart disease and cancer. Finally, after consultation with the in-house faculty the specific and measurable outcomes were listed. As shown in [Table/Fig-1], we thus ensured to align the outcomes

Expected short term outcomes	MCI Vision 2015
Able to appreciate health problems at family level	Be able to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is, - complete and relevant to disease identification, disease prevention and health promotion. - is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values
Able to identify the social, environmental and economic factors in local community.	
Able to elicit the history of various addictions among family members	
Able to identify the risk factors influencing non-communicable diseases.	Communicator with patients, families, colleagues and community.
Able to communicate with villagers	
Able to work with peers	Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.

[Table/Fig-1]: Expected outcomes of the community based medical education programme.

MCI: Medical council of India

of the CBME programme, with community needs, Regulation for Graduate Medical Education (MCI), syllabus of Pondicherry University and MCI vision 2015 [6,11,13].

Plan for teaching and learning: After finalising the expected outcomes, the programme was designed in consultation with the in-house faculty. Considering the resources such as number of faculty, time allotted in the undergraduate curriculum and budget constraints, we decided to run this programme for the period of seven days. It includes one-day orientation through interactive lectures and briefing, five days field assignments in small groups supervised by a trained small group tutors and final day with reflections and feedback. In a selected village, students were allotted three to four families for family study. Students were asked to complete the structured assignments on environmental problems, personal hygiene, diet survey and assessment of non-

communicable diseases. Before each assignment briefing was done and small group tutors supervised and supported the students in carrying out their activities. Later the students and small group tutors had discussion in small groups and students were asked to reflect on their observations made. During CBME programme the students had 20 hours of effective contact with the allotted family. Students were motivated to accompany sick people with acute and chronic illnesses in their allotted families for medical check-up

Activity	Content	Duration
Briefing for Small Group Tutors (Venue, RHTC)	- Provide uniform instruction to the students	7 hours
Briefing for Students (Venue, College building)	- Pre-test, Introduction to camp - Communication skills - Filling of village details - Briefing for family visits-record exercise - Family allotment, Instructions for camp-rules. - Briefing regarding formats on Environment, Non-communicable disease, Briefing regarding diet survey (Weighment method) and Personal hygiene, - Briefing on Family visit and closing ceremony (Camp)	10 hours
Students Field Activity (Venue, Village)	- Family visit (Introduction, assignment on environment, Personal Hygiene) - Assignment on diet survey, - Diet calculation, assignment on NCD formats - Feedback on assignment	20 hours
Plenary Session (Venue SMVMCH Auditorium)	- Post-test/Presentation/Experience Sharing/ - Programme Feedback	7 hours

[Table/Fig-2]: Details of activity and content of community based medical education programme.

RHTC: Rural health training centre; SMVMCH: Sri Manakula Vinayagar Medical College and Hospital

in a free medical camp organised at village level. The final day the small groups of students were asked to do their group presentation as a plenary session. The details of the programme are given in [Table/Fig-2].

Feedback to students and small group tutor's reflections: The feedback given at the end of the programme is 'feeds forward' for further learning [14]. In the present programme the small group tutors accompanied the students in the field and helped them to carry out the assigned tasks and do observations in the field and allotted families. Students were given feedback on their field assignments on their ability to relate health problems with social, economic and environmental conditions. In addition, small group tutors were asked to rate the students on their general appearance and general behaviour, punctuality, attitude towards the community, professional behaviour with colleagues and community members by using 'Students Performance assessment' format given by WHO [4].

This student-tutor interaction in small group helped them to validate their understanding with their peers and accommodate each others view point. Another purpose was to facilitate discussion among student and small group tutors for better learning and mutual communication.

After each CBME programme, we called the meeting with the small group tutors (n=18) and asked them to reflect on their learning, experiences and explored their suggestions to improve the CBME programme. We followed Kolb's experimental learning theory for reflection [15]. The major purpose of the reflection was to ascertain their learning during CBME programme. The small group tutors found the reflections useful in bridging the gap with the students. It also helped to know the challenges in monitoring the students in field, and found it easy to teach community

medicine in field. They understood how to make this programme beneficial to the family and to communicate to the rural people. Another purpose was to develop ownership for the programme which is paramount important for the future sustainability of the programme. They reflected on the programme implementation process of CBME programme and the students understanding of the content. Over the period we slowly introduced diet survey using raw food weigh-meant method [16], health exhibition for the community members, and revised field visit time to maximise

Students	Small group tutors	Community Members
<p>Health and other factors contribute to community development: We got rare opportunity to see the people with different ailments all in a single place.</p> <p>Acquaintance of knowledge: It is a new learning in the community and I understand the feeling of the community</p> <p>Theoretical knowledge to practical training: Skills in clinical examination, Development of personal skill and self confidence</p> <p>Communication: With community members: I have learned how to deal with patients and uncooperative families? and to develop rapport and interact with the people</p> <p>Communication with peers</p> <p>Social responsibility: Students came to know the respect given to doctor and the role to be played by the doctor.</p> <p>Suggestions Duration of the camp can be increased Provided detailed briefing for eliciting history on alcohol, smoking and income Non-cooperative family members Difficult to locate the allotted house on day one</p>	<p>Learning: Learned about diet survey using weight-meant method, role modeling, community medicine is taught easily in field and how to giving effective feedback to students</p> <p>Suggestions to improve: Need for structured training of facilitators to maintain uniformity, and co-operation for health exhibition, availability of map for transect walk</p>	<p>Awareness: Awareness about hand washing practices, vector control measures consuming green leafy vegetables, chlorination of water and screening for NCD, aware factors like sanitation, social, environmental factors responsible for disease</p> <p>Benefits: Students communicated well with the people, some of the health problems were solved at our door steps</p> <p>Suggestions: Provide care for the bed ridden patients</p>

[Table/Fig-3]: Reaction of students, small group tutors and community members.

student-community interaction. After the CBME programme we have also conducted four FGD's in the villages to know their opinion on the present activity.

The details of reaction of students, small group tutors, and community are summarised in [Table/Fig-3].

Permissions and preparation for the programme: The objective and design of CBME programme, budget and the transport plan was approved by the Director and other administrators of SMVMCH. Approval for the programme was also obtained from Institute Ethic Committee, SMVMCH. After consultation with the Director of SMVMCH and the members of Medical Education Unit, it was decided to implement the programme into the existing course during the early phase of second year of undergraduate course. At the community level, we planned to implement this programme in each of 55 villages of field practice area of our RHTC, Thiruvannainallure. As these villages were the present field practice area and present health care professionals provide basic health services through mobile clinic and are in contact with the members of 'Gram-Panchayat' (local self-government). In addition, we obtained permission from local 'Gram-Panchayat' to ensure their and villagers co-operation.

Team formation and training: We formed a team consisting of

faculty, post-graduates in Community Medicine, Medical Interns, Medical Social workers and active members of 'Gram-Panchayat' for implementation and supervision. This CBME programme was implemented over the period of five years. Small group tutors were trained to facilitate the learning process, and give timely feedback to the students.

Evaluation from students, small group tutors and community

point of view: We evaluated the CBME programme from students, small group tutors and community view point [Table/Fig-4]. The

Purpose	Method of Information collection	From whom	How it was used?
Learning, barriers, and suggestions	Retro-pre feedback	Students	Revising the programme, Adding new components
	Open-ended feedback		
	Informal meeting	Small group tutors	
Opinion of community members on programme	FGD	Community members	Sharing with students, Reinforcing in subsequent programme

[Table/Fig-4]: Evaluation from stakeholder's point of view.
FGD: Focus group discussion

retro-pre-and open-ended feedback was obtained from the students. The open-ended feedback was obtained to know the learning, facilitating factors and barriers in CBME. The small group tutors were asked to reflect on their learning and suggestions to improve the CBME programme. Two FGDs were held within a week in the village to know the community reaction to the programme.

DISCUSSION

We developed and implemented CBME programme which was suitable to context and resources. It was well received by the students, small group tutors and community. The medical schools should develop students competency, so as to meet the needs of the society and the method should be hands-on with community-based learning [1]. The MCI envisions "The goals of the Medical Undergraduate training programme are to create doctors with requisite knowledge, skills, attitudes, values and responsiveness, so that they may function appropriately and effectively as a Basic Doctor, physicians of first contact for the community in the primary care setting both in urban as well as rural areas of present country [13]. Similar programmes are happening in other medical colleges of India such as Christian Medical College, Vellore and Mahatma Gandhi Institute of Medical Science (MGIMS), Sewagram [5,10]. These programmes are relatively mature as compared to present programme and these are residential and more intensive with respect to activities and duration of stay in field. The MGIMS offers its CBME through Social Service camp and Reorientation of Medical Education (ROME) Camp [5,17].

From the students point of view, they perceived improved ability to identify health problems and relate them with social, economic and environmental conditions. They felt in better position to work in team and felt sensitised to social responsibility of a doctor. Students learned to interact with local community on common health issues, which might help them in communication in patient care. The WHO also reported the benefits of CBME programme as perceived by students [4]. Community based learning helps students to relate the theoretical concepts learnt in class to their observation in community and its impact on health [18,19]. It also provides right platform to learn skills like in developing the competencies to various health problems and communication skills [19-21]. According to Thistlethwaite JE, the communication skills and history taking skills improved among the third-year

students undergone community based teaching [22]. Kennady ME has highlighted that much of the learning for 'professional development' occurs behind the actual curriculum and one of the skills like communication skills develops well in the community setting [23].

The small group tutors felt that CBME programme facilitated student-community-teacher interaction and thus made the subject of community medicine more visible and practical to students. It was an opportunity to orient students to the local culture, customs and beliefs. The community members perceived that the students communicated well with the people and some of their minor health problems were solved at their door steps. Since, the present programme was carried out in the field the students reported barriers in learning were hot and humid climate, lack of formal class room infrastructure, long distance between college and field, difficulty in adjusting the students' field visit time with family work schedule.

CONCLUSION

The present CBME programme facilitated students learning in the local environment and also improved student-teacher interaction. Exposure to community has benefits such as - students got oriented to local health problems and can relate them to social, environmental and cultural factors. The curriculum is on continuous revision and we look forward to sustain and institutionalise the present programme by involving the clinical teachers and build the ownership among the management for the programme.

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REFERENCES

- [1] Improving the Teaching of Public Health at Undergraduate Level in Medical Schools suggested guidelines. Report of a review meeting of the Expert Group [Internet]. Kathmandu: World Health Organization; 2010 [cited 2012 Apr 5].
- [2] Kelly L, Walters L, Rosenthal D. Community-based medical education: Is success a result of meaningful personal learning experiences? *Educ Health*. 2014;27(1):47-50.
- [3] Al-Dabbagh SA, Al-Taei WG. Evaluation of a task-based community oriented teaching model in family medicine for undergraduate medical students in Iraq. *BMC Med Educ*. 2005;5:31.
- [4] Community-based education of health personnel: Report of a WHO Study Group [Internet]. Geneva: World Health Organization; 1987 [cited 2012 Nov 16]. Available from: URL:<http://apps.who.int/iris/handle/10665/41714>
- [5] Dongre AR, Deshmukh PR, Gupta SS, Garg BS. An Evaluation of ROME camp: Forgiven Innovation in Medical Education. *Educ Health*. 2010;23(1):363.
- [6] Medical Council of India Regulations on Graduate Medical Education [Internet]. 1997 [cited 2016 Jul 13]; Available from: <http://www.mciindia.org/>
- [7] Pokharel PK, Budhathoki SS, Upadhyay MP. Teaching District Concept of BP Koirala Institute of Health Sciences: An Inter-Disciplinary Community Based Medical Education and Health Service Delivery Model in Rural Nepal. *Kathmandu Univ Med J*. 2016;55(3):294-98.
- [8] Dent JA, Harden RM. A practical guide for medical teachers. 4th ed. London: Elsevier health sciences; 2013:374-75. Available at: (http://edoms.sp.sbmu.ac.ir/uploads/A_Practical_Guide_for_Medical_Teachers.pdf)
- [9] Prideaux D. ABC of learning and teaching in medicine. Curriculum design. *BMJ*. 2003;326:268. Available at: <https://www.bmj.com/content/326/7383/268>
- [10] Joseph A, Abraham S. Community-oriented medical education in Vellore, India. *Acad Med*. 1993;68(5):336-39.
- [11] Pondicherry University. Regulations on Graduate Medical Education (Amendment) [Internet]. 2008 [Cited 2017 Jul 24]. Available at: <http://www.pondiuni.edu.in/sites/default/files/downloads/Syllabus-MBBS-Regulations-290316.pdf>
- [12] Vijayarayanan V, Thirunavukarasu MR, Kalaiselvan G, Dongre AR. Exploration of Community health problem in rural Pondicherry. *RGUHS J Med Sciences*. 2014;4(3):148-51.
- [13] Medical Council of India. Vision 2015 [Internet]. 2011 [Cited on 2017 Feb 7].
- [14] Overeem K. 'Paying it forward': performance improvement through feedforward interviews. *Medical Education*. 2010;44(12):1159-61. Available at: <https://doi.org/10.1111/j.1365-2923.2010.03866.x>
- [15] Kolb AY, Kolb DA. Experiential Learning Theory: A Dynamic, Holistic Approach to Management Learning, Education and Development [Internet]. Weather head

- School of Management: [cited 2017 Jul 24].
- [16] Park K. Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: M/s banarsidas Bhanot publishers; 2015:601.
- [17] Dongre AR, Deshmukh PR, Garg BS. Portfolio based approach for teaching Community Medicine among medical undergraduates and assessment of their learning in a medical College in rural India. South-East Asian Journal of Medical Education. 2010;4(1):17-24.
- [18] Waddell RF, Davidson RA. The role of the community in educating medical students: initial impressions from a new program. Educ Health. 2000;13:69-76.
- [19] Ukwaja K, Moradeyo Y. Community based medical education: a tool for developing countries. Student BMJ. 2006;14. Available at: <http://student.bmj.com/student/view-article.html?id=sbmj0603110>
- [20] Stewart M, Regina PM. Community-based medical education. The Clinical Teacher. 2006;3:90-96.
- [21] Strasser R, Neusy AJ. Context counts: training health workers in and for rural and remote areas. Bull World Health Organ. 2010;88(10):777-82.
- [22] Thistlethwaite JE. Introducing community-based teaching of third year medical students: outcomes of a pilot project one year later and implications for managing change. Education for Health. 2000;15(1):53-62.
- [23] Kennedy EM. Beyond vertical integration community-based medical education. Aust Fam Physician. 2006;35(11):901-03.

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