

Journey Towards Implementing “Community Based Medical Education (CBME) at Indus Medical College”

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ABSTRACT

Introduction: Till last few decades doctors were mainly trained in tertiary care hospitals. Appreciating need of competency to manage community's sufferings and health issues; during last 30-40 years, medical education has undergone significant re-formations and re-organization in its delivery and training of medical personnel, with consequent focus on communities' health i.e., Community-Based Medical Education (CBME). The aim of this was to ascertain academic value and training superiority (if any), of CBME trainees if compared with in-hospital trained residents.

Methods: We were advised by the national medical regulatory authority to incorporate CBME in curriculum. To meet this requirement a pilot study was formulated, to help add final CBME component in curriculum. We planned a quantitative, prospective, quasi-experimental study, that compared two groups of residents with maximum possible similarities. One group was to be trained in communities and other within the Indus Medical College Hospital (IMCH). The Curriculum Committee designed a 4-week CBME program, for 6 residents of year-one, which was held at nearby rural health facility, about 2 kms from Indus IMCH, while other group, comprising same number of residents trained within the main campus of the institute. Research instrument, the questionnaire was based on Specific Learning Objectives (LOs), formulated by Curriculum and Assessment Committee, these were based on the results (anemia) of patient's Blood Picture, i.e., to ascertain cause of gross anemia. The learning objectives i.e., Cognition, Psychomotor and Affective included e.g., conversation with patients, history-taking, examination and interpretation of blood smears.

Results: These were based on the participants' responses to questionnaire i.e., Table of Specification (TOS) that incorporated all the three domains of learning (Knowledge, Skills, Attitude), relevant to the training objectives. The assessment of residents included tools, such as MCQs, OSCE, Mini-CEX, DOPS, Short Essay Question (SEQs) and Practical demonstrations etc. Out of 6 residents, 3 secured more than 80%, 2 had between 80 and 70% and one got less than 70% score. Average score obtained by CBME trainees was 80%, while other group had average score of 64.66%. Based on these results, it can be justifiably inferred that CBME training should be part of doctors in training.

Conclusion: The score obtained by of COME trained residents was compared with residents of same year in the matched subject. Observation was, CBME residents had at least 15% score higher than in-hospital residents.

Keywords: CBME, Medical Curriculum, Training, Communities.

1. INTRODUCTION

Till last few decades future physicians were mainly trained at tertiary care health facilities. Learning from experience, outcome of the learning, training imparted and competency achieved by the trainees, underscored the need of curriculum and training more focused on the diseases prevailing in communities. The aim was to make the graduates to

be competent enough to manage communities' sufferings and illnesses. During last 3-4 decades curriculum of graduate studies in medicine has undergone reformation and reorganization with consequent changes in the delivery as well as training in medical education focusing more on communities' health with consequent emergence of the notion of Community Based Medical Education [1].

Community Based Medical Education (CBME) can be defined as '*form of instruction where students learn professional competencies in a community setting to help students build a sense of connection with their communities*' [2]. Apart from how and what should be included in the CBME models and curricula, there is vagueness (perceived or real) about various terms used in relation with medical education and health services, primarily focusing on communities. Foremost of these is the lack of appreciation of difference between two terms i.e., Community Based Medical Education (CBME) and Community Oriented Medical Education (COME) [3].

Regarding differences between COME and CBME, study of literature reveals that **Community Oriented Medical Education (COME)** is an **APPROACH** or type of training imparted to health care professionals; where medical institutions, their staff/faculty; and students/trainees become engaged in the communities; while **Community Based Medical Education (CBME)** is a **set of learning activities to implement COME** [1, 4]. CBME is not a single or unified entity but multiple and diverse ways of leaning to implement COME in particular settings, outside academic hospitals [5]. The aim of this was to ascertain the academic value and training superiority (if any), in terms of the high score obtained on assessment of questionnaire responded by CBME and in-hospital trainees.

2. METHODS

Like any other medical institution in Pakistan, the performance of our institute i.e., Indus Medical College (IMC) is guided and monitored by Pakistan Medical Commission (PMC), the national regulatory body. Moreover, we are obliged to follow Commission's guidelines to prepare, update and incorporate improvements in the medical curriculum. This regulatory body is primarily instructed by the World Federation of Medical Education (WFME) and Eastern Mediterranean Region (EMRO) of World Health Organization (WHO)

We were advised by the PMC to incorporate CBME component in the curriculum. To meet this requirement a pilot study was formulated, to help add final CBME training program. in the curriculum. We planned a quantitative, prospective, quasi-experimental study of four weeks duration, to be carried out in October 2020, that compared two groups of residents with maximum possible similarities (based upon the performance in immediate past assessment). One group was

assigned to be trained in communities. The chosen community health facility was Taluka Hospital of Tando Mohammad Khan, about 2 kilometers away from main campus of IMC. While residents of other group were to be trained within the tertiary care hospital i.e., Indus Medical College Hospital (IMCH). For both groups the inclusion criteria were, residents should belong to the Year One resident program of Internal medicine, should have graduated MBBS from IMC and should be competent to communicate with the community members in local languages. Discontinuity / absence from the residency for more than 2 weeks was the exclusion criterion.

Research instrument, the questionnaire consisted 13 main questions (with variable number of sub-questions), based upon Specific Learning Objectives (LOs), shown in table 1, formulated by Curriculum and Assessment Committee. The questions were derived from the results (anemia) of rural patient's Blood Picture, i.e., to ascertain cause of gross anemia. The questions belonged to all the three domains of learning i.e., Cognition, Psychomotor and Affective; including for example conversation with patients, history-taking, examination and interpretation of blood smears. The outcome was measured by the assessment plan shown in table 2. Marks were allocated to each main item and sub-item, of the performance outcome /assessment, as shown in table. 2.

Before conducting the training, we worked which topic/field should be chosen for the training, so as to **respond to the community's health needs** [6]. A survey of the samples of complete blood examination reports (Blood CP / CBC) was carried out, of those patients belonging to nearby rural areas, received in the months from Jan to Sept. 2020, at our hospital laboratory. This revealed that 62% of women between age of 20 and 50 years had hemoglobin level of less than 10 grams/dl and 42% had less than 7 grams/dl while **26% had less than 5 grams/dl.**

Based on the steps suggested by Kelly, Walters & Rosenthal [2], following CBE training program was devised for the selected residents. Trained clinicians were selected to facilitate impart on-site training in the said communities.

2.1 Facilitators

These included two Senior Medical Officers (one male one female) working at Taluka Hospital

TMK and one faculty member (Assistant Professor, Dept. of Internal Medicine) of Indus Medical College Hospital (IMCH) as Supervisor (who was trained in curriculum development).

Before commencement of the course, a Workshop was conducted that was attended by said

facilitators (two Senior Medica Officers) Taluka Headquarter Hospital (THH) of Tando Mohammad Khan (TMK) and six Year One residents for orientation and necessary training for the planned course [4].

Table 1. Questionnaire consisting of Specific Learning Outcomes / Competencies [7].

	INDIVIDUAL LEARNER: By the end of the course each of the Year One Resident will be able to:	AGGREGATE OR PROGRAM By the end of the course the group of year One residents will be able:
LEARNING		
Cognition & Affective	Converse with the patients and their relatives without repetition.	At least 90% of the residents amongst the group not need repetition of conversation.
Cognition, psychomotor & Affective	Take the patient history acceptable to the preceptor and will not need elaboration	At least 90% of the residents amongst the group take patients' history acceptable to preceptor and will not need elaboration
Cognition & psychomotor	Examine patients to the satisfaction of preceptor and shall not need further patient examination	At least 90% of the residents amongst the group take patient history to the preceptor's satisfaction and will not need further examination
Cognition	Advise lab and radiological investigation without being corrected by the preceptor	At least 90% of the residents amongst the group advise lab and radiological investigations without being corrected by preceptor
Cognition	Order advance investigations that will not be corrected by preceptor	At least 90% of the residents amongst the group order advance investigations without being corrected by preceptor
Cognition	Interpret hematological lab investigations without being corrected by the preceptor	At least 90% of the residents amongst the group interpret hematological lab investigations without being corrected by the preceptor.
Cognition & psychomotor	Prepare at least 80% of the smears correctly.	At least 90% of the residents amongst the group make blood smears; with percentage of incorrect smears not more than 20%
Cognition	Advise bone marrow examination to appropriate patients	At least 90% of the residents amongst the group advise bone marrow examination to appropriate patients
Cognition & psychomotor	Aspirate bone marrow correctly in at least 5 patients	At least 90% of the residents amongst the group correctly perform bone marrow aspiration in at least 5 patients
Cognition & psychomotor	Microscopically examine stool slides of anemic patients for eggs of fish tapeworm (Diphyllobothrium - D. Latum) for the differential diagnosis of megaloblastic anemia, with 90% specificity and 90% sensitivity	At least 90% of the residents amongst the group perform microscopic examination with 90% specificity and 90% sensitivity
Cognition	Correctly interpret and relate investigations for disorders leading to hemorrhage, hemolysis and anemia.	At least 90% of the residents amongst the group correctly interpret and relate investigation for disorders leading to hemorrhage, hemolysis and anemia.
Cognition	Refer patients to correct specialists	At least 90% of the residents amongst the group refer patients to correct specialists
Cognition	Treat patients of anemia in such a way that patients show improvement in hemoglobin level	At least 90% of the residents amongst the group treat anemic patients so that they show improvement in their hemoglobin level

Table 2. Trainees’ outcome measurement / assessment plan:

	LEARNING OUTCOMES	ASSESSMENT TOOLS:	Marks
1	Converse patients and their relatives	OSCE / Mini-CEX	3 =3
2	Take patients’ history acceptable to preceptor and not need elaboration	MCQs / BCQs +OSCE / WPBA	3+3 =6
3	Examine patients to the satisfaction of preceptor and will not need further patients’ examination	OSCE +Practical demonstration (Capstone experience)	3+7 =10
4	Advise lab. And radiological investigations without being corrected by the preceptor	BCQs + Short essay question	3+4 =7
5	Order advanced investigations that will not be corrected preceptor	BCQs / EMQs + OSCE +Short essay question	3+3+4=10
6	Interpret hematological lab. Investigations without being corrected by the preceptor	BCQs + Short essay question	3+4 =7
7	Prepare at least 80% of the smears correctly	DOPS + Mini-CEX	3+3 =6
8	Advise bone marrow examination to appropriate patients	MCQs/ BCQs + Short essay question	3+4 =7
9	Aspirate bone marrow correctly in at least 5 patients	DOPS + Practical demonstrations	3+7 =10
10	Microscopically examine stool slides of fish tape-worm for the diff. diagnosis of megaloblastic anemia with 90% specificity and 90% sensitivity	DOPS + BCQs / MCQs + Short essay question	3+3+4=10
11	Correctly interpret and relate investigations for disorders leading to hemorrhage, hemolysis and anemia	BCQs / MCQs + Short essay question	3+4 =7
12	Refer patients to correct specialists	Mini-CEX+ Practical demonstration	3+7 =10
13	Treat patients of anemia in such a way that patients show improvement in hemoglobin level	BCQs / MCQs + Short essay question	3+4 =7
		Total Marks:	100

Note: There was no penalty of negative marking on wrong answers.

3. RESULTS

The assessment of trainees was performance-based, considering various aspects of learning and performance, as shown in table.2, above. Assessed items based upon the table of Specification (table: 1). This was formulated by Assessment Committee. Depending upon academic value, each item and sub-item was allocated appropriate weightage, incorporating all the three domains of learning relevant to the training objectives (shown in table 2 above). The assessment tools included such items as Multiple-Choice Questions (MCQs), Objective

Structured Clinical Examination (OSCE), Mini Clinical Evaluation Exercise (Mini – CEX), Direct Observation of Procedural Skills (DOPs), Short Essay Questions (SEQs) and Practical demonstrations. As the table 3, shows out of 6 participating residents, 3 secured more than 80% score, 2 obtained score between 80 and 70%, while remaining one secured less than 70% score. Based on these results and those of performance of in-hospital trainees, it can be justifiably inferred that CBME component should be part of the doctors’ training, so as to make the training productive and meaningful and helpful for the communities.

Table 3. Results / performance of both groups of residents, CBME, and in-hospital trained.

Resident	CBME trained Residents (CTR). Individual score	CTR Average score	Resident	In-hospt. rained Residents (HTR) Individual score	HTR Average score
CT-1	88	80 %	HT-1	80	64.66 %
CT-2	87		HT-2	71	
CT-3	84		HT-3	66	
CT-4	77		HT-4	61	
CT-5	75		HT-5	56	
CT-6	69		HT-6	54	

4. CONCLUSION AND RECOMMENDATIONS

The aim of this study was to ascertain the academic value and training superiority (if any), in terms of the high score obtained on assessment of questionnaires responded by CBME trained (CTR) and residents within hospital (HTR). In United States, three years ago a systematically reviewed study was carried out by Rehman [8], aiming to ascertain any differences of performance between internal medicine residents trained in community programs [CBPs] and University-based programs [UBPs]. This study identified significant differences between the two groups of residents in terms of patient education and counselling, residents' behavior and research activities. But there no differences were identified in acquired practical skills. Another study conducted by Talaat and Ladhani [5] stresses upon residents' training within the communities as they performed better than the hospital trained residents.

Our study score obtained by both the groups i.e., CBME Trained Residents (CTR) and In-hospital Trained Residents (HTR) was compared. The results showed gross differences between the two groups' performance. Participants of CTR group obtained at least 15% higher score as compared with their counterparts. Thus, it can be justifiably inferred that on-site training of the residents, such as within the community, results in much superior acquisition of competencies than that trained within the tertiary healthcare facilities. It was recommended to the curriculum Committee that CBME component of learning and training may be included in the curriculum.

Though our study reflects conclusive and gross differences in terms of performance among the two groups but it has some shortcomings. Our study includes small number of participants, so it needs to be generalized by conducting much larger studies. Moreover, it reflects residents' performance of only one institution in one province of Pakistan. To make it convincingly acceptable, it needs generalization, to carry out more studies, to ascertain whether these are consistent with our study or otherwise.

AUTORS CONTRIBUTIONS

Concept and Design Study:	Inayat
Drafting:	Inayat
Revising critically:	Tazeen
Final Approval of version:	Inayat, Tazeen

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