

## ORIGINAL ARTICLE

# Community Based Medical Education: Improving the Health of Community

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### ABSTRACT:

**Objective:** To evaluate the effectiveness of student's clerkship as an approach to community based medical education in improving the health of community.

**Materials and Methods:** This interventional study was conducted at Ziauddin Medical College; Karachi from December 2006 to December 2007. Data was collected by using structured questionnaire after the approval of university ethical review committee. Before collecting the data informed written consent was obtained from all study participants. Baseline data was recorded from 100 enrolled families. Medical students visited the enrolled families on fortnightly basis during which they carried out detailed counseling and interactive sessions. At the end of four month, post intervention data was recorded and all baseline parameters were compared with.

**Results:** The pre and the posttest results showed significant improvement in the knowledge of mothers regarding prevention and management of diarrhea.

**Conclusion:** Community-based education can be used as effective tool in improving the health of community. Health services should support the community based interventions to improve the knowledge and practices of mother which can contribute effectively towards improving infant and child health.

**Keywords:** Medical education, Students, Teaching tool, Community based teaching, Primary health care, Community

### INTRODUCTION:

Community oriented medical education (COME) is defined as "an integrated approach that not only focuses on health needs of an individual but also population groups and community as whole.<sup>1</sup> The aim is to train the future doctors in accordance with community needs and demands so that they will be able to serve at primary, secondary and tertiary level.<sup>2</sup> On the other hand Community based medical education (CBME) refers to specific community based learning activity that take place in particular community, based on the health needs of that specific setting.<sup>3,4</sup> There is no standard definition, both these terms Community based medical education (CBME) and Community oriented medical education (COME) can be used interchangeably in literature to depict the same concept.<sup>5</sup> However, for the purpose of understanding a general definition would be that it is the means by which educational achievements are made with relevance to the community needs. It consists of learning activities that use the community extensively

as a learning environment.<sup>6</sup> Menin describes CBME as activities that use communities as a learning environment.<sup>7</sup> The community may be an urban, peri-urban or rural one where students, teachers, community representative and volunteers actively participate in providing education that is in accordance to community needs and demand. All these stake holders are actively engaged throughout the educational experience in providing medical education that is relevant to community.<sup>8,9</sup> Need for CBME was first conceptualized from International Conference on Primary Health Care (PHC) at Alma-Ata that was the foundation for the vision of achieving Health for All by year 2000.<sup>10,11</sup> Main objective of integrating CBME into medical curricula is to provide opportunity to medical students to get familiarize with socio, cultural and economic environment of the country and to get on ground knowledge of prevailing health problems so that they will be able to assess health care needs of community that make a way for the effective provision of comprehensive health care to community based on their felt needs.<sup>12</sup> CBME is a multidimensional process<sup>13</sup> taking guidance from concept of Primary Health Care (PHC) based on the principle of active community participation and equitable distribution. It is a multi-disciplinary approach involving not only students, teaching faculty, local health authorities medical and health care staff but also involve active participation of community representatives and volunteers. They work in collaboration for improvement of community.<sup>14,15</sup> In CBME the students have a greater chance to interact with various groups of population, such interactions also provides opportunities to assess health needs of the community and understand the concepts of disease occurrence and factors that trigger it. This also helps them in identifying felt needs of communities and to set up the priorities for better establishment of health service delivery programmes.<sup>16</sup>

This study was designed to assess the effectiveness of involvement of medical students in improving the health of community based on the health needs. The objective

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of this study is to evaluate the effectiveness of student's clerkship in community as an approach to community based medical education. Success of this program can provide window of opportunity to integrate CBME as part of medical curriculum. This program provides students with an opportunity to interact with community and make them aware of health problems faced by underprivileged area of community. It will provide a real life exposure that can be an effective strategy to develop generic skills. This is in accordance with demands of present era and necessary to keep pace with changing needs.

#### MATERIALS AND METHODS:

This interventional study was part of clinical clerkship rotation program of fourth year MBBS Students and was conducted at Ziauddin Medical College; Karachi from December 2006 to December 2007. The aim was to train the future doctors in relevance to community needs and socio cultural circumstances so that they will be able to understand the role of physician in a community setting, and to motivate them to work in rural and underserved areas. A partnership with the adjacent squatter settlement 'Sikanderabad' was developed to provide health services and improve the quality of life. This squatter settlement comprises approximately 20,000 people, 94% of whom are from North-West Frontier Province (NWFP) and Afghanistan.

Study participants were from the squatter population in an area under the coverage of primary healthcare center (PHC) operated by university. PHC provides basic health care facility to the population of 20,000 mainly comprising of migrants from the northern areas of Pakistan and Afghanistan. The language spoken was Pashto. Majority of mothers were unable to understand educational sessions due to language barrier. Community volunteers from same locality were involved. One hundred families were targeted for this intervention which were selected randomly from the study population. The medical students of fourth year MBBS of Ziauddin University, Karachi implemented a community based project in accordance with health need of community. The significant community need was to improve the health status of children under five year of age. An innovative "Family Assignment program" was designed. Family assignment program is an approach to community based medical education in undergraduate medical curriculum of Ziauddin Hospital, Karachi. The objective of Family Assignment is to involve students as advocates of health to improve the quality of life of community. Students visited the allocated households every fifteen days. They were distributed into eight groups of 7-10, which were further divided into pairs of a male and a female. Each pair was allotted 3-4 households which were randomly selected. One instructor and a community health volunteer (CHV) accompanied the students. The project was designed to develop a cost-effective and sustainable program which was primarily aimed towards improvement of child health by enhancing mother's knowledge and practical skills for timely care and prompt treatment in order to reduce morbidity and mortality associated with diarrheal disease. The

intervention strategy focused on health education that was done through regular home visit by students. It also included direct counseling sessions and verbal discussion with mothers. The majority of mothers could not read or write and understand local language so they were educated with the help of pictorial demonstration and by using training tools including posters, brochures and pamphlets.

**Procedure of Data Collection:** This was an interventional study. All families having at least one child less than five year of age, willing to participate in the study were included in the study. Children with underlying chronic illness, mentally or physically handicapped and those who were not willing to participate were excluded. Informed written consent was obtained from each study participant before enrolling the patients in the study. Ethical approval was obtained from hospital ethical review committee before conducting the study. The sample size calculation was based on formula  $n = [(Z_{\alpha/2} + Z_{\beta})^2 \times \{(p_1(1-p_1) + p_2(1-p_2))\}] / (p_1 - p_2)^2$ . Based on above formula, the calculated sample size was found to be 132 to detect a clinically important difference of 10% between two groups with 80% power and a 5% level of significance. Therefore, total 140 families were enrolled initially. Out of which 40 dropped out at different stages due to their own reasons and finally 100 participants completed study. Data was collected by using structured questionnaire. Before collecting the data informed written consent was obtained from all study participants. University medical students received training to collect the data. Questionnaire was translated into local language. Baseline data were recorded from enrolled families. Then they were visited on fortnightly basis during which they had detailed counseling and interactive sessions. At the end of four month data was recorded and all baseline parameters were reanalyzed. In order to avoid bias data entry and analysis was done by third party not involved in intervention. Data was analyzed using statistical package for social sciences (SPSS) version 2. Descriptive statistics were used to calculate mean and standard deviation. Paired t test was used to compare pre and post intervention data. P value less than 0.05 was taken as significant.

#### RESULTS:

Mean age of participants (mothers) was  $30.12 \pm 3.05$ , youngest being 18 years old, while the eldest was 49 years old. 85% of the participants were housewives while 15% were working women. Majority (73%) were illiterate. Only 25% were living in nuclear family while 75% had joint family system (Table 1). Only 32% mothers had knowledge about ORS before intervention after intervention significant improvement was observed ( $p < 0.001$ ) with regards to number of items used in ORS preparation, quantities of item used to prepare homemade ORS, how long ORS can be used after reconstitution, food items that can be taken during diarrhea (Figure 1). Level of knowledge regarding mode of transmission and prevention was also improved significantly after intervention. Details are shown in Table 2.

Table :1  
Socio demographic profile of study participants

Variable	n= 100	Percentage (%)
Age of respondent (years)		
≤20	36	36
21-30	40	40
31-40	10	10
41-50	14	14
Occupation		
Housewife	85	85
Employed	15	15
Education status of respondent		
Illiterate	73	73
Below Matric	19	19
Matric	6	6
Intermediate	2	2
Family Structure		
Nuclear	25	25
Joint	75	75
Monthly income		
≤5,000	71	71
5,000 -10,000	19	19
≥10,000	10	10

Figure: 1  
Food items given by mothers

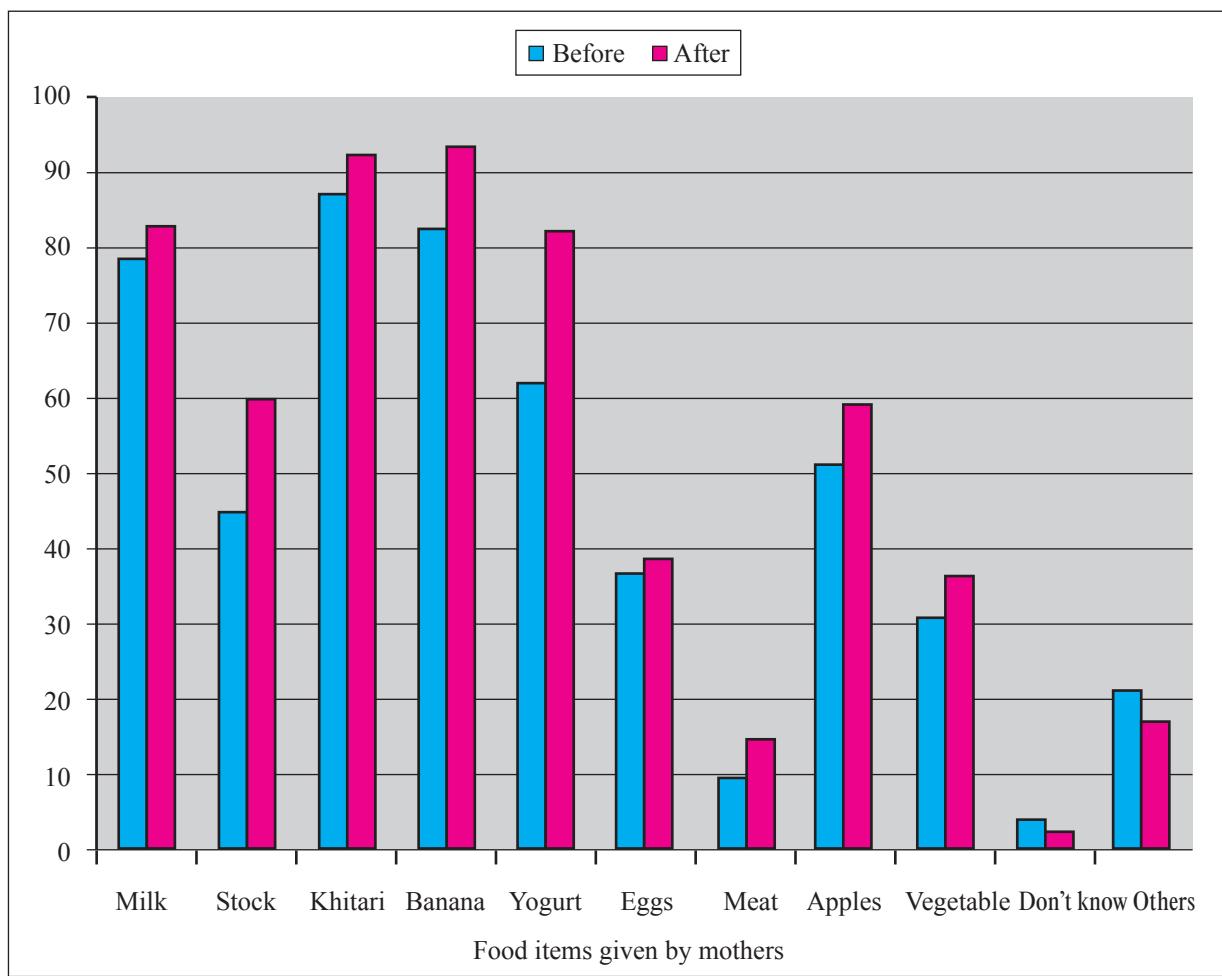


Table: 2  
Pre- and post-intervention results regarding prevention & management of diarrhea

N=100	Pre(n)	Post(n)	pvalue
Definition of diarrhea	15	36	<0.001
Oral rehydration therapy:			
What do you do when your child has diarrhea?			
Treat with packet of ORS	35	65	<0.001
Take the child to doctor	78	64	0.04
From where do you get the packet of ORS?			
Medical store/chemist	91	96	0.11
How many glasses of water are required for a packet of ORS?			
Four glasses of water	76	83	0.21
What items are used in homemade sugar and salt solution?			
Salt	49	88	<0.001
sugar	46	88	<0.001
Water	52	90	<0.001
Lemon	22	30	0.22
In what quantities are the above items used to prepare home -made sugar and salt solution?			
Salt( ½ teaspoon)	13	61	<0.001
Sugar(8 tea spoons)	04	59	<0.001
Water (4 glasses)	35	82	<0.001
Lemon (1/2)	06	18	0.009
For how long can ORS be used after reconstitution?			
Between 12 to 24 hrs.	51	76	<0.001
For how long should ORS be given to a child during an episode of diarrhea?			
As long as diarrhea continues	63	68	0.34
Food to be given during episodes of diarrhea:			
Frequency of food to be given to a child with diarrhea:			
Increase the frequency of food	35	53	0.012
Which food items can be given to a child during diarrhea?			
milk	78	83	0.35
stock	45	60	0.039
banana	82	93	0.017
yoghurt	62	82	<0.001
How is diarrhea spread?			
Contaminated water	52	77	<0.001
Rotten food	41	61	0.05
Rotten fruit	26	46	0.03
How can diarrhea be prevented?			
Washing hands	35	79	<0.001
Covering the food item	47	70	<0.001
Clean drinking water	45	64	<0.001

## DISCUSSION:

Traditional hospital which are expanding rapidly into huge units are now not considered as the best place to train the doctors as they fail to meet the demands and need of society.<sup>17</sup>

In present study under graduate medical students clerkship rotation based on the community based medical education provides them with an opportunity to become actively involved in community issues .The close interaction with community help them to assess the community health requirements. It was successful in imparting significant change in overall health behaviors of targeted families and specifically in terms of improvement of knowledge regarding diarrhea management, correct method of preparation and usage of ORS method.

WHO advocated that future doctors should be five star and now seven star. Seven star doctors should be good manager, leader, decision maker, care provider and also a good communicator and now additional two qualities including good researcher and spiritual healer.<sup>18,19</sup>CBME helps our future doctors to achieve all the characteristics. It promotes mainly a patient centered attitude among doctors.<sup>20</sup>Exposing them to the underprivileged population of the country help them to understand the community needs and demands. Our future doctors should be competent enough to work in diverse environment with more focus needs of society.<sup>21,22</sup>

The diversity of methods for implementing different models of Community based interventions were highlighted by success of programs that have been implemented in various communities around the globe. The result of randomized controlled trial on effect of Intensive Hand washing Promotion on Childhood Diarrhea in High-Risk Communities located in urban squatter settlement of Karachi showed almost 50% reduction in incidence of diarrheal diseases at the end of intervention. Hence, extensive community based intervention program proved to be successful in reducing the incidence of diarrhea among children at high risk of death from diarrhea.<sup>23</sup>

School Led Total Sanitation (SLTS) was community based intervention program in Nepal to improve sanitation and hygiene measures .This intervention was proved to be successful in reducing the childhood mortality due to diarrheal diseases.<sup>24</sup>The community based cluster randomized control trial was conducted in Ethiopia with primary focus on mothers education regarding improved hygiene and sanitation .At the end of intervention post test results showed significant reduction in incidence, prevalence and duration of diarrheal diseases in locality.<sup>25</sup>

The quasi experimental study conducted to evaluate the effect of health education on home care of under- five children with diarrheal disease. Study was conducted on 118 mothers having at least one child less than five years of age. Base line knowledge was recorded through structured questionnaire. Health education intervention was given by different strategies including home visits, show cards, counseling sessions and group discussions.

At the end of intervention post test results were compared with baseline data. Post test results showed significant improvement in mother knowledge regarding diarrheal diseases.In this study baseline knowledge of diarrhea increases from 35% in start to 97% at the end of intervention. This is comparable with result results of our study in which significant improvement in baseline knowledge of diarrhea was observed.<sup>26</sup>

The result of our study proved that health education can be effective strategy in improving the health of community. Different strategies like group discussion, show cards, personal communication and home visits are effective in bringing about change in health behavior. Rapid improvement in health of children in developing country is possible by health education of mother to deals with life threatening deliberating illnesses. It can improve mother's competence in managing their children at home and can be effective in combating increasing death tool due to childhood infectious diseases. In developing country like Pakistan, mother should be educated regarding the early detection, recognition of danger signs and home management of infectious diseases. Health services should promote community based interventions to improve consultation and referral system .This will help to improve overall health system of country.

## CONCLUSION:

Community-based education can be used as effective tool in improving the health of community. Health services should support the community based interventions to improve the knowledge and practices of mother which can contribute effectively towards improving infant and child health.

## Recommendations:

Community based medical education is a powerful tool. However, there is need of integration of all concerned stake holders including health, public, private, health, education to integrate to make effective strategies for its successful implementation. Community based primary prevention programs with more resources and manpower should be introduced with aim of achieving maximum benefit with cost effectiveness. Economic and academic incentives can prove to be effective strategy towards successful implementation and continuity of Community based medical education.

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