Original Research Paper

Portfolio based approach for teaching Community Medicine among medical undergraduates and assessment of their learning in a medical college in rural India

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Abstract

Objective: The study was undertaken to explore what and how first year medical undergraduates could learn about Community Medicine using a portfolio-based learning approach during the period of Social Service Camp in the village Pulai.

Methods: Study participants were 65 first year medical undergraduates participating in Social Service Camp in the village Pulai, during 10 - 24 October 2008. The first step was to set Specific, Measurable, Actionable, Realistic and Time bound (SMART) learning goals focused on Community Medicine. These learning goals were to be achieved during the fifteen days and within the existing curriculum, using existing resources and opportunities. The portfolio based records of students who accomplished their learning objectives were subjected to qualitative content analysis.

Results: Of 65 students, 41 (63.1%) completed and reflected on their portfolios. Methods adopted for learning were; interaction with community based groups (48.8%), interaction with allotted family members (43.9%), lectures series, role plays and demonstrations (36.6%), interactions with village level healthcare providers (31.7%) and journal exercises (26.8%). The portfolio based exercises were useful to 30 (46.2%) students to understand the social, economic and health problems of the villagers and their life style. Twenty four (36.9%) students said that it improved their communication skills. This exercise helped 11 (16.9%) students to explore weaknesses such as poor communication skills, poor knowledge of local language, inability to adjust in new environment.

Conclusion: The Social Service Camp in the village Pulai offered opportunities for portfolio based leaning to medical undergraduates. The students learned about the major topics of primary health care through self-directed learning.

Key words: Social Service Camp, community based teaching

Introduction

Innovations in current educational research have shifted education from being a traditional teacher-centered process to one that is student-centered. Parboosingh (1996) has pointed out that the role of today's teacher is not so much to impart knowledge, but to ensure that learning has taken place. Since Portfolios offer the opportunity to assess what students are learning, it is becoming a popular option among educationists. The International Association for Medical Education (AMEE) defines the portfolio as a framework containing evidence of achievement of learning outcomes over time (Davis, 2008). This evidence is supplemented by the portfolio builders' reflections on their learning and can be used to provide feedback to the learner. Despite the increasing popularity of portfolio-based learning, its usage is not widespread, especially among Asian medical schools (Elango *et al*., 2005). The Department of

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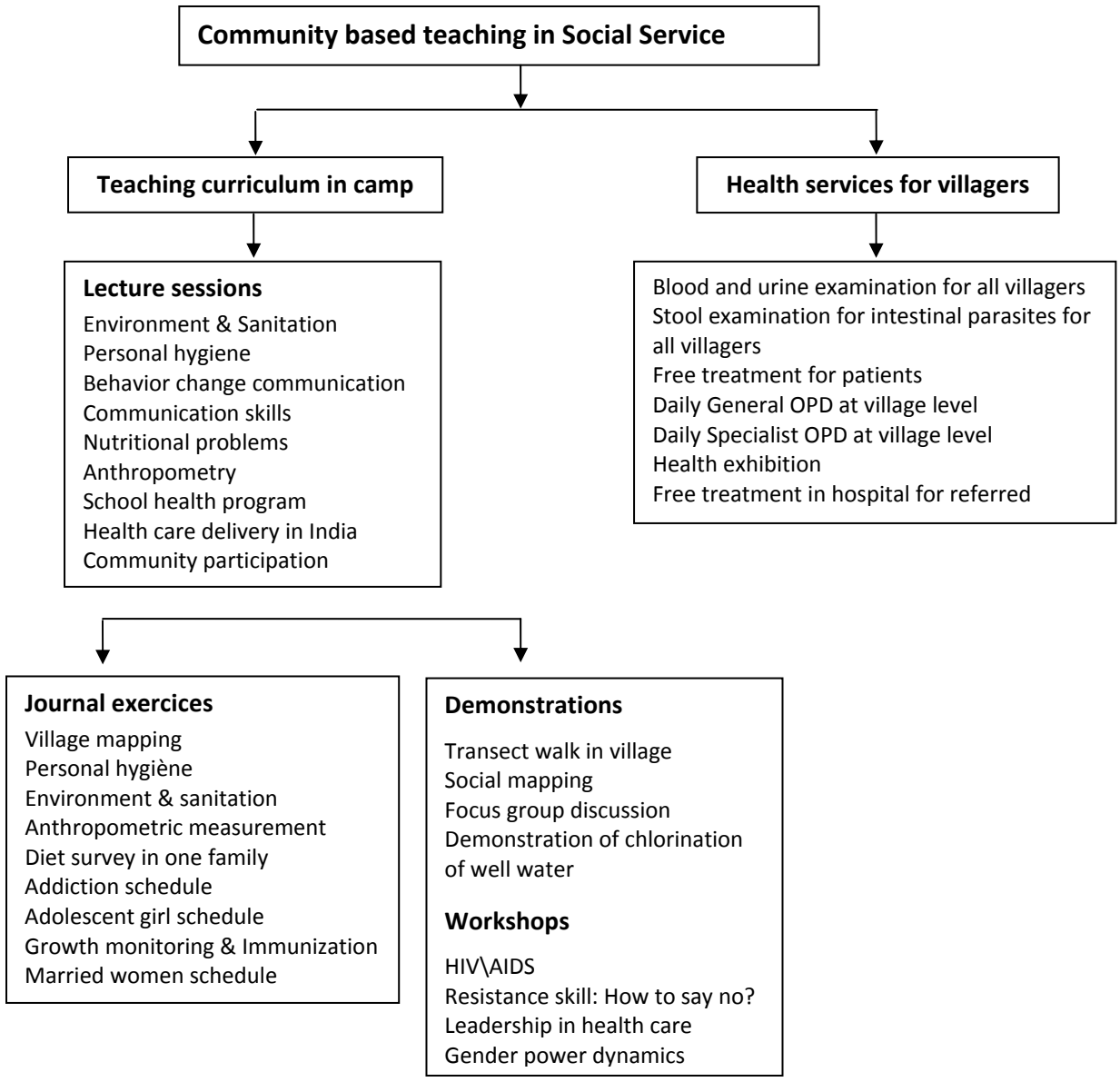
Community Medicine, Mahatma Gandhi Institute of Medical Sciences (MGIMS), Sewagram has been implementing its community-based public health teaching with the aim to build doctors for rural poor by orienting them to the prevalent public health problems in rural areas and empowering them with required social, medical and public health skills. Garg *et al.* (1996) and Narayanan (2006) have described the community based teaching in Social Service Camp and Re-orientation of Medical Education (ROME) camp for medical undergraduates. MGIMS offers wide scope for self-directed learners to learn from its ongoing community based participatory action research, field based camps for medical undergraduates with integration of public health, para-clinical and clinical disciplines and committed teaching faculty for adequate coaching and assessment (Figure 1).

Figure 1: Community based teaching in Social Service Camp for first year medical students



Every year, depending upon location, available resources and with the permission of Gram-panchayat (local self government), a village is selected for Social Service Camp where all first year medical students stay for fifteen days. Each student is allotted two to three families with approximately fifteen family members for their family based study. To foster students' learning, integration of lectures, demonstrations and role plays are done with journal based exercises on housing, sanitation, safe drinking water, dietary survey, immunization, malnutrition and addiction as a part of the family based study. Activities focused on the needs of the villagers and for their better co-operation, general clinic, specialist clinics and health exhibition are arranged. Apart from this, blood and stool examinations are organized for all villagers to screen and treat locally endemic diseases such as malaria, filariasis and intestinal parasite infestations. The examination and treatment is offered free of cost. The overall teaching and service framework has been explained in figure 1. Dongre *et al.* (2008) have reported that this community based camp approach of MGIMS has been perceived as the best approach for teaching Community Medicine. Hence, the present study was undertaken to explore what and how first year medical undergraduates could learn within the existing curriculum using portfolio-based learning approach during the period of Social Service Camp in the village Pulai.

Material and Methods

Study area

The present study was undertaken during the Social Service Camp for medical undergraduates in the village Pulai. It is situated four kilometers away from the Primary Health Centre, Anji and 28 kilometers from the District Place Wardha. The study site is located in a rural area of the eastern Maharashtra state of India. At the time of the study, the population of the village was 946. There was one women's self help group, one Kishori Panchayat (KP, forum of adolescent girls), one Kisan Vikas Manch (KVM, farmers' club) and one Village Co-ordination Committee (VCC, representative committee of SHG, KP, KVM and Gram-Panchayat - local self government). All these community based organizations (CBOs) were formed under a community based project called 'Community Led Initiative for Child Survival' (CLICS) programme (CLICS, 2006). There was one CLICS doot (local female health worker) in village for delivery of maternal and child healthcare. There was one Anganwadi centre, government primary school and Gram-panchayat office in the village.

Study participants and duration

The study participants were 65 first year medical undergraduates (38 males) participating in Social Service Camp during 10 to 24 October 2008. These students were selected through the national level competitive entrance examination.

Building portfolios by the students

On the first day, a faculty member gave an introductory lecture to all 65 undergraduates on the expected content and the guidelines for developing a reflective portfolio, its importance as a learning tool, the need to become a self-directed learner and various learning opportunities available in the village. The students were divided into small groups. The facilitator of each group used clear guidelines for portfolio development and offered students practical recommendations to develop portfolios in stepwise manner (Professional portfolio guide, 2008) The first step in portfolio development was to set Specific, Measurable, Actionable, Realistic and Time bound (SMART) learning goals focused on Community Medicine. These learning goals were to be achieved during the fifteen days and within the existing curriculum of the camp, using the existing resources and opportunities. Later, the students were encouraged to plan for learning activities and implement it over the next fifteen days. Students were asked to maintain a daily diary to document and reflect on their planned learning goals, methods adopted to accomplish the goals, outcomes of learning and barriers to the learning process. Every evening the students would self reflect on the daily activities and summarize the findings in their diaries.

Reflections on portfolios and semi-structured interviews

On the final day of the stay students were asked to develop a one page portfolio based descriptive report using notes on experiences from their daily diary and self reflections on the learning process. Most of these records were written in English, which is the medium of instruction in medical education.

However, for better self reflection, students' were given freedom to express themselves in the local languages of Marathi or Hindi. A semi-structured interview of each student was undertaken based on the portfolio record to verify the learning goals, methods adopted, accomplishment of learning goals and students' self reflection on portfolio exercise. Students' feedback on various facilitating factors and inhibiting factors in the portfolio-based learning approach and how this leaning woudl help them in future studies was obtained. Any new information obtained during semi-structured interviews with the students was incorporated as a note in their portfolio based records.

Analysis of data

The portfolio based records of students who accomplished their learning objectives were subjected to qualitative content analysis to explore what and how students accomplished their leanings (Lofland *et al.,* 1995). For the better understanding and planning of analysis, the descriptive data of portfolio records were read word by word and any clarification or additional information if required was obtained from the concerned student.

A code list was prepared for the manual coding of textual data. The units of analysis were words and statements under a given coding category. The coding of data was done until saturation point to avoid any loss of qualitative information. The data was classified according to a simple non-hierarchical typology of various categories i.e. public health subjects covered by the portfolios, leaning objectives, methods adopted and ultimately the student's learning as outcomes.

The data on various facilitating factors and inhibiting factors in the portfolio-based learning approach and how this learning was going to help them in the future was presented as simple frequency tables. To increase the validity of results, two faculty members of Community Medicine subject, who had more than five years of experience of using qualitative research methods, undertook the analysis of data.

Results

Out of 65 students, 41 (63.1%) completed and reflected on their portfolios. The methods adopted for learning were interaction with members of community based groups (48.8%), and interaction with allotted family members (43.9%), lectures series, role plays and demonstrations (36.6%), interactions with village level healthcare providers (31.7%) and journal exercises (26.8%). Among the 24 (36.9%) students who could not complete their portfolios, 12 (50%) students could not complete it due to the short time period given, 8 (33%) students had deviated from their learning objective and could yield no meaningful learning and 4 (17%) could not follow the concept of portfolio.

The broad themes that emerged from these portfolio reports were personal hygiene (5 students), nutrition (8 students), environment and sanitation (7 students), healthcare delivery and community participation (5 students), addiction (4 students), communication skills and behaviour change communication (8 students), school health (3 students) and old age care (1 student). Table 1 gives information on objectives, methods adopted for learning and lessons learned by the students.

The analysis of students' feedback explored some positive and negative responses. Allotment of families in the village and interaction with them was useful for learning to 59 (90.7%) students. Fifty (76.9%) students felt that interactive lectures, demonstrations and role plays in the camp curriculum were helpful to their portfolio exercise. Interaction with the members of community based groups and other villagers was a positive factor for 26 (40%) students. According to one third students, staying in village setting (30.8%) and the session on communication skills (29.2%) helped their field based portfolio exercises. Five (7.7%) students took help of their friends from the local geographical area for communicating in local language.

Among negative responses, 21 students (32.3%) had problems in communication in the local village language. High expectations of villagers from the services offered during the camp acted as a barrier to 8 (12.3%) students. Seven (10.8%) students felt that the duration of camp was short for portfolio exercise. Seven (10.8%) students said that the villagers were busy and not available during their home visits. Five (7.7%) students had a problem of poor co-operation from the villagers at the time of interview. Two students felt that the process of learning through portfolio based exercise was slow (Table 2).

Table 1: Status of portfolio based learning among medical undergraduates

Theme of portfolio	Objectives	Methods or activities undertaken	Lessons learned
A) Hygiene			
Personal hygiene No. of students - 5	To learn about personal hygiene practices of villagers such as hand washing, nail trimming, teeth, ear, eye and hair care	1. Lectures on personal hygiene, communication skills and behavior change communication 2. Journal exercises on personal hygiène 3. Observation of practices of allotted family members 4. Interaction with CLICS *doot* 5. Family members were given health education on healthy practices	1. Assess the status of personal hygiene of villagers 2. Think about use of positive deviance method for behavior change 3. Desired behavior change takes time and requires follow up
B) Nutrition			
Maternal nutrition No. of students - 2	To learn about dietary practices during pregnancy and learn about myths associated with food	1. Interview of two pregnant women and lactating mothers each 2. Interview of CLICS *doot* and *Anganwadi* worker	1. Minimum antenatal care package to be ensured for pregnant women 2. Myths associated with food and poor diet of women 3. The role of CLICS *doot* in dietary counseling
Child nutrition No. of students - 4	To learn about the status of child nutrition	1. Lecture on child nutrition 2. Interview of CLICS *doot* and *Anganwadi* worker 3. Anthropometric measurements 4. Dietary survey as journal exercise 5. Interaction with mothers 6. Interaction with the Village coordination committee (VCC) members of village *Pulai*	1. Breastfeeding, weaning practices & supplementary food given under ICDS scheme 2. Type of food given to children at household level 3. VCC members' efforts to deal malnutrition such as monthly celebration of 'Village Health Nutrition and Sanitation Day' and healthy baby concept
Adolescent nutrition No. of students - 2	To learn about problems in adolescent nutrition	1. Interview of CLICS *doot* and VCC members 2. Interaction with the *Kishori panchayat* members (adolescent girls) 3. Diet survey and adolescent girls schedule as a part of journal exercise	1. High prevalence of iron deficiency anemia among girls and 'weekly iron supplementation program for girls' through VCC 2. Health education efforts for girls at village level
C) Environment and sanitation			
Safe drinking water No. of students - 7	To learn about status of safe drinking water and waste disposal at village level	1. Lecture on safe drinking water and demonstration on well water chlorination 2. Assessed status of safe drinking water supply through 'Transect walk and Social mapping exercise' 3. Household level assessment through journal exercise on water supply assessment 4. Interaction with CLICS *doot* and VCC members	1. Water chlorination at supply and consumption point i.e. at household level 2. Role of *Gram-panchayat* in ensuring safe water supply at village level 3. Social marketing of ORS for diarrhea and hypochlorite sol. bottles and tap fitted earthen vessels for diarrhea prevention through VCC
D) Health care delivery at village level			
Infrastructure at village level for health care delivery No. of students – 2	To know about health care delivery at village level	1. Interaction with *Anganwadi* workers, *Sarpanch* (Village head), CLICS *doot* and members of VCC	1. Role of *Anganwadi* worker, Auxiliary Nurse Mid-wife and Village coordination committee members in healthcare

E) Community participation in health care No. of students - 3	To know about formation and role of community based organizations (CBO) (SHG, KP, KVM and VCC)	1. Lecture on role of CBOs in healthcare 2. Interview of ANM, AWW and CLICS *doot* and VCC members 3. Interaction with CBO members	Social marketing and health education efforts by VCC members with special emphasis on maternal and child health and environment and sanitation
F) Addictions **Addiction to tobacco and alcohol** No. of students - 4	To learn about villagers addictions tobacco and alcohol	1. Journal exercise on addictions 2. Interaction with family members	High use of tobacco in villagers life such as for cleaning teeth, treatment of minor ailments and for relaxation
G) Communication skills **Communication skills and behaviour change communication** No. of students - 8	To learn about behaviour change communication and communication skill	1. Lectures on communication skill and behaviour change communication 2. Role play on communication skills 3. Interaction with family members and villagers to develop communication skills	1. Importance of local language and local terms in effective communication 2. Good communication is required to explore local people's belief and practices
H) School health No. of students - 3	To learn about school health programme activity in primary school of village Pulai	1. Lecture on school health programme 2. School health check-up activity	How to plan and implement school health check-up and also seen common school health problems
I) Geriatric care No. of students - 1	To know various old age problems in rural settings	1. Interview of four old people in the village 2. Interaction with family members 3. Interaction with teachers	1. Various social, economic and health problems of old people in the village. 2. Poor social security of old age people

Table 2: Responses of all 65 first year medical undergraduates who worked on their portfolios

Positive responses	n (%)	Negative responses	n (%)
Allotment of families to each student for study and interaction with family members was useful for learning	59 (90.7)	Inability of students to communicate in local language of villagers	21 (32.3)
Interactive lectures, demonstrations and role plays in the camp curriculum were useful for our learning	50 (76.9)	High expectations of villagers from the services offered during the camp	08 (12.3)
Interaction with the members of community based groups and other villagers helped us	26 (40)	Duration of camp was small to accomplish learning in portfolio exercise	07 (10.8)
Stay in the village helped students as they could contact villagers at night when they come back from farm work	20 (30.8)	Villagers were busy with their farm work and could not give enough time for interaction	07 (10.8)
Session on communication skill helped us to effectively interview villagers	19 (29.2)	Poor co-operation from the villagers at the time of interview	05 (7.7)
Help of colleagues who knew local language	5 (7.7)	Process of learning through portfolio was slow	02 (3.1)

The portfolio based exercises helped 30 (46.2%) students understand the social, economic and health problems of the villagers and their life style. Twenty four (36.9%) students said that it improved their communication skills. According to 11 (16.9%) students, this exercise helped them to explore their weaknesses in competencies such as poor communication skills, lack of proficiency in the local language and inability to adjust to a new environment. It helped 10 (15.4%) students gain knowledge about common health problems of rural people and their management with limited resources. Nine (13.8%) students stated that it would help them to visualize village settings while reading text books on public health. Five students (7.7%) accepted that this exercise helped them to become a self-directed learner in future.

Discussion

One of the recommendations of the "Edinburgh Declaration" of World Federation for Medical Education (WFME, 1998) was to use active learning methods (tutorial, self-directed and independent). The present study used portfolio-based learning for students' active learning and tried to understand what and how medical undergraduates learn regarding public health in a community setting. Cook *et al*. (2008) emphasized need for studies with this purpose (i.e. studies asking: 'How and why does it work?') to deepen understanding and advance the art and science of medical education. The Social Service Camp for medical undergraduates is an integrated approach of public health, para-clinical and clinical disciplines delivering teaching to students and healthcare to the villagers. According to Binetti (2004) integrated health-centered educational projects are particularly relevant in the medical school where education is a function of continuous improvement in healthcare as well as in prevention.

Portfolio-based learning is effective when students and mentors receive clear guidelines which are relevant, clear and user-friendly for both students and mentors. Driessen *et al*. (2005) explored the conditions for successful reflective use of portfolio in undergraduate medical education. These conditions included appropriate portfolio structure, an appropriate assessment procedure, the provision of enough new experiences and materials, and sufficient teacher capacity for coaching and assessment. Clear guidelines for portfolio development were used and support ensured to students. There was enough opportunity for self-directed learners in the current community based teaching curriculum of Social Service Camp.

Among the purposes of the portfolio based learning is to encourage self-directed learning and explore the weaknesses of the students during a reflective process. In the present study, the portfolio based exercise helped most students understand rural health problems, improve their communication skills and explore their weaknesses. Although very few students accepted that it would help them to become a self-directed learner, the results of the present study were encouraging, as it was carried out in the existing teaching curriculum which relies heavily on records based teaching exercises. Students could actively assess their learning needs and utilize the opportunities available to fulfill the objectives of their portfolios. Sahu *et al*. (2008) found that the students' involvement in framing objectives, developing a mechanism of self-reflection and self-assessment in portfolio based learning can significantly improve the learning of the students.

The portfolio-based learning covered some major topics of public health such as personal hygiene, nutrition, environment and sanitation, health care delivery and community participation, addiction, communication skills and behavior change communication, school health and old age care. These topics are of public health concern in developing countries and understanding is required for ensuring primary healthcare. The students perceived benefits from portfolio based exercises which could be useful to their future course of learning. The limitations of the present study should be kept in mind. It was a small scale study done on pilot basis in short fifteen days duration of camp period. Its feasibility should be tested in the existing curriculum of a longer duration.

Conclusions

The Social Service Camp in village Pulai offered opportunities for portfolio based leaning to medical undergraduates. The students were able to learn about the major topics of primary health care through self-directed learning.

Conflict of interest: None declared

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