

## **Research Article**

### **Study on Participatory Learning among MBBS Students in a Medical College of West Bengal, India**

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**Abstract:** Teacher oriented teaching in medical education is still predominantly going on throughout the world including India. Active participation of students is rare or unknown. In these situations, an attempt can be taken as a piece-meal study on participatory learning as active learning. Its immediate impact also can be measured. The main aim of the work was to assess the feasibility of application of participatory learning; to observe the impact of participatory learning and to compare participatory learning with traditional teaching. In methodology, seventy eight students of 2<sup>nd</sup> MBBS batch were divided randomly into two groups. Participatory learning was introduced to Group I (n = 39) on the topic of Tuberculosis by faculties of community medicine through didactic lectures, interaction, patient examination, visit to DOT centre etc. Group II (n = 39) had conventional way of teaching on the same topic by faculties of community medicine through didactic lectures. Statistically significant results were obtained using skill score and empathy score questionnaire. Knowledge achievement was also encouraging with no statistical difference. In conclusion, the implementation of participatory learning was feasible in medical colleges of West Bengal and found to be more effective and accepted than traditional teaching methodology.

**Keywords:** Participatory learning, community medicine, traditional teaching, medical students.

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#### **INTRODUCTION**

Health professions education has undergone major transformations and innovations. Such innovations are in areas like curriculum reforms, faculty development, new methods of student selection, advances in technology and new methods of training[1]. However, innovations have sometimes been resisted by both lecturers and students, even when they have been guided by evidence-based educational research[2]. A key issue fuelling resistance to change by lecturers and students is the lack of active participation and engagement in these reforms[3]. One way of addressing this challenge could be to use participatory learning methods to make many of the innovations acceptable to all stakeholders.

The word participation stands for “the action or state of taking part with others in an activity” [4] the fundamental basis of all participatory learning methods is that “learners” are active participants instead of

passive listeners or readers[5]. Key points of Participatory learning are:

1. Passive listening during didactic sessions is unlikely to change behavior. By contrast, active participation during interactive sessions seems to influence subsequent practice.
2. Participatory learning methods, with focus on the complex clinical decision process, are well suited to integrate the knowledge of relevant scientific evidence.
3. Knowledge building and behavioral change can take place by participation in collaborative research, organizational development processes, and interactive education activities[5].

There are different means of participation in order to improve professional practice.

1. Participation in research;
2. Participation in organizational development;
3. Participation in interactive education [5].

A recent Cochrane Collaboration evaluation states: "Didactic sessions alone are unlikely to change professional practice. On the contrary interactive workshops are at least in some cases shown to alter practice.[6]"

Important ingredients in the most effective educational methods are shown to be participation, interaction, recurrence, and facilitators, rather than lecturers [7, 8, 9].

Participatory Learning Technique (PLT) is a form of classroom organization which utilizes students who actively participate in the learning tasks under the guidance of the subject teacher while Traditional Method(TM) refers to the generally used teacher-centered or lecture method in which students participate very minimally or not at all. In the PLT the teacher is required to present logically a research problem followed by the complete solution of the problem step by step and carrying the students along as he/she does this. He then writes a similar or related problem on the chalkboard and invites any student to take the lead, another to solve the first step, another second, and so on, until the students arrive at the correct solution and explanations by themselves. If any student is confused along the line, another is asked to help out, with the teacher only coming in when no other student can proceed any further. The teacher can thereafter ask only a single student to apply and solve an entire problem on the chalkboard while the others give support. In this way, all the students actively participate in the learning process under the guidance of the teacher in a cooperative classroom atmosphere [10].

Our Institution, though recognized by Medical Council of India (MCI), hardly implemented participatory learning methodology. In context of this current situation, this study was designed to introduce the method of participatory learning for second professional MBBS students probably for the first time at a Medical College of West Bengal in community medicine with the objectives of to assess the feasibility of application of participatory learning; to observe and compare the effectiveness of participatory learning with traditional teaching in the present didactic set up of teaching-learning situation .

## MATERIALS AND METHODS

### Study design and setting:

An institution-based interventional epidemiological study; cross sectional in design was carried out in community medicine department of a Government Teaching Institute of West Bengal, India under West Bengal Health University. The undergraduate MBBS 1st batch was admitted in 2004 and graduated in 2009. As mentioned, this medical school offers a curriculum where teaching activity involves didactic lecturing. Study period was for 6 months (1st May to 31st October, 2011. Study

population was comprised of all 2nd MBBS undergraduate medical students, aged 20 to 24 years, both sexes, studying in the same medical college. Sample size was 78 and sampling technique followed was Simple Random Sampling. The 2nd semester students were 91 and after exclusion of chronically absent students the sample size became 78.

### Study tools:

Tools for study were Modules on Tuberculosis (TB), Audio visual support, TB patients, Checklist, Pre designed pre-tested structured questionnaire(Open-ended and MCQ), Interpersonal Reactivity Index ( IRI) schedule with five point Likert scale [11,12].

The questionnaire was developed in consultation with 3 experienced faculties of community medicine. It was pre tested among 30 senior students; validated by another 3 experts of community medicine; and necessary corrections & modifications were adopted before final data collection.

### Methodology:

Permission from Institutional Ethics Committee for the study was obtained. Prior discussion has been done with the Principal, Dean, and Head of the Department and colleagues of the department. *Framing of Time Table* was decided and topic (Tuberculosis) was selected. Its definition, epidemiology, different presentations, RNTCP, diagnosis, classification, categorization, treatment, defaulter retrieval, outcome identification etc have been taken care of. The 2nd semester students were selected randomly as the study population. They were 91 and after exclusion of chronically absent students the sample size became 78. They were then assigned to two groups of thirty nine each by simple random sampling. One group was the Experimental Group (Group I) and the other was Control Group (Group II). Group I went for participatory learning (PLA) and group II went for traditional teaching (TT) methods. Prior informed consent with explanation that the internal assessment marks will not be affected was taken from each student participant. Group II which has traditional teaching was assured that they would be introduced to Guided participatory learning subsequently on Diabetes Mellitus. The composition of both groups remained constant throughout the study.

Active participation of students in the form of shaping the presentation, selection of audio-visual aids, and preparation by group discussion for presentation have been encouraged and practiced. This presentation has been followed by open discussion. Students were given full length of opportunity for acquiring more knowledge and skill during teaching-learning session through interaction. In this era of semi-feudalism and semi-capitalism the people are least bothered for empathic concern. Teachers provided all kinds of input in these issues. A skillful, knowledgeable and

empathetic doctor is necessary for the society. So the students of medical education should go through all these components. In this study these issues have been taken care of. Inquisitiveness, interest to gather further knowledge among students was also noted in comparison with conventional teaching-learning session. This background theme and working findings motivated this type of change in medical education to impart health knowledge to the students in the present set up of teaching-learning situation in holistic manner.

**Plan of study:**

Intervention I (Group I)

1. Materials as books, handouts etc.
2. References from other books.
3. Information through lectures.

Phase I: Knowledge skills: Lectures, Tutorials and Practical Guidance for presentation; Presentation by Students on TB; Interaction

Phase II: Learning Skills: TB clinical case presentation

Phase III: Visit to DOT centre

Intervention II (Group II)

1. Teaching learning session to other group of students on TB in usual way by didactic lectures.

**Collection of data by:**

- a) Written Assessment – Open Ended Questions and MCQ
- b) Observation of students while they were examining patient with a checklist.
- c) Tools for Empathy measurement IRI (Interpersonal Reactivity Index) [11,12] was used to Assess students’ empathy.

Assessment of students who underwent the intervention:

1. Written Assessment (quantitative assessment) – Open Ended and MCQ.
2. Observation of students while they were examining patient with a checklist.
3. Administration of schedule for IRI assessment.

Assessment of students who did not undergo the intervention:

1. Written Assessment (quantitative assessment) – Open Ended and MCQ.

The following differences were observed during actual implementation between PL and TT:

Features	Participatory learning	Traditional Teaching
Content of teaching	Didactic lectures, interaction, clinical case presentation, visit to DOT centre	Didactic lectures
Process of teaching	Interactive	Non interactive
Active involvement of students	Yes	No
Exposure to clinical cases	Yes	No

**Data Analysis:**

The data were analyzed by proper statistical tests. Comparison of marks of both group was done by un-paired ‘t’ test. P value below 0.05 was considered to be statistically significant and P value below 0.01 was considered to be highly significant. Comparison of results of both the groups would enable the investigator to compare the performances of both the groups and select which one is a better method of teaching. In addition; effect size (Cohen’s d and Pearson r) were also calculated

**Indicators:**

- a. Mean, variance, Standard Deviation and Standard error of knowledge scores by Both the groups.
- b. Mean variance, Standard Deviation and Standard error of skill scores by both the groups.
- c. Mean variance, Standard Deviation and Standard error of empathic concern scores by both the groups.

**Working definition:**

**IRI 11, 12:** 28-items answered on a 5-point Likert scale ranging from “Does not describe me well”

to “Describe me very well”. The measure has 4 subscales, each made up of 7 different items.

These subscales are [12]:

- Perspective Taking – the tendency to spontaneously adopt the psychological point of view of others
- Fantasy – taps respondents’ tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters in books, movies, and plays.
- Empathic Concern – assesses "other-oriented" feelings of sympathy and concerns for unfortunate others.
- Personal Distress – measures "self-oriented" feelings of personal anxiety and unease intense interpersonal settings.

**Effect size 13**

Cohen defined an effect size as ‘the degree to which the phenomenon is present in the population’ or ‘the degree to which the null hypothesis is false’ (1988). Although there is several effect size indices, the most commonly used of these indices is d (Cohen, 1988)

which reflects the difference between two group means divided by their pooled within-group standard deviation. Cohen suggested that  $d=0.2$  be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size.

A few authors have suggested that researchers should report a correlation coefficient as a measure of effect size. Alleged advantages of  $r$  are that it is a more familiar statistical value than  $d$  and that it is a bounded index ( $d$  has no fixed range) which may make interpretation easier. Cohen provided rules of thumb for interpreting these effect sizes, suggesting that an  $r$  (Pearson Correlation Coefficient) of  $|.1|$  represents a 'small' effect size,  $|.3|$  represents a 'medium' effect size and  $|.5|$  represents a 'large' effect size [13].

**RESULT**

The total number of study population was 78. Their age ranged from 20 to 24 years; with mean age was 20.6 years with SD 1.01; most of the students (63%) were in the age group of 20–22 years and 67% were males.

Table 1 revealed *Comparison between knowledge scores obtained by group I and II*. It depicted Mean and Standard deviation values of the total marks obtained in the test conducted for both groups (Group I and II) respectively and the inter-group comparison of significance using Student's unpaired t-test. Mean score was 17.23 (57.43%) with SD 4.06 and 15.85 (52.90%) with SD 4.26 for group I and II respectively. This difference was not statistically significant ( $t= 1.44, p > 0.05$ ).

**Table-1: Comparison between knowledge scores obtained by study and control group students**

Group	Mean (%)	Range	Std. Deviation	Std. Error Mean	Variance
Study Group ( $n_1 = 38$ )	17.23 (57.43)	9.5 – 25	4.06	0.66	16.48
Control Group ( $n_2 = 40$ )	15.87 (52.90)	8 – 27	4.26	0.67	18.14

$t=1.44$ ; degree of freedom ( $df$ )=76;  $P > 0.05$ ; Cohen's  $d= 0.32$ ; Effect-size= Pearson correlation ( $r$ ) = 0.16;

Comparison between skill scores obtained by both group of students was shown in Table 2. In the assessment of skills, average score was 21.75 (72.50%)

with SD 3.20 and 18.89 (62.90%) with SD 3.89 for group I and II respectively. This difference was statistically significant ( $t = 3.53, p < 0.05$ ).

**Table-2: Comparison between skill scores obtained by study and control group students**

Group	Mean (%)	Range	Std. Deviation	Std. Error Mean	Variance
Study Group ( $n_1 = 38$ )	21.75 (72.50)	17 – 28	3.20	0.52	10.24
Control Group ( $n_2 = 40$ )	18.89 (62.97)	13 – 25	3.89	0.61	15.13

$t = .53$ ;  $df = 76$ ;  $P < 0.05$ ; Cohen's  $d = 0.80$ ; Effect-size= Pearson correlation ( $r$ ) = 0.37

Table 3 depicted comparison between empathic concern scores obtained by both group of students. In the assessment of empathy, mean score was 21.67 (61.91%) with SD 3.83 and 19.04 (54.40%) with

SD 4.21 for group I and II respectively. This difference in results was statistically significant ( $t = 2.89, p < 0.05$ ).

**Table-3: Comparison between empathic concern scores obtained by study and control group students**

Group	Mean (%)	Range	Std. Deviation	Std. Error Mean	Variance
Study Group ( $n_1 = 38$ )	21.67 (61.91)	16 – 31	3.83	0.62	14.66
Control Group ( $n_2 = 40$ )	19.04 (54.40)	15 – 30	4.21	0.65	17.72

$t = 2.88$ ;  $df = 76$ ;  $P < 0.05$ ; Cohen's  $d = 0.65$ ; Effect-size= Pearson correlation ( $r$ ) = 0.31

**DISCUSSION**

The result of the present study showed that Participatory Learning method was an effective method of teaching which was corroborative with the findings by Kiessling at Sweden [5]; Duze *et al.*; at Delta State University, Nigeria [10]; Choosangthong *et al.*; at BMA Medical College & Vajira Hospital [14]; Kamath *et al.*; at Mangalore [15]; Radha *et al.*; at Maharashtra [16]; Prabhakaran *et al.*; at Tan Tock Seng Hospital of Singapore [17]; and Kiessling *et al.*; at Sweden [18].

Duze *et al.*; in his study on effects of Participatory Learning Technique on Achievement and Attitude of B. Ed. Students in Educational Research

Methods also showed that PLT was effective in not only enhancing learning output of the students but also in developing positive and favorable attitude towards the subject [10].

Choosangthong *et al* conducted a study to compare pre-test and post-test knowledge and attitudes through participatory learning among the medical students of Srinakarinwirot University & BMA, Medical College and Vajira Hospital, Bangkok and found that participatory learning took a positive effect on knowledge and attitudes of the fifth-year medical students in AIDS counseling training program [14].

Kamath *et al.*; at Mangalore done her study on effectiveness of participatory learning activity (PLA) cum lecture method on knowledge of nursing students of HIV/AIDS and demonstrated that students exposed to the participatory cum lecture method showed better outcome [15].

Another study by Radha et al at Pune, Maharashtra on the effect of participatory learning (engaged learning-EL) and lecture learning (LL) method on outcome based education in nursing revealed that participatory learning was effective strategy in build upon the interests of the students and individualize their classroom experience [16].

Similarly, Prabhakaran et al on his study on the topic of comparison of three different modes of teaching for enrolled nurses on Asthma Management depicted preference for the combination mode of teaching as compared with either didactic lecture method alone [17].

Educational intervention studies with patient related end points are scarce [19]. The reasons for this fact are manifold, spanning from potential problems with confounding factors to the lack of reliable objective outcome measures [5]. The patients treated by general practitioners participating in the case method learning sessions were found to have significantly reduced lipid levels, as compared to the patients treated by general practitioners in the control group. This participatory learning method was also effective as assessed by time spent at the seminars [5].

A Swedish study by Kiessling *et al.*; used a participatory learning method— which holds promise and showed significant results in secondary prevention of patients with coronary heart disease, even at the patient level in primary care [18].

It may be concluded that Participatory learning methods—including intellectual interaction between professionals—aiming at integration of scientific evidence, within the context and content of the concrete clinical decision process frame, would be an effective part of future continuous medical education [5].

#### Limitations:

Lots of planning and discussion sessions amongst the faculties were required before conducting participatory learning sessions.

#### CONCLUSION

1. The study showed that it is feasible to adopt a participatory learning methodology in medical teaching under a conventional curriculum.
2. The participatory learning was found to be more effective than traditional one.

3. Participatory learning had a positive impact on knowledge of the 2nd MBBS medical students in TB.
4. Thus time has come to introduction of participatory learning over traditional teaching.

#### Recommendations

1. Group II which has traditional teaching will be introduced to participatory learning subsequently on Diabetes Mellitus.
2. Continue participatory learning in other topics and other disciplines.
3. Students' enthusiasm and motivation has to be kept alive for permanent implementation of innovative teaching methods.

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