

Impact of 'structured bedside teaching module' on students' learning

Tanuja Manohar^{1*}, Tushar Jagzape², Nalini Humane³

^{1,2}Professor, ³Professor and HOD, ^{1,3}Dept. of Medicine, ²Dept. of Pediatrics, ^{1,3}NKP Salve Institute of Medical Sciences & RC & Lata Mangeshkar Hospital, Nagpur, Maharashtra, ²Faculty, Nodal Center, Jawaharlal Nehru Medical College, Wardha, Maharashtra, India

***Corresponding Author: Tanuja Manohar**

Email: tanuja.manohar9@gmail.com

Abstract

Introduction: Innovations in medical education' is the key to fill the gap between expectations from our UG students and actual practicality which we observe in them after graduation. Bedside teaching is an excellent Teaching-Learning method used since ages. It is the best method which if properly undertaken can give insight about all three domains of learning to the students. However if not properly planned this can go in haphazard manner and may not be proved that fruitful. In spite of vital importance of bedside teaching in medical education its popularity is decreasing day by day. If bedside teaching is properly structured and meticulously used, it can be utilized as an excellent method of imparting learning in all three domains. Considering these facts in mind, structured bedside examination module was prepared and this study was undertaken to study impact of this structured bedside teaching module on students' learning.

Materials and Methods: Students of 7th semester posted in medicine were enrolled in study and were divided in two groups. On group 1 students this novel module was implemented. In this module the students were given learning objectives of the case a day prior and in order to achieve active participation of all students, job of case presentation was distributed among all the students. Group 2 students underwent teaching learning session by conventional bedside teaching method. In this case was allotted to one student a day prior and he was asked to present the case on the day of bedside clinic. In both groups experienced teachers took T-L session. Cognitive part was tested by set comprising of 5 questions from 'must know area', which was given as pretest and posttest before and after clinic. Posttest was also repeated after 3 days. Results in two groups were compared and analyzed. On third day evaluation were done by OSCE, thereby along with knowledge, communication skills as well as psychomotor skills were evaluated.

Results: Results were encouraging in intervention group with statistical significance in all the tests. Feedback from students was also positive. Regarding bedside teaching all students agreed that it is essential component of medical education. However majority of them said that they could not get expected quantum of learning out of one bedside clinic. On the contrary majority of students appreciated the new module and also said at least 2 cases of each system should be taken in this manner so that lasting impact in learning can be achieved. In nutshell, if little changes are made in conventional bed teaching tremendous positive changes can be achieved.

Keywords: Structured bedside Teaching module, T-L method.

Introduction

Innovations in medical education' is the key to fill the gap between expectations from our UG students and actual practicality which we observe in them after graduation. Bedside teaching is an excellent Teaching-Learning method used since ages. It is the best method which if properly undertaken can give insight about all three domains of learning to the students. However if not properly planned this can go in haphazard manner and may not be proved that fruitful. By discussing the information regarding subject/disease under consideration cognitive knowledge can be given to the students. In fact because actual patient suffering from disease is in front of the students whatever is discussed in relation to disease can go directly in retentive memory. While taking history before presentation students can learn and develop an art of developing rapport with the patient. In spite of its vital importance in medical education its popularity is decreasing day by day. Reasons for its decreased popularity include increased patient turnover in hospitals, the availability of high-quality diagnostic procedures other than physical diagnosis, and practical and personal impediments.¹

Teachers' involvement in clinical, research, administrative and educational duties, and learners' distraction by technology have resulted in the decline of bedside teaching.² A variety of strategies are proposed to

provide some counterbalance to the increasing decline in bedside teaching. Some authors propose to reform the attitude of faculty regarding bedside teaching.³ According to some researchers bedside teaching should be structured well before, during and after the encounter, thereby reducing the risk of possible discomfort to the students & teachers.⁴ Considering all these facts in mind. 'Structured bedside teaching module was prepared and this study was initiated with the aim to study impact of this new module on students' learning.

Objectives

1. To evaluate the efficacy of structured bedside clinic module on student learning
2. To compare this novel module with conventional bedside teaching method
3. To gather perception of students about this module

Materials and Methods

After taking approval from Institute Ethics committee this interventional study was initiated. Initially discussing with peer group did validation of method and test questions. Students of 7th semester posted in medicine were included in this study. Batches posted in 2 different units comprising of 26 students were enrolled in the study. These students were divided into two groups by systematic random sampling.

The groups so formed were randomly assigned to intervention group and control group by lottery method. Group 1 was intervention group while group 2 was considered control group. Case of cirrhosis of liver with ascites was chosen for teaching-learning session.

For group 2 or control group comprising of 13 students teaching-learning method used was conventional bedside teaching by an experienced seasoned teacher. For this group case was allotted to a student, a day prior to bedside clinic. In intervention group or Group 1 comprising of 12 students, learning objectives related to the case were given to all students a day prior. The job of taking history and examination was distributed among all the students. One student was asked to record bio data of patient. Two students were asked to record presenting complaints and history of present illness. Two students were asked to prepare history related to complications of the related to disease in question. Two students were given the job of taking personal and past history. Two students were asked to do general examination while another pair of students was assigned to do systemic examination. One student was asked to summarize the whole case. In this manner the work was distributed among all students. Another equally experienced and seasoned teacher conducted bedside clinic.

While taking bedside clinic equal stress was given to affective domain and psychomotor domain. Different teachers took bedside clinic for both groups on the same day but in different rooms. Before starting T-L session pretest comprising of 5 brief answer questions from must know area related to the case was given to the students of both groups. All the students from both groups were given posttest questionnaire comprising of same questions. Results were evaluated in both groups and compared. Students from group 1 were asked revise the things daily, discuss and do practice of general and systemic examination for 2 days. Three days after this first session, all the students were subjected to assessment by OSCE method. Four OSCE stations were prepared. One on history taking, second general examination, third systemic examination and on 4th they were asked to write relevant investigations. All students were subjected to posttest again which was labeled as posttest 2. Students were also asked to write strengths and weaknesses of conventional bedside teaching. Feedback regarding new module was taken from students of group 1. Results of all tests were compared in two groups and statistical tests were applied to know p value.

Results

Table 1: Table depicting scores of OSCE stations in group 1 and 2

Group Statistics						T value	P value
	Group	N	Mean	Std. Deviation	Std. Error Mean		
OSCE 1	1	12	5.25	1.138	0.329	5.348	<0.001
	2	13	2.92	1.038	0.288		
OSCE2	1	12	6.88	1.384	0.399	7.376	<0.001
	2	13	3.38	.961	0.266		
OSCE3	1	12	7.83	.937	0.271	3.612	<0.001
	2	13	5.69	1.843	0.511		
OSCE4	1	12	4.67	.651	0.188	6.49	<0.001
	2	13	2.38	1.044	0.290		

This is the table depicting scores on OSCE stations in-group 1 (intervention group) and Group 2. In all 4 OSCE stations there was statistically significant difference between 2 groups with 'p' value <0.05. Major difference was noted in questions related to affective domain. In-group 1 Out of twelve, 8 students introduced themselves to the patients and 9 students took permission of the patients prior to examination. On the contrary in Group 2 only 3 and 5 students respectively out of 13 had done these things, which are important for strengthening Doctor-Patient relationship. Below the table is graphical representation of the chart in fig. 1.

Table 2: Table showing scores of pretest and both post test in group 1

Paired Samples Statistics					T value	P value
Group 1		Mean	Std. Deviation	Std. Error Mean		
Pair 1	Pretest	9.04	1.616	0.467	-7.73	<0.001
	posttest1	12.167	2.0038	0.5784		
Pair 2	Pretest	9.04	1.616	0.467	-7.15	<0.001
	posttest2	12.38	1.416	0.409		

This is the table showing difference between pretest and posttest 1 and 2 in group 1. There was very obvious difference between pretest and both posttests which was statistical significant. There was marginal increase between scores of posttest 1 and 2, but the difference was not statistically significant.

Flow chart of methodology

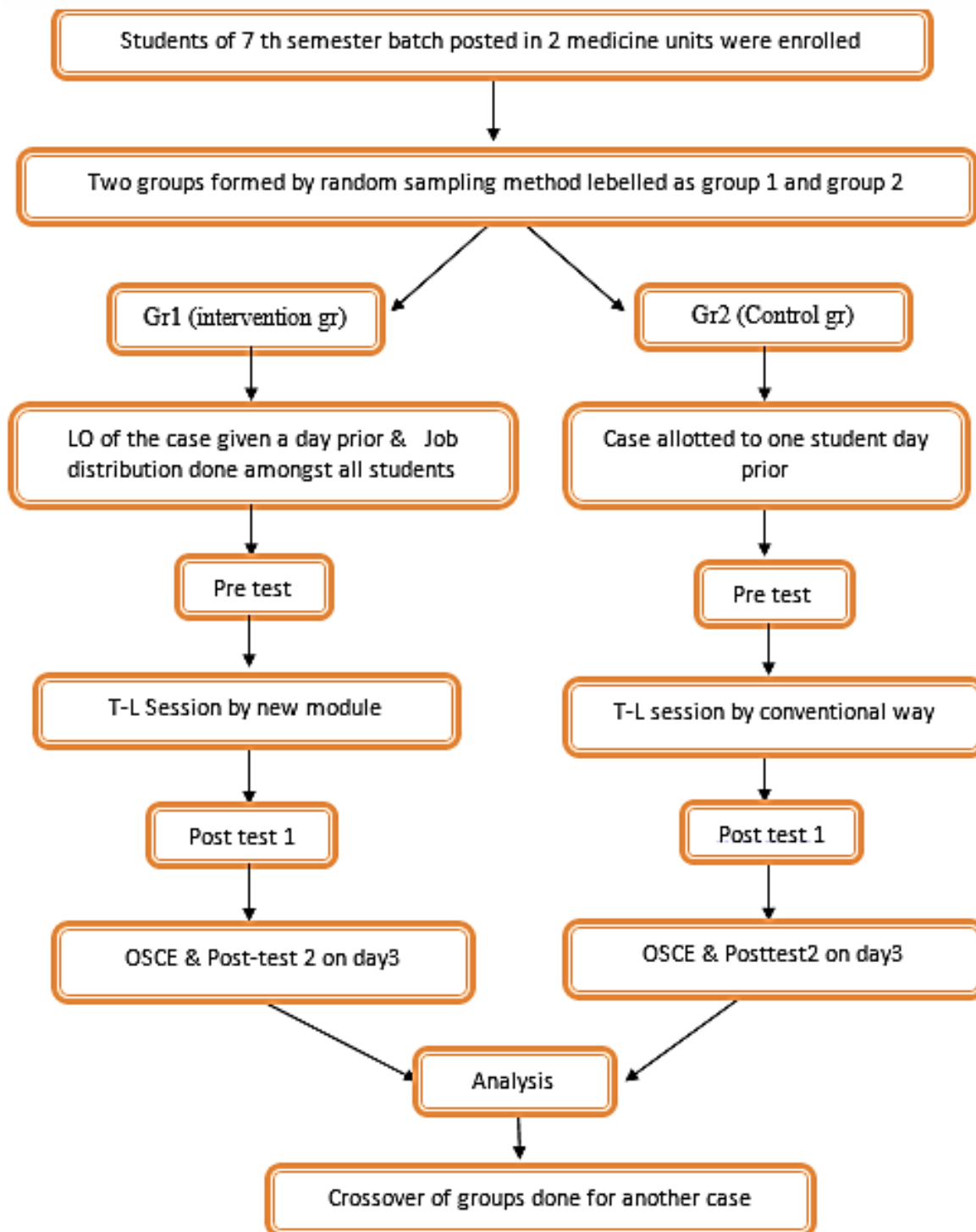


Table 3: Table showing scores of pretest and both post test in group 2

Paired Samples Statistics					T value	P value
Group 2		Mean	Std. Deviation	Std. Error Mean		
Pair 1	Pretest	7.115	1.9056	0.5285	-5.45	<0.001
	Posttest 1	9.038	2.2955	0.6367		
Pair 2	Pretest	7.115	1.9056	0.5285	-4.50	<0.001
	Posttest2	8.73	2.315	0.642		

In Group 2 also there statistically significant difference between pretest and both posttest. However in posttest 2 there was little decrease in mean score as compared to posttest 1. However this difference was not statistically significant

Table 4: Group statistics of both group with respect to pretest and both posttests

Group Statistics						T value	P value
	Group	N	Mean	Std. Deviation	Std. Error Mean		
Pretest	1	12	9.04	1.616	0.467	2.714	0.012
	2	13	7.12	1.906	0.529		
posttest1	1	12	12.167	2.0038	0.5784	3.616	0.001
	2	13	9.038	2.2955	0.6367		
posttest2	1	12	12.38	1.416	0.409	4.698	<0.001
	2	13	8.73	2.315	0.642		

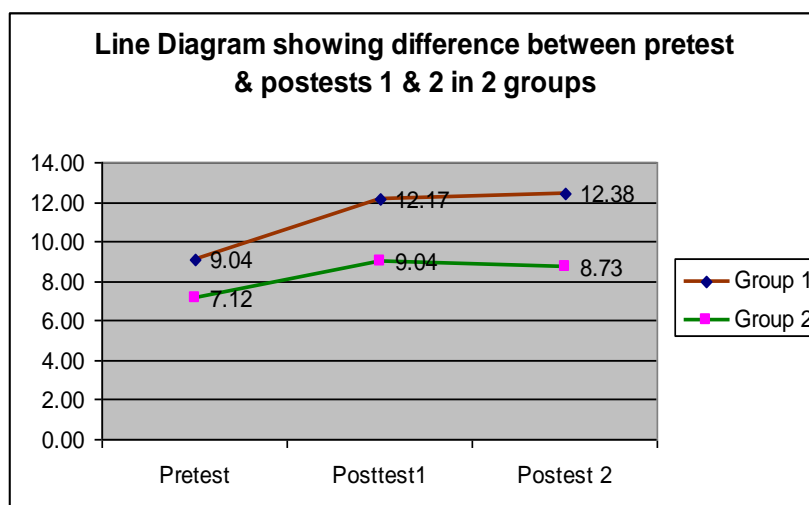
**Fig. 1:** Line diagram showing group statistics

Table 4 represents the scores of both groups in pretest and posttest 1 and 2. It shows in both groups there was statistically significant difference between pretest and posttests. However in pretests also there was statistically significant difference in two groups, which proves that giving learning objectives of the case a day prior definitely has positive impact on learning. In posttest 2 in group 1 there was found to be increasing trend in score even if not statistically significant. This increasing trend was not observed in group 2 which clearly shows that some changes in pattern of bedside examination can have lasting impact on learning.

Students were asked to write strengths and weaknesses of conventional bedside teaching. Following are some common points regarding strengths of conventional bedside teaching

1. All the students agreed about vital importance bedside teaching in medical education.
2. Majority of them found it interesting as they can actually get opportunity with talk with the patient and get to know about disease patient is suffering from in a better manner.
3. Few students stated that they get an idea about what they may have to do in future or rather snapshot of their future.

Some of the weaknesses mentioned about conventional bedside teaching were as follows:

1. Major time is spent in history taking and discussion does not progress beyond history.
2. Time is wasted in finding out teacher concerned.
3. Cases allotted may not have good findings.

4. Teacher who is going to take clinic hardly ever allots the case and usually unaware of case to be discussed.
5. For majority of students it becomes passive process and hence little boring.
6. Majority of them said that they could not get expected quantum of learning out of one bedside clinic.
7. Teacher could not remove phobia which they had regarding handling the patient.

Feedback about 'Structured bedside teaching module' was really encouraging.

Following are few positive strokes about the module

1. Because learning objectives were given to them a day prior, they actually get an idea about what is expected to learn from that particular T-L session.
2. Because all the students were involved in case presentation, they had active participation of all, which made the teaching session interesting.
3. Concept about giving respect to the patient, taking permission prior to examination, introducing oneself to the patient was found appealing to them
4. As they came prepared for the case, discussion could be progressed till diagnosis and investigations.
5. Overall they found this module more fruitful than conventional teaching module.

Some of the negative points about module were as followed

1. Module is more time consuming, as they have to spend more time for preparing a single case
2. Teacher may not like to spend this much time behind one case.
3. Every student has to remain attentive. Overall there was uniform agreement that, two cases from each system should be taken by this manner.

Discussion

Bedside teaching is defined as teaching in the presence of a patient. Bedside teaching is a vital component of medical education and one of the most effective ways to learn clinical and communication skills.⁵ "To study the phenomena of disease without books is to sail an uncharted sea, whilst to study books without patients is not to go to sea at all." This is the famous quote by great clinician Sir William Osler, which clearly states the importance of bedside teaching.⁶ Sylvius (1614-1672), a French practitioner was one of the first to record his thoughts on teaching on rounds. He said that to lead students by hand to the practice of medicine, it was necessary to make them see patient everyday.⁷ Thus the importance of Bedside teaching is known since ages. In teaching in the patient's presence, learners have the opportunities to use all of their senses and learn the humanistic aspect of medicine such as role modeling, which is vital but difficult to communicate in words.²

Bedside teaching was widely used across medical schools in the first half of the previous century, and was estimated to represent as much as 75% of all clinical training in the 1960s to 16% in 1978 and even lesser today.⁸ But in last few decades it's popularity is decreasing. The

decline in bedside teaching in medical curricula is viewed as a loss because of its merits in teaching certain important aspects of medical reasoning and clinical skills. Reasons include an increased patient turnover in hospitals, the availability of high-quality diagnostic procedures other than physical diagnosis, and practical and personal impediments.¹ It was observed that the majority of patients appear to appreciate bedside teaching because of the extra time and insight given to their medical situation. However, physicians seem to favour this teaching method far less, especially younger physicians, afraid of it being demeaning and burdening to patients.⁸

Different authors to increase effectiveness of bedside teaching suggested various models. One of such model was suggested by Janicik and Fletcher (2003), a new three domains "Model of Best Bedside Teaching Practices," which emphasizes on (1) attending to patient comfort, (2) focused teaching, and (3) group dynamics.¹⁰ Based on these lines a structured module for bedside teaching was prepared with the help of peer group. It enabled students to know what they were suppose to learn by providing learning objectives. It involved active participation of all students by distributing the job of case presentation among all the students. Results and feedback obtained were highly encouraging. Thus by making little changes in bedside clinic, by giving it structured format, observable change can be achieved.

Conclusion

To conclude bedside teaching is an extremely important tool in medical curriculum which enable students' learning in all 3 domains. In spite of it's declining popularity in medical education teaches should adopt the innovative strategies to stress importance of bedside teaching in learning. One of such strategy is developing structured bedside teaching module. This can be adopted without much exercise and additional hours of teaching.

Acknowledgement

I am extremely thankful to Mr. Nayse, our statistician for helping me overcoming the hurdle of statistics. My thanks are also due to my fellow teachers who helped me in undertaking this project and also my residents whose whole hearted support helped me in completing my project in Stipulated Time. I would like to express my sincere thanks to MBBS Students who actively participated in project and also patients who took part in this project.

Conflict of interest

None.

References

1. Peters M, ten Cate O. Bedside teaching in medical education: a literature review. *Perspect Med Educ* 2014;3(2):76-88. doi:10.1007/s40037-013-0083-y.
2. Salam A, Hamzah JC, Chin TG, Siraj HH, Idrus R, Mohamad N, Raymond AA. *Pak J Med Sci* 2015;31(3):499-503. doi: 10.12669/pjms.313.7389.PMID: 26150832

3. Williams KN, Ramani S, Fraser B, Orlander JD. Improving bedside teaching: findings from a focus group study of learners. *Acad Med* 2008;83:257-64. doi: 10.1097/ACM.0b013e3181637f3e.
4. Janicik RW, Fletcher KE. Teaching at the bedside: a new model. *Med Teach* 2003;25:127-30. doi: 10.1080/0142159031000092490.
5. Chipp E, Stoneley S, Cooper K. Clinical placements for medical student: factors affecting patients' involvement in medical education. *Med Teach* 2004;26:114-9.
6. Stone MJ. The wisdom of Sir William Osler. *Am J Cardiol* 1995;75:269-76. doi: 10.1016/0002-9149(95)80034-P. [PubMed] [Ref list]
7. Whitman N. Creative Medical Teaching. Salt Lake City: University of Utah School of Medicine; 1990.
8. Crumlish CM, Yialamas MA, McMahon GT. Quantification of bedside teaching by an academic hospitalist group. *J Hosp Med* 2009;4:304-7. doi: 10.1002/jhm.540.
9. LaCombe MA. On bedside teaching. *Ann Intern Med* 1997;126:217-20. doi: 10.7326/0003-4819-126-3-199702010-00007.