

Three Years Experience of Third Year Undergraduate Medical Students in Different Teaching Learning Methods: A Qualitative Study

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ABSTRACT

Introduction: India is a second largest populous country producing more than sixty thousand doctors every year. Still in India research on teaching learning methods are subtle. To improve the quality of knowledge and skills of medical students, there is a need to analyse the existing teaching learning methods as well as innovating new methods.

Aim: To compare the three years experience of third year MBBS (Bachelor of Medicine and Bachelor of Surgery) students in three different teaching learning methods (Tutorials, Integrated Teaching sessions and Routine Lectures).

Materials and Methods: Qualitative study was carried out among 60 third year MBBS students in medical college in south India. A semi-structured questionnaire was developed, with the help of literature review and is distributed among 66 students. Six participants excluded due to incomplete information. Questionnaire consisted of totally 16 questions. For the first ten questions answers were captured in Likert scale of one to five (one-poor; five- excellent). Eleventh to sixteenth questions were asked as an open-ended question to mention some positive

and negative things about each method. Questions with Likert scale were analysed using Kruskal Wallis H Test and the open ended questions were analysed by thematic analysis.

Results: Overall mean rank for Tutorial was 129.03 followed by Integrated Teaching (mean rank 86.33) and Routine Lecture (mean rank 56.14). Students gave better scores for Tutorials in areas such as easily understandable, better attention span and students involvement in the session. Students gave better scoring for Integrated Teaching in areas such as well organized, integration with other departments, ideal usage of audio visual aids and providing detailed information to the students. Drawbacks of Integrated Teaching were failure to attract the students, prolonged sessions (long duration), boring and minimal involvement of students. Lecture classes on the other hand purely depend upon the ability of the faculty.

Conclusion: In three years of students experience, when comparing to Routine Lecture and Integrated Teaching, Tutorial was considered as the best teaching learning method by students because of involvement of students, easily understandable, focussed and increased student teachers interaction.

Keywords: Integrated teaching, Routine lecture, Tutorial

INTRODUCTION

Starting with 23 medical colleges at the year of independence of India, now in 2016, we have reached a total of 462 medical colleges with total Undergraduate seats (Bachelor of Medicine and Bachelor of Surgery) of 63,535 [1]. In India, most of the current teaching techniques are of one-way communication, and the knowledge is imposed on the students. Students actually prefer multiple mode of teaching learning methods rather than one-way communication [2-5]. Although, we are producing a large number of doctors every year, we are unable to provide quality medical care because the current teaching learning methods used in medical education are less skill oriented [6]. So, there is a need to find out innovative and interesting teaching learning methods as well as to study the effectiveness of the existing and new teaching learning methods [7,8].

Medical Council of India (MCI) has made it compulsory to conduct group discussions/Tutorials, Integrated Teachings, seminars apart from didactic lectures in UG medical Curriculum [9]. MCI also recommended introducing both horizontal and vertical integration in Integrated Teaching method. Integration between departments of the same academic year are called as horizontal integration and with other academic years are called as vertical integration [10]. While implementing techniques like Tutorial or Integrated Teaching, researchers usually adopt a pre and post-test method of a single session or they compare with Routine Lecture method, usually a single session [6,11-15]. Some researchers claim that Integrated Teaching is better than lecture method and some others say that

Tutorial is better than lecture method [10,11,16]. Usually students knowledge and perception will increase at the end of any session and therefore, the positive feedback given by students may lead the researchers to claim their teaching learning method as better [17]. So, there is a need to compare different methods, after exposing the students for a longer duration. Having this in mind we intended to compare the experience of students for about three years with three different teaching learning methods (Tutorial, Integrated Teaching and Routine Lecture) using a qualitative method.

MATERIALS AND METHODS

A qualitative study was conducted among seventh semester (Third year) Undergraduate MBBS students studying in a medical college in South India who were already exposed to different teaching learning methods for the past three years from first to sixth semester. Reference period of recall is from 1st August 2013 to 31st July 2016. This study was conducted on 4th August 2016.

Operational Definitions:

- Routine Lecture: This is a usual method of taking classes for Undergraduate students where a single faculty was involved in teaching a topic. Usually this session lasts for an hour.
- Tutorial class: Usually this session lasts for two hours. All the students present on the day of session were divided into five to eight groups. One faculty was assigned to each group, who was acted as a "moderator". The whole session was coordinated by a faculty (overall faculty in charge). Brief introduction was given by overall

faculty in charge. Each group was provided with handouts, with information on the selected topic for group discussion. Under the guidance of “moderator”, students in each group discussed among themselves and clarified their doubts. Panel discussions were started following group discussion. In this discussion, few members from each group were selected randomly and their understanding about the topic was checked by conducting a quiz. Other members were also involved when the panel members were unable to answer. The doubts raised by the students were cleared simultaneously.

c) Integrated Teaching: Usually these sessions last for two hours. In this method a topic was selected by an in charge faculty. A team of faculty (usually 4-5) were formed by the in charge faculty from various departments (preclinical, para clinical and clinical departments). To ensure that all the concepts regarding the selected topic were covered, series of meetings were held to decide, discuss, finalize about their part in that topic and to exclude overlapping of content in that topic. There may be a little variance within each Integrated Teaching sessions, by a role play by student, case presentation, experts experience etc. However, the overall idea was to integrate various departments to teach about a particular topic, so as to cover all the concepts about topic are covered.

Students were exposed to all these three methods from the beginning of their medical curriculum for a period of three years. These methods were suggested, executed, monitored and reviewed regularly by Medical Education Unit. A semi-structured questionnaire was developed based on the literature review [6,11,12]. Questionnaire consisted of totally 16 questions. For the first ten questions answers were captured in Likert scale of one to five (one-poor; five-excellent). Eleventh to sixteenth questions were asked as an open-ended question to mention some positive and negative things about each method. Questionnaire was distributed and explained to the students before starting the study. Totally 66 students participated in the study. Among them six proformas were excluded due to incomplete data.

Data analysis: The mean rank of teaching for each lecture was compared using Kruskal-Wallis H Test. The Kruskal-Wallis H test (sometimes also called the “one-way ANOVA on ranks”) is a rank-based nonparametric test that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. It is considered as a nonparametric alternative to the one-way ANOVA, and an extension of the Mann-Whitney U test to allow the comparison of more than two independent groups [18]. Post-hoc power calculated using Open epi Software, between Tutorial and other two groups was 99% [19]. Thematic analysis was done for the six open ended questions asked under 11th to 16th question by two investigators. Responses were grouped under six prefixed theme and read several times to obtain a sense of the whole. Coding of responses were done within each theme and analysed [20]. Finally findings were triangulated with the Likert scale findings. Informed consent was obtained from the Students. Students were asked not to write their names to conceal their identity so that they can express their views without hesitation.

RESULTS

Among the 60 participants 36 were female and 24 were male with the mean age group of 20.9. Comparison of three different methods using quantitative method shown in [Table/Fig-1].

Theme 1: Positive things about Routine Lecture

Most of the students replied that this is the best method to teach simple topics. No overlap or repetition of content. Some students have mentioned that usage of audio visual aids is good in this method and the time management is good. Few mentioned that the outcome of lecture depends on the ability and quality of individual teachers.

Student 18: “It depends only upon the faculty teaching, whether

Parameters	Group (N=60)			p-value*
	Routine Lecture method [#]	Integrated Teaching [#]	Tutorial class [#]	
This method achieves the objectives fully	54.51	89.32	127.68	<0.001
Able to understand the topic better in this method	59.3	91.4	120.8	<0.001
Confined to the topic without any overlap or confusion	70.88	75.28	125.35	<0.001
Attention span is better with this method	53.7	80.37	137.43	<0.001
Time management is good in this method	81.35	73.72	116.43	<0.001
This is the best way of teaching difficult topics	61.31	83.48	126.72	<0.001
Interaction with students and involvement of students is better in this method	54.06	80.96	136.48	<0.001
Audio visual aids were used nicely in these sessions	74.28	105.18	92.05	0.003
This method is well and structured and planned	57.95	100.01	113.54	<0.001
Overall rating of this method of teaching as the best	56.14	86.33	129.03	<0.001

[Table/Fig-1]: Comparison of Routine Lecture, Integrated Teaching and Tutorial methods using Kruskal-Wallis H test. *p-value <0.05 is significant, #-mean rank

students listening or not”

Student 26: “Concise and depends on the faculty who is taking the lecture”

Theme 2: Negative things about Routine Lectures

Most of the students replied that the negative things about this method are usually monotonous, boring feeling sleepy, difficult in paying attention and less interaction with the students. Some replied that this is not a better method for complex topics.

Student 31: “Less interaction, attention lost”

Student 14: “Too monotonous”

Theme 3: Positive things about Integrated Teaching

Most of the students responded that integrated sessions were more elaborative with the involvement of faculty from many departments. Some people replied that it’s a better method to understand the topic and the audio visual aids were used properly.

Student 51: A good way to have different views on single topic

Student 52: A detailed aspect of the topic is taken

Theme 4: Negative things about Integrated Teaching

Most of the students told that it is too long to listen. There is no break in between the sessions, time management is bad and they feel boring and tired. It should not be conducted during post lunch period.

Student 22: “Sometimes boring and too long”

Student 26: “Too long, boring and tired in the afternoon class”

Student 32: “Time management is bad”

Theme 5: Positive things about Tutorial

Most of the students replied that the attention span is very good in this method. Involvement of the students and the understanding about a topic was very good in this method. Some students replied that it’s a targeted, focussed and brief method of teaching. Interaction between students and teachers was good.

Student 20: “Better interaction between the students and teachers”

Student 31: “More attention is paid; we were made to study the topic that time itself which is good.”

Student 50: “Keep us lively”

Theme 6: Negative things about Tutorial

Most of the students told that the audio visual aids were used less. Some students told that this may not be a good method to teach difficult topics, sometimes the material given is very difficult to read and understand. Some students may stay passive during discussion without involvement.

Student 47: "Difficult topics can't be understood"

Student 51: "Sometimes it is not easy to read the materials by students"

DISCUSSION

In our study, students have given a clear verdict supporting Tutorial as a best method over Integrated Teaching and Routine Lecture method. This was observed by Mishra AK et al., and Kumar RP et al., in a single session comparison study, but they didn't have compared with Integrated Teaching [6,11]. Students gave better scores for Tutorial in areas such as simple and brief in nature, easily understandable, better attention span and involvement of the students in the session. Interactiveness and comfortable environment to ask questions were also noted in this type of method by some other authors [11,21]. Authors also found overall Group learning was rated better than lecture method [6,11,22]. On the negative side of Tutorial, there is a chance that few students may remain passive in their group without involving in discussion. This has been noted by other authors also, and they reported that passive involvement of some students also increases the burden on other students [21,23]. While providing study materials (handouts) for discussion, it is recommended to keep the content simple and easy to read and understand by the students. As the students believe that Tutorials may not be used for complex and difficult topics, faculties may try some innovative way in Tutorials to cover difficult topics. Students gave better scores for Integrated Teaching in areas such as well organized, integration with other departments, ideal usage of audio visual aids and provision of holistic information to the students, which has been noted by other authors also [12,16,24]. But the Integrated Teaching process has failed in attracting the students due to its long duration, boring and non involvement the students. Lecture classes on the other hand purely depend on the ability of the faculty. Students ratings largely depend on how the session helped them in understanding the subject by increasing their attention span, than how elaborate and informative they are. For improvement of lecture and Integrated Teaching method, it is recommended to encourage the involvement of students in some possible ways, because it has been found that active participation of the students makes them to learn better than normal class room method [6,11,16].

LIMITATION

This study has been conducted in a single institute, needs to consider before generalization.

CONCLUSION

In three years of students experience, when comparing to Routine Lecture and Integrated Teaching, Tutorial was considered as the best teaching learning method by students because of involvement of students, easily understandable, focussed and increased student

teachers interaction.

REFERENCES

- [1] List of Colleges Teaching MBBS [database on the Internet]. Medical Council of India. c2010 [cited 2016 Oct 10]. Available from: <http://www.mciindia.org/InformationDesk/ForStudents/ListofCollegesTeachingMBBS.aspx>.
- [2] Prithishkumar IJ, Michael S. Understanding your student: Using the VARK model. *J of Postgrad Med*. 2014;60(2):183.
- [3] Nair SP, Shah T, Seth S, Pandit N, Shah GV. Case based learning: a method for better understanding of biochemistry in medical students. *J Clin Diagn Res*. 2013;7(8):1576-78.
- [4] Ramasamy R, Gopal N, Srinivasan AR, Murugaiyan SB. Planning an objective and need based curriculum: the logistics with reference to the undergraduate medical education in biochemistry. *J Clin Diagn Res*. 2013;7(3):589-94.
- [5] Paganini M, Rubini A. Chest ultrasound integrated teaching of respiratory system physiology to medical students: a first experience. *Adv Physiol Educ*. 2015;39(2):129-30.
- [6] Mishra AK, Kumar R, Chauhan RC, Purty AJ, Bazroy ZS. Concomitant use of handouts and group and panel discussions as a teaching technique for undergraduate medical students. *Int J Innov Med Educ Res*. 2015;13(1):180-86.
- [7] Nayak A. Changing medical students attitudes to psychiatry through newer teaching techniques. *Mens Sana Monogr*. 2015;13(1):180-86.
- [8] Murakami T, Tajika Y, Ueno H, Awata S, Hirasawa S, Sugimoto M, et al. An integrated teaching method of gross anatomy and computed tomography radiology. *Anat Sci Educ*. 2014;7(6):438-49.
- [9] Regulations on Graduate Medical Education. New Delhi1997 [Accessed 12 May 2017]; Available from: http://www.mciindia.org/Rules-and-Regulation/GME_REGULATIONS.pdf.
- [10] Bhardwaj P, Bhardwaj N, Mahdi F, Srivastava J, Gupta U. Integrated Teaching program using case-based learning. *Int J Appl Basic Med Res*. 2015; 5(Suppl 1):S24.
- [11] Kumar RP, Kandhasamy K, Chauhan RC, Bazroy J, Purty AJ, Singh Z. Tutorials: an effective and interactive method of teaching undergraduate medical students. *Int J Community Med Public Health*. 2016;3(9):2593-95.
- [12] Stalin P, Bazroy J, Singh Z, Divija R, Velavan A, Veerappan I, et al. Evaluation of correlated Integrated Teaching programme among undergraduate medical students. *Journal of Research in Medical Education & Ethics*. 2014;4(1):60-64.
- [13] Vyas R, Jacob M, Faith M, Isaac B, Rabi S, Sathishkumar S, et al. An effective integrated learning programme in the first year of the medical course. *Natl Med J India*. 2008;21(1):21-26.
- [14] Khobragade S, Abas AL, Khobragade YS. Comparative study on the measurement of learning outcomes after powerpoint presentation and problem based learning with discussion in family medicine amongst fifth year medical students. *J Family Med Prim Care*. 2016;5(2):298-301.
- [15] Ghosh S, Pandya HV. Implementation of Integrated Learning Program in neurosciences during first year of traditional medical course: perception of students and faculty. *BMC Med Educ*. 2008;8:44.
- [16] Shah AR, Shethwala ND, Parmar B. Perception of undergraduate medical students towards the subject of Pathology at one of the Medical Colleges of Gujarat, India. *Int J Med Sci Public Health*. 2014;3(7):863.
- [17] Yadav PP, Chaudhary M, Patel J, Shah A, Kantharia ND. Effectiveness of Integrated Teaching module in pharmacology among medical undergraduates. *Int J Appl Basic Med Res*. 2016;6(3):215-19.
- [18] Devi V, Mandal T, Kodidela S, Pallath V. Integrating students' reflection-in-learning and examination performance as a method for providing educational feedback. *J of Postgrad Med*. 2012;58(4):270.
- [19] Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health. [updated 2013/04/06; Accessed 17 Aug 2017]; Available from: <http://www.openepi.com/Power/PowerMean.htm>.
- [20] Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24(2):105-12.
- [21] Jayakumar N, Srirathan D, Shah R, Jakubowska A, Clarke A, Annan D, et al. Which peer teaching methods do medical students prefer? *Educ Health (Abingdon)*. 2016;29(2):142-47.
- [22] Lumma-Sellenhain A. Medical students' attitudes towards group and self-regulated learning. *Int J Med Educ*. 2012;3:46-56.
- [23] Arora K, Hashikar NK. Effectiveness of student-led objective tutorials in pharmacology teaching to medical students. *Indian J Pharmacol*. 2016;48 (Suppl 1): S78-s82.
- [24] Tsinopoulos IT, Symeonidis C, Tsaousis KT, Mataftsi A, Chalvatzis N, Tzamalis A, et al. Contribution of Integrated Teaching in the improvement of an undergraduate ophthalmology curriculum. *Adv Med Educ Pract*. 2014;5:433-37.

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