



To study the efficacy of virtual teaching over the didactic (traditional) teaching method in first year MBBS students

Authors

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ABSTRACT:-

Old traditional methods of didactic lectures is one way method whereas virtual lectures is a newer method for online learning and web based learning. We compared the effectiveness and satisfaction of traditional lecture with virtual lecture. 1st year MBBS students were divided in two groups by systematic random sampling, control group was exposed to traditional lectures and study group was exposed to virtual lectures. Both the methods were assessed by MCQ pre and post-test. Students satisfaction survey was done by questionnaire based on Likert's scale. We found the students were more satisfied by the traditional lectures as assessed by Likert's scale and there was no statistically significant difference in the assessment of knowledge. The virtual lecture by the teacher was not inferior to didactic lecture by the teacher. Traditional lectures give better understanding to topic as queries are solved during the lecture. Virtual lectures as scenarios of innovation leads us to recognize that these are means and not purposes for the learning of different contents linked to the course plans; that is, they are mediating tools.

Keywords:- traditional teaching, virtual teaching, student satisfaction

INTRODUCTION

Old educational methods are gradually replaced by multimedia since 1990s (1). Today, most educational systems are applying advanced technology to meet the demands of students and academic faculties. Several studies show that a combination of traditional and electronic teaching methods can improve learning outcomes (2). The inclination to apply electronic learning tools in medical schools is also increasing (3).

Wojtczak (4) defined lecture as an instruction or verbal discourse by a speaker before a large group of students. Wrown et al. (5) Stated that the main advantages of lecture were coverage of topics, simplification of difficult concept. Several studies (6,7,8,9) found that lecture was easy organization and effective and economical way of conveying information to large numbers of recipients. A good lecture is a text-book plus personality. The traditional lecture approach or the content-oriented approach is still the core teaching method. Lecture is a careful presentation of facts with organized thoughts and ideas by a qualified person. Virtual lectures were defined as primarily didactic lectures accessed through digital platforms that do not require active interaction with the video playback interface.

Medical education is facing variety of challenges in the 21st century, and it is in the midst of major transformation. [10] Training is known as an agent of change and progress in human. Improvement of educational quality has been considered in medical fields, and its importance is growing gradually (11). Most psychologists believe that transmitting the Education to Learners is related to educational conditions, and this education should be organized for each learner based on her/his talent and capability (12). According to Chhetri et al., contemporary generations of trainees have grown up immersed in various technologies and are now less functional in the traditional classroom setting [13].

Virtual lectures as a part of e-learning have evolved as pedagogical strategies to facilitate an active, learner-centred teaching approach. Hence in researching the success of e learning, it is important to reveal

not only the readiness and expectations of learners, but also the level of satisfaction about various dimensions of learning process. Whether the learner simply or an obligated to enrol in traditional lectures. Hence assess to what extent the students the students of 1st year MBBS (undergraduates) are ready for virtual lectures and revealing their level of satisfaction is important for educators and instructional designs and stakeholder in order to modify and revise both academic and administrative aspect of an E- learning programme so as to increase the quality of learning environment.

AIM:-

To study the efficacy of virtual teaching over the didactic (traditional) teaching modality in medical student curricula. The aim of this study was to compare the students' learning and satisfaction in combination, of virtual lectures with traditional (didactic) lecture methods. The present study was carried out with the objective to explore student's preferences about teaching methods.

OBJECTIVES:-

- To introduce and study the effectiveness of virtual teaching as a newer teaching aid.
- To obtain and compare student satisfaction qualitatively and quantitatively.
- To compare virtual teaching with didactic teaching

MATERIALS AND METHOD:-

The present study was conducted in the Department of Biochemistry, Indira Gandhi Government Medical college Nagpur . The present study was carried out during January, 2019.

Approval was taken from the Ethical Committee of Medical College, IGGMC ,NAGPUR before the study. [Copy of Approval letter from IEC enclosed in annexure]

Subjects:

A total of 140 first year MBBS students were selected out of total strength of 150. An informed consent was obtained from each participant after giving them full information about the study.

Participants will be divided into two groups by systematic random sampling, control group and study group.

There were two methods in this study, Traditional and virtual

Control will be given didactic (traditional) lectures and study group will be exposed to virtual teaching

• Traditional method

• The conventional method was a lecture-based course that included two, one hour sessions. In this course, the sequence of PowerPoint slides were shown.

• Virtual learning method

• All of the learning objectives were designed the same as the conventional method, with the exception of the teaching method. We designed a virtual learning environment that included all corresponding flexibilities and user friendliness enriched with multimedia.

The data collection method was questionnaire based survey and the data collection tool was designed in the form of questionnaires. The validation of the questionnaires was done by Expert from institutional MET unit.

Data collection tools included an 10-items questionnaires, with 9 question closed ended and 2 question open ended. The questions were framed to see the student satisfaction and analysed on Likert scale .

Method of assessment

A pre -test post-test that included MCQ was designed according to the lesson plan. Validity of the test was confirmed by a panel of Biochemists. We evaluated all participants upon completion of the lectures. The latter was for measurement of students' knowledge retention. For each MCQ we assigned one mark, for a total possible score of 10 points.

Crossing over of both the groups will be done after the study

OBSERVATIONS AND RESULTS:-

Table no.1 Showing The Results Of Comparison Of Teaching Methods Contriburting To The Knowlwdge

1.This class of virtual / traditional teaching contributed to my knowledge?		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
	Strongly Agree	20	28.57	26	37.14	2.41	0.297
	Agree	36	51.43	36	51.43		
	Neutral	11	15.71	8	11.43		
	Disagree	3	4.29	0	0.00		
	Strongly Disagree	0	0.00	0	0.00		
	TOTAL	70	100	70	100		

In table No 1 whether the virtual lecture contributed to their knowledge ,most of the students agreed (51.43%) which was found same in traditional lecture(51.43%),but more students were strongly agreeing over the question in traditional lecture (37.14%) as compared to virtual lecture(28.57%) and the difference was found to be statistically insignificant(P value 0.297)

Table no.2 Showing The Results Of Comparison Of Teaching Methods Giving Motivation To Learn

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
2.class gives motivation to learn	Strongly Agree	15	21.43	21	30.00	34.36	0.000
	Agree	28	40.00	47	67.14		
	Neutral	19	27.14	2	2.86		
	Disagree	3	4.29	0	0.00		
	Strongly Disagree	5	7.14	0	0.00		
	TOTAL	70	100.00	70	100.00		

In the Table no 2 ,whether the class gave motivation to learn we found that most of the students were agreeing(40%) and strongly agreeing(21.43%) in virtual lecture. The same was found with the traditional lecture who were agreeing (67.14%) and strongly agreeing(30%). But the percentage of students in traditional group as compared to virtual group was statistically significant (P value 0.000)

Table no.3 Showing The Results Of Comparison Of Teaching Methods For Which Is Interesting

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
3.Was the lecture interesting	Strongly Agree	10	14.29	34	48.57	22.8	0.000
	Agree	46	65.71	21	30.00		
	Neutral	11	15.71	14	20.00		
	Disagree	3	4.29	1	1.43		
	Strongly Disagree	0	0.00	0	0.00		
	TOTAL	70	100.00	70	100.00		

In table no 3 Most of the students in virtual lecture found the lecture interesting 65.71% was agreeing over it whereas 14.29% strongly agreed over it. In the traditional lecture maximum percentage were strongly agreeing(48.57%) and they found the lecture interesting whereas 30

Table no.4 Showing The Results Of Comparision Of Teaching Methods Of Which Is Helpful To Understand The Topic

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
4.Is this teaching method help you to understand the topic?	Strongly Agree	9	12.86	28	40.00	16.26	0.0002
	Agree	47	67.14	38	54.29		
	Neutral	12	17.14	4	5.71		
	Disagree	2	2.86	0	0.00		
	Strongly Disagree	0	0.00	0			
	TOTAL	70	100	70	100		

In table no 4, in virtual method maximum no the students were agreeing to it (67.14%). In the traditional method most of the students were agreeing (54.29%) and(40%) of the students were strongly agreeing . The P value was found to be 0.002 which was significant.

Table no.5 Showing The Results Of Comparision Of Teaching Methods For Better Relationship Between Student And Teacher

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
5.Better relationship between teacher and student.	Strongly Agree	0	0.00	22	31.43	32.9 YATE'S CORRECTION	0.000
	Agree	11	15.71	33	47.14		
	Neutral	25	35.71	13	18.57		
	Disagree	28	40.00	1	1.43		
	Strongly Disagree	6	8.57	1	1.43		
	TOTAL	70	100	70	100		

In table no 5, maximum percentage of students in traditional method were agreeing (31.43) and strongly agreeing (47.14), whereas only 15.71 % were agreeing in virtual method, p value was 0.000 which significant.

Table no.6 Showing The Results Of Comparision Of Teaching Methods For Arousing Interest In The Subject

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
6.Is this teaching method succeed arousing my interest in the subject?	Strongly Agree	4	5.71	24	34.29	18.27	0.0001
	Agree	39	55.71	30	42.86		
	Neutral	13	18.57	16	22.86		
	Disagree	8	11.43	0	0.00		
	Strongly Disagree	6	8.57	0	0.00		

Table no 6 shows that traditional method is more effective in arousing the interest in the subject as (34.29%)strongly agreed and (42.86%) agreed over it, as compared to virtual method in which only (55.71%) were agreeing and 5.71% were strongly agreeing. P value is 0.0001 which is significant.

Table no.7 Showing The Results Of Comparision Of Teaching Methods For The Queries Solved During The Lecture

7.All queries were solved during the lecture		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
	Strongly Agree	4	5.71	20	28.57	59.02	0.000
	Agree	4	5.71	33	47.14		
	Neutral	44	62.86	13	18.57		
	Disagree	13	18.57	4	5.71		
	Strongly Disagree	5	7.14	0	0.00		
	TOTAL	70	100	70	100		

Table no.7 shows traditional method is very effective in solving the queries as (28.57%) were strongly agreeing and (47.14%) were agreeing, as compared to virtual teaching where most of students (62.86%) were neutral . p value is 0.000 which is significant.

Table no.8 Showing The Results Of Comparision Of Teaching Methods For More Friendly Atmosphere

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
8.Got more friendly atmosphere?	Strongly Agree	0	0.00	22	31.43	46.9	0.000
	Agree	12	17.14	28	40.00		
	Neutral	42	60.00	16	22.86		
	Disagree	16	22.86	4	5.71		
	Strongly Disagree	0	0.00	0	0.00		
	TOTAL	70	100	70	100		

Table no.8 shows traditional method is very effective in giving more friendly atmosphere as (31.43%) were strongly agreeing and (40.00%) were agreeing, and (22.86%) was neutral as compared to virtual teaching where most of students (60.00%) were neutral . p value is 0.000 which is significant

Table no.9 Showing The Results Of Comparision Of Teaching Methods Rating The Overall Level Of Satisfaction

		VIRTUAL METHOD	%	TRADITIONAL METHOD	%	CHI SQ	P VALUE
9.Are you completely satisfied. Rate your level of satisfaction	Strongly satisfied	9	12.86	22	31.43	9.61	0.008
	satisfied	26	37.14	28	40.00		
	Neutral	26	37.14	15	21.43		
	Dissatisfied	9	12.86	5	7.14		
	Strongly Dissatisfied	0	0.00	0	0.00		
	TOTAL	70	100	70	100		

Table no.9 shows traditional method is (31.43%) were strongly agreeing and (40.00%) were agreeing, and (21.43%) was neutral as compared to virtual teaching where students (37.14%) were neutral(37.14%) were satisfied and (12.86%). p value is 0.008 which is significant.

Table no.10 Likert Scale For Questionnaire Percentage Of Satisfaction In Traditional Method

QUESTION	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1.This class of virtual / traditional teaching contributed to my knowledge?	37.14	51.43	11.43	0.00	0.00
2.This class gave you motivation to learn	30.00	67.14	2.86	0.00	0.00
3. Was the lecture interesting	48.57	30.00	20.00	1.43	0.00
4.Is this teaching method help you to understand the topic?	40.00	54.29	5.71	0.00	0.00
5.Better relationship between teacher and student	31.43	47.14	18.57	1.43	1.43
6. Is this teaching method succeed arousing my interest in the subject	34.29	42.86	22.86	0.00	0.00
7.All queries were solved during the lecture	28.57	47.14	18.57	5.71	0.00
8.Got more friendly atmosphere?	31.43	40.00	22.86	5.71	0.00
9.Are you completely satisfied. Rate your level of satisfaction	31.43	40.00	21.43	7.14	0.00

Table no.11 Likert Scale For Questionnaire Percentage Of Satisfaction In Virtualmethod

QUESTION	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
1.This class of virtual / traditional teaching contributed to my knowledge?	28.57	51.43	15.71	4.29	0.00
2.This class gave you motivation to learn	21.43	40.00	27.14	4.29	7.14
3. Was the lecture interesting	14.29	65.71	15.71	4.29	0.00
4.Is this teaching method help you to understand the topic?	12.86	67.14	17.14	2.86	0.00
5.Better relationship between teacher and student	0.00	15.71	35.71	40.00	8.57
6. Is this teaching method succeed arousing my interest in the subject	5.71	55.71	18.57	11.43	8.57
7.All queries were solved during the lecture	5.71	5.71	62.86	18.57	7.14
8.Got more friendly atmosphere?	0.00	17.14	60.00	22.86	0.00
9.Are you completely satisfied. Rate your level of satisfaction	12.86	37.14	37.14	12.86	0.00

Figure No.1

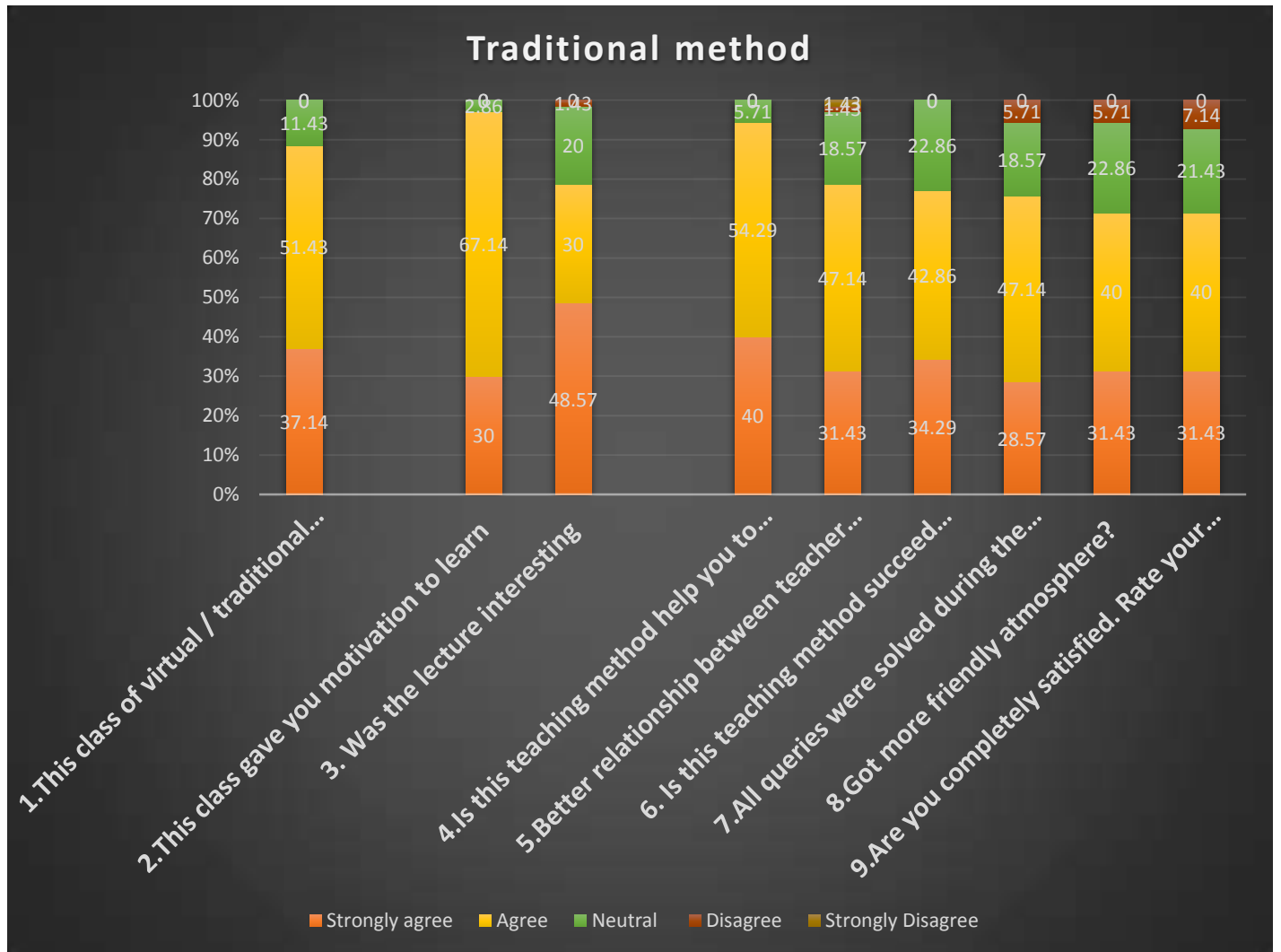


Figure No.2

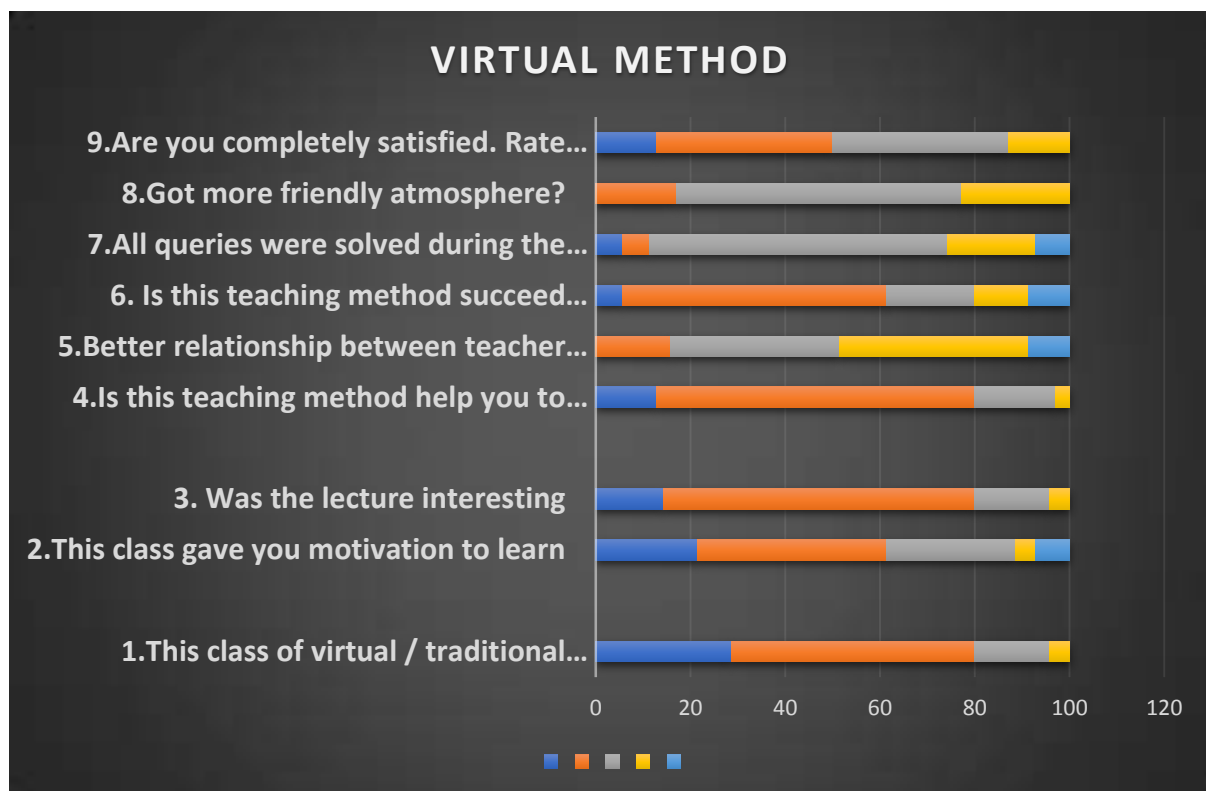


Table no 12 Traditional teaching method(pre and post comparison)

Traditional method	Before teaching	After teaching	p value
total score	239	456	0.000
mean score	3.41	6.51	

Table no 12, It was observed that scores were significantly increased after traditional teaching (P=0.000,S)

Table no 13 Virtual teaching method(pre and post comparison)

Virtual method	Before teaching	After teaching	p value
total score	224	384	0.000
mean score	3.2	5.48	

Table no 13 ,It was observed that scores were significantly increased after traditional teaching (P=0.000,S)

Table no 14 To test the change in scores of both the methods differ significantly or not?

Difference in score	Traditional method	Virtual method	p value
total score	217	160	0.01
mean difference of scores	3.1	2.28	

Table no 14,It was found that increase in score was more in traditional method than in virtual method. (Mann Whitney U test, P=0.01). This means that traditional method was more effective than Virtual method.

DISCUSSION:-

The traditional lecture-based learning (LBL) model is a teacher-centered pedagogical approach in which learning is derived from the instructor, in a lecture setting, imparting what is known about a subject and, thus, hopefully resulting in knowledge transfer. The point of focus in a LBL model is on the instructor and the content being imparted. One of the online teaching modalities include didactic online lectures (virtual teaching). A virtual classroom is an online learning environment (14)(Wang & Newlin 2012). Characteristics of online courses are a type of distance education. The delivery format goes by a number of names: e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, or web-based learning (15),(WCET, 2004).

In order to study the effectiveness of virtual lecture Likert scale questionnaire as student satisfaction is widely recognized as an indicator of the quality of students' learning and teaching experience. The questionnaire items were associated with:, feedback and assessment, learning resources .In this study, student satisfaction makes reference to "the learning experience". One of the most important roles of an educational institution is to offer relevant learning experiences to the students. When these experiences are not included in the curriculum, the students frequently become detached and unsatisfied, because they do not longer understand the importance of their classes. (16)Roberts & Styron Jr. 2010). According to Lo (2010)(17), student satisfaction represents a subjective perspective on the way in which the educational environment supports academic success. A higher level of satisfaction reveals how adequately educational methods are succeeding in stimulating thinking and learning. On the other hand, a below satisfactory level often indicates a lack of balance between academic requirements and the abilities that empower the students to accomplish them. Therefore a perceptible interest in gaining a high level of student satisfaction, regarding the learning experience, leads to an improvement in the teaching-learning process and even to the improvement of the evaluation and self-evaluation process.

Several investigations indicated some advantages of electronic learning in higher education; in other words, some disadvantages were also reported. Only few students and faculty members had insufficient experience or were afraid of web-based learning and technology (18). In addition, no face-to-face interaction, communication, and collaboration occurred between the students and the staff. The students' perception of the educational environment is not improved by virtual learning method (19). Finally in such learning methods, clinical and practical skills, some abilities related to asking questions, problem solving, providing orientation, getting feedback, and encouraging reflections are not practiced.

On examination and analysis of our research results we found that traditional didactic lecture most of the students were strongly agreeing and agreeing in the Likert scale of satisfaction as shown in table no 10. Students strongly agreed and also agreed about the virtual method to contribute to their knowledge. They supported both the teaching methods, but most of them preferred traditional method as they get more friendly environment, solving of queries and better relationship between teacher and student. Our finding was similar to finding of D.Vasudhara et al (20) . Papanna K M et al (21) also found that chalk and talk method was more preferred whereas Mohan et al(22) and Giri P A (23) et al found that traditional chalk and talk method with PowerPoint presentations were equally preferred through mix aids.

In the study, that was conducted by Jarahi et al(24) the comparison of clarity of topics in lecture with two other methods, higher percentage of students expressed greater clarity of the lecture. Also, in another study at Tehran university, students expressed greater educational impact of lecture method rather than e-learning; they have mentioned that teachers give more information about the educational content in the lecture; and it can make the learning process easier(25). Our study also concluded with the similar finding as traditional method is more effective in arousing interest in subject , better understanding of the topic and making the lecture interesting as the p value was significant. In addition, no face-to-face interaction, communication, and collaboration occurred between the students and the staff. The students' perception of the educational environment is not improved by virtual learning method (26). Our statistical analysis is similar as students' overall satisfaction is more with traditional method as there is better interaction between the students and the teacher, as compared to the virtual method.

On the assessment of learning outcomes of both the method we found the statistically significant difference in pre test score and post test score in both the teaching methods, which indicates that both the teaching methods are effective in short gain of knowledge. The post test score was higher in traditional method as compared to virtual method the p value was found 0.011 which was not statistically significant, but it indicates that traditional method was more effective than virtual. There are no differences regarding the academic performances the grades at the test between the two groups of students. According to Alireza et al virtual education was as effective as conventional method in teaching and academic guidance.(27). Moazami et al., also demonstrated a higher mean knowledge score and more effective learning in virtual learning method than in traditional and lecture based training method (28).

Also the open ended question revealed that 95% students preferred traditional method over the virtual method as there is face to face interaction, better understanding, solving of queries. They found the traditional lecture more interesting.

CONCLUSION-

The Likert chart findings indicate positive approach of the students towards traditional method.

The didactic teaching and virtual teaching did not produce any significant difference in the retention of knowledge.

The virtual lecture was not inferior to didactic lecture.

Traditional lectures give better understanding to topic as queries are solved during the lecture.

The virtual educational platforms are innovative scenarios in the teaching and learning process since they are "new" elements that the teacher must integrate in practice, thus generating strengthening in the student's learning.

However, the implementation of educational virtual lectures as scenarios of innovation leads us to recognize that these are means and not purposes for the learning of different contents linked to the course plans; that is, they are mediating tools.

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REFERENCES

1. Hosseini SV, Aghbali A, Emamverdizadeh P, Hasani A, Razbani M. Using E-learning in Teaching the Quality of the Practical Oral Pathology on Dentistry Students. *Res Dev Med Educ.* 2014;3(1):61-5. <http://dx.doi.org/10.5681/rdme.2014.013>
2. Ariana A, Amin M, Pakneshan S, Dolan-Evans E, Lam A. Integration of Traditional and E-Learning Methods to Improve Learning Outcomes for Dental Students in Histopathology. *J Dent Educ.* 2016;80(9):1140-8. PMID:27587581
3. Ruiz JG, Mintzer MJ, Leipzig RM. The impact of E-learning in medical education. *Acad Med.* 2006;81(3):207-12. <https://doi.org/10.1097/00001888-200603000-00002> PMID:16501260
4. Wojtczak, A. Glossary of Medical Education Terms. In *MedEdWorld Glossary.* (2003).
5. Brown, G., & Edmunds S. Lectures. In, J. A. Dent & R. M. Harden, (Eds.), *A Practical Guide for Medical Teachers* (4th ed., pp. 61-68). London: Churchill Livingstone Elsevier. (2013).
6. Hafeez, K., Khan, M. L. Z., Jawaid, M., & Haroon, S. Low attendance in lectures at medical colleges of Karachi – A cross sectional survey. *Journal of Postgraduate Medical Institute*, 28 (2), 161- 164, (2014).
7. Sumera, A. Large group teaching, an effective and efficient teaching methodology. *Journal of Asian Scientific Research*, 4 (1), 1-5, (2014).
8. Held, S., & McKimm, J. Improve your lecturing. *British Journal of Hospital Medicine*, 70 (8), 466-469, (2009).
9. Iqbal, I. Scenario based interactive lectures. *Nishtar Medical Journal*, 1 (2), 19-23, (2009).
10. Torre, D. M, Daley, B. J, Sebastian, J. M. & Elnicki, D. M. Overview of current learning theories for medical educators. *American Journal of Medicine*, 119 (10), 903- 907, (2006).
11. Zolfaghari M, Mehrdad N, Parsa Yekta Z, Salmani Barugh N, Bahrani N. The effect of lecture and e-learning methods on learning mother and child health course in nursing students. *Iranian Journal of Medical Education.* 2007;7(1):31–9. Persian.
12. Hergenhahn BR, Olson HO. *An introduction to theories of learning.* 6th ed. New Jersey: Pearson; 1996.
13. Chhetri S. E-learning in neurology education: principles, opportunities and challenges in combating neurophobia. *J Clin Neurosci.* 2017;44:80-3. CrossRef Google Scholar
14. Wang, A. Y. & Newlin, M. H. (2012). Online Lectures: Benefits for the Virtual Classroom. *T.H.E. Journal.* <<http://www.thejournal.com/articles/15513>> Accessed 16.07.2012
15. WCET: Western Cooperative for Educational Telecommunications, (2004). *Distance education: A consumer's guide* <<http://wcet.wiche.edu>> Accessed 16.07.2012
16. Roberts & Styron Jr. (2010). Student satisfaction and persistence: factors vital to student retention. *Research in Higher Education Journal.* <http://www.aabri.com/manuscripts/09321.pdf>.
17. Lo, C.C.(2010). How student satisfaction factors affect perceived learning. *Journal of the Scholarship of Teaching and Learning*, Vol. 10, No. 1, January 2010, pp. 47 – 54.
18. Khatony A, Dehghan Nayery N, Ahmadi F, Haghani H, Vehvilainen-Julkunen K. The effectiveness of web-based and face-to-face continuing education methods on nurses' knowledge about AIDS: a

comparative
study.. <https://doi>

19. Makhdoom N, Khoshhal K, Algaidi S, Heis- sam K, ZolalyMA. Blended learning' as an ef- fective teaching and learning strategy in clinical medicine: a comparative cross-sectional university-based study. *J Taibah Univ Med Sci.* 2013;8(1):12-7. <https://doi.org/10.1016/j.jtumed.2013.01.002>
20. D. Vasundhara Devi¹, M. Kiran Deedi² teaching and learning methodology in medical education. An analysis -in GSL Medical college, Rajahmundry . *J of Evolution of Med and Dent Sci/ eISSN- 2278-4802, pISSN- 2278-4748/ Vol. 4/ Issue 72/ Sept 07, 2015*
21. Papanna KM, Kulkarni V, Tanvi D, Lakshmi V, Kriti L, Unnikrishnan B et al. Perceptions and preferences of medical students regarding teaching methods in a Medical College, Mangalore India. *Afr Health Sci.* 2013;13(3):808-13
22. Mohan L, Ravishankar P, Kamath A, Manish MS, Eesha BR. Students' Attitudes Towards The Use of Audio Visual Aids During Didactic Lectures In Pharmacology. *Journal of Clinical and Diagnostic Research.* 2010;4:3363-8.
23. 5. Giri PA, Phalke DB. Views regarding use of audio- visual aids during didactic lectures in community medicine among first year medical students of Rural Medical College, Loni, Maharashtra. *Nat J Res Comm Med.* 2013;2(2):145-8.
24. Jarahi L, Najafi M. Evaluation of teaching through lecture with new methods of student-centered teaching in medical students. *FMEJ* 2013;3(4):6-9.
25. Zolfaghari M, Mehrdad N, Parsa Yekta Z, Salmani Barugh N, Bahrani N. The effect of lecture and e- learning methods on learning mother and child health course in nursing students. *Iranian journal of medical education* 2007; 7(1): 31-9. [Persian].
26. Makhdoom N, Khoshhal K, Algaidi S, Heis- sam K, ZolalyMA. Blended learning' as an ef- fective teaching and learning strategy in clini- cal medicine: a comparative cross-sectional university-based study. *J Taibah Univ Med Sci.* 2013;8(1):12-7. <https://doi.org/10.1016/j.jtumed.2013.01.002>
27. Alireza Abdollahi,^{1,2,*} Samaneh Salarvand,¹ and Hiva Saffar³ Comparing the Efficacy of Virtual and Conventional Methods in Teaching Practical Pathology to Medical Students *Iran J Pathol.* 2018 Spring; 13(2): 108–112. Published online 2018 Jul 17.
28. Moazami F, Bahrampour E, Azar MR, Jahedi F, Moattari M. Comparing two methods of education (virtual versus traditional) on learning of Iranian dental students: a post-test only design study. *BMC Med Educ.* 2014;14:45. [PMC free article] [PubMed] [Google Scholar]