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"Effectiveness of online symposium as a teaching-learning method in Undergraduate Medical Education"

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ABSTRACT

Objectives : To assess the effectiveness in terms of post-test scores, acceptability and retention of information, of online symposium as a teaching-learning method when compared to traditional symposium in phase 3 MBBS students.

Methodology : The students were divided by random lottery method into 2 batches (A and B) and 3 rounds of online and traditional symposiums were conducted (with one round consisting of session 1 - online symposium for batch A and traditional symposium for batch B, and then session 2 - online symposium for batch B and traditional symposium for batch A). Immediately after the symposium, post-test was conducted as multiple choice and short answer questions (which were offline for both batches). Each batch was also given an offline pre-validated structured questionnaire to understand acceptability of the teaching-learning method. To assess retention of information, each batch underwent an offline test consisting of multiple choice and short answer questions one month after the test also (similar to post-test with different equated questions).

Results &Conclusion :Overall, students felt that traditional symposiums are the way forward, atleast at this moment. Apart from screen sharing which students felt was not an issue, and retention of information which was comparable with face-to-face symposium, online symposium had its issues, mainly related to internet connectivity/speed/bandwidth as well as technical glitches and a lesser opportunity for interaction between both the teachers and peers. Although the traditional symposium had the upper hand in terms of post-test scores overall, the online symposium showed an improvement in scores in the final 2 sessions.

Keywords : Symposium, online, Phase 3 MBBS, post-test, retention test, internet bandwidth

I. INTRODUCTION & REVIEW OF LITERATURE :

Symposium is one of the most quotidian and most striven teaching learning methods for apportioning consequential knowledge and imparting adroit clinical wisdom among undergraduates in the esteemed medical curriculum presently undertaken in India. Not only is it facile to do and comprehend but also cogent and tenacious to both the facilitator and the learner. Thus, a symposium is a unique opportunity to exchange ideas[1].

A symposium classically involves 2 to 5 speakers and one moderator/chairperson with each speaker delivering separate speeches on different aspects of one issue/topic in front of a large group of audience; with no active discussion between the speakers. Short speeches help in maintaining audience interest, and it is a splendid teaching-learning method for analyzing different aspects of a controversial issue. Audience being passive is one drawback.

Students feel that lack of community, problems related to technology and problems in understanding instructional goals are the major barriers for online learning [2]. It is essential to find out if online symposium is riddled with these, but no studies have properly evaluated such feedback. In one study, students were not sufficiently prepared for balancing their work, family, and social lives with their study lives in online learning, and poorly prepared for several competencies, with an alarming low-level of preparedness regarding usage of Learning Management Systems [3]. These could be major barriers to successful conduct of online symposium.

In the era of computer-based teaching where online lectures are being used frequently, other large group teaching methods like symposium has to have an online platform too. But studies have been lacking in this area which give a concrete answer about its effectiveness when compared to the traditional offline method. It is imperative that this gap be filled quickly, since online teaching-learning methods for large group

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teaching are a must in this era; the recent pandemic making it even more relevant.

AIMS AND OBJECTIVES

AIM:

To assess the effectiveness of online symposium as a teaching-learning method when compared to traditional symposium in phase 3 MBBS students.

PRIMARY OBJECTIVE

To assess the comparability of post-test scores of online symposium as a teaching-learning method when compared to post-test scores in traditional symposium in phase 3 MBBS students.

SECONDARY OBJECTIVES

1. To assess the acceptability of online symposium as a teaching-learning method when compared to traditional symposium in phase 3 MBBS students
2. To assess the retention of information 1 month after online symposium when compared to 1 month after traditional symposium (using post-test) in phase 3 MBBS students

II. MATERIALS AND METHODS

STUDY DESIGN

Prospective analytical study

STUDY SETTING

Department of Paediatrics
Travancore Medical College, Kollam

STUDY POPULATION

Phase 3 MBBS students (part 2), Regular Batch (batch year not mentioned to maintain confidentiality); total 80 students.

STUDY PERIOD

6 months immediately after the Ethics Committee Clearance

STUDY SAMPLE

All phase 3 MBBS part-2 Regular batch students who gave informed consent to participate in the study

INCLUSION CRITERIA:

Students of phase 3 MBBS part-2 regular batch who give informed consent and are present for all the symposiums (online & offline) that are conducted as part of this study

EXCLUSION CRITERIA:

1. Students absent from any symposium or post-test conducted as part of this study
2. Students who opt out of this study after initially giving consent, if any
3. Students refusing consent

III. METHODOLOGY

Students of phase 3 MBBS (part 2) regular batch who gave informed consent to participate in this study were included. Students were divided into two batches (A and B) by random lottery method. Symposium on a certain topic in the cognitive domain was conducted online for Batch A and the same topic was conducted offline for Batch B. Each symposium had 3 students presenting and a faculty in Paediatric department as moderator. Same faculty presided as moderator for both batches A & B on the same topic. Second symposium (on a different topic in the same domain) was conducted offline for Batch A and online for batch B. Each batch thus was subjected to one online & one offline symposium. Immediately after the symposium, post-test was conducted as multiple choice and short answer questions (which was offline for both batches). Each batch was also given an offline pre-validated structured questionnaire to understand acceptability of the teaching-learning method. To assess retention of information, each batch underwent an offline test consisting of multiple choice and short answer questions one month after the test also (similar to post-test with different equated questions). The above was termed “round 1”. This same process was repeated 2 more times (hence each batch was subjected to a total of 3 online and 3 offline symposiums), which were termed “round 2” and “round 3”. The offline symposium was recorded and the same was provided, at the end of the study, to the Batch which underwent the online symposium on the same topic (after the post-test to assess retention of information) for ethical reasons.

TOOLS

Computer, internet connection, appropriate learning management system for online symposium, laptop with over-head projector for offline symposium, pre-tested structured questionnaire x 6, post-test x 6, retention test x 6

DATA COLLECTION METHOD

Data was collected from Batch A and Batch B after getting informed written consent from each student; and was filled in by the investigator using a pre-tested structured questionnaire. Post test and retention test were conducted offline and marks were tallied by the principal investigator.

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IV. STATISTICAL ANALYSIS

Data collected was entered into Microsoft excel sheet and was analysed by using SPSS version 16. Descriptive statistics such as frequency, percentage, mean and standard deviation were calculated. Student's t test was used to test statistical significance . P≤0.05 considered to be statistically significant.

ETHICS COMMITTEE CLEARANCE:

Ethics committee clearance was obtained before the conduct of the study. Strict confidentiality of the data collected was maintained and the data obtained was not disclosed to anybody without prior permission from the student. The offline symposium was recorded and the same was provided, at the end of the study, to the Batch undergoing online symposium on the same topic (after the post-test to assess retention of information) for ethical reasons.

ETHICAL ISSUE: Nil

CONFLICT OF INTEREST: Nil

FINANCE: None

Results

In this study, a total of 80 undergraduate students participated; with an equal number of males and females. They were divided by random lottery method into 2 batches (A and B) and 3 rounds of online and traditional symposiums were conducted (with one round consisting of session 1 - online symposium for batch A and traditional symposium for batch B, and then session 2 - online symposium for batch B and traditional symposium for batch A).

Post-test scores

ROUND 1

In session 1, the mean post-test score (out of total 10 marks) were 6.55 for batch A (online symposium) with standard deviation of 2.14; and 7.125 for batch B (traditional symposium) with standard deviation of 2.38. The p-value is 0.13.

In session 2, the mean post-test score (out of total 10 marks) were 4.9 for batch B (online symposium) with standard deviation of 2.93; and 5.525 for batch A (traditional symposium) with standard deviation of 3.01. The p-value is 0.17.

ROUND 2

In session 1, the mean post-test score (out of total 10 marks) were 5.825 for batch A (online symposium) with standard deviation of 2.64; and 6.2 for batch B (traditional symposium) with standard deviation of 2.88. The p-value is 0.28.

In session 2, the mean post-test score (out of total 10 marks) were 5.35 for batch B (online symposium) with standard deviation of 2.18; and 5.5 for batch A (traditional symposium) with standard deviation of 3.01. The p-value is 0.39.

ROUND 3

In session 1, the mean post-test score (out of total 10 marks) were 5.85 for batch A (online symposium) with standard deviation of 2.9; and 5.2 for batch B (traditional symposium) with standard deviation of 2.64. The p-value is 0.14.

In session 2, the mean post-test score (out of total 10 marks) were 6.825 for batch B (online symposium) with standard deviation of 2.55; and 5.725 for batch A (traditional symposium) with standard deviation of 2.71. The p-value is 0.03.

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Feedback

Feedback was collected as grades 0-4 (with 4 signifying that the parameter concerned was highly effective). The average overall grade has been analyzed below :

1. **Interaction with faculty during symposium** - Traditional symposium had a slightly higher grade (3.5) when compared to online (2.66).
2. **Interaction with peers during symposium**- Interaction with the teacher and between students were encouraged in both online and offline symposiums. Traditional symposium had a higher grade (3) when compared to online (1.3).
3. **Audibility and discernibility** - Traditional symposium had a slightly higher grade (4) when compared to online (3.66).
4. **Whether students felt technology was a barrier to learning** - Technology was indeed felt as a barrier in online symposium (average grade 1.16 when compared to only 0.5 for traditional symposium). Some technology was used in offline symposium also (like computer, projector etc.), hence this was compared.
5. **Whether the students found the use of technology more arduous in online symposium** - Yes, indeed they found it difficult (average grade 1.66 in online and 0 in offline). Some technology was used in offline symposium also (like computer, projector etc.), hence this was compared.
6. **Effectiveness of the doubt clearing session conducted online** - Interaction with the teacher and between students were encouraged in both online and offline symposiums. Traditional symposium had a higher grade (3.5) when compared to online (2.83). The doubt clearing session was more effective face-to-face.
7. **Effectiveness of online screen sharing** - Both online (3.16) and traditional (3.33) symposiums had comparable grades, hence screen sharing was not a barrier.
8. **Whether internet speed/bandwidth was a barrier to learning** - It was indeed a barrier (average grade 2 for online and 1.3 for traditional symposium).
9. **Whether the students could pre-prepare for the class better** - Face-to-face symposium did indeed allow students to prepare better before the class (score - 4), when compared to online (score - 1.5). Most students opined that since they could see the teacher face-to-face, it urged them to prepare better before the class to avoid embarrassment.
10. **Overall comparison** - Traditional symposium had a slightly higher grade (3.66) when compared to online (3.16).

Retention test scores

The retention tests were conducted one month after each symposium.

ROUND 1

In session 1, the mean retention test score (out of total 10 marks) were 5.82 for batch A (online symposium) with standard deviation of 3.12; and 5.5 for batch B (traditional symposium) with standard deviation of 3.05. The p-value is 0.31.

In session 2, the mean retention test score (out of total 10 marks) were 6.5 for batch B (online symposium) with standard deviation of 2.59; and 5.97 for batch A (traditional symposium) with standard deviation of 2.71. The p-value is 0.18.

ROUND 2

In session 1, the mean retention test score (out of total 10 marks) were 5.4 for batch A (online symposium) with standard deviation of 2.62; and 5.475 for batch B (traditional symposium) with standard deviation of 2.78. The p-value is 0.45.

In session 2, the mean retention test score (out of total 10 marks) were 6.67 for batch B (online symposium) with standard deviation of 2.46; and 5.55 for batch A (traditional symposium) with standard deviation of 2.95. The p-value is 0.03.

ROUND 3

In session 1, the mean retention test score (out of total 10 marks) were 6.02 for batch A (online symposium) with standard deviation of 2.79; and 6.65 for batch B (traditional symposium) with standard deviation of 3.15. The p-value is 0.17.

In session 2, the mean retention test score (out of total 10 marks) were 5.7 for batch B (online symposium) with standard deviation of 2.58; and 6.65 for batch A (traditional symposium) with standard deviation of 2.61. The p-value is 0.053.

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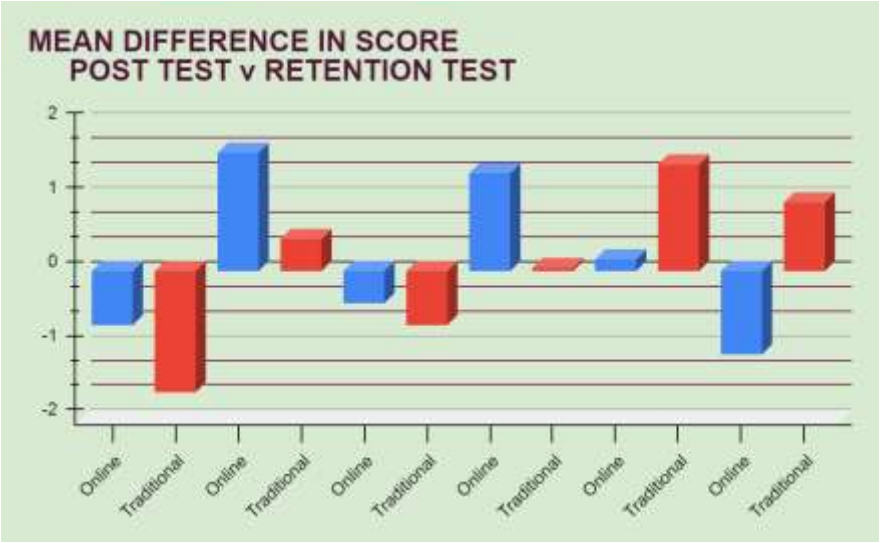
Finally, when comparing the mean difference in marks between post test and retention test of the same session, online symposium fared better in the first 4 of the total 6 sessions as seen below :



V. DISCUSSION

In this study, when comparing post-test scores, the first four of the six sessions (i.e., round 1 and 2) had the average score better in a traditional symposium. However, the final 2 sessions (i.e., round 3) had better scores for online symposiums (with p value being statistically significant in one of them), perhaps showing that repeated conduct of symposiums let students get the hang of it and both prepare and make better use of them.

Most students favoured traditional symposium and opined that it provided better interaction with faculty and peers. It was also more audible and the content more discernible, when compared to online symposium. Feedback from students suggested that technology was a significant barrier to the conduct of online

symposium. Most students felt that using technology, especially when their peers were presenting, was arduous; while they had no such difficulty in using the computer and projector in face-to-face symposium. The doubt-clearing session was also more effective face-to-face. However most students had no problem with screen sharing, and they felt it was not an issue at all. The internet speed and bandwidth was an issue leading to break in connections in between the symposium for many of the students. Most students opined that since they could see the teacher face-to-face, it urged them to prepare better before the class to avoid embarassment. Pre-preparation before the class was thus effective and satisfactory in traditional symposium only, and most students felt they didn't get the impetus to prepare at all before the online sessions. Overall, students felt that traditional symposiums are the way forward, atleast at this moment.

When comparing scores to test retention of information, 3 of the 6 sessions had a better score in the online symposium (p value was statistically significant in one of them). Hence, regarding retention of information, online symposiums were comparable to traditional symposiums, and students also fared better compared to post-test scores. Also, when comparing the mean difference in marks between post test and retention test of the same session, online symposium fared better in the first 4 of the total 6 sessions.

VI. CONCLUSIONS

Overall, students felt that traditional symposiums are the way forward, atleast at this moment. Apart from screen sharing which students felt was not an issue, and retention of information which was comparable with face-to-face symposium, online symposium had its issues, mainly related to internet connectivity/speed/bandwidth as well as technical glitches and a lesser opportunity for interaction between both the teachers and peers. Unlike online lectures in platforms like google classroom or zoom, symposium requires a few students to present topics online with a faculty presiding, hence it demands more interaction than an online lecture. This couldn't be satisfactorily provided by an online symposium with the present state of internet connectivity and speed that we have. Although studies were lacking on online symposiums, other studies on online lectures or classes also reported similar findings, especially in pre-preparation before the online class[4] and difficulty in using technology[3].

TABLES

Table 1
POST-TEST SCORES

ROUND 1		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	6.55	2.14	0.13
	Traditional symposium Batch B	7.125	2.38	
SESSION 2	Online symposium Batch B	4.9	2.93	0.17
	Traditional symposium Batch A	5.525	3.01	
ROUND 2		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	5.825	2.64	0.28
	Traditional symposium Batch B	6.2	2.88	

SESSION 2	Online symposium Batch B	5.35	2.18	0.39
	Traditional symposium Batch A	5.5	3.01	

ROUND 3		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	5.85	2.9	0.14
	Traditional symposium Batch B	5.2	2.64	
SESSION 2	Online symposium Batch B	6.825	2.55	0.03
	Traditional symposium Batch A	5.725	2.71	

Table 2

RETENTION TEST SCORES

ROUND 1		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	5.82	3.12	0.31
	Traditional symposium Batch B	5.5	3.05	
SESSION 2	Online symposium Batch B	6.5	2.59	0.18
	Traditional symposium Batch A	5.97	2.71	

ROUND 2		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	5.4	2.62	0.45
	Traditional symposium Batch B	5.475	2.78	
SESSION 2	Online symposium Batch B	6.67	2.46	0.03

	Traditional symposium Batch A	5.55	2.95	

ROUND 3		MEAN SCORE (out of 10)	STANDARD DEVIATION	p-value
SESSION 1	Online symposium Batch A	6.02	2.79	0.17
	Traditional symposium Batch B	6.65	3.15	
SESSION 2	Online symposium Batch B	5.7	2.58	0.053
	Traditional symposium Batch A	6.65	2.61	

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