Original Research

Whatsapp enhances Medical education: Is it the future?

Mohanakrishnan K[1], Nithyalakshmi Jayakumar[1], Kasthuri A[2], Sowmya Nasimuddin[1], Jeevan Malaiyan[1], Sumathi G[1]

[1]Department of Microbiology, Sri Muthukumaran Medical College and Research Institute, Chickarayapuram, Chennai, Tamil Nadu, India.
[2]Department of Community Medicine, Sri Muthukumaran Medical College and Research Institute, Chickarayapuram, Chennai, Tamil Nadu, India.
Correspondence to: Nithyalakshmi Jayakumar [nithya.smmcri@gmail.com]

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Abstract

Background: Whatsapp, launched in the year 2009, has exploded to 400 million active users each month.

Objectives: The aim of this study was to evaluate the use of Whatsapp to enhance medical education in Indian medical school and also investigate the impact of Whatsapp messenger in their curriculum from the perspective of students.

Materials and Methods: The study population included 100 students from the second phase of Sri Muthukumaran Medical College Hospital and Research Institute (SMMCHRI). An experimental study was planned by dividing them into two groups by simple random sampling. Experimental model (Study-group) were primed through Whatsapp before the session, while the comparison group (Control-group) comprised of 50 students, who were allowed to attend the lecture without prior exposure to the session. To assess the effect of Whatsapp intervention, a multiple choice post-test was conducted using 10 MCQs pertaining to the topic and a questionnaire-based cross-sectional survey assessing their perception was conducted among the Study-group students immediately after the session.

Results: There was a statistically significant difference between Study-group and Control-group students with a *p*-value less than 0.001. Study-group perceived the new format to be effective than traditional format which was evident by the increase in Likert scale response values.

Conclusion: Students are favorably inclined to use the Whatsapp and welcome its role in enhancing their learning experience. Since we observed that it was successful in providing an interactive environment during lecture, we propose that this methodology can be used to enhance student's learning.

Keywords: Whatsapp, Interactive lecture, Medical students, Medical education & Student perception.

Introduction

Educational research has shown that medical students are often, passive recipients of information in classroom settings when traditional lectures are delivered.[1] In a recent study, Feden (1994) found that a student's learning activity is enhanced when they are actively involved.[2]

Social media has presented medical education training strategies in a new dimension. Furthermore, online media was reported to be the primary source of information in a recent survey (2011) among the healthcare professional students.[3] Many educational environments support traditional face-to-face training models via social media seminars, small group work and one-on-one mentoring. Educators also use blogs for teaching and communication with students. As healthcare professional students change their learning style it is mandatory as a facilitator to adopt new strategies to connect with our audience effectively.[4]

Today's learners have advanced, past traditional forms. They rely more on online media to gain knowledge and also when properly incorporated as a teaching tool it encourages interactivity among the students outside the lecture hall. Though, there is ample evidence about the uses of Twitter, Twuffer, Hootsuite, Twitpic and Facebook in medical education,[5,6] we observed Whatsapp, to be a novel social networking site trending among our medical students.

Whatsapp, launched in the year 2009, is a site that has exploded with over 400 million active users each month.

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Whatsapp service has a simple design that makes it easy for even the least tech-savvy to use it. A recent survey among the students revealed Whatsapp has enhanced the effective flow of sharing the ideas and information.[7]

Since it is most utilized among our students, this social media was selected to deliver an engaging lecture. Several literature surveys revealed clear lacunae for priming the students pertaining to the topic through social media in medical education. So it was decided to develop, implement and evaluate a concept with Whatsapp based introduction of teaching material before a lecture topic. Beyond the recall of facts, active participation and involvement are prerequisite for learning. Various strategies of interactive lecturing for medical teachers have been proposed in several studies.[1]

However, analysis of such literature reveals that majority of the interactive techniques are implemented during the session. Whereas, our approach of introducing the topic, a day before by posting the clinical scenario, Problem-based learning (PBL) modules and relevant pictures is unique and this would be expected to create more interest as they have freedom to discuss with their friends and by pushing educational content into learners mobile devices, mere sneakers to the Whatsapp group are encouraged to participate actively by searching information through online or offline. In a nutshell, Social media was utilized to produce high yield pearls by self-motivating these millennial learners.

The aim of this study was to evaluate the use of Whatsapp to enhance medical education in Indian medical school and also investigated the impact of Whatsapp messenger in their curriculum from the perspective of students.

Materials and Methods

This study was approved by institutional research and ethics committee of our college. The study population included 100 students from the second phase of SMMCH&RI. An experimental study was planned. Two groups of students were formed by simple random sampling method. It was planned to provide two lectures one on Herpes virus and another on Paramyxovirus.

For the first session on Herpes virus, 50 students (assigned even numbers) were chosen to be an experimental model (Study-group) are primed through Whatsapp before the session, while the comparison group (Control-group), comprised of 50 students who were allowed to attend the lecture without prior exposure to the session.

Orientation program: An orientation program was conducted a week prior to the commencement of Whatsapp session. This was to introduce the students to the purpose of the study and online media approaches in Microbiology. The study design was explained to them and it was ensured that the role of facilitator in the group is to promote group dynamics and keep them focused on learning objectives. In the case of any doubts, clarification of concepts can be done during the lecture session. This would motivate them to pull out the information from all the educational resources before posting their comments as they are assigned as the sole responsibility for the content. Consent was obtained from all the students before enrollment for study.

Online material was designed to cover all the key content objectives needed for the Study-group. Through social media, a group was created by adding all 50 students of the experimental model and one facilitator.

Two days before the lecture, the group received, topic-related material (Pictures, Case study, Rapid questions) and a day before the lecture the objectives for the session were uploaded. Acknowledgment by student's interaction (by posting comments) in the group was received. Whereas the Control-group was given the specific learning objectives (SLO) and materials during the lecture. Lecture session was taken for both the groups together.

Process evaluation: To identify the effectiveness of the method, a cross-sectional survey was conducted among the Study-group students using a questionnaire immediately after the session. Confidential closed and an open-ended questionnaire was prepared.

The closed-ended questionnaire included six items which were finalized after group discussion. This survey was focusing on the students' perception on various indexes such as whether it has enhanced their interest, was it thought provoking, and was it relevant to the concept being introduced through social media. It also probed into the validity of Whatsapp in terms of better understanding of the subject content and confidence in examination performance. Responses were to be provided on six point Likert scale with a score of **1** = strongly disagree**, 2** = Disagree, **3** = Neutral, **4** = Agree **5** = strongly agree and **6**= very strongly agree.

There were six open-ended questions in which two were yes/no type and the remaining demanded their analytical skill to answer from their perspective. On these evaluations, they wrote about their experience with Whatsapp intervention.

Output evaluation: To assess the effect of Whatsapp intervention on academic performance, a multiple choice post-test using 10 MCQs pertaining to the topic covered was prepared. Questions were developed by the facilitator and peer reviewed by other faculty members in the department to ensure the clarity of content. As planned, the test was conducted for both groups immediately after the session. Responses of 50 students in each group were analyzed and the average score was calculated. We compared the average scores obtained by the Study-group that had been primed by Whatsapp with the Control-group that had undergone the process by traditional lecture alone.

For the second lecture on Paramyxovirus, crossover of students was done in such a way that Control-group of the previous session was chosen to receive the experimental model so they become Study-group. This ensured that all the

students of the large class had an opportunity to share their experience on Whatsapp intervention. Methodology for conducting the cross-sectional survey and post-test was same as the one followed during the first session on Herpes virus.

Data analysis: The average scores obtained by the Study-group that had been primed by Whatsapp with the Control-group which received the topic by traditional lecture alone were compared using paired *t*-test.

To address the perception of students on Whatsapp intervention, frequencies of responses were analyzed by merging SDA & DA (Strongly disagree and Disagree) and VSA, SA & A (Very strongly agree, strongly agree and Agree) as two groups. None of them opted for a neutral response. Percentage of responses was calculated.

Results

The mean (SD) post-test score of the Study-group and the Control-group for the first session was 7.03(1.24) and 4.58(1.79) respectively. Similarly, the mean (SD) post-test score of the Study-group and Control-group for the second session was 8.25(1.04) and 5.24(1.37) respectively. (Table 1)

There was a statistically significant difference between Study-group and Control-group students with a *p*-value less than 0.001. These results suggest that Whatsapp intervention has produced higher performance level than using didactic lectures alone.

Students' perception on Whatsapp usage for introduction:

The Study-group perceived the new format to be effective than traditional format which was evident by the increase in Likert scale response values. (Figure 2)

Table 1: First and Second post-test knowledge score from both Study-groups (Whatsapp):

MCQ	Study-group		Control-group		Significance
	Mean	SD	Mean	SD	
Herpesvirus	7.03	1.24	4.58	1.79	0.000***
Paramyxovirus	8.25	1.04	5.24	1.37	0.000***

*** Significant difference ($p < 0.001$).

From the Study-group, 98% students agreed that this novel approach is more interesting and thought provoking. This was further supported by the student comments listed below:

- "Great way to motivate myself"
- "This method kindled our interest."
- "I searched topic related articles prior to the lecture, that has created a better atmosphere in a classroom to apply what I learned".
- "Please consider this for further topics as well the lectures are boring and extremely dry".

Level of Student understanding about microbiological basis of clinical disease:

In the Study-group, 98% students reported that they had a better understanding of basic concepts. This finding is further corroborated by the following student comments:

- "Case scenario discussion was very helpful to understand the pathogenesis"
- "Helps to correlate pathogenesis with clinical presentation"
- "It may sound funny but by trying to reply (to approve or disprove) in our forum in par with my friends, I learned a lot …".

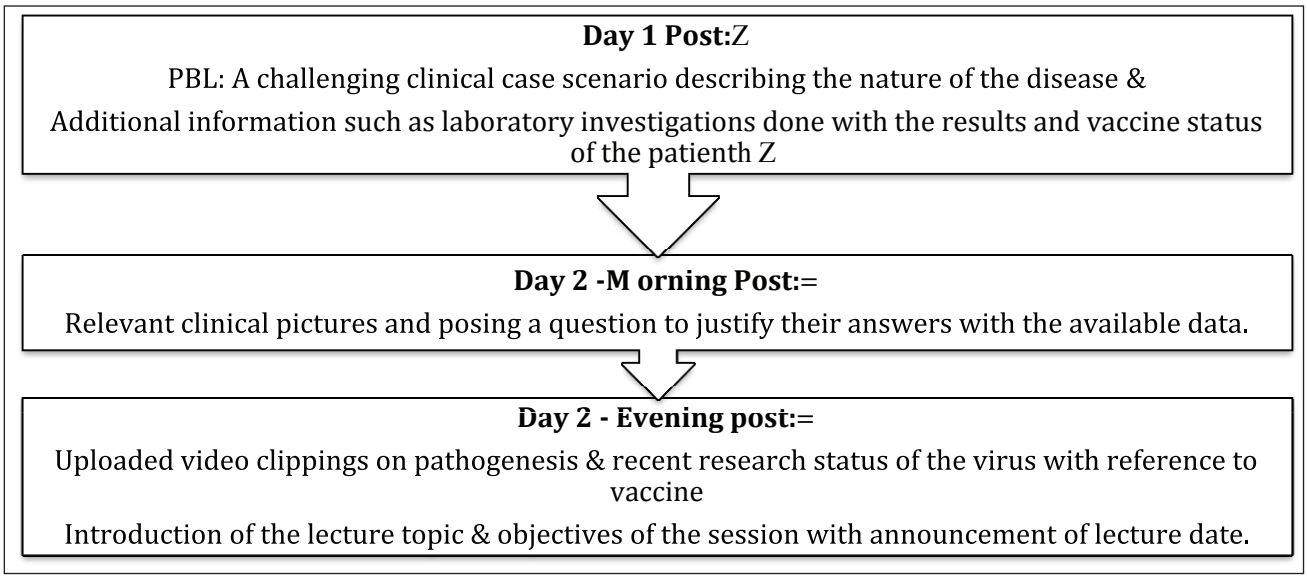

Figure 1: Planning of a module

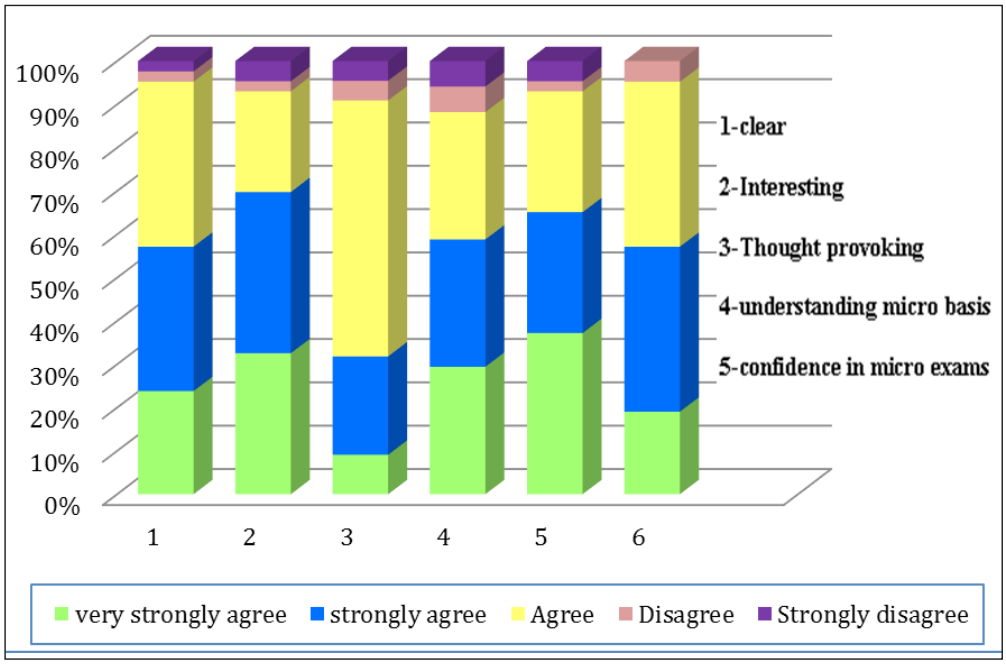

Figure 2: Medical student's perception on Whatsapp usage for interactive lectures

Student confidence with the material*:*

In the Study-group, 98% students felt that they would be able to perform well by answering clinical microbiological questions related to the topic. This was reiterated in the following comments:

- "At the end, I learned huge volume of required material without much effort as it seemed to be an add-on information on what I have surfed already"
- When asked about improving this lecture method, students also indicated that "with the available tight time limit what was provided to them was perfect, if time permits more videos and case scenario can be posted for review."
- "Would be great if videos were also posted"
- "I wish more stuff like this should be posted more often in future"

In our study explanation given by few students for their liking towards this intervention was- helped them to grasp the content, promoted healthy debate about the topic and enjoyed the opportunity to explore related topic and overall provided good learning experiences.

Discussion

Though didactic lectures have been criticized for providing limited opportunities to think independently, it cannot be denied that they have stood the test of time.[8] Any modification in this time-tested methodology, of course, demands the evidence. This study was undertaken to test the hypotheses of interactive lecture using Whatsapp intervention, being better than didactic lecture.

Our student's feedback on this method was encouraging as 98% agreed it was clear, thought-provoking, and relevant. This might be due to the fact that Study-group students are primed about the session that would make them more attentive and highly participating during the session. And 98% of them agreed that challenging clinical scenario helps them to develop their thinking skills and most importantly, encourage their self-directed learning. Hence, the problem-based clinical scenario posted a day before the lecture would definitely help them to identify gaps in their own knowledge. As a result, their literature search was found to be self-directed and creative. This is further supported by results of our study in which students experienced Whatsapp intervention; 98% agree to its role in understanding the concepts and development of confidence to perform better in exams (Figure 1).

Their perceptions of better performance in the examinations were also found to be true by Comparing post-test scores of the Study-group to Control-group. The mean score of the Study-group in both sessions was significantly higher compared to mean score of the Control-group. Thus, it is likely that introducing the topic before lecture would increase the

attentiveness and eagerness to learn, which is evident by the test score (Table 1).

Although there are no cited references specifically using Whatsapp for lectures, others have successfully used Twitter, Facebook etc as an educational adjunct. David Bahner et al., who conducted a longitudinal study using twitter curriculum reported that Twitter was an excellent means of delivering educational content for health care professionals.[9] In a recent study that reviewed the incorporation of social media in medical school observed maximum learners engagement.[10] Our findings are in accordance with an earlier study which reported that medical students perceived, social media in medical education, facilitates professional development[4]. In contrast to our findings a recent literature review (2004) about the use of social media in medical education observed no significant impact on the learning process, in the majority of the studies analyzed.[11]

In the journey from rote memory based schools to the vast medical curriculum, medical students face considerable challenges and hurdles. This scenario worsens further when all the content delivery is primarily based on didactic lectures. To address this crisis, Medical Council of India (MCI) has revised the medical curriculum which recommends the shift from teacher centered to student centered learning by using various interactive strategies.[12] Today's students both medical and non-medical, have innovative thoughts, which allows them to process it differently from their predecessors. Of course, they seem to be the new generation, ever growing up with all digital technology. As a facilitator in this modern era, we need to cope up with the challenge of adopting this technology to correlate with the learning styles of students.

At present, both the American and British Medical Associations have recommended guidelines for professional use of social media tools by medical students to promote medical information and education.[13,14] While it is widely agreed upon that social media enhances medical education, a literature review about the usage of social media to enhance medical education in Indian medical colleges is scarce.

There may be two important reasons for this contrast observation. Most frequently, facilitators fear that students could misuse the group forum in a professional context and facilitators' apprehension which is quite common when there is a deviation from routine. We tried to figure out such problem by conducting an orientation program for the participants to inform what is expected out of them and ensured the preparation of online module well ahead of posting the first message so that we can guide them towards the specified objectives. In addition, a report from a recent survey among the medical students nationwide encouragingly states that students have a good understanding of social media use and aware of its potential dangers.[3]

Recommendations: On the basis of our findings few recommendations can be looked forward. Need to increase awareness about the usefulness of interactive lectures. A slight modification of delivering system with due respect to today's learner's need and capability would definitely promote their confidence and academic performance.

Limitations of the study

It is important to mention some shortcomings of our study. Firstly, it was restricted for a single batch of students in Para clinical block. Second, it is difficult to guarantee Whatsapp followers (as the user needs to be online always to receive the post) before the session.

Despite these limitations, intervention proved to have a positive impact on student's academic performance. Further research on a larger scale including students of different years posted in various blocks (Pre-clinical and Clinical) are needed for better evaluation of this novel approach.

Conclusion

Students are favorably inclined to use the Whatsapp and welcome its role in enhancing their learning experience. Since we observed that it was successful in providing an interactive environment during lecture, we propose that this methodology can be used to enhance student's learning.

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