

## THE PERCEPTION OF MEDICAL STUDENTS TOWARDS E-LEARNING, USING WHATSAPP TEACHING

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### ABSTRACT

**Introduction:** In today's world the medical faculty has to deal with changing technology and with students of Generation Y, who are technology savvy. Social media has brought many changes in the field of medical education. WhatsApp is a very popular social media platform. It is being used as a platform for e-learning, in medical education. WhatsApp has several technical advantages. It helps in accessing limitless data and people worldwide, with just a click on your smartphone. By analysing the perceptions of medical students to e-learning, by using WhatsApp for teaching, the faculty members can make appropriate changes, in the teaching - learning methods. Therefore, we decided to introduce WhatsApp for teaching, and assess the medical students' perception towards this new teaching - learning method.

**Objective:** To assess the medical students' perception on e-learning, by using WhatsApp, as a new teaching - learning method, for Clinical Microbiology.

**Materials and Methods:** A descriptive, cross sectional, questionnaire based study, was conducted. The facilitator created a WhatsApp group. Two days, prior to the scheduled lecture, the facilitator posted the study material in the form of images, videos, case scenarios, research articles etc. The students' responses and comments, in the WhatsApp group, were noted down by the facilitator. On the day of the scheduled lecture, the traditional teaching method was used. At the end of the lecture, the WhatsApp perception questionnaire was handed over to the students. The filled questionnaire was collected back and analysed.

**Statistical analysis:** Percentage analysis of the data was done using SPSS version 22.

**Results:** A total of 139 medical students participated, of which 60.43% (84/143) were females and 39.56% (55/143) were males. WhatsApp enhanced the students' interest in the subject (62.6%) and it was thought provoking (64.8%), the content posted on WhatsApp, was relevant (84.2%) and students felt that they were able to contribute to the learning (82%). Better interaction (80.6%) with the facilitator and their doubts were cleared (51.1%). WhatsApp motivated them to read out the recent advances (79.1%). Neutral responses were observed with regards to understanding of the subject (48.2%), confidence of performing well in exams (43.9%), and whether WhatsApp can be used as a T-L method (38.1%)

**Conclusion:** WhatsApp is a good platform to introduce e-learning in Clinical Microbiology. Although WhatsApp allows the student to access information, anytime, anywhere and at their convenience, it cannot replace traditional teaching. Therefore, a blended course is recommended, which has both e-learning, as well as face-to-face interaction.

**Keywords:** *Clinical Microbiology, e-learning, medical students, perception of students, WhatsApp teaching*

### INTRODUCTION

In today's world, technology is ever changing and it has crawled into various spheres of medical education. The medical faculty is also dealing with a new crop of students, who are referred to as Gen Y (Generation Y or Millennials). Students of Gen Y are technology savvy. With the implementation of CBME (Competency Based Medical Education.) by MCI, there is a lot of emphasis given on self-directed learning (SDL). The MCI, in its Vision 2015 document, envisions the Indian Medical Graduate (IMG) to be a self-directed learner. With the introduction social media, there has been a change in the

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field of medical education. Facebook, Twitter, Instagram and WhatsApp are the names of few social media, which are being used by the teaching faculty, to teach, beyond the four walls of the classroom. Therefore, it is high time that traditional didactic lectures are replaced with more interactive and interesting forms of teaching, so that the medical students become self-directed learners in the future. WhatsApp is one such popular platform which can be used to achieve the above mentioned objectives (Mohanakrishnan, *et al.*, 2017; Hunt, 2011; MCI Vision 2015 Booklet, 2018; Makhdoom *et al.*, 2013). WhatsApp was introduced in the year 2009, by Brian Acton and Jan Koum. Ever since then, WhatsApp has changed the way we communicate. WhatsApp is a user friendly app, which can support the interaction of 256 members at any given point of time. The ease with which images, videos, text and audio messages can be shared instantly, makes it very popular with Gen Y. It connects you to limitless data and people worldwide, with no geographic boundaries. An ocean of information can be easily accessed, with just a click on your smartphone (Mohanakrishnan *et al.*, 2017; Gon, 2017; Sharma, 2019). The United Nations and WHO have provided for e-learning, for all the health care professionals in the developing countries (Al-Shorbaji, 2015). The Medical council of India (MCI) has recommended the integration of e-learning in medical education (Hunt JE, 2011). By analysing the perceptions of medical students to e-learning, wherein Clinical Microbiology is taught by using WhatsApp, the faculty members can introduce relevant and appropriate changes in the teaching learning methods (Shazia, 2016). Therefore, we decided to introduce WhatsApp teaching, to teach Clinical Microbiology and assess the medical students' perception towards this new teaching - learning method.

**Objectives:** The objective of this study was to assess the medical students' perception on e-learning, using WhatsApp, as a new teaching - learning method, for Clinical Microbiology.

## MATERIALS AND METHODS

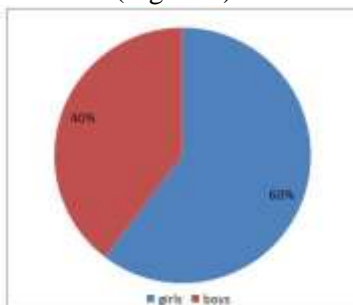
This descriptive, cross sectional, questionnaire based study, was conducted at BGS Global Institute of Medical Sciences, Bangalore. The study was approved by the Institutional Ethical Committee. Before the start of the study, informed consent was obtained from the second year medical students. The study included the second year MBBS students (n=139), who gave consent for the study. An orientation programme was conducted for the students, to prime them about the use of WhatsApp in medical education and about the purpose of this study. In this orientation programme, the do's and the don'ts (social media etiquette), on the WhatsApp group were discussed. The students were informed that the study material will be shared by the facilitator, two days prior to the traditional lecture. They were also instructed not to use their mobiles during class hours. Based on the literature review; a detailed questionnaire was designed by the facilitator. This questionnaire was peer reviewed by the faculty members of the Department of Microbiology (Annexure 1). A topic in Clinical Microbiology was chosen by the facilitator. A WhatsApp group was created by the facilitator, including only those students who had given informed consent for this study. After a small introduction, the facilitator discussed the learning objectives of the WhatsApp session. Two days, prior to the scheduled lecture, the facilitator posted the study material in the form of images, videos, case scenarios, research articles etc. The students' responses and comments were noted down by the facilitator. Any doubts, that were raised by the students was clarified by the facilitator. The facilitator also motivated the students to search and post the study material of their choice, which was relevant to the topic. On the day of the scheduled lecture, the traditional teaching method was used. At the end of the lecture, the WhatsApp perception questionnaire was handed over to the students. Sufficient time was given to the students to fill up the questionnaire and it was collected back. The students' responses on the five point Likert scale was noted down (Gon, 2017; Likert, 1932; Manjunath *et al.*, 2015).

**Statistical analysis:** Data entry was done in Microsoft Excel data sheet. MS Excel and MS word was used to obtain various types of graphs such as bar diagram. MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyze data.

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### RESULTS

In this study, a total of 139 medical students participated. Of these 139 medical students, 60.43% (84/143) were females and 39.56% (55/143) were males (Figure 1).



**Figure 1: Sex distribution of the class.**

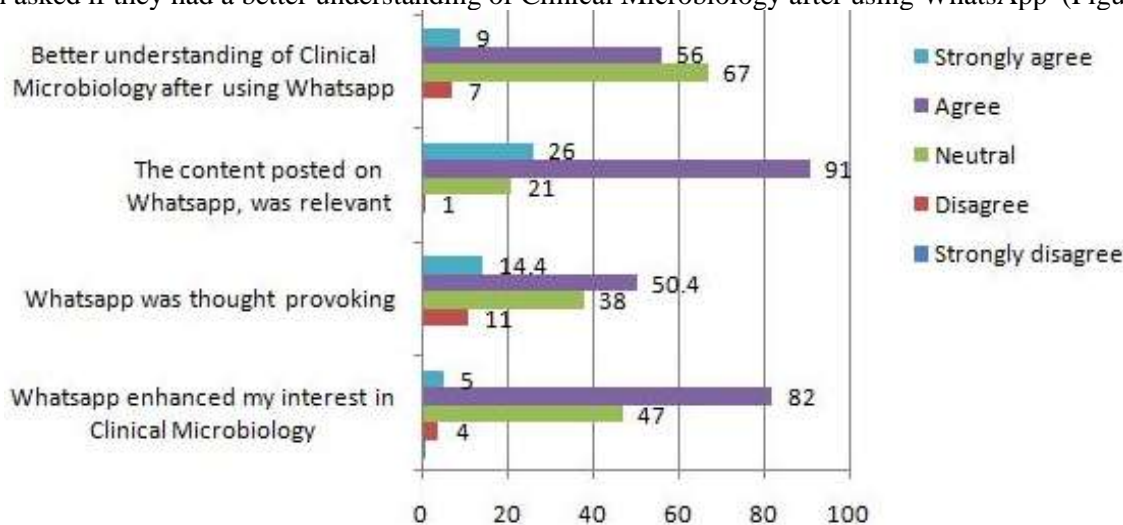
Majority of students agreed for Q1 (59%), Q2 (50.4%), Q3 (65.5%), Q6 (50%), Q7 (41.7%), Q8 (51.8%) and Q11 (51.8%). Majority of them had neutral opinion for Q4 (48.2%), Q5 (43.9%), Q9 (38.1%) and Q10 (38.1%).

**Table 1: Students perception on WhatsApp learning according to Likert Scale**

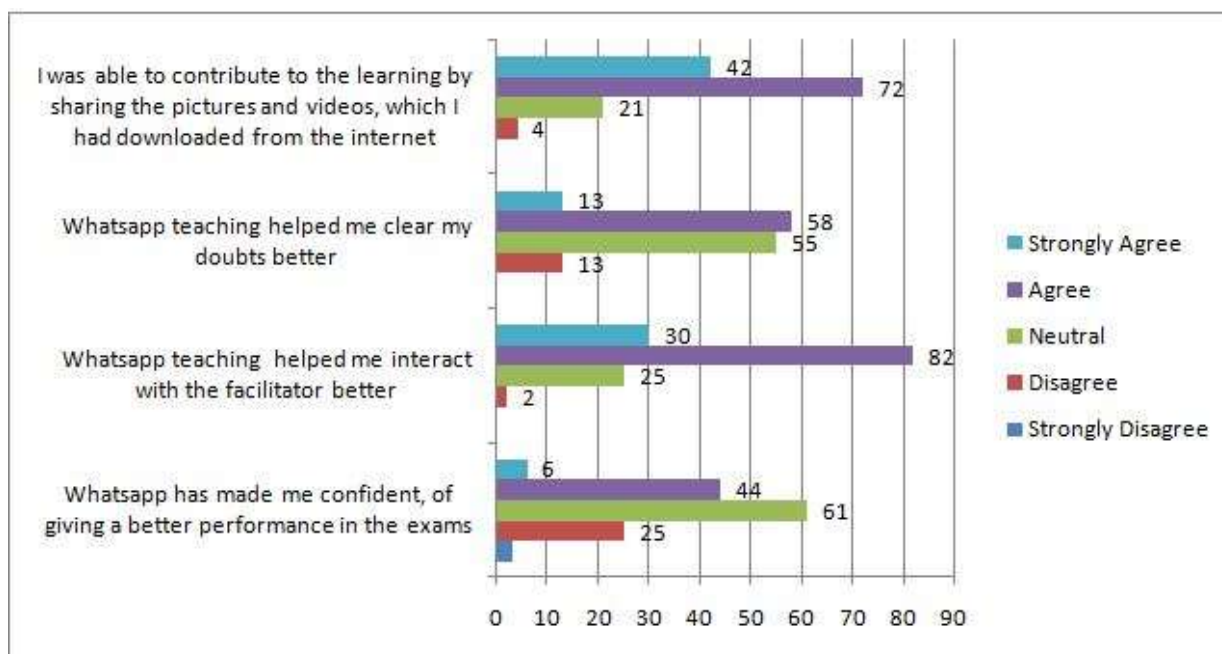
		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
		Count	%	Count	%	Count	%	Count	%	Count	%
Q1	WhatsApp enhanced my interest in Clinical Microbiology	1	0.7%	4	2.9%	47	33.8%	82	<b>59.0%</b>	5	3.6%
Q2	WhatsApp was thought provoking	0	0.0%	11	7.9%	38	27.3%	70	<b>50.4%</b>	20	14.4%
Q3	The content posted on WhatsApp, was relevant	0	0.0%	1	0.7%	21	15.1%	91	<b>65.5%</b>	26	18.7%
Q4	I have a better understanding of Clinical Microbiology after using WhatsApp	0	0.0%	7	5.0%	67	<b>48.2%</b>	56	40.3%	9	6.5%
Q5	WhatsApp has made me confident, of giving a better performance in the exams	3	2.2%	25	18.0%	61	<b>43.9%</b>	44	31.7%	6	4.3%
Q6	WhatsApp teaching helped me interact with the facilitator better	0	0.0%	2	1.4%	25	18.0%	82	<b>59.0%</b>	30	21.6%
Q7	WhatsApp teaching helped me clear my doubts better	0	0.0%	13	9.4%	55	39.6%	58	<b>41.7%</b>	13	9.4%
Q8	I was able to contribute to the learning by sharing the pictures and videos, which I had downloaded from the internet	0	0.0%	4	2.9%	21	15.1%	72	<b>51.8%</b>	42	30.2%
Q9	WhatsApp is more interesting and interactive than the traditional classroom lecture	11	7.9%	32	23.0%	53	<b>38.1%</b>	35	25.2%	8	5.8%
Q10	I would recommend the use of WhatsApp as a T-L method for Clinical Microbiology	5	3.6%	18	12.9%	53	<b>38.1%</b>	52	37.4%	11	7.9%
Q11	WhatsApp motivated me to read out the recent advances on the topic taught	2	1.4%	6	4.3%	21	15.1%	72	<b>51.8%</b>	38	27.3%
Q12	In your own words, describe your learning experience on WhatsApp.	(Open Question)									

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62.6% of the students agreed that WhatsApp enhanced their interest in Clinical Microbiology. 64.8% found WhatsApp thought provoking. 84.2% of the students agreed that content posted on WhatsApp, was relevant to the concept being introduced through social media platform. 48.2% of the students were neutral when asked if they had a better understanding of Clinical Microbiology after using WhatsApp (Figure 2).



**Fig 2: Column diagram showing the distribution of students' response (on a 5 point Likert scale) to questions 1, 2,3 and 4, on the WhatsApp perception questionnaire.**



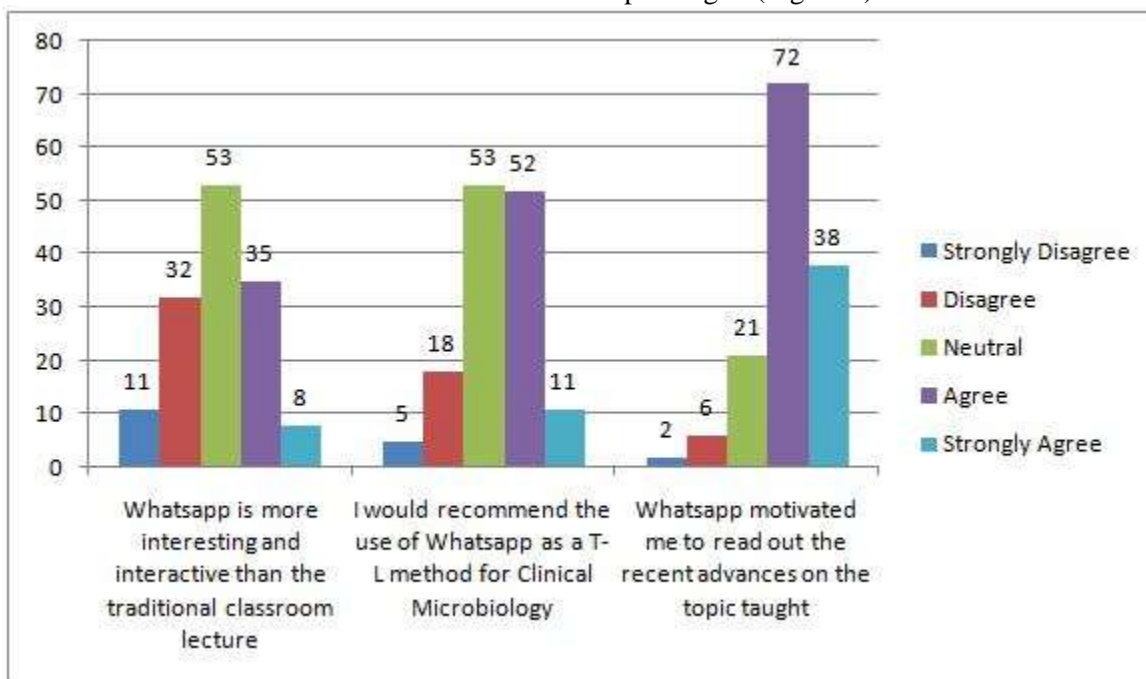
**Fig 3: Column diagram showing the distribution of students' response (on a 5 point Likert scale) to questions 5, 6, 7 and 8, on the WhatsApp perception questionnaire.**

43.9% of the students were neutral when asked if WhatsApp made them confident, of giving a better performance in the exams. 80.6% of the students felt that WhatsApp teaching helped them interact with the facilitator better. 51.1% of the students felt that WhatsApp helped me clear their doubts better. 82%

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of the students felt that they were able to contribute to the learning by sharing the pictures and videos. (Figure 3)

38.1% of the students were neutral when asked if WhatsApp is more interesting and interactive than the traditional classroom lecture. 38.1% of the students were neutral when asked if they would recommend the use of WhatsApp as a T-L method for Clinical Microbiology. 79.1% of the students felt that WhatsApp motivated them to read out the recent advances on the topic taught. (Figure 4)



**Fig 4: Column diagram showing the distribution of students' response (on a 5 point Likert scale) to questions 9, 10 and 11, on the WhatsApp perception questionnaire.**

Question number 12 was an open question. Some of the responses noted to the question number 12 are as follows: WhatsApp teaching although interesting cannot replace traditional classroom teaching. Students observed that their understanding was better with the traditional lecture class. Also in the traditional lecture class, exam oriented teaching is done which the students find very useful. Videos that were posted in WhatsApp teaching group helped the students in understanding the topic better. Coming prepared to class (due to pre-lecture WhatsApp teaching), made them understand the topic better and helped in retention of knowledge. However, they said that there too many messages and WhatsApp was clearly a source of distraction, as they would drift away from the WhatsApp teaching group, to chat with their friends. Also some students would just copy paste, without actually understanding the concept. There was too much of information and they did not know how much to tailored it to the university exams.

## DISCUSSION

E-learning is defined as a computer based educational tool or system that enables us to learn anywhere and at any time (Sharma,2019).With the introduction of smart phones, the way medical students' learn, is changing. They use their smart phones not only for their personal needs, but also for their learning needs, as there is a vast amount of information accessible at the tip of their fingers. As social media platforms are very popular amongst students, they find it more interesting to learn on their smart phones. One such popular application is WhatsApp . As there is no additional investment requirement, WhatsApp becomes



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a cost effective and interesting method for the faculty to adopt it as a platform for e-learning (Gon, 2017; Sharma, 2019; Kurian, 2018). Therefore, this application was used to introduce the students to e-learning and assess their perception towards it.

Each student learns differently (VARK learners). Some are visual (V) learners, some are auditory (A) learners, some are Read/write (R) learners, and some are Kinesthetic (K) learners. Also, the pace at which each student assimilates information is different. WhatsApp can cater not only to different types of learners, but also to different paces of learning. The biggest advantage with WhatsApp is that it can be accessed by students anytime, anywhere and any number of times. In this study, it was observed that WhatsApp scored well in terms of enhancing students' interest (62.6%) in Clinical Microbiology. In this study, students found WhatsApp to be thought provoking (64.8%). These findings are similar to the studies conducted by Mohanakrishnan *et al.*, (2017) and Sharma (2019). These findings reinforce the fact that the students belonging to Gen are keener on the use of technology. WhatsApp also facilitated good student interaction (80.6%) with the facilitator. This is similar to the study conducted by Ranjan (2017). This makes WhatsApp, not only an interesting, but also an interactive methodology for teaching learning. In this study, students found WhatsApp to be relevant (84.2%) and in helping the students to clear their doubts immediately (51.1%). This is similar to the study conducted by Mohesh (2016). 79.1% of the students felt motivated to read about the recent advances in the topic discussed. This is similar to the study conducted by Sharma (2019) who observed that 94% felt motivated to read about the recent advances.

However, the students were not sure, if WhatsApp facilitated good understanding of Clinical Microbiology. They were of the opinion that traditional classroom teaching definitely facilitated good understanding of the subject. The students also noted that since there was pre-lecture WhatsApp teaching, they were able to retain the knowledge better. With regards, to whether they were confident of doing well in the exams, the students were neutral on this, as most of them felt that the traditional classroom teaching, catered to exam oriented teaching. With regards, to whether WhatsApp should be recommended for teaching Clinical Microbiology, neutral response was noted as the students felt that a combination of both WhatsApp and traditional classroom lecture would be better. Neutral response was observed on whether WhatsApp was more interesting and interactive than the traditional classroom lecture, as the students felt that the facilitator could arouse good interaction and interest in conventional teaching. In this study, none of the students used foul language nor exhibited any bad behaviour in the group. This could be attributed to the orientation programme that was conducted before the start of the study. Today, medical colleges aim at producing, life-long, self-directed learners, who can diagnose and address their own learning gaps. E-learning using WhatsApp, is one such platform which can motivate students to become self-directed learners.

#### **Challenges observed in this study**

In this study, it was observed that the activity posted on WhatsApp, did not have the seriousness that a classroom activity has. WhatsApp learning activity was not linked to marks or attendance. Hence, few of the students did not participate. In this study, students reported that there was flooding of messages and also irrelevant messages. They also said that the information was too much to read. Some of the posts were repeated. Very few students were apprehensive to answer in the group and preferred a one-on-one interaction with the facilitator. This finding is similar to studies conducted by Dyavarishetty (2017) and the study conducted by Sharma (2019). Some of the students felt that their classmates were posting study material, only to impress the facilitator. Some of the students, who had not seen or posted study material in the group, had issues with internet connectivity and data mobile charges. This same observation was noted in the study conducted by Gon (2017). One student, who did not post any study material in the WhatsApp group, had some eye problem, due to which she is unable to see blue light on the mobile screen. Due to this condition, she did not use her mobile much.

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As a facilitator, it was difficult to check if the students were cut, copying and pasting the same messages. It was difficult for the facilitator to ensure, that all students participated, as the class strength was big (139 students). E-learning requires more self - directed learning than the conventional teaching. This should motivate more self - directed learning in our future doctors, as laid down by MCI. However, in this study we did observe that the less motivated students failed to participate in the WhatsApp group discussion. This finding is similar to studies conducted by Sharma (2019). Also it was difficult to check, if the students had actually read the messages and if they had understood the content. The facilitator had to send reminders to motivate students to participate. It was difficult to ensure the authenticity of the study material posted by the students. From the facilitator's perspective, WhatsApp teaching is time consuming. It takes a lot of planning, to schedule and execute the WhatsApp teaching - learning module. What is even more challenging is the flooding of messages. It is not possible to reply to each and every message. It is very difficult to give individual feedback to the students. This problem is further complicated, as some of the students neither have a profile picture, nor do they have their proper names on the WhatsApp profile. These findings are similar to a studies conducted by Mohesh (2016) and Gon (2017).

## CONCLUSION

As the students are already very familiar with WhatsApp , they are more than ready to use it as a platform to learn. The ease and accessibility and at no extra cost, WhatsApp is a good platform to introduce e-learning in Clinical Microbiology. Although WhatsApp allows the student to access information, anytime, anywhere and at their convenience, it cannot replace traditional teaching Sharma (2019).Therefore, a blended course is recommended, which has both e - learning, as well as face-to-face interaction. Such blended learning, is the need of the hour (Dyavarishetty, 2017; Patricia McGee, 2012).Hence, one can deduce that WhatsApp cannot totally replace traditional lectures. WhatsApp can be used along with traditional classroom lecture; to enhance the learning experience for the students.I would like to conclude with this quote from Benjamin Franklin: “Tell me I forget, teach me I remember, involve me I learn.” The use of WhatsApp in e-learning, can help us to gain the involvement of the students, in the teaching - learning process, which is both interesting and interactive.

## ACKNOWLEDGEMENTS

I acknowledge my mentors at St. John's Medical College, Dr. Nachiket, Dr. Sunitha, Dr. Farah and Dr. John. I would like to thank the Managing Director of BGS Group of Institutions Sri Sri Dr. Prakashnath Swamiji for the encouragement he gives to research. I would like to thank our dynamic Principal Dr. M.E. Mohan Sir, for all the motivation. I would like to thank all the medical students who participated with a great deal of enthusiasm, in this study.

**Conflict of interest:** None

**Source of support:** None

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Sl. No.	Question	Strongly Disagree	Disagree	Neutral	Strongly Agree	Agree
1.	WhatsApp enhanced my interest in Clinical Microbiology.					
2.	I found WhatsApp thought provoking.					
3.	The content, posted on WhatsApp, was relevant to the concept being introduced through social media platform.					
4.	I have a better understanding of Clinical Microbiology after using WhatsApp.					
5.	I am confident of giving a better performance in the exams.					
6.	WhatsApp teaching helped me interact with the facilitator in better way.					
7.	WhatsApp teaching helped me clear my doubts better.					
8.	I was able to contribute to the learning by sharing the pictures and videos, which I had downloaded from the internet.					
9.	WhatsApp is more interesting and interactive, than the traditional classroom lecture.					
10.	I would recommend the use of WhatsApp as a T-L method for Clinical Microbiology.					
11.	WhatsApp helped/motivated me to read about the recent advances on the topic taught.					
12.	In your own words, describe your learning experience on WhatsApp.	(Open Question)				

**Note:** 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.