

Effectiveness of Whatsapp as a Teaching Learning Tool in Biochemistry for I MBBS Students

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Abstract

Aim: The present research study aims to study the effectiveness of WhatsApp as a teaching learning tool in biochemistry for I MBBS students. **Objectives:** To enhance the ability of students to apply their knowledge of biochemistry to clinical case scenarios using WhatsApp as a medium of instruction and to evaluate the effectiveness of WhatsApp as a medium of teaching complementary to traditional teaching. **Materials and Methods:** Institutional ethics committee approval was obtained. I MBBS students were enrolled after obtaining their informed consent. WhatsApp group was formed involving the students and faculty of the department of biochemistry. Study period: 3 months (April – June 2018). Sample size: 131 I MBBS students. Topics that were earlier taught by didactic lectures were chosen and clinical scenario based discussion on those topics were initiated in the WhatsApp group thus created. Pre-test and post-test questionnaires were given before and after the WhatsApp based discussion and student feedback about the WhatsApp based teaching method was also obtained. **Results:** The pre-test and post-test scores were compared using paired t test and it was observed that the performance of students improved significantly after the WhatsApp sessions. An analysis of feedback from students has revealed that 78% of students felt that the WhatsApp sessions helped them to logically analyse the information taught and another 71% felt that it helped them apply their knowledge of biochemistry to clinical case scenarios. The students perceived the WhatsApp based teaching method to be effective, as evident from their feedback. **Conclusion:** It is evident from the study that the WhatsApp based case discussion has proved to be an effective supplement to conventional mode of teaching, though it cannot totally replace the conventional method. Therefore, it can be concluded that the social media has the potential to revolutionize medical education in the future.

Keywords: WhatsApp based teaching method, Clinical scenario based discussion.

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INTRODUCTION

Health professionals need to develop analytical and diagnostic thinking skills which would help them to make the right diagnosis and thus aid them in proper treatment of the patient. Biochemistry is one of the basic medical sciences in the medical curriculum, the knowledge of which is required in understanding the future clinical sciences. The traditional system of medical education involves didactic lectures which is more teacher centered, with minimal active participation from the students and hence, the students lacked critical thinking. But nowadays, the education system is changing to a student centered teaching-learning process with the use of various innovative teaching methods. This makes the students actively involved in the process of learning and it thus prepares them for a lifelong self-directed learning process [1].

Case based learning is now an established active learning tool which aims at developing reasoning skills, based on the clinical scenarios [2].

In this study, the teaching approach involves the incorporation of innovative teaching method (Case discussion using WhatsApp), to make the learning process student centered. A study by Thakur et al found that the participants felt that the lectures didn't stimulate their learning [3]. Case studies are ideal to develop higher order reasoning skills [4]. They are also believed to increase students' motivation to learn. It is due to the time constraint that case based learning has not been extensively used in the undergraduate curriculum so far. Time is no longer a constraint if these case discussions are done through social media like WhatsApp which is accessible to students and faculty

anytime and anywhere and thus saves a lot of classroom time.

A comparative study found that there was significant difference in the achievement and attitudes of the group exposed to learning through WhatsApp as compared to the group exposed only to didactic lectures in the classroom [5]. Another experimental study showed that when WhatsApp is used as a tool for mobile learning in a blended strategy, the outcome was better as compared to the traditional learning alone [6]. An in-depth interview with high school teachers who were using WhatsApp also revealed its advantages as a tool for communication [7]. WhatsApp is an effective social media tool to motivate, augment and perhaps improve the learning of undergraduates when used along with traditional teaching. The present research study aims to study the effectiveness of WhatsApp as a medium of teaching complementing the traditional teaching to enhance the knowledge and skills of the undergraduate medical students.

MATERIALS AND METHODS

After obtaining Institutional Ethics Committee approval and consent from the students, the study was designed among 131 I MBBS students in the Department of biochemistry at SMMCH&RI. The students were already accustomed to using WhatsApp as a modality of social conversation. They were sensitized to the research study. A WhatsApp group was formed involving all 131 students and the faculty of biochemistry.

Four topics of clinical relevance in biochemistry (Diabetes Mellitus, thyroid dysfunction,

acid base disturbance and protein energy malnutrition) that were already taught by didactic lectures were selected and each topic discussed for a period of 3 weeks. The clinical scenarios were formulated in the above topics by a core faculty work group. To obtain validity of the case based scenarios, they were circulated within and across disciplines among the college faculty and modified as per the feedback. Pre-test and post-test questionnaires in the form of MCQs in the selected topics were framed and a student feedback form was developed and both validated involving a group of faculty. A pre-test questionnaire was given to all the students and the response collected before the WhatsApp based discussion. Case studies were posted in the group and the students were asked to submit their responses within a definite time period. This was followed by a WhatsApp based discussion involving the students and faculty in the group. At the end of the discussion a post-test questionnaire was given to the students and their response obtained. The pre-test and post-test scores were compared. The second outcome measured was the participation rate in the discussion. The participation rate in the discussion on WhatsApp was assessed by counting the number of students submitting their responses on WhatsApp. Frequency and percentages of participation were calculated. Students' feedback was collected with regard to the WhatsApp sessions. Faculty feedback was also obtained to assess their perceptions about the process.

RESULTS

The pre-test and the post-test scores, before and after the Whatsapp based discussion were compared and the findings are represented in Fig-1.

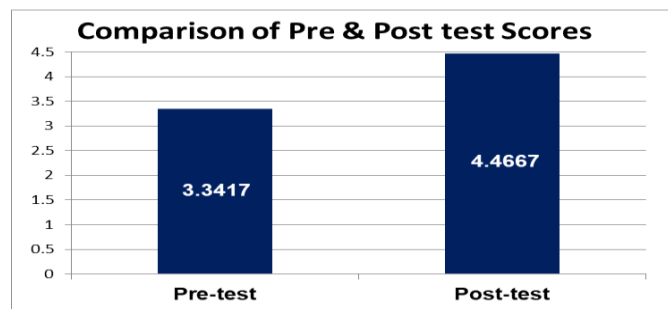


Fig-1: Comparison of Pre and Post test scores

The mean post-test score of students is found to be higher than the pre-test scores.

Table-1: Paired samples t- test
Paired samples t-test

Sample 1	Pre-test
Sample 2	Post-test

	Sample 1	Sample 2
Sample size	131	131
Arithmetic mean	3.3417	4.4667
95% CI for the mean	3.0149 to 3.6685	4.1836 to 4.7498
Variance	3.2688	2.4527
Standard deviation	1.8080	1.5661
Standard error of the mean	0.1650	0.1430

Paired samples t-test

Mean difference	1.1250
Standard deviation of differences	1.8083
Standard error of mean difference	0.1651
95% CI	0.7981 to 1.4519
Test statistic t	6.815
Degrees of Freedom (DF)	119
Two-Tailed Probability	P < 0.0001

Differences

D'Agostino-Pearson test for Normal distribution of differences	accept Normality (P=0.2716)
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Table-1 shows that the pre-test and post-test scores when compared using paired t test showed a p value < 0.0001, indicating that the performance of students improved remarkably after the WhatsApp sessions

The feedback received from the students about this innovative teaching method is represented as a bar diagram in Fig-2 shown below.

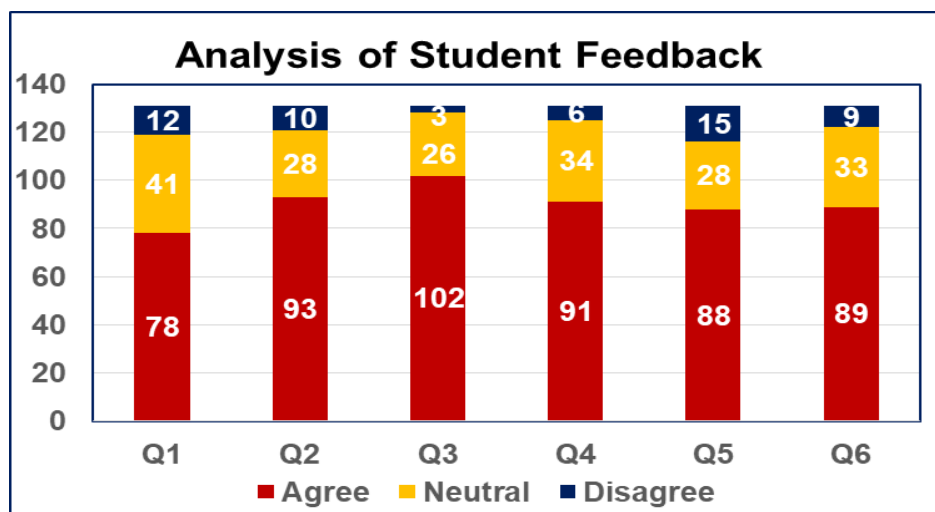


Fig-2: Analysis of feedback from students

- Q1: Do you think the WhatsApp case discussions stimulated your learning and made it interesting?
- Q2: Do you think these sessions helped you apply your knowledge of biochemistry to clinical case scenarios?
- Q3: Do you feel that these sessions helped you to logically analyse the information taught to you?
- Q4: Do you now understand the concepts taught to you clearly?
- Q5: Did you find the WhatsApp group discussion to be useful?
- Q6: Do you want to have further discussions on WhatsApp on other topics?

An analysis of feedback from students has revealed that 78% of students felt that the WhatsApp sessions helped them to logically analyse the information taught and another 71% felt that it helped them apply their knowledge of biochemistry to clinical case scenarios. The overall student perception was that the WhatsApp based teaching method was effective and they wanted to have further such discussions in other topics in the subject.

The participation rate of students in the discussion was calculated and it was observed that the

participation decreased with time and it was also lesser during the internal assessment examinations.

CONCLUSION

It is evident from the study that The WhatsApp based discussion has proved to be an effective supplement to conventional mode of teaching, though it cannot totally replace the conventional method. Therefore, it can be concluded that the social media has the potential to revolutionize medical education in the future.

REFERENCES

1. West, D. C., Pomeroy, J. R., Park, J. K., Gerstenberger, E. A., & Sandoval, J. (2000). Critical thinking in graduate medical education: A role for concept mapping assessment?. *Jama*, 284(9), 1105-1110.
2. Herreid, C. F. (1994). Case Studies in Science--A Novel Method of Science Education. *Journal of College Science Teaching*, 23(4), 221-29.
3. Thakur, A. B., Upadhyay, R., Wavare, R. R., & Deshpande, A. R. (2016). Perception Towards Community Medicine as a Subject and Career Option among Medical Students in a Medical College, Indore, Madhya Pradesh. *Nil J Community Med*, 7, 430-4.
4. Herreid, C. F. (1994). Case Studies in Science--A Novel Method of Science Education. *Journal of College Science Teaching*, 23(4), 221-29.
5. Amry, A. B. (2014). The impact of whatsapp mobile social learning on the achievement and attitudes of female students compared with face to face learning in the classroom. *European Scientific Journal, ESJ*, 10(22), 116-136.
6. Barhoumi, C. (2015). The Effectiveness of WhatsApp Mobile Learning Activities Guided by Activity Theory on Students' Knowledge Management. *Contemporary Educational Technology*, 6(3), 221-238.
7. Bouhnik, D., Deshen, M., & Gan, R. (2014). WhatsApp goes to school: Mobile instant messaging between teachers and students. *Journal of Information Technology Education: Research*, 13(1), 217-231.