

Comparison of effectiveness of WhatsApp and Facebook as learning tool for the students of a medical college

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Abstract

Objective: To compare the effectiveness of Facebook and WhatsApp as learning tools for undergraduate medical students in ophthalmology.

Methods: The quantitative, quasi-experimental study was conducted at Khawaja Muhammad Safdar Medical College, Sialkot, Pakistan from October 2017 to March 2018, and comprised 4th year medical students. A pre-test of ophthalmology topics was taken and participants were divided into Facebook and WhatsApp groups by gender-based stratified randomisation. Four topics were taught through Facebook and WhatsApp to the relevant groups and post-test was taken using multiple choice questions. Data was analysed using SPSS 20.

Results: Of the 100 students, 35(35%) were males and 65(65%) were females. The overall mean age was 21.76 ± 0.85 years (range: 20-24 years of). The two groups had 50(50%) subjects each. A significant difference was found between pre- and post-test results of both the groups ($p < 0.001$). There was no significant difference between the groups ($p > 0.05$) neither the baseline nor post-intervention. There was significant difference along gender lines ($p > 0.05$).

Conclusion: Facebook and WhatsApp as learning tools had no significant difference in terms of impact on the learning process.

Keywords: Social media, Learning, Facebook, WhatsApp, Medical students. (JPMA 70: 1705; 2020)

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Introduction

Teaching in the 21st century is considered an exciting activity mainly due to the availability of resources, collaboration and better opportunities. The social networking through online resources is not a new concept which results in the connection of people for personal interests and requirements.¹ The use of social media enables participative learning and also works as a constructivist tools for teaching and learning activities.² Similarly, the role of the teacher has been shifted to that of a facilitator rather than an information-provider.³ Importantly, social media is an economical tool for global collaborations. A relevant research concluded that students using technology-related tools had an improved interaction in the classroom as described by 77% of the teachers.² Moreover, around 80% of the young individuals have an account on social networking websites.²

Technology has made a vital alteration in the way of

interaction between students and teachers. The phenomenon can be observed in educational institutions as well. Multiple sites for social networking are available, but Facebook is among the most commonly used application with 350 million active users.⁴ A study about the use of smart phones and mobile applications among youngsters found that 95% of the participants were using smart phone as the primary device.⁵ Significantly, all teachers and nearly 75% of students had personal smart phones, and around 85% of the students and 95% of the teachers had access to internet.¹ WhatsApp has also been used as a major tool for socialisation by teachers and students, and both were found willing to improve their educational experiences through the use of this application.¹ WhatsApp is among the advanced and widely-used applications on smart phones. Around 18% of the users of WhatsApp belonged to the 17-25 years age group which mainly consists of students. Although this application is generally used for socialisation, it is also used for educational purposes.⁶ WhatsApp provides an opportunity to discuss topics and involve learners in collaborative and cooperative online educational activities.

Medical education is using these tools, and WhatsApp is an important application for the enhancement of motivation and knowledge-seeking attitude of learners. There is substantial increase in the use of social media and social networking tools among students of different

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educational institutions in Pakistan. Studies regarding the use of different social media applications about their role in medical teaching and learning activities are available,^{7,8} but comparative studies regarding the effectiveness of Facebook and WhatsApp for undergraduate teaching, especially in the Pakistani context, are not many. The current study was planned to compare the effectiveness of Facebook and WhatsApp as learning tools among undergraduate medical students.

Subjects and Methods

The quantitative, quasi-experimental study was conducted at Khawaja Muhammad Safdar Medical College, Sialkot, Pakistan from October 2017 to March 2018. The study design was chosen in line with literature.⁹ After approval from the institutional ethics review committee, 4th year medical students in the ophthalmology class were enrolled using census sampling technique. Ophthalmology is a part of 4th year undergraduate curriculum and, therefore, only the fourth year students were targeted.¹⁰ After taking written informed consent, a pre-test was conducted involving all the participants. Later, they were randomly segregated into two equal groups; one for teaching through Facebook, and the other for teaching through WhatsApp. The researchers prepared and collected uniform resource material for teaching and learning of the participants in both the groups. Customized 12 Power Point presentations were prepared about four topics of ophthalmology, including cataract, glaucoma, refractive errors and retinal vascular diseases. Also, relevant 24 videos of lectures and surgical procedures were selected from the internet. The teaching lasted one month from the last week of January 2018 to the last week of February 2018. Two videos and one Power Point presentation were forwarded to all the participants in both groups on alternative days. After each post, relevant questions posted on the following day on WhatsApp and Facebook to generate discussion among group members which was monitored and guided by the researchers. Uniformity of the questions for both the groups was ensured and a pool of 141 scenario-based multiple choice questions (MCQs) from the four designated topics. These MCQs were sent to three subject experts qualified and experienced both in ophthalmology and medical education for categorisation into three different areas based on the level of difficulty. Later, 100 MCQs were selected, including 30 each for cataract and glaucoma, and 20 each for refractive errors and retinal vascular diseases. In terms of level of difficulty, there were 40 easy, 40 moderate and 20 difficult questions. These 100 MCQs were divided into two sets of 50 each for pre-test and post-test, which were taken in the class room. Demographic profile of the participants was

also noted. Data was analysed using SPSS 20. Different variables were compared using independent sample t-test and paired sample t-test. $P < 0.05$ was considered significant.

Results

Of the 100 students, 35(35%) were males and 65(65%) were females. The overall mean age was 21.76 ± 0.85 years (range: 20-24 years of. The two groups had 50(50%) subjects each. There was a significant difference between pre- and post-test results of both the groups ($p < 0.001$). However, there was no significant difference between the groups (Table-1).

Among male participants, there was no significant difference between WhatsApp and Facebook groups both in pre-test and post-test ($p > 0.05$). The same was true of the female participants (Table-2).

The pre-test score of WhatsApp group among males was lower than female but the difference was not significant ($p = 0.102$). In Facebook group, pre-test score of males was not significantly different from females ($p = 0.976$). Post-test score of WhatsApp group among males was lower than females, but the difference was not significant ($p = 0.102$). In

Table-1: Comparison of pre- and post-test scores for the two study groups.

	WhatsApp	Facebook
Pre-Test (Mean $\pm$ Standard Deviation)	12.46 $\pm$ 4.34	30.94 $\pm$ 4.44
Post Test (Mean $\pm$ Standard Deviation)	13.92 $\pm$ 4.23	30.78 $\pm$ 5.19
p-value (+Independent sample t test)	0.092+	0.869+
p-value (*Paired sample t test)	<0.001*	<0.001*

Table-2: Comparison of pre-test and post-test according to study groups and gender.

Gender	Test	WhatsApp (Mean $\pm$ SD)	Facebook (Mean $\pm$ SD)	p-value
Male	Pre-Test	11.06 $\pm$ 3.80	13.94 $\pm$ 5.25	0.073+
	Post Test	30.59 $\pm$ 4.81	30.83 $\pm$ 5.57	0.890+
Female	Pre-Test	13.18 $\pm$ 4.48	13.91 $\pm$ 3.63	0.477+
	Post Test	31.12 $\pm$ 4.31	30.75 $\pm$ 5.06	0.751+

+Independent sample t test.

Table-3: Comparison of pre-test and post-test according gender within study groups.

Gender		Male	Female	p-value
Pre-Test	WhatsApp	11.06 $\pm$ 3.80	13.18 $\pm$ 4.48	0.102+
	Facebook	13.94 $\pm$ 5.25	13.91 $\pm$ 3.63	0.976+
Post Test	WhatsApp	30.59 $\pm$ 4.81	31.12 $\pm$ 4.31	0.692+
	Facebook	30.83 $\pm$ 5.57	30.75 $\pm$ 5.06	0.957+

+Independent sample t test. *Paired t test.

Facebook group, post-test score of males was not significantly different from females ($p=0.957$) (Table-3).

Discussion

The two mostly commonly used social networking platforms are Facebook and WhatsApp and they were used for teaching and learning purposes in the current study, and were found to be an effective aid to classroom teaching and learning, but one was not superior to the other. WhatsApp showed slightly more student engagement compared to the Facebook which may be due to its quick access through mobile phone, and cost-effectiveness in the shape of mobile internet packages in Pakistan. Our findings are consistent with the results of a previous study which concluded that WhatsApp is an effective tool to motivate, augment and perhaps improve the learning of undergraduate medical students.¹¹

There is a dramatic increase in the use of social networks for education. The technological and social applications provide an open mega door for learning activities. The use of social networking in academics is becoming a common practice and the number of faculty utilising social networking for professional purposes is increasing. Due to the use of this media the relationships between teachers and students have moved into an unfamiliar area requiring clear policy and guidelines to create a balance between the expectations, culture and ethical obligations.¹² The findings of the present study favour the conclusion of another study describing that students enthusiastically and swiftly asked and answered questions and also shared new knowledge after the class. This suggests that social media applications have a great potential to contribute to the post-class and life-long learning of medical professionals.¹³ The current study found that both Facebook and WhatsApp were effective learning tools. The findings are contrary to the results of a study among undergraduate and graduate students at a large Midwestern university in the United States which concluded that the Facebook users had lower grade point averages (GPAs).¹⁴ The data of the US study was collected through a questionnaire and majority of the participants were students of humanities and social sciences.¹⁴ However, another relevant study concluded the value of Facebook use in the learning and teaching process of science concepts as an adjunct tool.¹⁵ The results of the present study are also in accordance with the findings of another study revealing that majority of the participants agreed that the advantages of Facebook were easy interaction, comfort in getting information, easy to use and easy to share information while most people viewed the only disadvantages as the platform being too open to public.¹⁶

The results of the current study are in contrast with the findings of another international research which concluded that the use of Facebook had a negative impact regarding students' perceptions about the quality of the content, student-teacher interaction and performance.¹⁷ However, the results regarding the effectiveness of Facebook are in line with a relevant research concluding that there is a significant association between the intended learning outcomes and overall academic achievement of the learners with the use of Facebook as a learning tool. The study also affirmed that Facebook enhanced interaction and helped to solve the queries of the studies.¹⁸ A qualitative study regarding the experiences of the faculty members about the use of Facebook as an educational tool supported the results of the current study by describing that it had more benefits than drawbacks.¹⁹ The results of the present study demonstrated the effectiveness of WhatsApp as a learning tool for undergraduate medical students. These results are aligned with the findings of another study about the impact of WhatsApp mobile learning on achievements.²⁰ The results are consistent with the findings of a study which concluded that 63.8% female students and 77.7% male students ranked the activity of WhatsApp use in medical education as high or above. This study was about the perceptions of the students regarding the potential of WhatsApp as an instructional strategy for teaching and learning in medical education.¹¹ It was based on a Likert-scale questionnaire and WhatsApp was used as an adjunctive learning tool along with the traditional teaching in undergraduate ophthalmology.¹¹ The results of another study favour the finding of the current study by concluding that WhatsApp assistance was highly acknowledged by the learners with 74% positive response as a learning and communicative interaction. This was a descriptive study to assess the outcome of the curricular assistance given to the students over WhatsApp for almost over 8 months and the relevant perception regarding WhatsApp-assisted learning was compiled by the use of a questionnaire.⁷

The limitations of the current study include a small sample size, single-centre status and the inclusion of only two social media tools. Also, the study design may lack in one or two fundamental study elements of a true experimental design, including control group, randomisation and intervention. There was no control group in the current study.⁹

Conclusion

Social media applications Facebook and WhatsApp were found to be equally effective learning tools for undergraduate teaching in ophthalmology. There was no

significant difference in their effectiveness. Both genders in either group had no difference in achievement of grades in post-test.

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