

The Effect of WhatsApp Messaging on Learning Paediatrics During Clinical Rotation of Final Year MBBS Medical Undergraduates

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ABSTRACT

Objective: To determine the impact of WhatsApp Messaging on learning paediatrics during clinical rotation of final year MBBS medical undergraduates.

Study Design: Quasi-Experimental study

Place and Duration of Study: Bahria University Medical and Dental College, Karachi Pakistan, from Apr to Oct 2018.

Methodology: Final year MBBS students attending the Department of Paediatrics for three months of clinical rotation were randomly allocated to two Groups. Group-A was the control Group without WhatsApp, and Group-B was the intervention Group with WhatsApp messaging. Both Groups had a pre-test and post-test before and after their clinical rotation. The evaluation was performed before and after clinical rotation using Multiple choice questions (MCQs) for the final evaluation.

Results: Of a total of 80 students, 19(23.8%) were males, and 61(76.3%) were females, with a median age of 23(22-23) years. Of 40 students in the WhatsApp Group, active participation was observed in 37(92.5%) students, whereas the quality of the shared content by students was found to be adequate/relevant in 35(87.5%) cases. The median score was significantly higher in both Groups' clinical rotation test than in the pre-clinical rotation assessment (p -value <0.001). However, the median score of the post-clinical rotation test was significantly higher in the WhatsApp Group than in the non-WhatsApp Group (p -value <0.001).

Conclusion: WhatsApp was found to be a highly effective tool for learning paediatrics among medical students during their clinical attachment.

Keywords: Clinical attachment, Paediatrics, Ubiquitous learning, Undergraduate medical education, WhatsApp.

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INTRODUCTION

As the technology evolved, so has the learning experience. From formal to informal learning, mobile phones also changed the timing and location of the learning environment.^{1,2} Modern Learning strategies using technology such as cell phones effectively support learning, even during lectures, if used appropriately.³ Studies from the developed world mostly refer to handheld devices like iPads, iPods, and Black-Berrys.^{4,5} In developing countries with resource-constrained environments, cell phones and WhatsApp messaging can be used in medical education to enhance teaching and learning.⁶

Various studies have reported the utility of communication apps such as WhatsApp in medical education.⁷ Pediatrics is taught as a separate subject in the final year of the undergraduate medical program in Pakistan. There is a need to assess the efficacy of

communication apps, such as WhatsApp messaging, to enhance paediatric learning in undergraduates.^{8,9}

In addition to its usage for social networking and communication, this media must be utilized after working hours and on weekends, if required, through one of the most frequently used messaging applications to enhance learning.¹⁰ Thus, this study was planned to compare the two teaching methodologies, teaching paediatrics without WhatsApp messaging and teaching paediatrics using WhatsApp messaging, in terms of end-of-rotation test results in final-year MBBS students and evaluate the impact of this intervention on students' learning.

METHODOLOGY

The quasi-experimental study was conducted at Bahria University of Medical and Dental College, Karachi, Pakistan, from April to October 2018 after ethical approval from IERB (Number ERC/2018/PAEDS).

Inclusion Criteria: Final-year MBBS students doing a three-month Paediatrics rotation were included.

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Exclusion Criteria: Students who were absent for more than two weeks during their rotation, those who did not possess a smart-phone or were unfamiliar with Whatsapp, those who had unavailability of Wi-Fi or mobile network, were excluded.

Written informed consent was taken from all participants in the study. Group-A was taught per the routine practice without WhatsApp messaging, followed by an end-of-rotation test. The second intervention, Group-B routine teaching, was augmented by teaching via WhatsApp messaging and end-of-rotation testing. Both Groups had a pre-test before, while the post-clinical rotation results were recorded at the end of the rotation.

Mobile learning was defined as coming to know through conversations across multiple contexts among people and personal interactive technologies. The availability of smart phones with the WhatsApp messaging application, familiarity with their use and the availability of Wi-Fi access or mobile networks was confirmed by all students before enrolling in the WhatsApp Group. The WhatsApp Group was made in which all students enrolled in the WhatsApp Group were added. The purpose of the Group was explained. There were relatively flexible guidelines. The main purpose of the Group was to discuss scenarios and cases related to paediatrics. In order to maintain the integrity of the main purpose of the Group, discussion on topics other than pediatric cases was prohibited.

For the learning, students were allowed to post any case or scenario to discuss. Moreover, they were also to share short learning material as well. Regularly, 2-3 cases were posted by the principal investigator for the active discussion on the Group. After 24 hours of a post, the principal investigator shared a key finding of the case and diagnosis and differential diagnosis.

The evaluation was performed before and after clinical rotation. Multiple choice questions (MCQs) method were used for assessment at the time of starting clinical rotation in both Groups for the evaluation. This information These evaluation marks along with demographic characteristics of the participants and their interest in the Group like the total number of messages, images, webpage links shared, level of contribution (active/non-active), and competency relevance, i.e., contribution in education-related topic only or other than education topic or both, were noted.

Statistical Package for Social Sciences (SPSS) version 24.0 was used for the data analysis. As the

normality assumptions were unmet, all the quantitative variables were explored using the median and interquartile range, whereas frequencies and percentages were calculated for qualitative variables. Inferential statistics were explored using the Mann-Whitney U, and Wilcoxon signed rank tests. The *p*-value of ≤ 0.05 was considered as significant.

RESULTS

Of the total 80 students, there were 19(23.8%) males and 61(76.3%) females, and the median age of the students was 23(22-23) years. Of 40 students in the WhatsApp-Group, the median number of messages, images, and webpage links shared by students were 14(12-15), 5(4-6), and 2(0-3), respectively. The median total contents shared by students were 19(18-24) (Table). Active participation was observed in 37(92.5%) students, whereas quality of the shared content by students was found to be competent in 35(87.5%) cases.

Table: Descriptive Analysis of Content Shared on WhatsApp-Group (n=40)

	Median (IQR)	Min	Max
Parameters			
Messages	14(12-15)	10	35
Images	5(4-6)	3	10
Webpage Links	2(0-3)	0	3
Content	19(18-23)	15	42
Age ≤ 23 years			
Messages	14(12-15)	12	35
Images	5(4-5)	3	9
Webpage Links	2(0-3)	0	3
Content	19(18-21)	16	42
Age > 23 years			
Messages	12(10-15)	10	24
Images	5(3-6)	3	10
Webpage Links	0(0-3)	0	3
Content	15(15-24)	15	34
Males (n=8)			
Messages	13(11-14)	10	14
Images	5(4-5)	3	5
Webpage Links	0(0-2)	0	2
Content	17(15-20)	15	21
Females (n=32)			
Messages	14(12-16)	12	35
Images	5(4-6)	3	10
Webpage Links	2(0-3)	0	3
Content	20(18-24)	16	42

The comparison of the pre and post-clerkship test results showed that the median score was significantly higher in post-clinical rotation as compared to the pre-clinical rotation assessment (*p*-value < 0.001) in both Groups. However, the median score in the clinical rotation test was significantly higher in the case Group than in the Control Group (*p*-value < 0.001) (Figure).

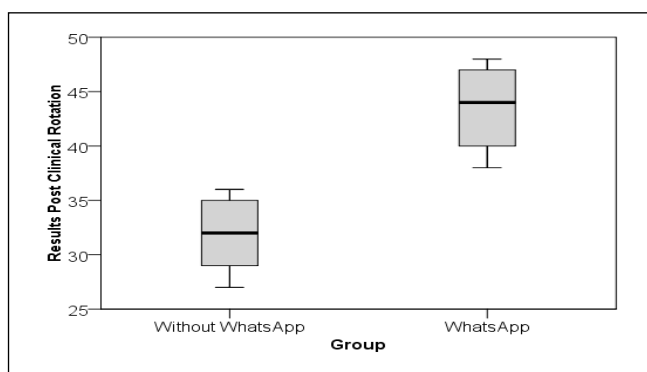


Figure: Median Score Level Post Clinical Rotation in each Group(n=80)

DISCUSSION

According to the current study findings, the median score post-clinical rotation was significantly higher in students who were in the WhatsApp Group as compared to the students who were not in the WhatsApp Group. Though studies on the topic are scarce, a similar kind of study conducted among dental students by Zhang *et al.* reported that the students and tutors were quite satisfied with the process of the Android application for messaging for problem-based learning and appreciated the Group members' contributions and performance. In their study of Zhang *et al.*, the "WeChat" app was quite similar to WhatsApp.⁹ However, as WhatsApp is the most popular and widely used application, in the current study, we used WhatsApp. However, a study conducted among Saudi medical students by Alkhalaf *et al.* reported no significant role of WhatsApp messaging in academic performance. They further reported the addiction to mobile phone use among students.¹⁰ The probable reason for the failure of their study could be because the study was conducted among medical students during their academic sessions first and second-year medical students in contrast to our study, which was conducted during a clinical attachment. Many studies evaluated WhatsApp or other related application as a learning tool during clinical attachment has reported satisfactory performance.¹¹⁻¹³

The current study's findings have shown that active participation was observed in ninety-two per cent of students. In contrast, the competency of sharing content was found in eighty-seven per cent of the cases. The findings are supported by a previous study in which they reported that all students who were on clinical attachment were active in initiating and participating in conversation within the Groups.¹⁴

Thus, almost all studies on a similar topic have reported the efficacy of WhatsApp and related application usage for teaching purposes.^{15,16} However, this mode of learning has some common disadvantages or weaknesses. It is reported that the availability of cell phones supporting WhatsApp is a mandatory requirement. Conversely, a small screen and multitasking can affect the overall performance and lead to boredom and fatigue.^{17,18}

LIMITATIONS OF STUDY

Study sample was very limited. However, the limited sample size in this study will help improve learning opportunities. A large number of participants in a WhatsApp Group will eventually lead to content overload and distraction, eventually disturbing and distracting students all the time and thus minimising the learning opportunity. Secondly, the study needs more participant feedback regarding learning opportunities, particularly in the WhatsApp Group. The feedback and perspective of the participants are very important. They will not only highlight the pros and cons of WhatsApp for learning but would be an opportunity to improve the teaching on WhatsApp in future.

CONCLUSION

In this experimental study, WhatsApp was found to be a highly effective tool for teaching paediatrics to medical students during their clinical attachment. Such studies are highly recommended in the future, especially after the COVID-19 pandemic. The use of virtual learning in undergraduate medical education is indeed a new way of learning but requires continuous monitoring and evaluation for improvement.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

QM: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

AU: & SH: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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