ORIGINAL ARTICLE

WhatsApp an informal learning and communication tool: Perception of medical officers working in low resource setting: A Focus Group Discussion

Ambareen Khan,[1] Ambreen Usmani,[2] Tanwir Khaliq[3]

Abstract

Objective: To assess if WhatsApp communication improves clinical knowledge and to explore the perception of its use among medical officers at a secondary care facility.

Methods: The mixed method study was conducted at the Department of Obstetrics and Gynaecology, Aga Khan Hospital for Women and Children, Kharadar, Karachi, from May to July,2018, and comprised medical officers working at the secondary care facility. All the officers were added to a WhatsApp group with a consultant. Information regarding patient condition and management were exchanged in the form of messages, images related to patient care along with consultant feedback. A pre-test to assess prior knowledge was done followed by a post-test after three months of WhatsApp communication to see improvement in knowledge. To inquire about participant's WhatsApp experience and perception, a focus group discussion was conducted. SPSS 19 was used for data analysis.

Results: There were 10 medical officers in the study. A total of 520 communications were recorded. Of them 352(67.6%) were text messages, 117(22.5%) were images followed by 15(2.88%) web links and 36(6.9%) social messages. The pre-test mean score was 29.8±2.65 while the post-test score was 41.3±2.83 with a mean improvement in knowledge of 11.50±2.46 ($p<0.0001$). The focus group discussion indicated that the participants felt it was a valuable tool for prompt communication and effective patient care, and enhanced their clinical knowledge.

Conclusion: WhatsApp was perceived as an effective tool for good communication as well as for improving clinical knowledge among medical officers working in low-resource setting.

Keywords: WhatsApp, Perception, Clinical learning, M-learning, Communication. (JPMA 70: 225; 2020)
https://doi.org/10.5455/JPMA.17802

Introduction

Digital technology has made its way into nearly all aspects of modern living. Social media has not only transformed communication, but has provided innovative strategies for information transfer. Over the years it has been seen to be an effective tool for learning.[1] "Mobile learning is about changing the way we teach, with the way students' best learn".[1] Among the many social media applications, like Instagram, Twitter, Facebook, WhatsApp has emerged as one of the most popular communication tool. WhatsApp messenger is an application used by smartphone, which has multimedia features and voice, video chat, digital camera, and chat groups. In the last few years, it has gained a lot of popularity gaining over 380 million users.[2] Modern technology has revolutionised patient care by progress in diagnostics and treatment.[3] However, the communication methods between physicians, nurses and other health staff still remain as before the advent of the smartphone. Many hospitals still use a pager system to communicate with each other. This type of communication causes increased waiting time between page and return of page, frequency disruptions, identification of caller issues which can hinder timely patient care. Many hospitals have started adopting mobile communication technology to optimise effective communication in health systems.[4-6] Various studies have used it for information transfer among students, clinical bedside teaching and patient care, giving mixed views of its efficacy in the clinical setting. There are limited studies utilising it in medical education as well as for clinical use in remote or resource-poor areas where unavailability of consultants can cause a delay in patient management. Use of WhatsApp messenger in such areas can provide effective communication and can improve patient care as well as improving clinical learning. In developing countries like Pakistan where maternal morbidity and mortality is still very high, WhatsApp communication may prove beneficial in timely communication to help improve both maternal health and knowledge among junior doctors working in small health setups. In Pakistan, no data is available on the role of WhatsApp in such kind of communication for patient care and clinical learning

The current study was planned to explore the experience of WhatsApp communication with physician and medical

[1]Department of Obstetrics and Gynecology, Aga Khan University, Karachi, [2]Department of Anatomy, Bahria University Medical and Dental College, Karachi, [3]Department of Surgery, Pakistan Institute of Medical Sciences, Islamabad, Pakistan.
Correspondence: Ambareen Khan. Email: ambareen2014@gmail.com

officers at a secondary care facility, and to assess if this communication improved clinical knowledge.

Subjects and Methods

The mixed method study involving both quantitative and qualitative analysis with a pragmatic paradigm was conducted at the Department of Obstetrics and Gynaecology, Aga Khan Hospital for Women and Children, Kharadar, Karachi, from May to July, 2018, and comprised medical officers working at the secondary care facility. All medical officers in the department at the facility voluntarily consented to participate in the study. All of them had completed MBBS, one-year internship and had professional experience each of over 3 years. Verbal and written consent was taken. To evaluate the improvement in knowledge after WhatsApp use, a pre-test and post-test was used. The pre-test was intended to assess the prior knowledge of the participants which included multiple choice questions (MCQs) regarding basic obstetrics and gynaecology information. The MCQs were formed on the basis of the Royal college of Obstetrics and Gynaecology (RCOG) guidelines after being reviewed by three professors. The subjects were given 45 minutes to complete the test. Later, a WhatsApp group was formed with an attending physician and all the subjects. All medical officers used smartphone and had been using WhatsApp messenger for informal communication. The hospital where the study was conducted had Wi-Fi internet facility available to all employees. For three months all patients of the attending physician were communicated through WhatsApp when the attending physician was not physically present on the floor. The type of communication included text messages of patient's condition, foetal cardiotocograph (CTG) and partogram to monitor the progress of labour, ultrasound films and reports, X-rays, computed tomography / magnetic resonance imaging (CT/MRI) scans, and laboratory reports. This communication was intended for early information of patient's condition to the physician as well as for timely decision for action, and to facilitate the officers to improve their clinical diagnosis, interpretation of investigations and to learn to take prompt action. Patient's identification was protected by WhatsApp encrypted messaging. An approval was obtained from the institutional ethics committee. It was ensured that all medical officers were using password protected or finger print smart phone along with anti-virus applications. All precautions were taken to ensure that our practice was compliant with the Health Insurance Portability and Accountability Act (HIPAA).[7] At all stages of information sharing, patient identity was kept confidential and this was communicated to all the participants through the consent form. Patient information that was shared was sufficient to know exactly about which patient's conversation was going on, such as ward number, bed number, procedure done, and this information was shared only with the primary attending physician. All conversations and images were deleted on a weekly basis after obtaining relevant data which was kept in password-protected computer, access to which was available to the primary researcher alone.

At the end of the study, the same test as post-test was given to all the medical officers to assess the overall improvement in clinical knowledge. The pre-test and post-test scores did not earn any extra grade or extra credit. Information collected and analysed did not include the participant's names or any individual identifiable information other than the pseudonyms assigned to them. This was followed by a focus group discussion (FGD) of 8 medical officers to assess the experience of WhatsApp communication. FGD was conducted with questions based on pre-decided probes. It was directed at getting participants opinion on the experience of WhatsApp communication as a means of effective communication for patient care and as an informal tool for clinical learning. The interviews were conducted by the researcher in an environment conducive for the participants, after taking written consent. The interviews were recorded on two different sources, audio recording, and notes. Time and convenience were considered at all times for taking an interview with the focus group. Data was kept confidential and in lock and key in the form of password-protected soft copies.

Data analysis was done using SPSS 19. Quantitative data was calculated in terms of frequencies and percentages as well as mean and standard deviation). The scores of the pre-test and post-test were analysed to assess the improvement in knowledge gained among the medical officers. Improvement was coded by subtracting the percentage of correct answers (out of 50) that the subjects had received on the pre-test from the percentage of correct answers on the post-test. Positive values were denoted as an increase in their clinical knowledge from the beginning to the end of the study (pre-test/post-test gain = Improvement), while zero or negative percentage signified no improvement. The higher the percentage, the more knowledge or information was considered to have been gained. Mean with SD was calculated for knowledge score (pre-test vs post-test), while paired t-test was used to calculate the paired difference of knowledge scores with 95% confidence interval (CI). $P<0.05$ was taken as statistically significant.

The qualitative data collected through FGD was

transcribed by the interviewer within 24 hours of the event. The transcription was coded which included simply un-edited statements with no assumptions. These codes were arranged in categories. Finally, these categories and codes were comprehended and interpreted in different themes. The emerging themes were then linked together to formulate conclusions.

Results

There were 10 medical officers. Overall 520 WhatsApp communications took place between the medical officers and the primary physician. Among them, 352(67.6%) were text messages, 117(22.5%) were images followed by 15(2.88%) web links and 36(6.9%) social messages. Mean response time was calculated to be 5.83±4.077. Overall mean pre-test scores was 29.8±2.65 (59.6%) compared to the mean post-test score of 41.3±2.83 (82.6%). The difference between the pre-test and the post-test was11.50±2.46(23%) ($p<0.0001$) (Table).

FGD explored the perception of medical officers regarding learning and communicating through WhatsApp, and probed their perception by questions such as, how effective is WhatsApp as a communication tool; how did it help you to communicate; how else was WhatsApp messenger useful other than for communication, etc.

Satisfaction and comfort was one of the themes that emerged from the FGD. The participants reflected that the use of WhatsApp for communication with the physicians was very comforting and a satisfying experience. When making decisions, it felt comforting to them to share the CTG images and pictorial information with the physician which led them to feel comfortable in decision-making.

"I felt comfortable and satisfied each time I shared the patients' information with the senior doctor as I was at ease that the physician knows all about the information required."

"It was comforting to know that what decision I made was the right one."

"I was very satisfied each time I informed the physician about my management and shared patient information."

Another theme was source of good information and knowledge gain. All participants felt that the application provided them with a rich source of information and knowledge which was shared, and gave them the opportunity to learn from relevant literature. It helped to update their existing knowledge.

"I learned through the shared literature a lot."

"It helped me to improve my knowledge and change my existing practices."

The third theme related to good communication between junior doctors and senior consultant. This communication fostered trustworthiness and confidence among the participants and the physician. The communication helped the medical officers to interact without hesitation and create an environment of trust and confidence in improving clinical performance and knowledge.

"I felt very confident communicating with the physician with this method compared to earlier."

"I didn't feel any hesitation in asking questions about clinical issues, I felt more confident in my approach to clinical situations."

The next theme was timely decision-making. The participants felt that WhatsApp use helped in timely decision-making. It allowed them to take effective and timely decision by sharing CTG images, X-rays and laboratory investigations and patient condition to take a quick and effective decision.

Table: Pre-test and Post-test individual scores with mean score.

Medical officer no	Pre-test	Percentage	Post-test	Percentage	(Post-test - Pre-test=gain (Improvement)
1	29/50	58	40/50	80	22%
2	31/50	62	42/50	84	22
3	29/50	58	44/50	88	30
4	30/50	60	46/50	92	32
5	28/50	56	41/50	82	26
6	34/50	68	43/50	86	18
7	27/50	54	38/50	76	22
8	30/50	60	39/50	78	18
9	34/50	68	43/50	86	18
10	26/50	52	37/50	74	22
Mean ±SD	29.8±2.65	59.6	41.3±2.83	82.6	11.50±2.46

"I felt that decisions were taken much quickly by sharing CTG graphs as the physician would tell me exactly what to do."

"It was not easy to interpret graphical investigations earlier and more often this led to a delay in decision-making, but using WhatsApp changed this."

"Sharing patient information with the physician through WhatsApp led to very quick decisions."

The subjects found WhatsApp interesting and easy to use. They were already using it for social reasons and already knew its advantages. They were familiar with its use and found it very interesting and easy to share patient information through this tool.

"I was already using WhatsApp for sharing posts, but found sharing patient information interesting,"

"Using WhatsApp is easy. I use it very often to chat with friends but for clinical reasons, it became interesting and useful."

The participants also appreciated the opportunity to clarify their concepts with the senior consultant. As the physician was able to guide them in decision-making, it helped them to rectify their mistakes and improve their clinical learning.

"I liked the fact that I could discuss the case with the physician and clear my concept."

"It helped me greatly to take a decision by guidance from the senior doctor as earlier I felt differently in making a particular decision."

The final theme was shared responsibility. The participants felt that using WhatsApp gave them the feeling of shared responsibility with the physician. They felt that sharing patent information relieved them of the burden of sole responsibility.

"I was so relieved informing about the patient, especially the CTG graphs, as I felt relaxed once I shared my decision with the physician."

"This communication made me feel that I was not alone in making the decision."

"Sharing the information gave me a sense of relief as I won't be held responsible alone for the decision I made."

Discussion

Introduction of the smartphone has opened doors to chat groups with secure information-sharing opportunities between healthcare workers.[8] The current study revealed that WhatsApp application is popularly used among the medical officers of our hospital and information-sharing through this tool was very effective and comforting for the participants. The use of WhatsApp communication for three months helped in improving knowledge gained by the junior doctors. This communication helped in understanding complex clinical scenarios in the absence of the senior physician on the floor, and helped in timely communication of patient's condition for effective patient care. Against the pre-test mean score of 29.8±2.65 (59.6%) the post-test mean score was 41.3±2.83 (82.6%), suggesting a significant mean improvement in knowledge by 11.50±2.46 points (23%). This means that information-sharing improved knowledge among the participants. A similar study used WhatsApp to see if the students' learning improved. It used post-test between two groups and found that the use of WhatsApp improved the students' learning.[9] Another study used WhatsApp-based discussion among residents and found that interactive case discussion improved the resident's knowledge regarding postoperative pain management.[10]

In our experience, medical officers communicated with the physician regarding patient's condition and shared information, which included CTG, partogram, laboratory investigations, radiological images and medical information. Such communication enabled them to effectively communicate with their senior and attempt to make a swift decision regarding patient care. Each information or image sent was discussed along with the management plan which improved their knowledge and made them confident about their decisions. The qualitative analysis done by interviewing them gave in-depth exploration into their perception and experiences. Majority of the medical officers felt that it was easy to use and was an effective tool for communication. It boosted their confidence and helped in learning about management plans, especially when urgent decisions were required. The participants felt it provided them with the opportunity to clarify misconceptions. They asked consultant questions to clear their concept and felt less hesitant in communicating. Images sent through WhatsApp enabled the senior physician to interpret and provide relevant feedback which provided ease and comfort to the medical officers who had the responsibility of managing the patient on the floor as well as the consultant who could witness the images and advise accordingly. This process increased their problem-solving and clinical reasoning skills. Several studies have utilised WhatsApp for communication and educational use. Khanna et al.[11] used WhatsApp among their residents and found significant improvement in the diagnostic ability of the residents in orthopaedic service.

Martyn-Hemphill et al.[12] used WhatsApp in a busy urology service to promote patient safety and found it to be a cost- and time-effective mode of communication. In a study in Turkey WhatsApp was used for second opinion emergency maxillofacial injuries. Their study found exchange of images and videos on WhatsApp was an easy, effective way of evaluating maxillofacial CT scans in night-time tele-consultation.[13] Similar advantage was observed by other studies utilising M-health.[14,15] In our observation, medical officers felt comforted and confident sharing patient information and receiving feedback from the consultant when the consultant was outside the hospital. Similar finding was reported by Giordano[5] as well as Gulacti[4], who concluded that WhatsApp was effective in communication between physicians in the emergency department, especially when the consultants were outside the hospital. In a developing country such as Pakistan, with 184.5 million population of which 64% live in rural areas, where access to health becomes a major issue,[16] it can be especially beneficial as lack of resources, transportation and skills hinder in providing effective patient care.[17] Use of smartphone for effective patient care would help overcome this problem. Timely management of patient saves life, especially in the obstetric population. Use of such communication applications with the capacity to exchange images, videos, and communication with experts on patient management in remote areas or resource-limited situations would facilitate in decision-making and timely patient transfer to a tertiary facility. Literature supports the use of WhatsApp in such situations.[17] Astarcioglu et al.[6] used WhatsApp for communication between the emergency physician in a rural hospital and interventional cardiologist at a tertiary centre. Similarly, Thota and Divatia[18] reported using WhatsApp for lifesaving purpose in resource-limited situation which involved sending electrocardiogram changes to expert consultants and receiving feedback from them who were 40km away from the centre where the patient was located.

Learning is a process which involves social activity where individuals scaffold each other's knowledge. The new era of digital scaffolding has emerged where new knowledge is gained by the individual's own personal device. Siemens[19] proposed "connectivism which suggests that new knowledge now resides within the network as well as in the minds of those who use it". As the intricate network of people, technology, and connections fortify, knowledge becomes widely accessible and learning intensifies. WhatsApp seems to qualify for this kind of learning where shared information scaffolds people's knowledge and augments new knowledge in a form of social constructivism.

The limitations to this study were the limited number of participants as well as the fact that the study focussed only on medical officers working in the obstetrics and gynaecology department.

Conclusion

WhatsApp was found to be a vital tool for communication as well as an application which could prove effective in improving clinical knowledge. The medical officers found the experience of Whatsapp communication helpful in improving their knowledge and confidence in clinical decision-making, and shared their responsibility by communicating with the physician.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Bansal T, Joshi D. A study of students' experiences of mobile learning. Global J Human Soc Sci. 2014; 14:26-33.
2. Bouhnik D, Deshen M, Gan R. WhatsApp goes to school: Mobile instant messaging between teachers and students. J Info Techno Educa Res. 2014; 13:217-31.
3. Johnston MJ, King D, Arora S, Behar N, Athanasiou T, Sevdalis N, et al. Smartphones let surgeons know WhatsApp: an analysis of communication in emergency surgical teams. Am J Surg. 2015; 209:45-51.
4. Gulacti U, Lok U, Hatipoglu S, Polat H. An analysis of whatsapp usage for communication between consulting and emergency physicians. J Med Syst. 2016; 40:130.
5. Giordano V, Koch HA, Mendes CH, Bergamin A, de Souza FS, do Amaral NP. WhatsApp Messenger is useful and reproducible in the assessment of tibial plateau fractures: inter-and intra-observer agreement study. Int J Med Inform. 2015; 84:141-8.
6. Astarcioglu MA, Sen T, Kilit C, Durmus HI, Gozubuyuk G, Kalcik M, et al. Time-to-reperfusion in STEMI undergoing interhospital transfer using smartphone and WhatsApp messenger. Am J Emerg Med. 2015; 33:1382-4.
7. Greene AH. HIPAA compliance for clinician texting. J AHIMA. 2012; 83:34-6.
8. Alsobayel H. Use of social media for professional development by health care professionals: A cross-sectional web-based survey. JMIR Med Educ. 2016; 2:e15.
9. Raiman L, Antbring R, Mahmood A. WhatsApp messenger as a tool to supplement medical education for medical students on clinical attachment. BMC Med Educ. 2017; 17:7.
10. Bakshi SG, Bhawalkar P. Role of WhatsApp-based discussions in improving residents' knowledge of post-operative pain management: a pilot study. Korean J Anesthesiol. 2017; 70:542-9.
11. Khanna V, Sambandam SN, Gul A, Mounasamy V. "WhatsApp" ening in orthopedic care: a concise report from a 300-bedded tertiary care teaching center. Eur J Orthop Surg Traumatol. 2015; 25:821-6.
12. Martyn-Hemphill C, Sarkar S, Withington J, Roy A, Chisholm R, Newton T, et al. mp16-06 'whatsapp Doc?' Evaluating A Novel Modality Of Communication Amongst Urology Team Members

To Promote Patient Safety. J urol. 2015; 193:e169-e70.
13. Kelahmetoglu O, Firinciogullari R. Efficient utility of WhatsApp: From computer screen to the surgeon's hand to determine maxillofacial traumas. J Craniofac Surg. 2015; 26:1437.
14. Mars M, Scott RE. Whatsapp in clinical practice: A literature. Stud Health Technol Inform. 2016;231:82-90.
15. Kiviniemi MT. Effects of a blended learning approach on student outcomes in a graduate-level public health course. BMC Med Educ. 2014; 14:47.
16. Wu R, Rossos P, Quan S, Reeves S, Lo V, Wong B, et al. An evaluation of the use of smartphones to communicate between clinicians: a mixed-methods study. J Med Internet Res. 2011;13:e59.
17. Rizvi A, Bhatti Z, Das JK, Bhutta ZA. Pakistan and the millennium development goals for maternal and child health: progress and the way forward. Paediatr Int Child Health. 2015;35:287-97.
18. Thota RS, Divatia JV. WhatsApp: What an app! Indian Indian J Crit Care Med. 2015;19:363-5.
19. Siemens, G. Connectivism. [Online] [Cited 2016 April 25]. Available from: URL: http://www.elearnspace.org.