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Original Research Article

Effectiveness of messaging apps in emergency room-online survey study

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ABSTRACT

Background: Medical professionals communicate effectively and conveniently using mobile communication applications (Apps). With clinical details being transmitted quickly among multidisciplinary teams, the potential improvements in patient care and education are significant. However, there are also moral and legal concerns with sharing patient data in this manner. This study aimed to quantify and categorize how often medical staff members used communication apps in clinical settings, their role in patient care, their knowledge of and attitudes toward safety, and the main advantages, potential drawbacks, and policy implications.
Methods: A 16-question survey with an anonymous response was distributed to our 1500 bedded hospital's medical staff. The study gathered information on the demographics of the respondents, how they used communication apps in clinical settings, how they felt about such apps, how safe they thought their data was, and why they chose one app over another. The study period was January to March 2023.
Results: From students to consultants, communication apps are widely utilized with WhatsApp being the most popular one. Although all respondents thought these apps were useful for swiftly exchanging information in a clinical context, they were all concerned about the privacy consequences. Overall, 62.5% use WhatsApp in the ER, and 70.8% found that it has helped reduce the communication gap between junior and senior orthopaedic surgeons.
Conclusions: Messaging apps help medical professionals communicate more effectively, but their use poses compliance difficulties, particularly with privacy laws. Hence, a user-friendly design and privacy-compliant must be given top priority when creating apps.

Keywords: Social media, Interdisciplinary communication, Hospital communication systems, Emergency service

INTRODUCTION

Mobile phones are frequently used to communicate and improve clinical practice in hospitals due to their increased availability, affordability and functionality.[1] Addition, several 3rd party apps used on mobile devices to support clinical decision-making, patient monitoring, medical education/information, communication and more.[1,2]

Applications (Apps) are software applications designed to operate on a computer or mobile device and achieve a certain goal. The creation of a deluge of medical mobile device apps for both business and personal use has been made possible by faster processors, better memory, smaller batteries, and extremely effective open-source operating systems that handle complex operations.[3]

There are various communication methods using mobile phones, such as texting (short messaging service: SMS), voice and video calling, multimedia messaging, and communication applications such as WhatsApp and Telegram.[4]

In an Australian study, a variety of patient information was delivered in an average of 12 messages per day. Although all respondents thought these apps were useful for swiftly exchanging patient information in clinical context, they all concerned about privacy consequences of doing so.[1]

Communication must be effective and efficient for patient care to be safe and of the highest calibre. Two-way communication is challenging due to conventional channels like paging, but communication apps on mobile devices are quick, effective, portable, and comfortable. They are free, widely accessible, and in use.

WhatsApp has become a low-cost, easily accessible telemedicine tool for developing nations to communicate, exchange data, and direct clinical care decisions.[5]

Mosa et al recorded 83 applications, including 57 for healthcare professionals, 11 for medical or nursing students, and 15 for patients. Healthcare professionals and students rated the disease diagnostic, drug reference, and medical calculator applications as the most useful.[6]

Mobile phone apps are a desirable method of communication for medical professionals, but they do not adhere to established privacy guidelines, leading to consent not being acquired, data being accessible from the host device if lost or compromised, and data being kept on an unsecured server. Certain government agencies are also focusing on developing messaging applications for the medical sector that prioritise patient data protection.[1,6]

This study aims to measure and categorize the usage of communication apps by medical professionals in clinical settings, their contribution to patient care, and their safety, advantages, drawbacks, and regulatory implications especially in Indian scenarios.

METHODS

Study type

We conducted an online survey observational study.

Study place

The study was conducted at Dr. D. Y. Patil medical college and hospital, Nerul, Navi Mumbai.

Period of study

Study conducted from January to March 2023 conducted online survey about messaging apps.

Study population and selection criteria

All medical personnel involved in the emergency department (ED) at our 1500-bed hospital got an email, social media post, or personal request because of their participation in an anonymous 16-item online survey powered by Google forms.

Inclusion criteria

All doctors namely, resident doctors, postgraduate doctors and consultants working in ER for more than 6 months were included in study.

Exclusion criteria

Doctors who have not completed 6 months of duty in emergency room and who didn’t give consent for the survey were excluded.

Procedure

The lead researcher and two additional researchers disseminated the survey. The survey's first page provided a poll summary, information concerning anonymity, and a statement about plan to release de-identified data. Consent was obtained by participation in survey following the first page indicating consent. A total of 153 medical personnel were approached for response, of which 72 responded and completed survey with response rate of 47%.

Ethical approval

Ethical approval was taken from the ethical institutional board of Dr. D. Y. Patil medical college and hospital before conducting the study.

Statistical analysis

All data collected stored in password protected MS excel sheet. Statistical analysis done with MS excel software.

RESULTS

A total of 153 respondents were communicated to complete the survey report. Three entries were filtered out due to incomplete and duplicate entries. The 72 poll entries were included for the final study.

Age

The mean age of the respondents was 25 years (range- 19 to 37 years) and standard deviation of 3.2 years.

Most of the responders were 25 years old followed by the 27 years age group as shown in Figure 1.

Designation of work

The majority of responders in our survey (73.6%) were first-year resident doctors, who are the primary point of contact for patients in the ER. They find it especially effective for establishing a swift link between main management provided by first-year residents and

additional management that requires oversight from seniors. Second- and third-year residents made up 9.7% and 12.5% of the respondents, respectively as seen in Figure 2.

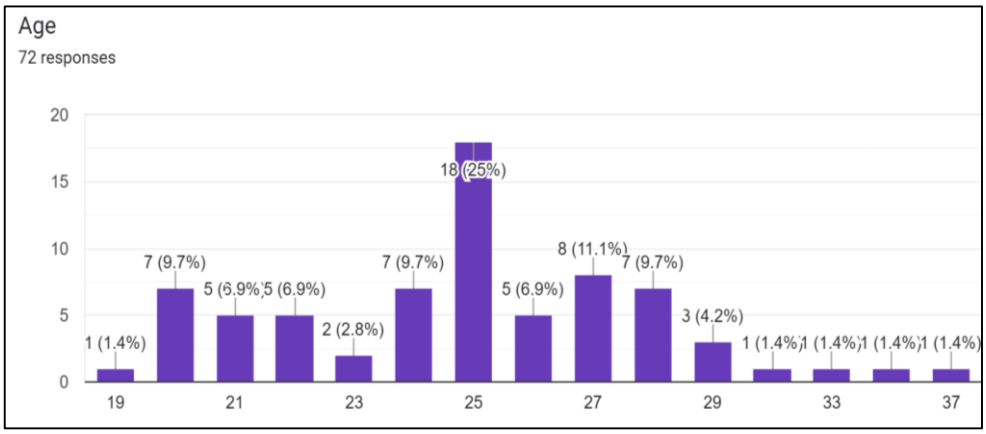

Figure 1: Age wise distribution of respondents for survey.

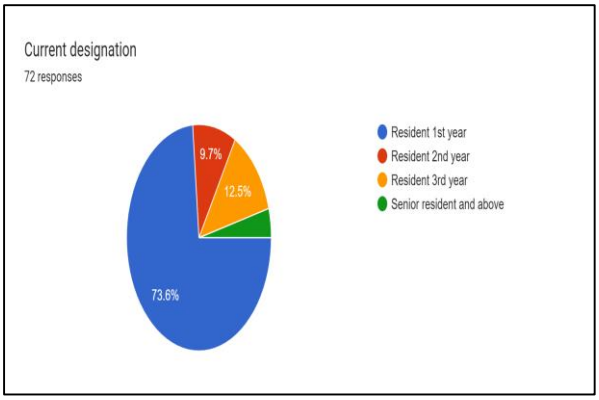

Figure 2: Designation wise distribution of respondents in our study.

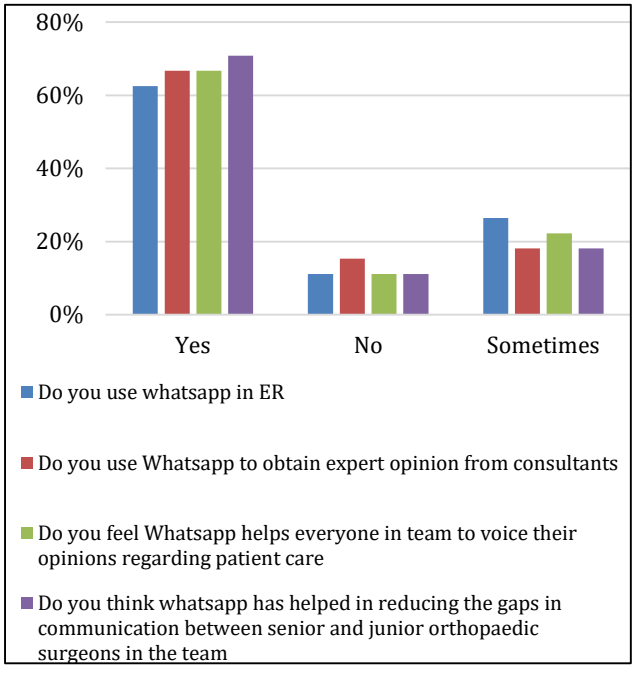

Figure 3: Views of WhatsApp use in the ER room.

About two-thirds of respondents use the WhatsApp smartphone app to communicate in the emergency room. One-fourth of doctors said they used it sparingly at times. Only 11% of doctors were negative about using WhatsApp as seen in Figure 3.

Most respondents (66.7%) stated that they utilised WhatsApp on a regular basis to seek professional advice and to inform consultants about patients. WhatsApp was used by 18% of doctors occasionally. The remaining 15% refused to use WhatsApp for this reason (Figure 3).

Experiences with WhatsApp communication

Around ⅔rd residents feel mobile apps like WhatsApp helps them to convey their messages and air voice about patients in democratic way, 22% feel sometimes WhatsApp helps to voice their concerns (Figure 3).

A large majority of responders, almost 70%, believe that WhatsApp helps to bridge the communication gap between junior and senior colleagues in orthopaedic teams. While 11% believe differently, 18% are uncertain on the topic (Figure 3). Reducing the communication gap between resident doctors allows them to work more efficiently, reduces stress among juniors, and avoids errors in patient care.

On the one hand, the majority (59.7%) of respondents believe WhatsApp helps to improve and enhance patient care, while 21% believe it causes more confusion. Figure 4 shows that the remaining 19% were unsure about either of the options.

More than half of those surveyed (56.9%) believe instant messaging apps such as WhatsApp help to shorten the decision-making process for patient care. 21% of respondents believe WhatsApp does not assist to minimise time spent on patient care as seen in Figure 5.

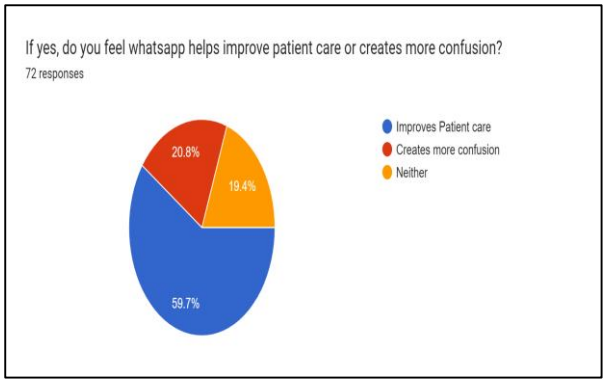

Figure 4: Experience with WhatsApp- helps to improve care or confusion.

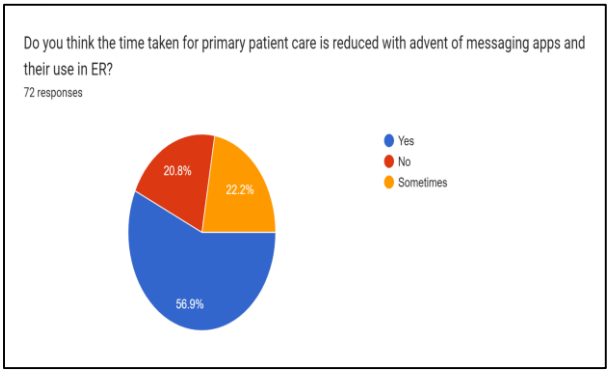

Figure 5: Experience with WhatsApp-helps to reduce time in patient care.

Our doctors in the study were divided on whether WhatsApp decreases errors in diagnosing patients, with 57% stating that it does, particularly given that it offers multimedia assistance as shown in Figure 6.

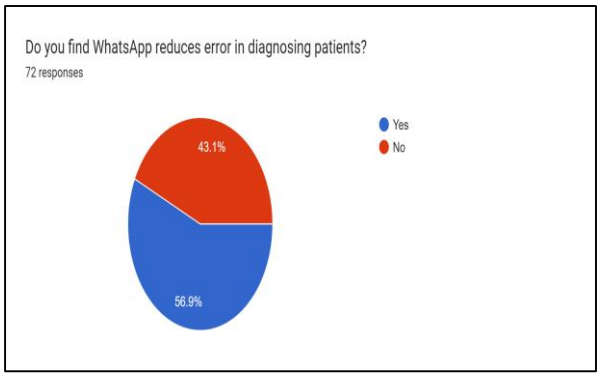

Figure 6: Experience with WhatsApp-helps to reduce error in diagnosing patients.

Constant alerts and texting from friends, family, and work might generate work distractions, which can lead to risks in patient care. Because of regular messaging in WhatsApp groups, 35% and 40% of respondents are constantly and occasionally diverted from work, respectively (Figure 7). As a result, it is critical to have separate work and personal phones when working in the ER.

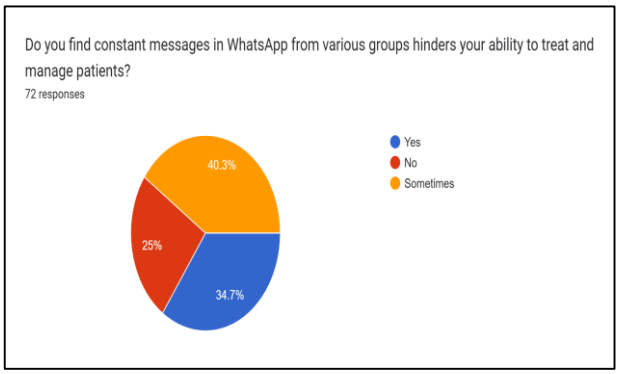

Figure 7: Experience with WhatsApp-does constant messaging hinder patient care?

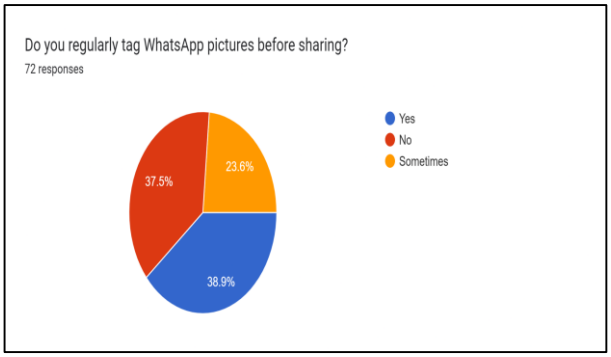

Figure 8: Percentage of respondents who tag pictures sent over WhatsApp.

Tagging photographs in WhatsApp is vital to avoid misunderstanding when numerous patients' information, including text and multimedia, is provided over WhatsApp. Tagging photographs reduces confusion and, in rare cases, inappropriate treatment. Approximately one-third of respondents stated that they do not tag images while sharing them over WhatsApp, which might pose a risk in patient care. Approximately 39% stated that they tag all their images while transmitting from ER as seen in Figure 8.

DISCUSSION

In our study, WhatsApp was used by 62.5% of doctors in the ER, while other apps such as Telegram, iMessage, and Twitter were also used infrequently. When transferring patient data, WhatsApp saves time, and end-to-end encryption ensures data confidentiality. According to our research, WhatsApp improves patient care (60% vote for it), lowers diagnostic mistakes (57% vote for it), saves time for patient care (49% vote for it), and bridges the senior-junior communication divide (70% vote for it). However, because of the requirement to respond to clinicians advising the treating clinician in the ER, it can also be a hurdle.

History of mobile phones

The first mobile device that incorporated both communication and computing features was the Blackberry in 2002. In 2007, Apple launched the first-generation iPhone, followed by smartphones that ran the Google Android operating system in 2008. In 2010, Apple introduced the iPad tablet computer, which ignited the tablet computer market. Tablets that ran the Google Android operating system were launched later that year, making the use of these mobile devices even more widespread.[7,8]

Mobile applications and healthcare

Apps are used by medical practitioners to increase interaction with co-workers and to communicate clinical information in order to improve patient outcomes. They are more effective, portable, and less invasive than traditional communication techniques, making them ideal for managing multidisciplinary teams and improving cooperation in geographically scattered healthcare institutions. Medical gadgets and applications are used by health care professionals for a variety of purposes, the majority of which may be classified into five general categories: management, electronic health record support and accessibility, communications and consultation, referencing and information collection, and medical education.[3]

Advantages of mobile phones

Mobile devices and apps have provided health care professionals with portability, rapid access to information, flexible communications, and powerful apps. These benefits have been shown to have a positive effect on patient care outcomes, such as reduced adverse events and hospital length of stay. Additionally, mobile devices have been found to improve the completeness and accuracy of patient documentation, reduce prescription error rates, and increase productivity.[3]

Fixed and mobile telephones may be a beneficial healthcare intervention in underdeveloped nations, according to evidence. However, there is minimal research on utilising mobile phones as a healthcare intervention for HIV, tuberculosis, malaria, and chronic diseases. Convincing information on the cost-effectiveness of mobile phone "telemedicine" are few, and high-quality research are uncommon.[9]

Patient safety regulations

Personal information safeguarding has grown into one of the most serious security problems for document keepers, and this will become even more difficult with the implementation of the European general data protection regulation (GDPR) in the middle of 2014.[10] Also, The health insurance portability and accountability act (HIPAA), also known as legislation 104-191, was adopted into US federal law to guarantee that medical information about patients is kept private and safe.[11] With a population of 1.4 billion people, India has yet to establish such a law to protect medical information of those treated in Indian medical institutions.

Privacy risks in mobile applications

Tangari et al in his study in BMJ showed that 88.0% of mHealth applications had code that may possibly gather user data, with the majority involving third-party service providers. The 23% of user information transmissions used insecure protocols, 28.1% had no confidentiality arrangements, and 1.3% of consumers expressed privacy concerns. This investigation discovered major privacy issues and uneven privacy practices in mobile health apps. When weighing the advantages and hazards of such applications, doctors should be cognizant of these and communicate them to patients.[12]

Mobile technology has revolutionised global communication networks, and it is altering healthcare systems as we speak. India should recognise this truth and seize this chance to implement patient data protection regulations and a low-cost patient data record collecting system that is privacy compliant.

We have a few suggestions regarding the facilities the mobile applications should have for addressing the privacy concerns and wider and safe use for patient care.

With frequent follow-up reviews, a few trustworthy mobile health communications applications should be approved by the government as safe and privacy compliant. Mobile phones should include a message self-disappearing feature that will prevent the storing of sensitive data on mobile phones for an extended period of time. Work and personal mobile phones should be kept separate, and patient information should not be stored on personal phones. To minimise misunderstanding in patient care, such mobile applications should make it essential to tag clinical photographs, documents, and reply to conversations with the patient's identity. There should be limits on the total number of personnel who may access patient information, and frequent logs of activities on such apps should be kept.

To the best of our knowledge, this is the first research to look into the usage of mobile apps like WhatsApp among orthopaedic residents working in an emergency room in India.

Our study, however, has a few limitations. Our study has a smaller sample size and only one hospital was studied. A long-term multicentre trial comparing traditional record keeping and communication methods such as phone calls and paging systems, as well as with all medical professionals, would shed light on the real usefulness of mobile health app use and effectiveness.

CONCLUSION

In Indian hospitals, medical staff commonly used communication apps, the most popular of which being WhatsApp. These applications help to enhance medical staff communication, which leads to improved health outcomes for patients. The main downside of using apps is that many famous ones must adhere to privacy regulations. Despite the fact that most medical personnel are aware of patient privacy concerns, they are nonetheless utilised. To support the transition to privacy-compliant apps, a coordinated effort in terms of norms and policy is also essential. India, as a developing-world technology hotspot, should build its own health data mobile messaging software that is both secure and simple to use.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Appendix

Questionnaire used in google forms

Survey:

1. Email:
_____

2. Full name:
_____
3. Age:
_____
4. Currently working at:
_____
5. Current designation

Resident 1st year
Resident 2nd year
Resident 3rd year
Senior resident and above

6. Do you use WhatsApp in ER?
Yes
No
Sometimes

7. Do you use WhatsApp to obtain expert opinions from consultants?
Yes
No
Sometimes

8. Do you feel WhatsApp helps everyone in the team voice their opinions regarding patient care?
Yes
No
Sometimes

9. If yes, do you feel WhatsApp helps improve patient care or creates more confusion?
Improves Patient care
Creates more confusion
Neither

10. Do you think the time taken for primary patient care is reduced with the advent of messaging apps and their use in ER?
Yes
No
Sometimes

11. Do you find WhatsApp reduces errors in diagnosing patients?
Yes
No

12. Do you regularly tag WhatsApp pictures before sharing?
Yes
No
Sometimes

13. Do you think WhatsApp helps to reduce the time taken to treat the patient?
Yes
No
Sometimes

14. Do you think WhatsApp has played a role in providing a better quality of care to patients?
Yes
No
Sometimes

15. Do you think WhatsApp has helped in reducing the gaps in communication between senior and junior Orthopaedic surgeons in the team?
Yes
No
Maybe

16. Do you find constant messages in WhatsApp from various groups hinder your ability to treat and manage patients?
Yes
No
Sometimes