

Role of smartphones in patient follow up

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Abstract

The smartphone is very popular and almost all the doctors and most of the patients or the attenders use a smartphone. Medical science is a dynamic field that gets influenced by the advancements of technology. There is an unrelenting try to make patient care; safe, effective, reproducible, and easy. The smartphone is a method of communication that is widely used, The smartphone based on Android as well iOS was used for following up the patients who underwent treatment in the Department of Plastic surgery in a tertiary care center in South India. From March 2020 to April 2021. In this article, we share our experience of how to utilize a smartphone to make patient follow-up, safe, effective, easy, reproducible during the lockdown of COVID-19.

Keywords: Smartphone, Android, iOS, Patient Follow Up, Plastic surgery.

Introduction

The mobile phone was first introduced in 1973, since then it has evolved drastically from a mere telephone to encompass many features which replaced many instruments, like camera, alarm clock, calendar, planner, compass, map, and the list is increasing. Medical Science is a dynamic field which tries and tests latest instrument and technologies into patient care. The emergence of COVID -19 led to the overburdening of healthcare facilities of the world. Non-emergency patient care needed to be stopped due to the risk of transmission of infection, which led to a situation where either the patients were deprived of the treatment or patients becoming non-compliant to treatment. There was an unprecedented demand for Telemedicine during this period. Telemedicine can be done using a Telephone, computers as well as using a smartphone. There are many articles regarding the use of smartphones in Telemedicine. In this article, we are sharing our experience of using the smartphone in following up on post op patients

Materials and Methods

The study was conducted in the Department of Plastic surgery in a tertiary care center, From April 2020 to March 2021, all the patients in the follow-up were added to smartphone-based follow-up. The exclusion criteria were patients who were not familiar with smartphone use. The permission was obtained from the departmental ethical committee. Each patient was followed up for 2 weeks to 6 weeks. The patients were followed up using live video conference, voice chats,

photographs, and vitals monitored using a pulse oximeter, smart band, the smartwatch was also used for the follow-up. Applications used for the following-up were mainly free applications downloaded from the play store or apple store like WhatsApp and Telegram. The residents made a list of patients and were called at fixed intervals, the patients were interviewed, relevant clinical photographs or short videos were examined, and the patients were given advice, instructions, and tips on physiotherapy, dressing, etc on live video conference or as short videos. Prescriptions if needed were given at the end of each session. A proforma was filled by the residents and patients at the end of each session and also at the end of the follow-up period. The proforma was evaluated at the end of the follow-up period (Table 1). No statistical analysis of the results was done.

Results

The majority of patients who participated in the study said the best thing they find about smartphone-based follow up is that its easy and audiovisual quality were good and they said they recommend the smartphone-based follow up and it also prevented the transmission of COVID infection to healthcare workers from the patient and vice versa. The smartphone-based follow-up prevented the patients from becoming non-compliant to treatment as all patients on follow-up completed the 6 weeks follow-up period.

Table 1: Proforma

Questions	Response		
What do feel the best thing about smartphone-based consultation	It is easy	Safe during corona	Saves money and time
What do feel about the smartphone consultation	I love it	It is ok	I hate it
Do recommend the use of smartphone consultation	Yes	No	No comments
What is your opinion about audiovisual quality	Good	Bad	It is ok

Discussion

Telemedicine using a smartphone in health care is a rapidly expanding area. There is considerable enthusiasm for smartphones for patient care as they have beneficial effects on health and health service delivery processes, especially in resource-poor countries.¹

Smartphone-based patient follow-ups can be designed effectively to improve health care service delivery processes, making them safe, cost-effective, time-saving, and minimal workforce-consuming. The smartphone-based follow-up doesn't warrant the physical presence of the patient, thus the travel expense of the patient is saved, the time of wait near the concerned OPD is saved. The crowd in the hospitals can be decreased, which makes the hospitals safer, especially from the transmission of airborne, droplet, contact transmitted infections. Also, these can decongest the hospitals to some extent

The features of smartphones that may make them particularly appropriate for patient follow-up are their popularity, their mobility, and their technological capabilities. The falling cost of mobile technology and the internet becoming more affordable has led to an increase in the ownership of smartphones, which means the smartphone can be used for the follow-up of more patients. In 2009, more than two-thirds of the world's population owned a mobile phone and 4.2 trillion text messages were sent.² In many high-income countries, the number of mobile phones is more than the population.³ In low-income countries, mobile communication technology is the fastest-growing sector of the communications industry and geographical coverage is improving.⁴

Smartphones work on various operating systems like Android, iOS, Windows. The improvement in technology has improved the speed reliability, storage, and multitasking capabilities of these types of equipment. Functions of smartphones like text messages (SMS), photography, audio calls, video calls, internet access, multimedia playback, and software apps like WhatsApp, Telegram, video calling apps like Google Duo, Google meet, zoom, etc can serve many functions. They can be connected to medical equipment or other equipment using Bluetooth, which will enable the easy transfer of data.

The mobility and popularity of smartphones help people carry their mobile phone with them wherever they go and keep the accessibility faster and this allows the healthcare intervention when it is most relevant. Real-time communication using video calling apps allows interventions to be accessed or delivered wherever it is needed. For

example. at the time health care providers see a patient and find any alarming findings, immediate management can be advised breaking the barriers of time and distance. The smartphone could also be relevant for providing clinical management support in settings where there is no senior or specialist health care provider or where there is no such support at odd hours of the night or on weekends.

The technological capabilities of smartphones are continuing to advance at a high pace. Technology is getting cheaper and technology literacy is improving day by day. More and more applications are making smartphones more capable, easily customizable, and also artificial intelligence making it easier for the operator to read and interpret the findings easily. The smartwatch, smart band, etc can be used to record the vitals of the patient and the findings can be easily transferred.

Conclusion

Smartphones are effective as a tool in patient follow-up, especially in a period of the pandemic when the hospitals are usually catering only COVID -19 patients as well there is lockdown being implemented. Our study is based on a single-center and mostly involving a single specialty, we suggest a multicentre study with multi-specialty

Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

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