

Tele-OPD: Bridging distance between Clinician and Patient

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IJMHS (Jan-Jun 2017) 04 (1): 17-21 / ©Red Flower Publication Pvt. Ltd.

Abstract

Background: The use of mobile devices has become increasingly universal in almost every aspect of life, including emerging use in healthcare, which encompasses diverse issues to solve clinical problems and promote public health initiatives in pioneering ways. Wide availability of Mobile phones with low call rates and smart phone applications like Skype, WhatsApp can be used as means of communication between the consultant and patient. **Methods:** The study is an observational retrospective study conducted in the Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Pondicherry from April 2015 to May 2016. The tele-OPD consisted use of telephonic conversations, video conferencing, mail, whatsapp etc. At the end of the study period, the feedback was obtained from consultants, patients and analyzed. **Results:** In the 1 year study period, 2048 telephonic calls were made to patients, 1806 calls were received from patients, 126 WhatsApp messages, 118 emails received and 20 Skype calls were done. On taking feedback from patients & Consultant it was found to be patient friendly, inexpensive and time saving. An internal record of all the patients phone numbers, email ids were noted down in a register.

Conclusion: Tele-OPD is found to be a promising

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Received on: 07 July 2016

Accepted on: 23 July 2016

method of communication, especially in nonemergency situations where the patient doesn't have to physically come to OPD but might need some advice or information regarding treatment. It is User-friendly, time saving and cost-effective means to obtain consultation in less time-critical contexts.

Keywords: Telemedicine; Tele-OPD; Smart Phone.

Introduction

Telemedicine is another example of emerging medical technology that is defined as the use of electronic information and communication technologies to provide and support health care when distance separates the participants [1]. In simple terminology, it can be defined as the use of communication networks for the exchange of healthcare information to enable clinical care. Telemedicine promises to address the issues involved when distance barriers exist by using the Internet, telecommunications, and information technologies. This facilitates access to specific consultations and improves patient management, as well as saving human and material resources. The intersection of this technology with medicine is likely to result in efficient access to medical information/data, avoiding unnecessary testing, and saving of both cost and time to busy hospitals and doctors.

Methods

This study is an observational retrospective study conducted in the Department of Plastic Surgery, Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER), Pondicherry from April 2015 to May 2016. The tele-OPD consisted of

using mainly telephonic conversations between the consultant and the patients, and also in educated patients using mobile phone applications like WhatsApp messages, Skype calling and email.

Telemedicine data bank is maintained for all opd patients. Patients were enrolled in Tele-opd data after taking informed consent. Each patient who comes to the OPD is given a telemedicine ID number along with the departmental telemedicine phone number, skype id and email address (Figure 1, 2). All patients are shown to the consultant in first visit either personally or by "Three way communication", in case he is not available at that time (Figure 3). After the first physical consultation of patient in OPD, patient then follows up in telemedicine clinic that is conducted on two days per week from the department of plastic surgery (Figure 4). Using the telemedicine ID number given Patients can send their collected laboratory reports via mail (Figure 4) and if needed they can call for any health related queries, to discuss laboratory reports, to take appointment for next consultation. Resident doctor calls the patient and depending on the lab reports date for admission and surgery is allotted. Hence unnecessary visits are avoided. More educated patients send photographs of their clinical condition by WhatsApp, or email.

Skype calling was used when there is any difficulty in diagnosis and real time monitoring is necessary (Figure 5). All the images were viewed and monitored by the consultants in their mobile or tablet. At the end of the study period, the feedback was taken from consultants and patients and analyzed.

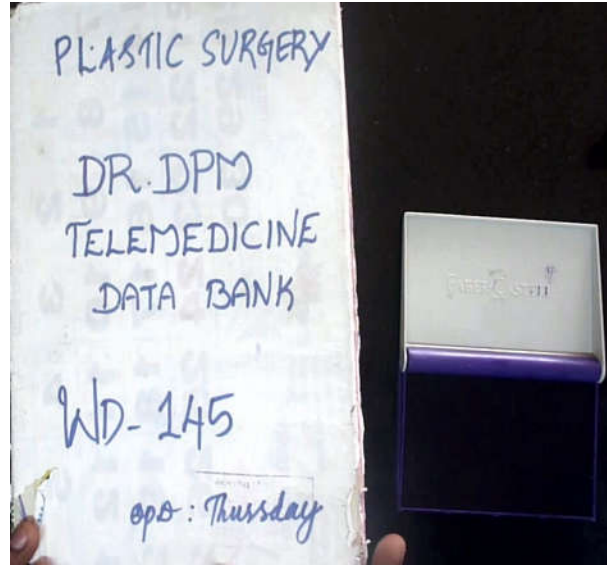


Fig. 1: Telemedicine Data bank

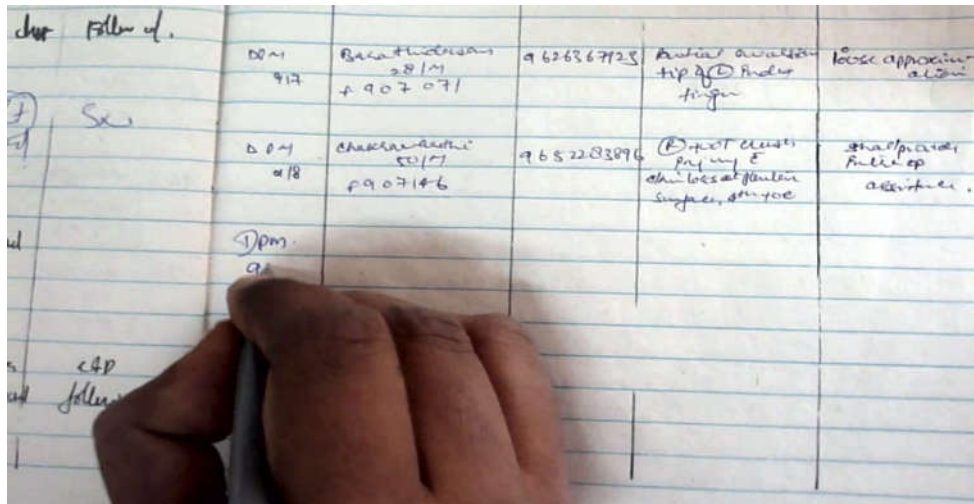


Fig. 2: Entry into telemedicine data bank



Fig. 3: Tele opd setup showing "Three way conversations" between patient, resident doctor and senior consultant



Fig. 4a: Consultant performing Tele opd from the department

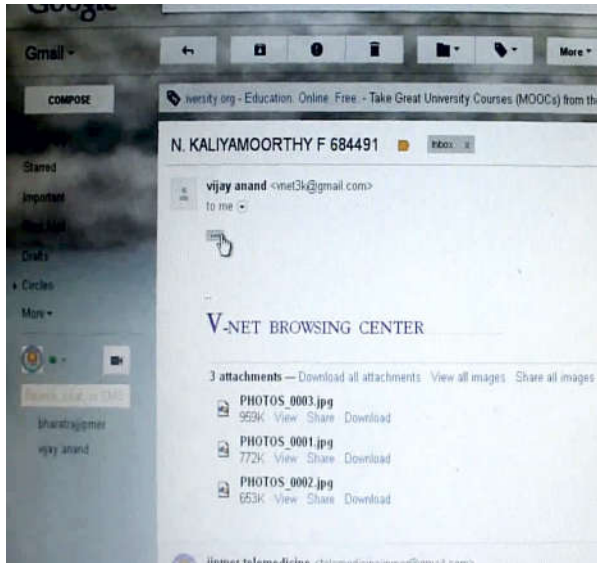


Fig. 4b: Email received from patient



Fig. 5: Patient communicating to doctor by using Skype application

Results

In 1 year study period, 2048 telephonic calls were made to patients, received 1806 calls from patients. 126 WhatsApp messages, 118 emails received and 20 Skype calls were done. The cost of one tele OPD

consultation per patient was on average 5 to 10 rupees. But for physical OPD consultation patient had to spend on average 200 to 300 rupees, and time, travelling effort required for patient, attendants is also to be considered. On taking feedback from Consultants and patients it was found that tele OPD was effective, while saving human and material resources. Minor, non critical issues can be dealt in tele OPD saving time for the consultant and avoids overcrowding in OPD. It also supports patient adherence to medication. It was found that patients lost to follow up is also decreased because of tele OPD. For internal record purpose all the images & records were stored in department's hard disk.

Discussion

Warnock advises that "as mobile communications and related apps proliferate, it is essential for surgeons to remain well-informed" about how to use this technology to facilitate daily work and what kind of new point-of-care knowledge can be obtained [2].

In areas "where people have limited access to formal health care, increasing coverage for control and prevention of many major diseases require novel approaches" [3]. What is essential in the long-term is impartial empirical research, "comparing the cost and efficacy of different systems in well-defined tasks and contexts" [4]. If utilized in an organized way, apps can support and monitor health improvements and accelerate achievement of clinical healthcare goals. The converse also holds true; it must be underlined that, if used ineffectively, advancement of these tools could result in medical harm or a waste of resources. The other concerns involve doctor-patient personal interaction, data security, and the safety of advising without properly physically examining the patient.

The utility of smartphones in plastic surgery is varied:

- To improve communication between members of a plastic surgery team.
- To enable ease of data collection and storage.
- To enable easy and detailed reference on any topic [5].
- For students/educational purposes.
- To improve patient understanding and communication.
- For postoperative monitoring [6]

Various types of Telemedicine are available which

are very effective for patient-doctor interaction. Types of Telemedicine (TM) are [7]

1. Store and forward (SAF) or pre-recorded (asynchronous) TM
2. Real-time or video conference (VC) (synchronous) TM
3. Hybrid TM
4. Mobile or cellular TM
5. Integration model.

Asynchronous TM

In this, information about the patient is acquired and stored in some format before being sent by some appropriate means for expert interpretation. It involves the transmission of digital images, and asynchronous evaluation is practiced. The simultaneous presence of the health care professional is not required. It is the commonly used technology. SAF TM has been found to be cheap and easy to set up and practice.

Synchronous TM

There is no appreciable delay between the information being collected, transmitted and displayed. Interactive communication about wound care between individuals at the site is, therefore, possible. Real-time interaction requires an expert to be available to give an opinion. Real-time or video consultation (VC) uses video conferencing equipment to connect the patient, often with their General Practitioner (GP) or nurse present, with a distant consultant.

Hybrid TM

The combination of SAF TM in the first step followed by VC TM in the second step is called hybrid TM. It saves time, clarifies doubts and avoids misinterpretation from both the ends. This process achieves the best physician and patient satisfaction as far as patient care is concerned.

Cellular TM

Portable devices like cellular phones and Personal Digital Assistants (PDAs) (like laptops and handheld computers) provide an inbuilt camera to capture patient's digital images, and computing and networking features to deliver patient care at a distance. They provide immediate image access and direct interaction, and it is possible to obtain

clarification. Quality and speed of image transmission is no longer an obstacle. New generation cellular phones allow taking good-quality images and transmitting them directly to other cellular phones (via multimedia messages) and computers (via e-mail or blue tooth-wireless connection) with diagnosis agreement of 82% compared to face-to-face consultation.

Integration Model

The systematic functional integration of electronic devices and software to capture, transfer, store, measure and deliver patient follow-up care is the principle of integration model and has been used effectively for patient care in remote geographical regions. Routine follow-up care in a remote area under the close supervision of higher center is performed. Computerized measurements are rapid, easy and precise, and suited for effective delivery of health care services.

Through this article we highlight the use of Telemedicine in conducting Tele- opd, which was proved to be cost effective and satisfactory for patient and doctors as it was an easy way of communication without repeatedly carrying the patient and hence repeated travelling cost was also reduced. Consultants were also comfortable and they could give more time to the patient/relative which was not possible in crowded OPD.

Conclusion

Tele OPD is found to be user-friendly, cost-effective means while saving human and material resources to obtain decision support from consultants in less time-critical contexts with frequent interaction possible between consultant and patients. Because of the wide availability of mobile phones with cheaper calling rates and internet the clinical consultation regarding patient care is easy for the consultant and patients. It is our opinion that the benefits smart phones offer far outweighs any possible risks.

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