

APPLICATION OF TELEMEDICINE CLINIC IN PLASTIC SURGERY**Elankumar S¹, Chittoria R K¹, Mohamed Ishaq Z²****ABSTRACT**

Objective: To assess the application of telemedicine clinic in plastic surgery.

Methods: This is a retrospective study in which feedback given by patients and/or their family members following telemedicine consultations were analyzed and studied.

Results: Majority (96 %) of patients and/or their family members found teleconsultations received through telemedicine clinic satisfactory in terms of audio/video quality and connectivity. All of them agreed with benefits like avoidance of waiting period & overcrowding in Out Patient Department (OPD) and saving of their travel time & expenses.

Conclusion: Telemedicine clinic can be used as a useful tool for giving consultations for patients of plastic surgery.

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INTRODUCTION

Information technology and communication in the field of medicine is growing remarkably. Telemedicine in general, is sharing of medical knowledge over distance; with the aid of telecommunication^[1]. World Health Organization (WHO) defines telemedicine as the practice of health care using interactive, visual, and/or data communications. In recent years, telemedicine is used for health care delivery, diagnosis, consultation and treatment, as well as in educating medical professionals and transferring the medical data^[2]. There are various types of telemedicine applications that store and forward real time or videoconferencing. Hybrid, mobile or cellular and integration models are also used for this purpose^[3]. Telemedicine can be applied successfully with the availability of the devices to capture images and access to a telecommunications network. Use of Smart phones, smart applications, digital camera, and personalized devices like laptop, video telecast aid in practicing telemedicine efficiently^[4]. Plastic surgery is one of the fields with shortage of specialists and with most of the patients requiring long term follow up. Telemedicine clinic helps in the delivery of health care to patients from remote areas. This study highlights the application of telemedicine clinic in plastic surgery.

Materials and Methods

This is a retrospective study conducted in the department of Plastic surgery in Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry, India during the period of May 2012 to April 2017. Retrospective analysis of the feedbacks taken from patients/ family members who were given tele-consultations through the telemedicine clinic. Telemedicine clinic (room of 8 x 8 feet) was set up with the facilities of Telephone line, Smartphone, Laptop, Desktop with mike, camera & speaker and Internet connectivity (at least 512 Kbps). National Knowledge Network (NKN) internet connectivity was provided free of cost to JIPMER by Ministry of Health & Family Welfare (MOHFW), Government of India. Internet connectivity was used for Store and Forward and Real Time Type of teleconsultations. Telemedicine clinic provided four types of teleconsultations i.e, Telephonic (using telephone), Store and Forward (through E-mail, Whatsapp, MMS), Real Time (using free videoconferencing software like Skype/ Hangout/ IMO/ Line) and Hybrid (combination of all the three) (Figure-1). All patients presenting to department of plastic surgery were assigned a telemedicine number for future teleconsultations reference purpose.

Consent for telemedicine consultation and photographic documentation was taken. Patient's clinical details, contact details (home address, telephone number, email address, Whatsapp number, Skype / Hangout / IMO / Line videoconferencing ID) were noted in the telemedicine register. Same details along with clinical photographs were stored in the telemedicine clinic computer. Patients were also given the contact telephone number, email address, days & timing of telemedicine clinic. At the end of the teleconsultation, feedback from patient or their family members was obtained and noted in the feedback form. Data obtained in the feedback included satisfaction scale (poor/average/good), opinion about benefits (like saving of travel time and expenses, avoiding overcrowding & waiting period in Out Patient Department (OPD), Connectivity, Audio/Video quality etc. Patient's identity and details were kept confidential.



Figure 1: Doctor in telemedicine clinic giving hybrid (combination) type of teleconsultation

Results

Total of 35046 teleconsultations were done over the period of five years. Majority of teleconsultations were telephonic type (34150), followed by real time type (856), Store and Forward type (22) and Hybrid type (18). Of all teleconsultations, 33,644 teleconsultations (96%) were found to be satisfactory including connectivity, audio & video quality. All the patient and or their family members agree (100 %) about benefits of saving of their travel time, expenses, avoidance of waiting period & overcrowding in OPD.

Discussion

Telemedicine in plastic surgery has wide application beginning with improvement of communication between patient and doctor and also among doctors. Data collection and storage in smart phones makes it easy for future references and to look into the prognosis of patients. Daily imaging & storing helps in monitoring the patient's progress. Use of internet sources and live telecast of scientific sessions improves knowledge among medical professionals [5]. Chronic wounds which requires long term follow up is properly taken care of by consultants with the help of telemedicine. Digital imaging of skin lesions makes it easier for both the consultants

and patients^[6]. Use of a digital camera and access to a telecommunication network has made trauma and burns management easy. The information technology has made it easy to obtain information and images of injury from a referring hospital, thereby reducing the time taken to make valuable decisions. Instructions are given through video conferencing by looking at the digital images^[7]. Radiological images are also interpreted in the same way using telecommunication devices^[8]. Microsurgical free tissue transfer and follow up of patients using documentation of digital images has been successful and used as a reliable method^[9].

In developing country like India where most of the specialists practice in cities, rural patients are deprived of their consultations. Further, rural population being in remote areas need to travel long and spend significant amount of money for transportation for obtaining the consultation from the specialist. Telemedicine Clinic providing teleconsultations to remote population can help to solve this problem. Overcrowding & waiting period in OPD can also be reduced by providing teleconsultations. Repeated visits of patients required in plastic surgery (as patients undergo multiple surgeries in stages and for following up results of surgeries) can also be

avoided through teleconsultations through telemedicine clinic. This study has explored the applicability of telemedicine clinic for plastic surgery. The results of this study and feedback received from patients and their family members may recommend setting up of similar telemedicine clinics for remote rural population in developing countries. There are limitations in this study like there is no statistical analysis, retrospective study conducted in a single centre with no control.

Conclusion

Telemedicine clinic is a useful way of providing consultations and follow-up in plastic surgery. Patients are benefitted by saving their travel time, expenses, avoiding period of delay & overcrowding in OPD. A large multicentre controlled prospective study is required to study the applicability of telemedicine clinic in plastic surgery.

Conflict of Interest Statement-

There is no conflict of interest.

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