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Simplified Community Based Telecare During the COVID-19 Pandemic

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Abstract

Telehealth has evolved as a very comprehensive tool for treating patients with mild to moderate symptoms across the globe during the global pandemic. Adoption of Telehealth in India posed special challenges because of its diversity in languages. Lack of proper healthcare infastructure and especially poor network connectivity have affected pre-hospitalisation care. We have developed an easy to use replicable tool and shown the path to succesful telecare for affected communities. ***Methods*** *MedicAid™ - an EMR software has been used along with Zoom® to quickly provide online consultations for COVID patients, individually and in groups.* ***Results*** *A total of 60 COVID patients were given online consultation and provided support with recovery in all.* ***Conclusion*** *Group based community care is safe for mass treatment of COVID.*

Keywords:

Telehealth
Electronic Medical Record (EMR)
COVID 2019

Introduction

SATHI – Short for Society for Administration of Telemedicine and Healthcare Informatics is a not-for- profit organization established in 2004 with the vision and mission of ensuring wider adoption of health informatics as well as Telehealth. We are a group of technocrats who hold regular jobs and come together voluntarily to provide technological solutions for social needs especially in the field of healthcare. One observation which paved the way for the formation of our society was the realisation that a major reason for project failures had been the jump to high end technological projects without thinking through the needs and capacity of the population the project was meant to serve [1]. Our focus has been on using community-based care for remote locations, using appropriate locally servicable technology and to employ and train workers from the same locality. The latter ensured that there were no language related communication issues – a major problem in a diverse country like India, a feeling of local ownership of the project as well as less resistance to something which has been imposed by outside forces. This approach has worked well in the past like during the response to the 2004 tsuanmi [2] as well as for providing blindness support in Mizoram, India [3]. Currently as the world is reeling under the COVID-19 Pandemic, Telecare solutions are increasingly being adopted globally for interacting with mildly ill patients and those with chronic diseases[4-6]. It helps in providing them supportive care at the same time reducing their exposure to highly critical patients in hospitals. There are still barriers to acceptance of Telecare by the patients namely, (1) many patients are comfortable in interacting with the providers through direct contact only; (2) they prefer to use Telecare solutions only if their own provider is using it and (3) many are unaware of the available Telecare solutions.

Inspite of this, the telecare projects that have been implemented so far have provided many opportunities and lessons. The main lessons are (1) for implementing Telecare solutions a practical ground approach is required (2) Technological provisions should be of low cost and locally servicable and (3) More emphasis should be given on change management [7] , and providing training [8] to the stakeholders. [1].

For resource poor locations which are quite omni-present in India, a community based telehealth system [1] approach has worked well due to higher number of beneficiaries with cost sharing and low cost of each transaction.

Poor adoption has been a cause of antipathy towards the use of telemedicine as well as an effect. There are multiple reasons for this :

- Low usage accounts for increased cost per transaction.
- Poor motivation.
- Less incentive to learn due to low usage.

The Coronavirus Disease 2019 (COVID 19) [9] pandemic which first emerged in 2019 at Wuhan, China has been sweeping the globe in waves. COVID-19 is caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The coronavirus may cause various symptoms such as fever, headache, dry cough, rhinorrhea, fatigue, myalgias, shortness of breath, nausea, diarrhea, weakness and anosmia. [10]. Transmission of SARS-CoV-2 occurs primarily via respiratory droplets [10]. As of May 15th 2021, 222 countries have been affected, with a total number of 161,513,458 confirmed cases of COVID-19, including 3,352,109 deaths [9].

The first real change that COVID brought about in the country was a deliberate one done by the interim Board of Governors (BoG) of the disbanded Medical Council of India. They accelerated the release of the Telemedicine Practice Guidelines (TPG) [11] so that Telemedicine could now be considered legal. A farsighted effort. However, clarity related to the use of health workers for assisting tele-consultations is still missing. This is imperative since internet access and the ability to use smartphones is restricted in remote communities due to the cost associated with the electronics devices.

The other major change due to the COVID-19 pandemic is that, doctors themselves prefer remote care and tele-support over physical consultations to minimise contact. This not only reduces the risk of doctors getting infected, it also helps in alleviating the excessive demand for PPE kits.

The second wave of the pandemic in India started in February 2021, with daily cases rising from 8000-10000 per day to over 4,00,000 cases per day by the first week of May 2021 [9]. The daily death toll similarly climbed from 400-500 per day to over 4000 per day. Many areas had reports of oxygen shortages and severe squeeze on resources. Rural areas, especially in the north and central regions of the country have been known to be resource constrained especially pertaining to health. SATHI was contacted by various rural organizations for help and support for those affected by the pandemic.

In our organization SATHI, An Electronic Medical Record System – Medic AidTM (Ms AMLA MEDIQUIP) has been in use for all of our patients since long. Besides efficiency in patient care, the care documentation provided by the same had allowed enhanced research and publication opportunities [12]. Another important feature has been a facility for creation of templates for ordering investigations, history taking as well as prescription making. This also provides the opportunity to quicken data entry [13]. Hence the entire process of history taking, investigation recording, ordering and other encounter details along with making a prescription was found to be faster and efficient than writing a prescription manually [14].

However, Medic Aid was designed for a client-server environment and worked only on a local area network, and it had not thus far been considered suitable for telehealth purposes. SATHI was negotiating with other solution providers to develop a Telehealth solution, but the same was not yet ready for deployment.

Simultaneously SATHI had been using the online meeting solution available through ZoomTM for its internal meeting purposes during the lockdown. SATHI was approached by SANGTIN to provide teleconsults for their essential COVID support volunteers. SANGTIN is a rural NGO based in Sitapur district in Uttar Pradesh. It works with marginal farmers and agricultural laborers, both female and male, to improve their health, nutrition and agricultural practices as well as their access to government programs. During Teleconsultation it was brought to our notice that there were inexplicably high mortality rates in some of the remote locations where the volunteers were operating. This led to an idea of providing support to the residents of these remote locations.

A project for providing mass-based COVID support to the SANGTIN members and their families was agreed upon between SATHI and SANGTIN in mid-April and such sessions were held. Lack of information in the rural population regarding COVID-19 and its management was realised and the need for providing a mass training program to the communities became indispensable.

Though there have been studies highlighting the use of Telemedicine during the COVID-19 pandemic in India, very few discuss the implementation of the same, especially in the rural areas where there is lack of infrastructure and awareness towards COVID-19. In this paper we highlight our experience of providing teleconsultation for COVID-19 patients in rural areas through use of inhouse built EMR solution and the barriers during the process.

Objective

The objective of this paper is to highlight the experience and the process of implementing EMR based tele-consultation system connecting health practitioners, volunteers and pateints during the COVID-19 pandemic in the country. This is an ongoing project.

Study Methodology

Study Design:

The study involved implementing teleconsultations with the support of the EMR based software Medic Aid developed by SATHI.

Study Method:

One of the authors is a surgeon running a day care surgical centre. Elective surgeries had to be stopped during the peak of the second wave in India due to the hospital staff themselves contracting COVID-19 and later a severe oxygen shortage as well as lockdowns. Consequently we had also shifted to providing online consultations. The initial consultations were on a one-to-one basis by direct requests by patients or their relatives. Patient data was maintained thoroughly in the Medic Aid software. The data entry process in the EMR software followed the same process as physical consultations.

Demography in the form of name, age, gender, address, referred by and also a preliminary diagnosis were registered. This was followeed by a short history buildup, investigation report and was finally concluded with a final diagnosis using ICD 10 [15]. During online sessions, the current status was enquired and further questions were asked before making a prescription. This generally involved using a template with additional free texts and notes. This was done through an online zoom session. PDF versions of the precriptions were made and sent by WhatsApp®. Patients were even encouranged to take a photograph or a screen shot of the presciption in preview mode. Precriptions were signed and sent or even sent unsigned with a disclaimer of it being made online.

For the group-based sessions, which were conducted for rural Hindi-speaking mass, standardised templates for COVID care, initially in English alone, were expanded and made bilingual (Hindi and English).

Training of the COVID volunteers was done online based on comprehensive guidelines, which included collecting data in the form of reporting symptoms, measuring SpO2 and using a digital thermometer. General instructions on self-hygience and protection against the virus were also provided. Volunteers were encouraged to report any possible symptoms of a case of COVID-19, firstly among themselves, their families and therafter within their vicinity. Armed with a pulse oximeter, these volunteers would go to various houses and collect reports. A note was sent for an appointment during the daily session and the data for each of these patients was sent through WhatsApp® to the SATHI secretary, who would in turn enter the data into the database. Simultaneously training sessions were provided to the local technicians within the community to remotely upload the same on the database on their own.

The following people were part of the teleconsultation process: The Doctor (In their clinic), The Secretary (Doing work from home), Volunteer Patient Helper (At remote location) from a local NGO who coordinated with the patient/community, The Patient (If possible) else care taker of the patient who was aware of the patient's health condition. In an earlier study [16] it was identified that young professionals and medical students were interested in adopting Telemedicine in their work. Hence doctors from rural community and final year medical students students who were interested in training were also encouraged to participate.

The prescription was genereated by the doctor or by the secretary under the direction of the doctor. The prescription making process was similar for individual patients as well as patients in groups. Patient privacy was not required as the group care sessions mainly consisted family members or close

acquaintances. Prior to start of teleconsultation, the process was explained to the patient and consent was obtained for maintaining their personal data and for the presence of the secretary, NGO volunteer and the doctor in training during the session. Only caretakers or relatives of the patients were allowed to be part of the consultation.

The remote control facility of zoom was used to allow direct data entry. Approximate time per consult was noted.

Communities were encouraged to purchase pulse oximeters, digital thermometers, masks, gloves and sanitizers. A list of drugs for possible use was made available for the community-based volunteers since pharmacies were not within easy reach of the affected communities. Plans to provide oxygen support in the form of concentrators and cylinders have not furctifed yet.

After one month of implementation, patient feedbacks were collected regarding their current health condition, their statisfaction with respect to the teleconsultation and suggestions for improvement if any.

Study Duration:

This is an ongoing project. The paper highlights the data of 1 month of implementation (April 15th to May 16th, 2021).

Results

Four training sessions of one hour each were held for the community volunteers. In preliminary session, they were taught about the COVID-19 virus, its typical characteristics, how it transmits and all the preventive measures related to the disease. In audio-video sessions, the volunteers were taught about the usefulness of different types of masks and how to wash or sanitize hands properly. Later on, they were trained on how to use pulse oximeters and digital thermometers so that they could monitor the patients' conditions at the very initial stages. At the end of the training sessions, the volunteers were asked to demonstrate their skills. Each volunteer was individually quizzed and tested regarding their awareness of sanitization and masks through interviews.

Data available for COVID patients (ICD Code U07) between 1st April, 2021 and 15th May, 2021 revealed a total of 60 patients (33 males, 27 females). Figure 1 shows age wise sex ratios and figure 2 shows the geographical distribution of the patients. Out of the 60 patients, 4 had physically paid a visit to the clinic for follow-up consultations. Nine group care sessions were held to manage 27 patients.

The average time taken per individual consultation was 12 minutes while, for community consultations, it was 20 minutes per group. One group consisted of 4-5 people from the same community. The average time taken for follow-up consultations per individual was 5 minutes, which could be done remotely via phone calls alone.

A total of 81 prescriptions were generated, including follow-up consultations. Ibuprofen and Paracetamol were the most common drugs to be prescribed as per the treatment protocols. Only 4 patients were prescribed steroids. Two out of the four patients who availed of physical consultations were admitted to our suggested hospital due to low oxygen concentrations. One of them was discharged within 10 days of admission without needing any additional oxygen support, while the other patient was discharged in 15 days with the administration of prednisone and supportive oxygen. There were no other reports of low oxygen concentration.

No significant difference was found between the individual consultations and the community consultations. The recovery rate was found to be 100%.

Discussion

The above results are based on one month of project implementation. The results suggest that the use of EMR software for maintaining patient data is efficient. It not only reduces time of consultation, it also helps in monitoring and follow-up of the patients. The current system involves the presence of other stakeholders in addition to the doctor and the patient. While providing community based consultation, the presence of volunteers of NGOs from the local community was mandatory as these patients had very little medical support and counseling facilities. All kinds of help was highly appreciated by the communities. Absence of known volunteers was reported to be a barrier as patients were skeptical consultating unknown doctors.

Each community was subdivided into groups to make consultations easier. Patients within the same family or village were examined and provided advice in groups of 2 to 4. Skillful volunteers were recruited and trained. Smart phones managed by trained volunteers in remote areas allowed for wide based home care which is the need of the hour for COVID-19 emergencies.

Every patient both in individual and community based consultations were highly satisfied with the teleconsultation. They suggested that the doctors should follow-up with them on a regular basis.

The initial plan to provide oxygen concentrators through donation, as well as a few cylinders to each village, has not yet come to fruition. Fortunately, the need did not arise in our patients. However, we hope and plan to be equipped and ready when the 3rd waves arrives.

Overall, our study findings provide evidence that telemedicine can be a very useful tool for physicians and other healthcare professionals to provide services, especially in rural areas during the COVID-19 pandemic. We have been successful in shifting our direct care to a virtual clinic. We believe that the way forward to address further expanding of telemedicine services is to make available basic infrastructure including oxygen concentrators, cylinders and to provide access to admission facilities. Though not yet operative, regional language software tool which will provide compatibility for maintaining patient data should be and is being developed. At the same time patient privacy should be taken into consideration but we found Indian patients specially when in a family to be less concerned about it.

The limitation of our study is that our work started only in Mid April and is an ongoing work, and the findings are based on a short period of data collection. Hence we could assessment of the long term effect of Telecare was not possible. We have also not considered factors like health seeking behaviour of the patients. However the strength of our study is that we believe this could help and revolutionise healthcare. We expect it to add to the learning and help providers and organizations to plan and implement similar initiatives in rural areas. A further research, we plan to carry out is about cost effectiveness of our implementation which may help one to devise strategies to reach out to such patients in remote and low resource settings.

Conclusions

The current study has proven that community based-care and online consultations for COVID are safe, manageable and accessible. A sound EMR system can be a quick way to start remote consultations during emergiencies. Local provision of related equipment is important. An online desktop sharing platform (Zoom® is only an example, any other platform may

be used) with remote control facility, though not essential, helps smooth the process.

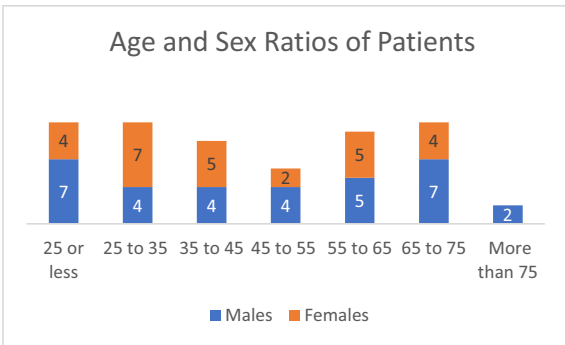

Figure 1 – Age and Sex Ratios of Patients

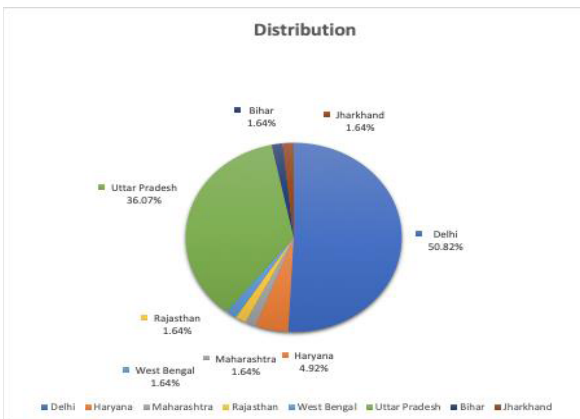

Figure 2 – Geographical Location of Patients

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