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Original Research Article

Utilization of outpatient eSanjeevani National Teleconsultation Service during COVID- 19 pandemic in a public healthcare institution in North India

Kunwar S D S Guleria¹, Nitin Patiyal¹, Arun Kumar Negi¹, Vikrant Kanwar², Kansal Dinesh^{1,*}

¹Dept. of Pharmacology, Dr. Rajendra Prasad Government Medical College, Tanda, Himachal Pradesh, India

²Dept. of Hospital Administration, Dr. Rajendra Prasad Government Medical College, Tanda, Himachal Pradesh, India



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ABSTRACT

Objectives: To analyse the utilization of outpatient eSanjeevani Telemedicine Service during COVID pandemic in a public healthcare institution in North India by profiling the attributes of patients availing online video consultation in terms of gender, age, urban-rural, organ-system involvement, speciality of OPD service given and prescription analysis.

Materials and Methods: This is a descriptive, cross sectional study done at Dr. Rajendra Prasad Govt. Medical College which served as a hub in a hub & spoke type model for rendering online OPD consultations; on a software platform “eSanjeevani” developed by Centre for Development of Advanced Computing (C-DAC) Mohali. Data from 206 audio+video based online tele-OPD consultations & their prescriptions were analysed.

Results: Out of a total 206, 114 (55%) were males and 92 (45%) were females. Mean \pm S.D. age of patients was 42 ± 19.6 years. 146 (71%) connected from rural area and 60 (29%) from urban area. 38 (18%) patients required to be referred to the health-care centre and 46 (22%) patients required a review after blood biochemistry investigations. 76 (37%) were from district Kangra of Himachal Pradesh. The most common organ system involved was musculoskeletal system (19%) followed by skin (18.4%) and gastrointestinal system (16%). The most commonly prescribed class of drugs were NSAIDs & analgesics (36%) antimicrobials (23%) and antihistaminics (18%).

Conclusion: Telemedicine is an innovative solution to many of the challenges posed by COVID-19 pandemic. It can help substantially in decreasing the OPD workload in hospitals & decreasing infection chances for both patients & hospital staff.

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1. Historical Background

One of the first private sector telemedicine based initiatives in India had concluded that “telemedicine as a tool is a very convenient and an ‘all-time-available’ facility for establishing patient-physician contact in the shortest time. It is useful in rendering instant advice for hospitalisation in emergency situations while avoiding unnecessary visits to the hospital”.¹ This venture started in May 1997 at Escorts Heart Institute and Research Centre, New Delhi.

First public sector telemedicine initiative soon followed in 1999 at Chennai Medical College, Tamil Nadu.²

2. Current Scenario

Telemedicine in India has come a long way since then, adding newer platforms viz. M-Health etc. in its arsenal. The World Health Organization (WHO) on March 11, 2020, declared the novel coronavirus (COVID-19) outbreak a global pandemic.³ This on-going COVID-19 scenario has given the much needed impetus to all the stakeholders of Telemedicine, both public & private, to explore its options

* Corresponding author.

E-mail address: dinesh.kansal56@gmail.com (K. Dinesh).

at an unprecedented level. WHO recommended doctor-population ratio is 1:1000.⁴ Doctor-population ratio in India is 0.62:1000.⁵ This gross difference in healthcare demand vs. delivery further widens due to various restrictions imposed in lieu of COVID-19 pandemic. The benefits of telemedicine are elimination of the probability of virus transmission & unnecessary travelling of patients. This reduces travelling costs and provides opportunity cost for taking care of other aspects of healthcare needs of patients.⁶ The COVID-19 pandemic has triggered the rapid growth, acceptance and research in the field of telemedicine. Government of India rose up to the opportunity to give its nation a much needed, first ever comprehensive “Telemedicine Practice Guidelines” as published in Gazette Notification on 25th March 2020.⁷

Telemedicine has been mostly used in past for speciality services like tele-neurology, tele-cardiology, tele-orthopaedics, tele-paediatrics, palliative care etc. but there is not much literature available for general OPD patients. In our study we have analysed the utilization of outpatient eSanjeevani Telemedicine Service during COVID-19 pandemic in a public healthcare institution in North India by profiling the attributes of patients availing online video consultation in terms of gender, age, urban-rural, organ-system involvement, speciality of OPD service given and prescription analysis.

3. Materials and Methods

This is a descriptive, cross sectional study done over a period of 3 months from May 2020 to July 2020 done at Dr. Rajendra Prasad Govt. Medical College, Kangra at Tanda, Himachal Pradesh which served as a hub in a hub & spoke type model for rendering online OPD consultations; on a software platform “eSanjeevani” developed by Centre for Development of Advanced Computing (C-DAC) Mohali, which is a premier R&D organization of the Ministry of Electronics and Information Technology (MeitY).⁸ The software enabled audio & video based clinical consultations between a doctor at hub and a patient sitting in the confines of their home. Initially, patient had to connect to the software via a web based browser from a laptop and within few weeks, android based mobile app was also released which made it possible for patients to connect via their mobile phones too. After logging in securely using mobile OTP, the patient had audio & video consultation with doctor. There was no time limit kept for the length of consultation which enabled detailed history taking and required counselling. After the consultation, an e-prescription was generated by software which could be easily downloaded at patients’ end. In our study, we evaluated data from 206 such consultations. Data is expressed as % age & mean \pm S.D. and analysed using Microsoft Excel 2019.

3.1. Ethics approval

Approval from Institutional Ethics Committee was taken vide letter No. HFW- H DRPGMC/ Ethics /2020/046, Dated: 02.11.2020.

4. Results

Out of total 206 consultations, 114 (55%) were males and 92 (45%) were females (Figure 1). Mean age of all patients was 42 years (\pm 19.6). 83 (40.3%) patients belonged to age group 20-39 years, followed by 63 (30.5%) patients from 40-59 years, 42 (20.3%) patients were above 60 years and 18 (8.7%) patients were below 18 years of age (Figure 2). 146 (71%) patients connected from rural area and 60 (29%) connected from urban area (Figure 3). 76 (36.9%) patients were from Kangra, 31 (15%) from Hamirpur, 30 (14.6%) from Shimla, 15 (7.3%) from Bilaspur, 14 (6.8%) from Mandi, 13 (6.3%) from Solan, 9 (4.4%) from Chamba, 7 (3.4%) from Una, 6 (2.9%) from Kullu, 4 (1.9%) from Sirmaur, 1 (0.5%) were from Kinnaur and 0 from Lahaul & Spiti district of Himachal Pradesh. Patient profiling based on organ system involved: out of 206 patients, the most commonly involved organ system in their complaints was musculoskeletal system 39 (19%), followed by skin 38 (18.4%), gastro-intestinal system 33 (16%), nervous system 21 (10%), respiratory system 15 (7%), cardiovascular system 12 (6%), genitourinary system 11 (5%), eye 10 (4.8%), reproductive system 9 (4.3%), endocrine system 9 (4.3%), haematopoietic system 5 (2.5%), ear 2 (1%), immune system 1 (0.5%) and dental 1 (0.5%) (Figure 4). Patient profiling according to OPD service given: in order to understand which speciality OPD services are required the most by patients taking tele-consultation, we did profiling of patients depending on their chief complaints & diagnosis. Out of 206, maximum patients were ascribed to Medicine 84 (41%), followed by Dermatology 29 (14%), Orthopaedics 24 (11.6%), Surgery 16 (7.7%), OBG 13 (6.3%), Psychiatry 11 (5.3%), Ophthalmology 10 (5%), ENT 10 (5%), Paediatrics 8 (4%) and Dental 1 (0.5%) (Figure 5). Prescription Analysis: the most commonly prescribed class of drugs were NSAIDs & analgesics 74 (36%) followed by antimicrobials 47 (23%), antihistaminics 37 (18%), proton pump inhibitors (PPIs) 34 (16.5%), antihypertensive drugs 20 (10%), anti-epileptics 12 (5.8%), anxiolytics 11 (5.3%), anti-diabetics 10 (4.8%) (Figure 6). 5 (2%) patients accepted to be smokers. 38 (18%) patients required to be referred to the health-care centre and 46 (22%) patients required a review after blood biochemistry investigations.

5. Discussion

COVID-19 scenario has posed unprecedented challenges for the medical fraternity. The current dilemma is how to provide service not only for those afflicted with COVID-19

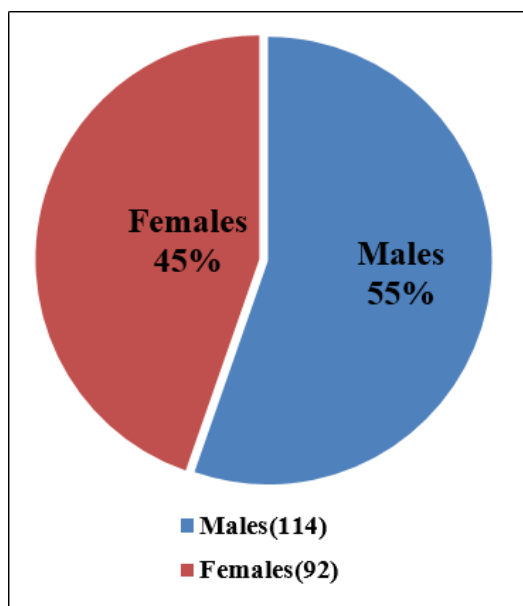


Fig. 1: Gender distribution of eOPD patients (n=206)

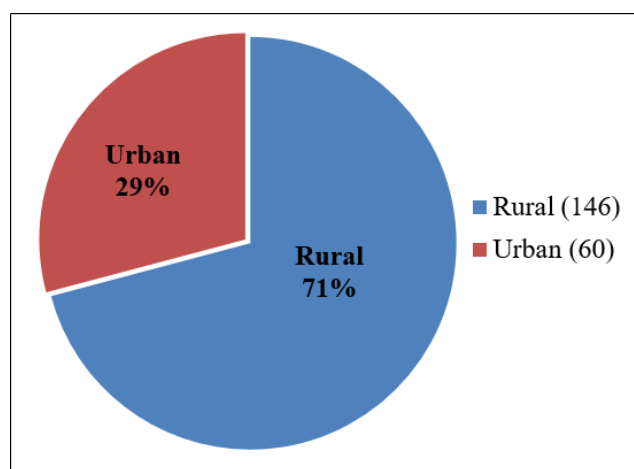


Fig. 3: Rural vs. Urban profiling of eOPD patients (n=206)

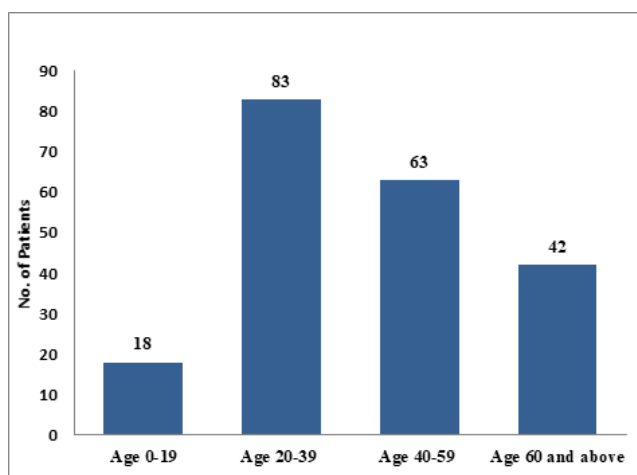


Fig. 2: Age group profiling of eOPD patients

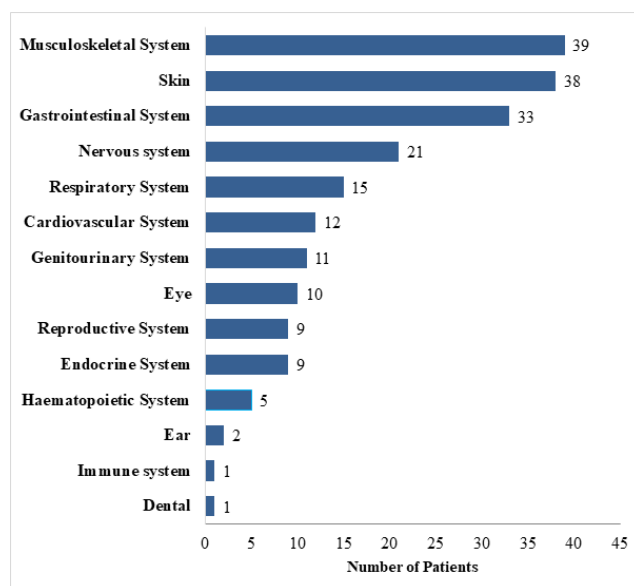


Fig. 4: Patient distribution based on organ system involved (n=206)

but also for patients suffering from other chronic diseases while protecting medical staff.^{9,10} Governments and health professionals across the globe are struggling as patient load; both COVID & non-COVID, has exceeded the levels for which health systems were designed. One of the most important strategies to reduce and mitigate the advance of the epidemic are social-distancing measures; this is where telemedicine can help.¹¹⁻¹⁴ and provide support to the healthcare systems, especially in the areas of public health, prevention and clinical practices,¹⁵⁻¹⁷ just as it is doing in others sectors such as teleworking and support in training and education.^{18,19} Our results reflect the following points:

1. Both males and females in almost equal proportion availed eOPD services implying the fact that there is

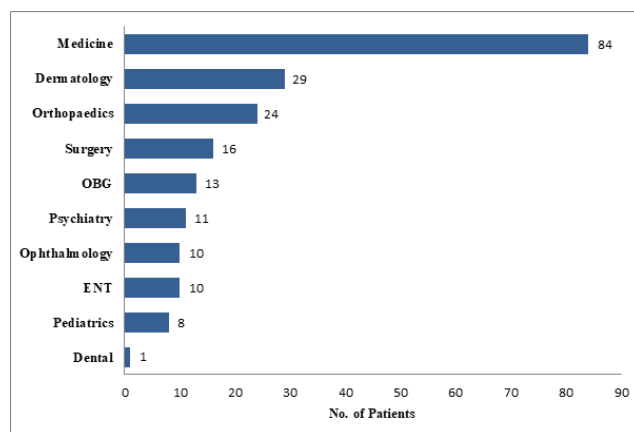


Fig. 5: Patient profiling according to OPD service given

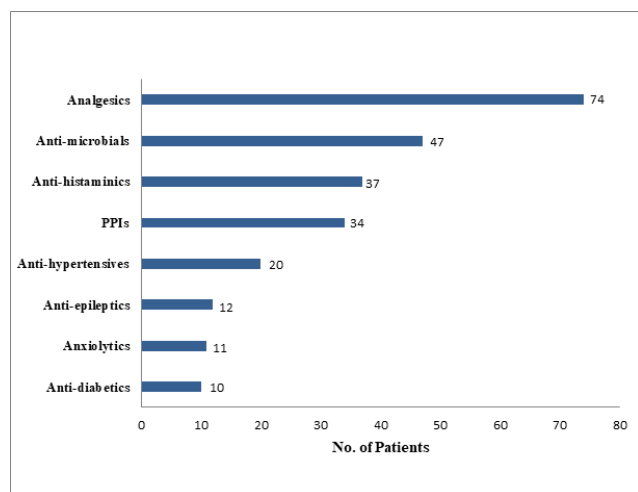


Fig. 6: Distribution of patients based on class of medicine prescribed

acceptability for telemedicine in both genders.

- Maximum patients belonged to the age group of 20-39 years (40.3%) indicating that it is most popular in the adult working class population. It might be because this population is expected to be most well versed & confident with technology usage.
- 71% patients connected from rural area indicating good tele-density in Himachal Pradesh. It also indicates that such telemedicine initiatives are a boon for people living in rural areas.
- The most common organ system involved in the chief complaints of eOPD patients was musculoskeletal, skin & gastro-intestinal system.
- The speciality OPD service required the most by patients having eOPD consultations is Medicine (41%), followed by Dermatology & Orthopaedics. This observation can be made a guiding principle for recruitment of specialists if a telemedicine centre has to be set up.
- Analysis of prescriptions indicates that most of the drugs required by eOPD patients are commonly available over the counter drugs. Most commonly prescribed drugs were NSAIDs/Analgesics (36%), followed by antimicrobials & anti-histaminics.
- Only 38 (18%) patients required to be referred to health-care centre for in-person clinical examination indicating that maximum patients availing eOPD do not require in-person clinical examination or urgent interventions.
- Only 46 (22%) patients required a review after blood/biochemistry investigations indicating that most of the patients generally do not require blood/biochemistry investigations.

6. Conclusion

Our study emphasizes that Telemedicine is an innovative solution to many of the challenges posed by COVID-19 pandemic. It acts complementarily and not as a substitute to conventional in-person OPD services. It can help in substantially decreasing the OPD workload in hospitals & at the same time decrease infection chances for both patients & hospital staff. More such studies with larger sample size should be done. Studies evaluating the economic advantages of & man-hours saved by telemedicine for both patients & hospitals must be done in future.

7. Limitation of the Study

The study was done on a small sample size. Follow up consultation by the same doctor, at the same hub, to the same given patient was not possible due to technical issues. Further study of feedback from the patients need to be done in order to analyse their perception about tele-consultation service. Profiling of patients availing telemedicine consultation was only done in a single eSanjeevani hub at Dr. Rajendra Prasad Govt. Medical College Kangra at Tanda.

8. Source of Funding

Nil.

9. Conflict of Interest

The authors declared that they have no conflict and any competing interests.

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Author biography

Kunwar S D S Guleria, Junior Resident

Nitin Patiyal, Junior Resident

Arun Kumar Negi, Junior Resident

Vikrant Kanwar, Assistant Professor

Kansal Dinesh, Professor and HOD

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