

Smartphone-Based Telemedicine Service at Palliative Care Unit during Nationwide Lockdown: Our Initial Experience at a Tertiary Care Cancer Hospital

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Abstract

Background and Aims: With the COVID-19 pandemic, lockdown, and fear from contagion, the advantages of telemedicine are clearly outweighing the setbacks by minimizing the need for individuals to visit health-care facilities. Our study aims to assess how palliative medicine physicians could follow up on cancer patients and barriers they faced, discuss their results, and evaluate their treatment response with the help of telemedicine. **Materials and Methods:** We conducted a prospective analysis of the smartphone-based telemedicine service at our palliative care (PC) unit from March 25, 2020, to May 13, 2020. We recorded the patient's reason for call, main barriers to a hospital visit, and the assistance given to them by the physician on call. Each caller was asked to measure his/her satisfaction with the service on a 4-point scale. **Results:** Out of 314 patients, 143 (45.54%) belonged to Delhi and 171 (54.46%) belonged to other states. 157 patients sought help for symptom management; 86 patients needed to restock their opioid medications. Seventy-one patients required information regarding their oncological treatments requiring consultation from other departments. Titration of oral opioids and medication prescription ($n = 129$), contact details of other PC units at their native state for opioid procurement ($n = 55$), and attachment to our community-based PC service ($n = 22$) were main modes of management. Fifty-six patients were very satisfied and 152 patients were satisfied with the service. **Conclusion:** Telemedicine is the future of health-care delivery systems. In PC, we deal with immunocompromised debilitated cancer patients and telemedicine is immensely helpful for us to provide holistic integrated care to these patients who are unable to visit hospitals regularly.

Keywords: COVID-19, palliative care, telemedicine

INTRODUCTION

Telemedicine is an old yet poorly adopted concept in oncology care.^[1] In the era of novel coronavirus (COVID-19) pandemic, the telemedicine has regained the popularity.^[2,3] The outbreak of COVID-19 has already been declared as a global pandemic by the World Health Organization on March 11, 2020.^[4] To ensure effective social distancing as an infection control strategy, many nations have declared lockdown. India is also in a lockdown mode since March 24.^[5] Access to standard health care has become more difficult with the strict imposition of laws and restriction of mobility. Moreover, due to the consumption of palliative care (PC) resources for acute care of infected patients,^[6] providing a continuous quality PC service in advanced cancer patients has become a real challenge.

Telemedicine has emerged as a solution to these problems in various specialties involved in cancer care, including PC.^[7-9] Newer technologies, e.g., smartphone-based applications and video calls, have made the service more dynamic.^[10,11] It enables the PC physicians to assess the symptoms and provide

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psychological support to the patients and caregivers. It also serves as an effective triaging system during the pandemic to choose priority patients for home visits and screening of symptoms suggestive of COVID infection.^[12]

These potential benefits can make telemedicine the future of health-care services, even after the lockdown period. Therefore, we have set up a 24 × 7 smartphone-based telemedicine service for cancer patients in the department of palliative medicine. Here, we share our initial experience of 50 days of such service. It gives an insight into the different characteristics of patients, their needs, barriers to access regular services, and level of satisfaction with such services. This helps identify the problem areas of the telemedicine setup and gives an idea to improve it for long-term use.

MATERIALS AND METHODS

We conducted a prospective analysis of the telemedicine service at the PC unit, in the Department of Onco-Anaesthesia and Palliative Medicine, Dr. B.R. AIRCH, AIIMS, New Delhi, from March 25, 2020, to May 13, 2020. Our department has an only phone call-based telemedicine service already in place for the consultation of our follow-up patients. However, in response to the current pandemic and anticipating more vigorous need of telemedicine service, we changed this to a smartphone-based 24 × 7 model. We transferred our previous subscriber identity module card for telemedicine service to an android smartphone with 4G internet connectivity. We used phone calls, text messages, and smartphone-based applications, e.g., WhatsApp Messenger and Skype for audiovisual consultation. We updated our telemedicine contact details in the main hospital website and teleconsultation web portal. A PC senior resident, trained for PC in cancer patients at our department, was posted for 24 × 7 for the service under the supervision of a faculty. We referred to electronic records of our department for details of individual patients, whenever needed during or after the consultation. The PC physicians managed the symptoms at their discretion. We do maintain an online record of the centers giving PC services to cancer patients in different states all over India. We provided the patients the contact numbers of those centers to procure opioids if they cannot come to our hospital. A multidisciplinary assistance was provided to the patients by providing the contact details of telemedicine service of the other specialties, if needed. We noted down the patient's reason for the call, main barriers to a hospital visit, and the assistance given to them by the physician on call. Each caller was called back within 24 h by a second person, who was not related to the previous call made to him. A separate call with an independent person was made to assess the satisfaction level to eliminate intimidation bias. Each caller was asked to measure his/her satisfaction with the service on a 4-point scale: very satisfied (4), satisfied (3), partially satisfied (2), and unsatisfied (1).

RESULTS

We analyzed the telemedicine records of a total of 314 patients over 50 days (March 25, 2020, to May 13, 2020). Among the

patients who availed our teleconsultation service, 143 (45.54%) belonged to the State of Delhi and 171 (54.46%) belonged to other states. Maximum patients (123; 39.17%) were having curative therapy and 103 (32.8%) patients were under the best supportive care only. Among 314 patients, 224 (71.34%) patients were taking opioids under our follow-up. The details of the characteristics of the patients are described in Table 1.

The majority of the patients availed telephone calls and text messages ($n = 167$, 53.18%), whereas video consultations were required for 84 (26.75%) patients. The peak frequency of calls was between 10 A.M. to 2 P.M. (37.58%) and least (4.14%) at night (10 P.M. to 6 A.M.), and the majority of them had a duration of 10–15 min (39.49%). The details of the consultations are discussed in Table 2. Among 314 patients, 157 (50%) patients sought help for symptom management; 86 patients (27.39%) needed to restock their opioid medications. Seventy-one (22.61%) patients called up for information regarding their oncological treatments from other departments involved in cancer care. The major barrier, as perceived by the caller, to avail the hospital services for their patient was restriction of movement across the state borders and lack of transport availability (in 124 patients), terminal patients (in 88 patients), and fear of getting infected (in 71 patients). We provided prescriptions through text messages

Table 1: Characteristics of patients who availed the telemedicine service

	Number of patients (total=314)
Age (years) (mean±SD)	45.39±15.63
Sex (male:female)	148:166
Residence	
Delhi	143
Other states	171
Diagnosis	
Lung cancer	36
GI cancer	38
Hepatobiliary carcinoma	37
Gynecological carcinoma	31
Head and neck cancers	42
Bone and soft tissue sarcoma	41
Breast carcinoma	33
Urological carcinoma	21
Hematological	21
Others	14
Time since diagnosis	
<6 months	147
6 months-1 year	101
>1 year	66
Disease status	
Under evaluation	88
Under active therapy	123
Best supportive care	103
Patients previously on opioids?	
Yes	224
No	90

GI: Gastrointestinal, SD: Standard deviation

Table 2: Details of the teleconsultations

Characteristics of the calls	Number of patients
Number of calls	Number of patients (total=314)
Audio calls only	63
Audio + text	167
Audio + text+ visual	84
Timing of calls	Number of patients (total=314)
6 A.M-10 A.M	48
10 A.M-2 P.M	118
2 P.M-6 P.M	99
6 P.M-10 P.M	36
10 P.M-6 A.M	13
Total duration of calls (min)	Number of patients (total=314)
<5 min	71
5-10 min	62
10-15 min	124
>15 min	57
Reason of call	Number of patients (total=314)
Symptom management	157
Pain	98
Dyspnea	36
Nausea and vomiting	8
Constipation	10
Others	5
Queries regarding oncological treatment from other departments	71
Restocking of opioids	86
Severity of symptoms	Number of patients (total=157)
<4/10	32
4-6/10	97
>7/10	28
Major barrier to avail the hospital service	Number of patients (total=314)
Sealing of borders	124
Patient is terminal	88
No social support to accompany	31
Afraid to come to hospital for fear of infection	71
What was advised at the end?	Number of patients (total=314)
Prescribed for oral titration of opioids	109
Prescribed oral medications for symptom management	20
Referred to the emergency of a nearby hospital in the locality for symptom management	22
Home visit by community based palliative care team with contact details suggested	22
Information of an alternative palliative care unit at the native state with contact details shared to procure opioids	55
Scheduled for our OPD visit for procurement of opioids	12
Contact details of other departments given	71
Monitored end of life care	3

OPD: Outdoor patient department

for titration of oral opioids and medications for other symptoms in a total of 129 (41.08%) patients. 55 (17.52%) patients, who were from other states and needed to restock their opioids, were given contact details of other government hospitals with PC units at their native state. 22 (7%) patients, who were from Delhi, were given contact details of our community-based PC service team for home visits for symptom management. All the patients with complaints of dyspnea (36; 11.46%) were assessed via video calls. Among them, 22 patients from other states were advised to visit the nearby hospitals for the evaluation and drainage of ascitic or pleural fluid.

The rests of the patients (14) were managed with titration of opioids and anxiolytics. Three patients with terminal dyspnea were monitored and provided with end of life care over video consultation. In those patients, oral opioid dose was escalated and the caregivers were reassured about the dignity of death. All the three patients died under our monitored supervision.

We also assessed the satisfaction level of our patients for the telemedicine service [Figure 1]. 56 patients were very satisfied and 152 patients were satisfied with the service. However, 59 patients remained partially satisfied and 47 patients were unsatisfied. The reasons for this were majorly unavailability of multidisciplinary advises over a single call (64 patients). The rest of the 42 patients believed that face-to-face consultations may be more useful for them.

DISCUSSION

Cancer care delivery is facing several challenges due to the COVID-19 pandemic. Telemedicine is a solution to many of the barriers faced by PC physicians when caring for cancer patients without increasing undue risk of infection. This study was developed to assess the efficacy of our new smartphone-based teleconsultation model for PC patients and to identify the needs of the patients and major problem areas for future improvement. We have provided consultations to 314 cancer patients (average daily 6.28 patients) during nationwide lockdown over 50 days.

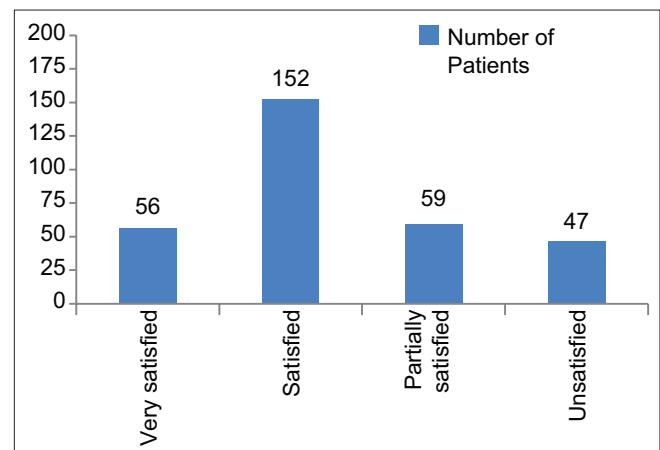


Figure 1: Satisfaction level of patients for telemedicine services using 4-point scale

Smartphone-based teleconsultation models have several advantages. Pak *et al.*^[13] (2018) identified that patients and caregivers have easy access to smartphones and their applications. They also found that it is quite accurate for the assessment of physical symptoms of the patients as compared to the on-site assessment by a physician. All our 314 patients had access to the smartphones with adequate capacity to handle the common messenger applications. The major limitation of the use of these mobile-based applications is the safety of the patient's data. We suggest that the data can be transferred to another protected hospital-based record system and later can be deleted from the mobile device (store-forward-delete system).

In our study, we found that pain and dyspnea are the common symptoms, for which patients availed telemedicine service. Lesley (2020) *et al.*^[14] have also described pain, dyspnea, nausea vomiting, and fatigue as the most common symptoms in advanced cancer patients requiring PC. Another major reason for the call was the stocking of opioid medications. In India, the Narcotic Drugs and Psychotropic Substances Act has already been identified as the major barrier to the availability of opioids.^[15] Due to strict impositions of rules and punishments, it is extremely important to dispense opioids from only registered centers with appropriate forms. We tried to overcome this barrier by providing the patients with information regarding an alternative center for opioids nearby to their residence. One important aspect was the disproportionately less number of patients who called for opioid restocking. Although 224 (71.33%) patients were on opioids previously, only 86 (27.38%) patients were having the problem of restocking of them. There may be two reasons for it. First, we started dispensing opioids for at least 1 month for all patients with proper documentation since early March to decrease the frequency of hospital visits by the patients as a part of our infection control strategy. Second, we kept our outdoor service with limited capacity for opioid dispensing. As some of the patients who belong to Delhi availed for this service, they had adequate opioids for the period of lockdown.

The involvement of different specialties for cancer care is important for the holistic care of cancer patients. Hui *et al.*^[16] (2018) explained the importance of such an approach to deliver complex care to cancer patients. Janssen *et al.*^[17] (2017) highlighted the fact that communications and coordination between teams are important for an effective multidisciplinary approach. In our study, 71 (22.61%) patients were also in need of consultations from other departments, e.g., medical oncology, radiation oncology, and radiation oncology. They needed the information regarding the schedule of chemotherapy, radiotherapy, and surgery, information regarding oral chemotherapy-related drugs, and complications due to recent chemotherapy. Although we provided the contact number of the concerned departments, we were unable to trace back those patients whether their requirements were fulfilled or not. Moreover, they needed to make multiple calls, which was not very convenient. Thus, we suggest that a real-time video conferencing call involving physicians from multiple

specialties, family members, and patient can improve the quality of our service.

Patient satisfaction is the key to assess the efficacy of any service. Although our majority of the patients were satisfied with the service, 106 patients were either partially satisfied or unsatisfied. This indicates a scope of improvement of our services. The major problem area identified was the lack of a multidisciplinary approach to the service. This was also the most common cause (64 out of 106) of lack of satisfaction among patients. This suggests that we need to develop a system for a real-time integrated system for teleconsultations involving other departments.

Our assessment had some limitations too. We were unable to assess the psychological aspects of the patients and caregivers. We could not follow up on our patients who were advised for another PC unit visit, emergency department of nearby hospitals for symptom management, or provided with the contact details of other departments. Following up such patients in the future can improve the outcome and efficacy of our service. Although all our patients had an access to smartphone services, it is important to assess the feasibility of its use in larger patient population. A large well-planned study involving patients from different backgrounds and areas of country should be conducted to assess the access of smartphone-based technologies and expertise of patients for it. Finally, we also could not assess the physician's perception of the service and problems faced by them. Future assessment of physician-reported outcomes can also help improve the service.

CONCLUSION

COVID-19 pandemic may get over it sometime, but it will change our practices for the long term. Telemedicine is going to be the future of health-care delivery systems. In PC, we deal with immunocompromised debilitated cancer patients who are at risk of infection. Hence, telemedicine is going to be helpful for us to provide holistic PC to these patients. In our study, we have found that it is feasible to assist the patients to manage their symptoms by providing real-time assessment using smartphone-based applications. Setting up a multidiscipline setup for telemedicine may improve the service and patient satisfaction significantly. In further evaluation, we also should include the psychological aspects of patients and caregivers for improving our holistic care to cancer patients.

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Conflicts of interest

There are no conflicts of interest.

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