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Tele-health and cancer care in the era of COVID-19: New opportunities in low and middle income countries (LMICs)

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ABSTRACT

In the current era of COVID-19 pandemic where at least some degree of social distancing is the norm and hospitals have emerged as hotspots for acquiring the infection, it has become important for oncologists to devise methods of providing care to cancer patients while minimizing patients’ exposure to healthcare settings. In light of the on-going pandemic, it has been recommended that in-patient visits for cancer patients should be substituted by virtual visits and patients should be advised to proceed directly for infusion treatment. Telemedicine and tele-health based interventions have emerged as reasonably practical solutions to these impediments in the delivery of care to cancer patients. Technological advancements have resolved the issue of connectivity for telemedicine even to the remotest places. Teleconsultation is becoming an acceptable alternative for patients and health care providers in this era of information technology. Albeit the challenges that we are facing are diverse and therefore cannot have a singular full proof answer, telemedicine and tele-health based interventions seem to offer promise in effectively complementing our efforts in that direction. Telemedicine is beneficial for both patients and doctors in term to provide quality care without shifting to physical location.

Introduction

The COVID-19 pandemic has proven to be one of the most significant threats to global healthcare and well-being, affecting millions across the world in a matter of few months. Patients with certain co-morbidities have been found to be more susceptible to suffer from complications of the infection [1,2]. Patients with cancer have been found to not only possess a greater risk of transmission but also a higher risk of morbidity and mortality associated with coronavirus infection [1]. In the current era where at least some degree of social distancing is the norm and hospitals have emerged as hotspots for acquiring the infection, it has become important for oncologists to devise methods of providing care to cancer patients while minimizing patients’ exposure to healthcare settings.

Teledmedicine and tele-health based interventions have emerged as reasonably practical solutions to these impediments in the delivery of care to cancer patients. Since most of the ‘regular well visits’ for cancer patients have either been postponed or cancelled, tele-health based interventions allow oncologists to take care of their patients remotely and monitor their progress [3]. In this perspective, we discuss how tele-health based interventions can help maintain efficient delivery of care for cancer patient during the on-going pandemic.

Teledmedicine the new norm

Many hospitals have set up dedicated telemedicine lines. Technological advancements have resolved the issue of connectivity for telemedicine even to the remotest places. Patients can log in and make
general inquiries which are handled by a team of healthcare provider volunteers. In our practice, many of the calls at the beginning of the lockdown were about anxiety, fear of acquiring infection, and how to cope with the lockdown but shifted to practical aspects of cancer treatment over the time. Teleconsultation is becoming an acceptable alternative for patients and health care providers in this era of information technology. Work performed by our group has highlighted the limitation of telemedicine to treat cancer patients with surgery, chemotherapy, radiotherapy as these procedures require multiple hospital visits and face to face interaction. Telemedicine has been given top priority to reach cancer patients amidst COVID-19 crisis but it has not entered the mature phase of integration into current cancer care delivery after many months. Telemedicine is not a treatment but just a technology, rather it is only a catalyst which can help us to organise our cancer care delivery system.

Telemedicine and patient care

Telemedicine allows assessment of patients in real time and gives physicians the opportunity to communicate with patients to discuss not only regarding changes in symptoms/well being but also allows them to educate patients and discus necessary changes to their treatment plans. Effective communication is the key for most interventions in cancer patients’ care such as treatment plan discussions, providing supportive care, advance care planning, survivorship, etc. Against popular notion, tele-health based interventions, do not compromise the quality and strength of physician-patient communication. In fact, some studies have reported higher patient satisfaction with virtual visits [4].

Cancer patients on active treatment usually require in-person visits for a comprehensive clinical evaluation which includes in-person interview, physical exam as well as on-site radiological and laboratory investigations. However in light of the on-going pandemic, it has been recommended that in-patient visits for these patients should be substituted by virtual visits and patients should be advised to proceed directly for infusion treatment [5]. Although the implementation of such interventions may be very difficult or practically impossible in resource limited settings. These interventions can allow technologically advanced cancer centres to ensure access to pathology and cytology services to cancer patients even in remote areas during current times through establishment of satellite virtual care centres.

Telemedicine and resource constrained settings

Government of India released new guidelines for telemedicine in which Video (Telemedicine facility, Apps, Video on chat platforms, Skype/Face time etc.); Audio (Phone, VOIP, Apps etc.); and Text Based platforms can be utilized. Legal frameworks are being developed and even tele-medicine certification is being planned. Though it was a concern that not all poor patients had smart phones or could schedule telemedicine appointments, this digital divide was perceived as a barrier to access. Even illiteracy or lack of knowledge of medicines is not a hindrance as patients could send images of medicines, prescriptions, blood reports for patients in different states in the India, many in very remote areas. The recommended new prescriptions can be sent and filled locally. Telemedicine has also been utilized to manage difficult cases remotely and even chemotherapy in different states were administered under guidance and monitoring was advised by Tele-hand-holding [6].

Telemedicine assessment of patient

It is worth mentioning that, virtual visits can also serve as an excellent resource to assess changes in functional status and monitor treatment related toxicities in patient. Tele-health based monitoring can not only help in initial evaluation of patients prior to initiation of treatment, it can also be used for continuous monitoring and follow-up of patients during and after treatment. Since mobile devices, tablets and computers are widely available and used today, use of these electronic devices for recording and transmitting electronic patient reported outcomes (ePRO) has been adopted across the spectrum of cancer care settings. The full potential of these platforms has not been explored and new technologies like virtual reality tools etc. are likely to change doctor - patient interactions in the future.

Palliative care via tele-route

Telemedicine can be used to identify patients who would need additional care with palliative support or social services, etc. Effective pain management continues to be a significant part of comprehensive cancer care delivery without the risk of exposing these high-risk patients to infection. Telemedicine has been shown to be associated with positive overall outcomes and improved patient satisfaction in chronic pain management for cancer patients. Table 1 summarizes various tele-health based interventions that have been studied for chronic pain management which has been a major concern for cancer patients especially during lockdown.

Clinical trials in COVID era

Clinical trials and cancer research are the fuel that drives cancer care across the globe. Continued development of newer therapies and treatment advances are vital for enhancing the level of care that cancer patients receive. Unlike clinical protocols for cancer care, clinical trial protocols tend to be very rigid and non-flexible to changes, especially in rapidly changing scenarios as in current times. As much as clinical trials are suffering from lack of resources and short-staffing, thereby affecting overall subject recruitment; the on-going pandemic may also unfortunately be a deterrent for cancer patients to get enrolled into clinical trials as well. Only 20% of institutions are enrolling patients for cancer research and approximately 200 trails have been suspended [10]. In March 2020, the Food and Drug Administration (FDA) released a formal statement on guidance regarding conducting clinical trials in light of the COVID-19 pandemic. In the current scenario, telemedicine may prove to be an excellent resource to assess changes in functional status and monitor treatment related toxicities in patient. Tele-health based monitoring can not only help in initial evaluation of patients prior to initiation of treatment, it can also be used for continuous monitoring and follow-up of patients during and after treatment. Since mobile devices, tablets and computers are widely available and used today, use of these devices for recording and transmitting electronic patient reported outcomes (ePRO) has been adopted across the spectrum of cancer care settings. The full potential of these platforms has not been explored and new technologies like virtual reality tools etc. are likely to change doctor - patient interactions in the future.

Table 1

| Modality of tele-health | Description | Evidence supporting use |
|------------------------|-------------|------------------------|
| Direct contact consultation | Using tele-health services, non-specialist healthcare providers discuss options for pain management for patients with specialists. | - Extension for community health outcomes project (ECHO): Project developed by University of New Mexico (UNM). Through video conferencing or telephone, general practitioners meet periodically with a multidisciplinary team of physicians specializing in chronic pain management. Individual cases of patients are discussed and best treatments are selected based on recommendations of the team. - Speciality Care Access Network (SCAN) of the VA healthcare systems works in a similar manner as well [7]. - Reduced hospital admissions and reduction in need for in-person visits reported by Delligraine et al. [8]. - The VA healthcare system has adopted a direct-contact: hub and spoke model at some sites [9]. |
| Direct-contact home-based | Using tele-health technologies, chronic pain management is provided to patients remotely at home. Patients are directly referred by hubs (facilities staffed by generalists) to spokes (clinics staffed by specialists in pain management). | |
| Direct-contact hub and spoke | | |
be a beneficial aid and can be used to effectively conduct various steps of clinical trials including pre-trial eligibility assessment, consent, participation and follow-up [11].

Conclusion

It is well understood that the after-effects of COVID-19 would last for much longer than current times. Vulnerable populations such as cancer patients would have to continue to practise varying degrees of lifestyle modifications in order to minimize their exposure to the virus. Cancer care and clinical research would continue to adhere to their ‘new normal’ for the greater good of communities and patients. Albeit the challenges that we are facing are diverse and therefore cannot have a singular full proof answer, telemedicine and tele-health based interventions seem to offer promise in effectively complementing our efforts in that direction. Telemedicine is beneficial for both patients and doctors in term to provide quality care without shifting to physical location. Care teams and health systems across the world need to focus on innovating and developing newer technologies to incorporate virtual care into the practice of oncology. Telemedicine is here to stay and revolutionize cancer care in the times to come.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] A. Shankar, D. Saini, S. Roy, A. Mosavi Jarrahi, A. Chakraborty, S.J. Bharti, et al., Cancer care delivery challenges amidst coronavirus disease - 19 (COVID-19) outbreak: specific precautions for cancer patients and cancer care providers to prevent spread, Asian Pac. J. Cancer Prev. 21 (3) (2020) 569–573, https://doi.org/10.31557/AJPCP.2020.21.3.569, Epub 2020/03/28 PubMed PMID: 32212779.
[2] A. Shankar, T. Seth, D. Saini, S.J. Bharati, S. Roy, Oncology nursing challenges during COVID-19 outbreak: precautions and guidance, Asia Pac. J. Oncol. Nurs. 7 (4) (2020) 305–307, https://doi.org/10.4103/apjon.apjon_39_20, PubMed PMID: 33062822.
[3] M. Ueda, R. Martins, P.C. Hendrie, T. McDonnell, J.R. Crews, T.L. Wong, et al., Managing cancer care during the COVID-19 pandemic: agility and collaboration toward a common goal, J. Natl. Compr. Canc. Netw. (2020) 1–4, https://doi.org/10.6004/jnccn.2020.7560, Epub 2020/03/21 PubMed PMID: 32197238.
[4] C.S. Krone, N. Krown, B. Rodriguez, L. Tran, J. Vela, M. Brooks, Telehealth and patient satisfaction: a systematic review and narrative analysis, BMJ Open 7 (8) (2017) e016242, Epub 2017/08/05, doi: 10.1136/bmjopen-2017-016242, PubMed PMID: 28775180, PubMed Central PMCID: PMC5629741.
[5] B. Potluri, A. Alvarez Secord, D.K. Armstrong, J. Chan, A.N. Fader, W. Huh, et al., Anti-cancer therapy and clinical trial considerations for gynecologic oncology patients during the COVID-19 pandemic crisis, Gynecol. Oncol. 158 (1) (2020) 16–24, https://doi.org/10.1016/j.ygyno.2020.04.694, Epub 2020/05/11 PubMed PMID: 32386911.
[6] McKinstry B. Telemedicine: the good and bad of living a hype 2020. Available from: https://perspectives.esmo.org/latest-edition/promoted-content/telemedicine-the-good-and-bad-of-living-a-hype.
[7] S. Arosa, S. Kalishman, K. Thornton, M. Komaromy, J. Katzman, B. Struminger, et al., Project ECHO (Project Extension for Community Healthcare Outcomes): a national and global model for continuing professional development, J. Continu. Educ. Health Profession. (2016) 36.
[8] J.L. Dellifraire, K.H. Dansky, Home-based telehealth: a review and meta-analysis, J. Telemed. Telecare 14 (2) (2008) 62–66, https://doi.org/10.1258/jtt.2007.070709, Epub 2008/03/20 PubMed PMID: 18348749.
[9] J.K. Eled, J.L. Fontenberry Jr., The hub-and-spoke organization design: an avenue for serving patients well, BMC Health Serv Res 17 (Suppl 1) (2017) 457, doi: 10.1186/s12913-017-2341-x. PubMed PMID: 28722550.
[10] Nalin Goyal, Deepak Saini, Harpreet Angurlal, Richa Richa, Vikrant Kaushal, A. Shankar, COVID-19 and its impact on cancer Patient’s outcome and cancer research, Asian Pacif. J. Cancer Care 5 (Suppl 1) (2020) 199–201, https://doi.org/10.31557/apjcc.2020.5.S1.199-201.
[11] S.J. Sirintrapun, A.M. Lopez, Telemedicine in Cancer Care, Am. Soc. Clin. Oncol. Educ. Book 38 (2018) 540–545, https://doi.org/10.1200/EDBK.200141, Epub 2018/09/21 PubMed PMID: 30231354.