

Cancer Care Delivery Challenges in India during the COVID-19 Era: Are We Prepared for the Postpandemic Shock?

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The coronavirus disease-2019 (COVID-19) pandemic has affected virtually every sector of a country. The cancer care delivery system is one of the worst affected systems in the health sector, especially in developing countries such as India. Most cancer patients living in rural areas are normally required to move to big cities to receive proper cancer treatment. Nationwide lockdowns, imposed during late March in efforts to curb the spread of the infection, have disrupted cancer care delivery services, which led to delays in diagnosis or treatment initiation and treatment interruptions or rescheduling, resulting in progression of disease and poor survival. Diversion of resources to combat COVID-19 has resulted in an inadequate workforce that cannot meet the demands of the cancer care delivery services during this difficult time. This pandemic has broadened the inequality and disparity gaps in care delivery associated with inadequate cancer care infrastructure that cannot handle the current cancer burden. High hopes have been placed on vaccines against COVID-19 for cancer care delivery services to return to normal. Postpandemic cancer care is expected to be a major challenge for oncologists in view of the increasing

number of cancer patients waiting, for months, to resume or start treatment in an already strained health-care system. Cancer patients will face the threats of not only delayed cancer treatment but also the associated morbidities and mortalities. Available data and strategies of other countries on managing the COVID-19 pandemic should be adopted for the improvement of cancer care system in India during the COVID-19 pandemic and beyond it.

Introduction

COVID-19 is an infectious disease first reported in Wuhan, China, in December 2019. It has, within weeks, spread to many countries, subsequently leading to the World Health Organization's declaration of this outbreak as a Public Health Emergency of International Concern on March 11, 2020.^[1] Currently, over 215 countries or territories have been affected, with more than 17 million confirmed cases and at least 0.66 million deaths by July 30, 2020, and the numbers keep increasing every minute.^[2]

This paper highlights the rising cancer incidence in India; in addition to cancer-associated mortality, status

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of the cancer care delivery system before the pandemic and the ways this pandemic has affected this system are described. This paper also predicts the cancer care situation in the postpandemic era and highlights solutions for such challenges to minimize the suffering of cancer patients. This predictive analysis will help us establish effective strategies to deal with the shortcomings and provide better cancer care delivery services.

Cancer Epidemiology and Cancer Care Delivery System in India during the Pandemic

The COVID-19 pandemic has affected virtually every sector of a country including the economic, agricultural, telecommunication, transportation, and health-care systems. The cancer care delivery system is one of the worst affected health sectors, especially in developing countries such as India, where 95% of cancer centers are situated in urban areas, while 70% of the population lives in the rural areas.^[3] Cancer patients are bound to move from villages to big cities or different states to get proper treatment, which is nearly impossible due to the travel restrictions and countrywide lockdowns implemented.

At present, there are approximately more than 4.5 million patients with cancer in India, who are either in follow-up or different stages of treatment. In India, over 1.5 million new cancer patients are registered every year and approximately 780,000 die from cancer, which makes cancer the second leading cause of death after cardiovascular diseases.^[3]

Nationwide lockdowns were imposed in India during late March in efforts to curb the spread of the infection. However, this has consequently disrupted cancer care delivery services, leading to delays in diagnosis or treatment initiation and treatment interruptions and rescheduling, resulting in the progression of the disease and poor survival.

The financial crisis due to the lack of household earnings and losses incurred by small businesses has been another important factor for treatment interruption. As cancer treatment is a long-term process, the majority of patients who undergo treatment in big cities away from home relocate to shelters or dharamshalas near hospitals or even reside on footpaths outside these hospitals. Therefore, lodging for these patients and their caregivers has become a big issue during the COVID-19 pandemic.

There are many cancers that are curable with treatment, but this lockdown has brought uncertainty to the survival of such patients due to the inaccessibility of treatment. Treatment delays have been attributed to many factors, and it is difficult to predict the time when treatment delivery will return to normalcy.^[4]

Cancer care requires a multimodal approach, and radiotherapy is an essential component. Based on the study by Möller *et al.*, around half of the diagnosed cancer cases required radiotherapy treatment in one form or another.^[5] Many government-run medical colleges and private hospitals provide cancer care facilities in India. The general population mostly prefer receiving cancer treatments in government institutions where these are either free or subsidized, whereas private hospital services are accessed by patients who can afford their own treatment expenses or have insurance or other coverages. Cancer care delivery has further been slowed down due to the diversion of resources toward tackling COVID-19 in many government institutions by changing cancer hospitals into dedicated COVID-19 hospitals and posting staffs to specifically work for COVID-19 patients. State-of-the-art cancer treatment devices such as the Gamma knife, Cyberknife, and proton beam machines are scarce in number and mostly owned by private institutes, which are not affordable for the poorer strata of the society. At this point in time, when resources are directed toward the care of COVID-19 patients, it is very difficult for the general population to start or continue their cancer treatment in private hospitals, which is beyond their means. The available workforce has not been adequate, due to the lack of trainees specializing in oncology, in meeting the demands associated with the rising number of cancer cases. Therefore, this pandemic has broadened the inequality and disparity gaps in cancer care delivery associated with inadequate cancer care infrastructure that cannot handle the current cancer burden. Barriers such as long-distance traveling to receive cancer care, accumulation of cancer patients, and the already strained health-care system will contribute to delayed diagnosis and treatment.

Each institution has either formulated their own evidence-based guidelines or is following national or international guidelines for effective cancer management during the COVID-19 pandemic. Prioritization of patients according to expected outcomes has been recommended.^[6,7] Radiotherapy schedules are being changed from conventional to hypofractionated schedules, especially in breast and prostate cancers. Moreover, decisions regarding long- and short-course radiotherapies for rectal cancers have become more important in these times. Extreme hypofractionation-like stereotactic body radiotherapy involves fewer fractions but is associated with increased planning and treatment time, and it has its own set of complications. Modifications of chemotherapy schedules are also being considered. These include conversion from weekly or two-weekly regimens to three-weekly regimens or from intravenous administrations to oral therapies to decrease the chances of immunosuppression and reduce

the number of hospital visits. Nonurgent surgeries are being postponed, and only patients who require urgent interventions are being admitted.^[4] Nonavailability of drugs and scarcity of blood units in blood banks are some other reasons for treatment delay, especially in patients with hematological malignancies who require frequent blood transfusions.

Cancer Care in the Post-COVID-19 Pandemic Era

An increased load of patients in cancer care facilities is expected in later months in this year when patients start to visit hospitals for screening, diagnosis, treatment initiation or continuation, and follow-up. Approximately 100,000 cancer cases per month will go undiagnosed in India, and the numbers might change depending on the travel restrictions and transport availability over the following period. Thus, the COVID-19 crisis will eventually lead to disease progression in cancer patients, diagnosis at an advanced stage, and thus will adversely impact patient outcomes.

At present, no data are available to calculate the number of cancer patients affected by COVID-19 in India. Studies from other countries such as China and Italy have shown that cancer patients are more vulnerable to coronavirus infection, with higher severity and mortality compared to the general population.^[8] A study conducted in the Chinese mainland showed that the estimated infection rate of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in cancer patients was double the cumulative incidence of all diagnosed COVID-19 cases. Lung cancer was reported to be the most common cancer type with adverse outcomes; furthermore, 28.6% of the cancer cases were suspected to have acquired COVID-19 from the hospitals.^[8] Apart from affecting patients care, the COVID-19 pandemic has greatly hindered cancer trials and research due to the unavailability of oncology staff and resources in this period of health-care emergency. Most of the studies have been put on hold, and COVID-19-related trials are being given priority. Other ongoing trials are presented with obstacles at every step such as participant enrollment due to the decreased patient turnover in hospitals, data entry, breaks in treatment protocols, delays in the reporting of toxicities or adverse effects, and data collection, among others. Missed hospital visits and the difficulties associated with getting radiological or laboratory workups were done on time interferes with adherence to study protocols and lead to difficulty in the assessment of end points. Study outcomes will also be affected in the case of SARS-CoV-2 infection in participants. Delays in completion of ongoing trials will increase the cost and also negatively affect the development of new drug and treatment standards.^[9,10]

Approach, Strategies, and Way Forward

The current pandemic will incur adverse effects on all aspects of cancer care and negatively affect patients' overall outcome. These patients will face the threats of delayed cancer treatment and vulnerability to COVID-19. Available data and strategies of other countries on controlling the pandemic should be adopted to improve the cancer care systems in India during the COVID-19 pandemic and beyond it.

These include ensuring ample supply of medication and protective equipment, individualized cancer treatments that balance the risks of disease progression and infection, educating cancer patients regarding preventive measures along with the signs and symptoms of COVID-19, aggressive screening policies for cancer patients, encouraging telemedicine to decrease hospital visits, and social distancing measures in treatment facilities. There is anecdotal evidence of a lesser degree of telehealth engagement among our rural, older, and minority patients, as well as among patients with whom language is an issue. Data should be collected for all COVID-19-positive patients to help better understanding of the disease in the Indian context. Specific measures should be implemented to ensure proper utilization of limited health-care resources during this crisis.

As a long-term management strategy, facilities should strengthen the management of COVID-19 while avoiding the negligence toward cancer care treatment. Cancer care delivery has come to a standstill in many institutions and is affecting the outcomes of cancer patients. Once these institutions start functioning normally, they will encounter an overcrowding of cancer patients, which may adversely affect the delivery system. Therefore, cancer care facilities of both government and semi-government setups require careful planning for postpandemic cancer delivery to smoothen the overall experience of cancer patients who are already stressed by the disease. For cancer patients to receive treatment at home or in a district hospital, excellent nursing care will be required to keep patients safe, comfortable, and for the management of any adverse reactions during treatments.^[11] There is a need to establish more and strengthen the existing government-run cancer centers to ensure uninterrupted and affordable treatment near patients' homes during times of crisis and afterward as well. In addition, screening measures and cancer awareness programs should be increased to help early detection and decrease cancer incidence.

To reestablish cancer care following the COVID-19 pandemic, oncologists must remember the lessons learned

from this pandemic and overcome the obstacles encountered in providing cancer care services. It is important to understand the impact of modifications in cancer care delivery services and research during an emergency and adopt this knowledge as new standard practices to ensure safer, more effective, and higher quality care and research in the future.

Therefore, from clinical, moral, and financial perspectives, clinicians and health-care systems must prioritize policy reforms to improve cancer care delivery services in rural parts of India, maintain a continuum of care, and improve monitoring of services to facilitate patient access to cancer care facilities and patient compliance to treatment.

This pandemic has increased our awareness about the shortcomings of the cancer care delivery system in India and taught us the importance of mitigating them by establishing more cancer centers, especially in rural areas, to minimize disparities and inequalities in access to cancer care experienced by the general population. The presence of cancer treatment facilities near patients' residences will greatly support them in the postpandemic era.^[12]

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Conflicts of interest

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