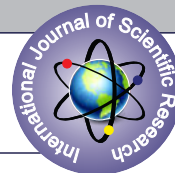


## THE IMPACT OF COVID-19 NOVEL DISEASE ON CANCER CARE – A REGIONAL CANCER CENTRE EXPERIENCE



## Oncology/Radiotherapy

|                           |                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Dr. C. Ramachandra</b> | Director, Kidwai Memorial Institute of Oncology, Bengaluru                                                                    |
| <b>Dr. Vijay C R</b>      | Associate Professor, Department of Epidemiology and Biostatistics, Kidwai Memorial Institute of Oncology, Bangalore           |
| <b>Dr. Ashalatha D</b>    | Assistant Professor, Department of Radiation Oncology, Kidwai Memorial Institute of Oncology, Bangalore                       |
| <b>Dr. P Sridhar*</b>     | Associate Professor, Department of Radiation Oncology, Kidwai Memorial Institute of Oncology, Bangalore *Corresponding Author |
| <b>Mr. Venkatesh K</b>    | Statistical Assistant, Department of Epidemiology and Biostatistics, Kidwai Memorial Institute of Oncology, Bangalore         |

## ABSTRACT

**Background:** Covid-19 pandemic is affecting health systems around the world. People living with Non-Communicable Diseases (NCDs) are affected the most. Cancer care activities are disrupted in terms of preventive, early detection, diagnosis, treatment and follow-up. **Aim:** The aim of study is to know the magnitude of discomfort to patients due to COVID-19 lockdown with respect to Hospital accessibility and Patient's perspective. **Materials and Methodology:** Study was conducted at Kidwai Memorial Institute of Oncology (KMIO). Longitudinal data was collected to know the effect of COVID-19 on Cancer Care. Data was collected from all departments. Trend from January 2020 to December 2020 was observed. **Results:** The new registration decreased in April and July by around 50% and an increasing trend was observed from August. The same trend was observed in Diagnostic investigations. A decreasing trend in Admission was observed from April-2020. The number of surgeries performed decreased to more than 50% in the month of April, May and July-2020. Radiotherapy treatments reduced by around 50% in the month of April and July. 53.2% decrease in Chemotherapy cycles was observed in April and July. **Conclusion:** The Cancer care in terms of diagnosis and treatment was affected during the April and July months and it subsequently improved from August-2020. Although the service was available, there was a decrease in the number of patients seeking care for obvious reasons such as non-availability of transport and economic reasons in seeking Cancer care.

## KEYWORDS

Non communicable disease, COVID-19, Regional Cancer Centre, Hand Sanitization, COVID appropriate behavior.

## INTRODUCTION

The Health systems around the world has been affected the most due to Covid-19 pandemic. It is playing havoc in the delivery of health care, which is a basic fundamental right of every human being. The care of people living with Non-Communicable Diseases (NCDs) such as cancer, heart diseases and diabetes are affected the most. It has made life harder for billions of people across the globe to survive and overcome the impact of viral disease, and to access the health care they need. Before the pandemic, NCDs were the biggest cause of deaths globally killing 41 million people each year and most of these deaths occur in low-middle income countries including India.

Cancer burden Globocan 2018, Cancer is a serious disease that affects the lives of millions around the globe (1). The nature of the cancer disease and its treatment, requires frequent visit to health care facilities and prolonged treatment time compared to other diseases. Cancer treatment of patients is a multidisciplinary team approach. During the disease course, patients require multiple hospital visits for assessment by different clinicians and to undergo many laboratory or imaging tests for diagnosis, staging monitoring of treatment effects in addition to various types of procedures and interventions. It has severely caused disruption of cancer care activities irrespective of whether preventive, early detection, diagnosis, treatment and continued follow-up. A majority of the cancer patients present with advanced diseases to the cancer care center. As per the latest estimates, at present about 14 lakh new cases are reported in India every year (2).

Kidwai Memorial Institute of Oncology (KMIO) is a premier and State of art cancer care and Research center in the state of Karnataka and is a center of Excellence. It is estimated that in Karnataka, about 78,000 new cases are reported every year. The population-based cancer Registry functioning at Bengaluru registered around 11,000 new cancer cases with an Age-adjusted incidence rate of 126 and 157 per 100,000 populations in males and females respectively (3). The Hospital Based Cancer Registry functioning at KMIO since 1984, registers around 20,000 new cases every year with more than 3 lakh times patients visiting the hospital for treatment and follow-up purposes (4). As seen globally and in India, the current Covid-19

pandemic has adversely affected the cancer care services. The aim of this study is to know the magnitude of discomfort to patients due to COVID-19 lockdown with respect to Hospital accessibility and from Patient's perspective. The present study is to share the understanding and experience of the impact of Pandemic on the cancer care activities in a Regional Cancer Center.

## METHODOLOGY

The Hospital-Based Cancer Registry (HBCR) registers around 20,000 new cases every year with more than 3 lakh follow-ups of patients visiting the hospital for treatment. The Guidelines from the Ministry of Health and Family Welfare (MOHFW) Government of India were optimally followed in the Institute (5).

The patient movement and exposure by stepping outside the house must be limited for recent treatment completed patients. An observational study was done to know the difference in magnitude of patients visit to Kidwai Memorial Institute of Oncology, Longitudinal data was collected to analyze the amount of effect due to COVID-19 on New Registration, diagnosis and follow-up, Observation was also focused on various modalities of treatment in the Regional Cancer Centre.

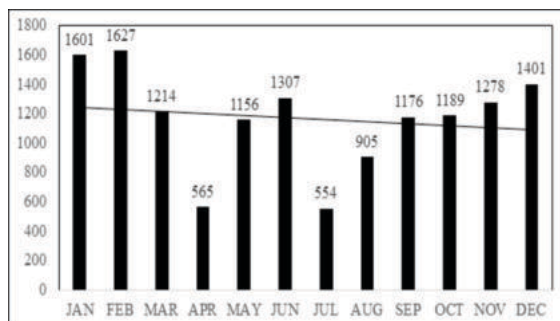
The data was also collected from different departments which includes Radio diagnosis, Pathology, Biochemistry, Microbiology and treatment data from Surgical Oncology, Radiation Oncology and Medical Oncology departments. The above study is mainly focused on observing the trend from January 2020 to December 2020. The procedure followed in the COVID-19 crisis at KMIO was, sample collection done for all the new patients who were registered from January-2020 to December-2020.

ICMR core-proforma was used to collect the demographic and symptom data from the patients who had COVID-19 symptoms, samples were collected and sent for KMIO lab for COVID-19 test, once report was confirmed COVID-19 negative patients were allowed to follow-up or registering for further treatments, positive patients were referred to dedicated COVID-19 Centers for COVID-19

treatment which was established by Government of Karnataka (5).

## RESULTS:

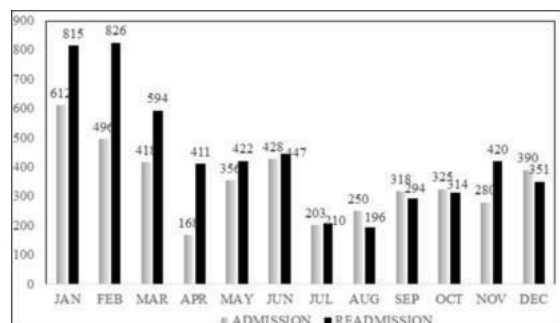
All the Cancer patients were evaluated and categorized. All emergency treatments were given without any delay. Bulk Short Message Service was sent to all Patients regarding the COVID-19 awareness and their scheduled cancer care treatment.



**Fig no1:** New Registration in KMIO January to December 2020

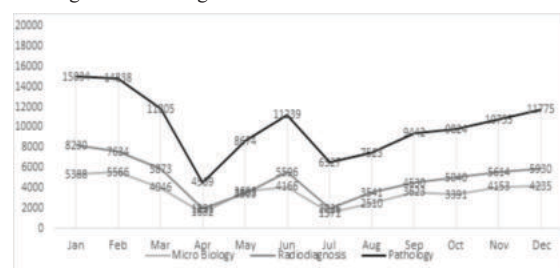
Fig no1. Shows the number of new registration cases at Kidwai Memorial Institute of Oncology from January 2020 to December 2020. A total of 13973 cases was registered during the year 2020, On an average 1600 new patient registrations were observed during the COVID-19 crisis of the Lockdown period. The new registration decreased to 1214 in the month of March and 565 in the month of April-2020, in May and June month of the year 2020 again increasing in new registration was observed and in July, August 554 and 905 New registrations were seen. The trend is stabilized after September month, as the COVID-19 guidelines were revised and unlock protocol was initiated.

Fig no 2 Depicts the number of admission and readmission over January to December month of the year 2020. A 73% decrease in admission and a 50% decrease in readmission was observed compared to general days of the month from April. From September onwards, an increase in admission and re-admission was observed.



**Fig no2:** Admission and Readmission at KMIO January to December 2020

Fig no3: A 55% and 57% decrease in microbiological diagnosis was observed during April and July month. With respect to Biochemical investigations, 55% and 40% decrease in the investigation was observed in the month of April and July. A 59% decrease in Radiological diagnosis was observed in the month of April and July-2020. The almost same trend was observed in Pathological investigations, it reduced by 55% and 35% respectively in April and July. All clinical investigations done in the Institute showed an increasing trend after August month.



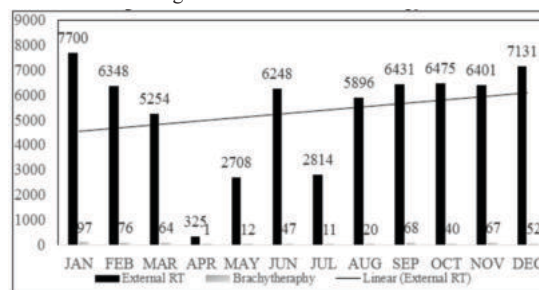
**Fig no3:** KMIO-Investigations: Jan to Dec-2020

Effect on the modality of the treatment given during the COVID-19 was analyzed. The impact of COVID-19 on cancer Surgery was analyzed. Compared to average surgery performed on general days of the month on an average of 420-450 surgeries were done in Kidwai Memorial Institute of Oncology. Due to the COVID-19 pandemic situation, the number of surgeries performed at Kidwai Memorial Institute of Oncology decreased by almost 50% from April to July. The number of Major surgeries also followed the same trend. After the end of October month, the surgeries done at Kidwai Memorial Institute were stabilized (Table No.1).

**Table No.1: No. of Surgeries Performed at KMIO**

| Surgery                                  | #    |
|------------------------------------------|------|
| Total Surgery Jan to DEC                 | 2973 |
| Total Surgery Mar to July                | 816  |
| Average Surgery Per Month in Normal Days | 291  |
| Average Surgery in COVID-19 Crisis       | 204  |
| Percentage decreased                     | 29.9 |
| Average Major Surgery in Normal days     | 291  |
| Average Major Surgery in COVID-19        | 148  |
| Percentage decreased                     | 50.9 |

Fig no 4 explains regarding the number of patients treated by Radiotherapy between Jan to Dec -2020. During the COVID-19 crisis, the number of patients treated by Radiotherapy was reduced by around 50% in April and July. An increasing trend in Radiotherapy treatment was observed from August-2020.



**Fig No 4.** No. of Treated Cases in Radiotherapy Jan-Dec 2020

**Table No.2: No. of Chemotherapy cycles given to patients at KMIO**

| Chemotherapy                                   | No. of Cycles |
|------------------------------------------------|---------------|
| Total Chemotherapy Jan to December             | 17435         |
| Average Chemotherapy in Normal Days of a month | 2227          |
| Average Chemotherapy in COVID-19 Crisis        | 1185          |
| Percentage decreased                           | 53.2          |

Table no 2 gives the number of chemotherapy cycles taken by the patients during the general days of the month and by comparing with the COVID-19 crisis, almost 53.2% of the patient load is decreased.

## DISCUSSION:

In the normal days around 1600 new patients were being registered per month and during the peak of Pandemic (March 2020 and July 2020) on an average around 1200 patients were registered and the lockdown enforced by the Government has shown a gradual decrease in the total registrations of patients with hardly one-third of the patients visiting during the peak lockdown period of April 2020 (6). For Diagnosis and treatment, very few of the cancer patients visited the hospital for continued cancer care during the COVID-19 situation. Clinical Oncologist needs to decide regarding the benefit of the cancer treatment by considering the COVID-19 infection and its implications, hence separate Standard Operating Procedure was made to give maximum benefit to patients. Similar results were obtained from the Vishal Jindal and Kamal Kant Sahu study which explains about global pandemic of coronavirus disease 2019 (COVID-19).

The patients need cancer-directed treatments such as Surgery, Radiotherapy and Chemotherapy as a multidisciplinary approach without delay. Various health bodies around the world have come up with standard guidelines in each department to be followed during COVID-19. The treatment needed thorough evaluation at weighing the risk of COVID-19 infection versus the benefit of cancer care in the present health emergency. Oncologists are striving hard every day to

provide the best and appropriate care to cancer patients. They have to outweigh the risk and benefit of giving cancer treatment vs chances of infection with COVID-19. As cancer patients are immunocompromised and there are high chances of exposure during hospital visits and if they get infected and become COVID positive the outcome can be fatal. The basic guidelines in the management of cancer patients during the COVID-19 pandemic must be followed (7-8).

The hospital functioned normally taking necessary precautions as per the guidance provided by International and National agencies. The consultants of Kidwai Memorial Institute of Oncology gave more preference to the telemedicine approach and gave virtual assistance to many patients who were unable to visit the institution. In such health emergencies, newer innovations must be followed to give better health care to the public and improve digital health. The Study also reported that about 30% of patients were affected in their oncological treatment and follow-up. In the majority of cases, this resulted in conversion from hospital visits to consultations by phone/SMS or video call. Chemotherapy (30%) and Immunotherapy (32%) were the most frequently adjusted treatments. About 55% of the patients were worried about delay in initiation of treatment and 63% of patients were anxious about the discontinuation of Cancer treatment due to lockdown and other consequences of the COVID-19 pandemic (9-10). The clinical and lab services functioned normally with staff taking rotation duties and safety measures to handle the patients as per the Standard Operating Procedures framed from the institute. Considering the risk of Covid-19, the hospital is a Non-Covid care center, elective surgeries were reduced without interrupting emergency care (11-12). Since the Institute had a Covid-19 testing (using RT-PCR) laboratory, there was not much delay in starting treatment, as the test results could be obtained in less than 48 hours and prompt care was offered to all concerned patients. There was a decrease by 48% in the number of surgeries performed, as many of the patients planned for surgery were referred for treatment with Neo-adjuvant Radiotherapy and/or Chemotherapy (13-14).

Compared to the routine number of Surgeries in the Institute, around 48% of overall surgeries decreased and about 51% of major surgeries decreased in pandemic time. Dinesh C Sharma conducted a study at Tata Memorial Hospital, Mumbai also found that a global modeling study on the impact of the COVID-19 pandemic on surgeries projected that 59.7% of cancer surgeries were postponed in India during the peak 12 weeks of disruption, translating to 51,100 postponed cancer surgeries (15-16). In general days, around 400-500 surgeries per month were performed and during the COVID-19 crisis, it decreased to about 200 surgeries per month. Adequate precautions must be taken to prevent aerosolization in the operation theaters of high-risk surgery cases. Measures must also be taken for the installation of air purifiers to prevent COVID-19 infection to patients, nursing staff and the medical fraternity.

Other than April and July, the Radiotherapy treatment was not affected much in the COVID-19 crisis. Lack of transportation during the lockdown time has caused a lot of inconvenience to the patients to reach the RCC. Radiotherapy treatment noticed approximately regular magnitude after August (17-19). Some of the studies from Kidwai Memorial Institute of Oncology reported that Hypofractionated radiotherapy schedules are to be used wherever feasible thereby reducing the overall treatment time and the exposure of Cancer patients to COVID-19 and also treating the cancer patients (20-22).

All the guidelines framed by the Ministry of Health and Family Welfare (MOHFW) were followed from time to time to avert the COVID outbreak in the Institute. Awareness about COVID appropriate behavior was given time and again every day at the peak of the COVID-19 pandemic to the patients, caregivers and hospital staff. Measures were taken to provide a free mask to patients and caregivers, hand sanitization procedure was demonstrated by live streaming in the televisions and social distancing was followed very strictly in all sections of the institute.

On regular days, on an average 2,200-footfall of patients were observed in chemotherapy or Daycare treatment, in the COVID-19 crisis a decrease of 50% was observed. The Health system and major health institutions across the country must gear up and revamp the health infrastructure by prioritizing the health sector and be prepared to face the ripples of the COVID-19 pandemic.

## CONCLUSION:

Considering our grave concern first and foremost for patients who have been unable to access needed cancer treatment, Kidwai Memorial Institute of Oncology has been able to deliver the optimum possible cancer care to the patients. Cancer care, both in terms of diagnosis and treatment was much affected during April and July. Further data analysis of patients attending the institute will facilitate understanding more regarding the stage at presentation, whether there was any change in the protocol of management modified due to the pandemic situation and its impact on the disease status. Although the service was available, there was a decrease in the number of patients seeking care for obvious reasons such as non-availability of transport, economic reasons arising due to the pandemic and lack of social or family support in seeking cancer care.

It is pertinent to note that the fear of contracting Covid-19 especially knowing that cancer and its treatment raise the risk for Covid-19 related morbidity and mortality kept away many people with cancer from visiting the cancer center even when there was a dire need for hospitalization. Further, the potential for increased risk of late-stage cancer for those who missed their screening is another major concern. Lockdowns and travel restrictions, fear of contracting Covid-19 and increased financial constrain on families have exacerbated the disease burden. The current pandemic has pushed people into poverty. High costs of medicines and disrupted supply chains (especially in rural areas) can have tragic consequences if the services are not planned and executed properly. According to the Global Burden of Diseases (GBD) forecasting study, for most countries, prioritizing NCDs and NCD-related risks in health planning and investment decisions has the potential to markedly reduce mortality.

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