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Impact of the COVID-19 Pandemic on Cancer Care in Iraq: Exploratory Research

Ahmed K. Ahmed,[1] Mohammad Omar Farouq Alkaiyat,[2] Hoda Jradi,[3] Abdul Rahman Jazieh,[4] and Layth Mula-Hussain[5, 6, *]

[1] *Department of Oncology, Anbar Cancer Center, Anbar Health Directorate, Ramadi, Anbar, Iraq.*
[2] *Department of Oncology, King Abdullah International Medical Research Center, King Saud bin Abdulaziz University for Health Sciences, Riyadh, KSA.*
[3] *Department of Community and Environmental Health, College of Public Health and Health Informatics, King Saud Bin Abdulaziz University for Health Sciences, Riyadh, KSA.*
[4] *Cincinnati Cancer Advisors, Cincinnati, Ohio, USA.*
[5] *Radiation Oncology Division, The Ottawa Hospital Cancer Centre, Faculty of Medicine, University of Ottawa, Ontario, Canada.*
[6] *College of Medicine, Nineveh University, Mosul, Iraq.*

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ABSTRACT

Background: The COVID-19 pandemic has a tangible impact on the health care systems globally and is represented by interruption of the usual services in many health facilities and exposing vulnerable patients to significant risks.
Objectives: We aimed to evaluate this pandemic's impact on Iraq's cancer care.
Materials and methods: We conducted an exploratory study using a validated web-based questionnaire of 51 items. The questionnaire collected information on the capacity and services offered at the Iraqi cancer centers, the magnitude of care disruption, reasons for the disruption, challenges faced, patient harm estimation, and the interventions implemented during the pandemic.
Results: 18 cancer centers from 11 Iraqi governorates took part between 21st April and 8th May 2020. These centers were serving around 18,867 new patients per year. Most of them (72.2%) were facing challenges in delivering their care during the pandemic. Although 44.4% of the centers reduced their services as part of a pre-emptive strategy, other reported reasons included lack of personal protective equipment (22.2%), an overwhelmed system (11.1%), and a restricted approach to medications (11.1%). Missing at least one therapy cycle by $>$ 10% of the patients was reported in 38.9% of the centers. Participants have reported that their patients were exposed to potential harm from interruption of cancer-specific care (44.4%) and non-cancer-related care (33.3%).
Conclusion: The negative impact of the COVID-19 pandemic on cancer care in Iraq is evident. Additional research to estimate such an effect at the patients' level and the required measures to counteract this problem is vital.
Keywords: COVID-19; Iraq; Cancer; Care.

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INTRODUCTION

The emergence of the novel coronavirus disease 2019 (COVID-19) was started in Wuhan, China, in December 2019, and it progressed rapidly and crossed the borders to many other countries [1]. The World Health Organization (WHO) has announced that COVID-19 is a global pandemic on 11th March 2020 [2]. The pandemic is still ongoing despite all the measures taken. Its confirmed affected cases were 102,107,858 people and impacted the lives of 2,207,834 worldwide, as per the Corona Virus Resource Center's record at the Johns Hopkins University on 30th January 2021. Simultaneously, 618,147 people were confirmed infected, and 13,036 were died due to the infection in Iraq [3]. Based on these numbers, the case fatality rates were 2.16 and 2.11, worldwide and in Iraq, respectively.

* Corresponding author: E-mail: lmulahussain@aol.com
Phone number: +1 7803184589

Although COVID-19 impacted the whole people, there are specific subgroups that are more seriously affected. Among those most at risk of getting worse outcomes from the infection are the cancer patients. Unlike other patients, cancer patients need repeated and continuous visits to the hospitals for assessment by different clinicians, starting from the diagnosis and staging to the treatment and follow up. The negative impact was not only on the cancer patients, but it extended to the oncologists who are part of the team responsible for cancer patient care [4].

The COVID-19 pandemic has negatively influenced the health care systems, including cancer services. The critical implications of the pandemic on cancer care included, and not limited to interruption of patients' visits to the health care facilities (whether for screening, diagnosis, treatment, or follow up) due to travel restrictions and patients' wariness, changing and reducing in the treatment modalities to reduce the risk and the increasing need for more protective measures. Moreover, health care resources are exhausted and directed forward to respond to the pandemic, which resulted in delaying or less-optimal care for cancer patients. Cancer patients are a vulnerable population and can be seriously affected and complicated by such pandemic disease. Hence, oncology clinicians face a significant challenge to make the proper balance in cancer patients' care.

The protective and precautionary measures applied in this situation are deleting or postponing unnecessary procedures, discharging the inpatients, and decreasing the outpatients' visits and number [5, 6]. Although the negative impact of the COVID-19 pandemic is global; however, it may be more impactful in the low- and middle-income countries because of the lack of health care providers and health facilities, insufficient protective measures and equipment, and inadequate health education [7].

The Iraqi cancer board at the Ministry of Health in Baghdad planned multiple recommendations in managing cancer patients right after this pandemic declaration in March 2020 to reduce the infection's spread as much as possible. These recommendations included: increase awareness among the staff and patients about the clinical features of COVID-19 disease and send any suspicious case to do the diagnostic tests, postpone the follow-up visits, stop admitting patients for palliative care, switch intravenous chemotherapy to oral type and the conventional fractionation to the hypofractionation in radiotherapy if possible, use the treatment plans with more time between the cycles, prioritize patients for surgery, activate the telehealth, reduce the presenting staff in the centers, and provide the personal protective equipment (PPE) for the health team [8].

A consortium of researchers from different countries conducted a global study during the second quarter of the pandemic to measure cancer care patterns during this period and quantify the pandemic's impact on various cancer care delivery components in 54 countries, including Iraq [9, 10]. In parallel with that global study, the authors here explore the effects of the COVID-19 pandemic on cancer care in Iraq in particular.

To our knowledge, this is the first national initiative that addressing this issue, which was also presented as a virtual oral presentation at the Anbar first International Medical Conference COVID-19: Updates on Management and Outcome, during the period from 28th to 29th, November 2020, at Anbar University in Iraq.

MATERIALS AND METHODS

This cross-sectional study was performed to measure the impact of COVID-19 on cancer care in Iraq. The survey questionnaire consisted of multiple questions to assess the Iraqi oncological facilities' response during the pandemic and evaluate the oncologists' awareness of the harms and precautionary aspects.

An electronic survey in the English language was created using a SurveyMonkey platform (SurveyMonkey, San Mateo, CA), and it was selected by the original global research team [10]. The survey was electronically distributed to the targeted participants, who were senior oncologists involved in managing cancer patients in different Iraqi cancer centers and were oriented about their centers' information. Patients were not included in our study.

The survey included different sections: characteristics of the participated centers (location and type of the organizations, types of offered services, and the number of served patients per year), disruptions in the cancer care services (continuation or interruption of the services, and reasons of the interruptions), potential harms that may affect the cancer patients, diagnosis and management of COVID-19 (diagnosed cases in the city, diagnosed patients without cancer, diagnosed patients with cancer, diagnosed cancer center staff, availability of PPE, and availability of practice guidelines for COVID-19 diagnosis and management), and virtual services that were applied during the time of the pandemic (availability and management of virtual tumor boards, availability and management of virtual clinics, the possibility of the persistence of these services after the pandemic subsides, and shipping of medication to the cancer patients).

The completed questionnaires were collected from the participants, and the data were entered into Excel, and the descriptive statistical analysis was done using the SPSS version 20th statistical software (SPSS Inc., Chicago, IL, USA).

RESULTS

A survey of 18 participants from 11 Iraqi governments-including Anbar, Babil, Baghdad, Basra, Dhi Qar, Erbil, Karbala, Kirkuk, Nineveh, Salahuddin, and Sulaymaniyah-were compiled. Figure1 is showing the locations of these centers on Iraq's map.

Table 1 summarizes the characteristics of the participated centers. The majority (83.3%) were governmental centers. These centers are serving around 18,867 new patients with cancer per year.

Most of these centers (72.2%) reported disruption in delivering their services during the pandemic time; although, 27.8% remained fully opened and didn't reduce their care. The pre-emptive strategy was the main reason behind the cancer care interruption (44.4%); however, other centers declined their services due to lack of PPE (22.2%), an overwhelmed system (11.1%), and restricted access to medications (11.1%) as shown in Table 2.

It was estimated that more than 10% of the patients missed one cycle of therapy in the least, as reported in 38.9% of the centers. As a protective measure, many of the centers reduced visits to outpatient clinics. Participants have reported patients' exposure to harm from interruption of cancer-specific care (44.4%) and non-cancer-related care (33.3%), as in Table 3.

The confirmed COVID-19 cases among the cancer patients and the centers' staff in April−May 2020 were reported in

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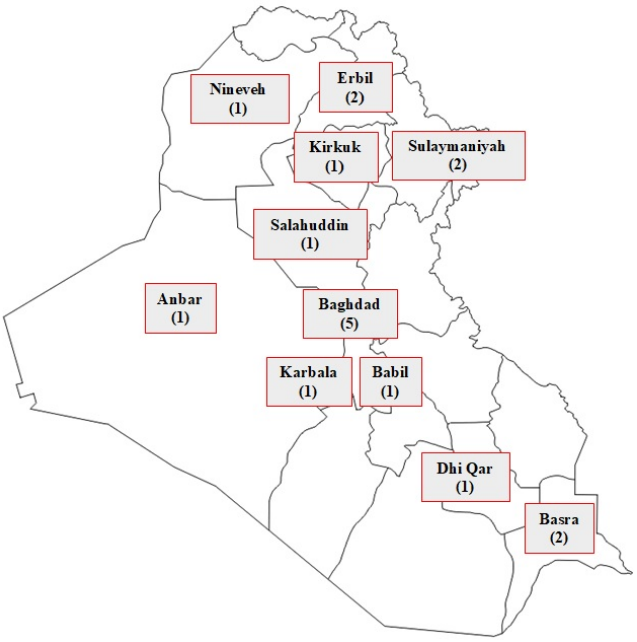

Figure 1. Participating centers and their cities.

16.7% and 5.6% of the centers, respectively. Multiple centers reported shortages in the PPE and mainly in the N95 masks (77.8%) and face shields (61.1%). The clinicians followed and applied different guidelines in managing and prioritizing cancer patients during the pandemic time. More details are in Table 4.

Most of the centers have canceled the physical tumor boards (44.4%), while others proceeded to virtual boards (27.8%). The outpatient clinics remained only physical in 44.4% and only virtual in 11.1%. Most of the participants believed that these changes would not continue after the pandemic. Remote care for patients like doing routine laboratory investigations near the patients' homes and delivering medications to them was applied by 50% and 38.9% of the centers, respectively, as shown in Table 5.

Table 1. Characteristics of enrolled centers.

Characteristics	Number (%)
Number of enrolled centers	
1. Anbar	1 (5.6%)
2. Babil	1 (5.6%)
3. Baghdad	5 (27.8%)
4. Basra	2 (11.1%)
5. Dhi Qar	1 (5.6%)
6. Erbil	2 (11.1%)
7. Karbala	1 (5.6%)
8. Kirkuk	1 (5.6%)
9. Mosul	1 (5.6%)
10. Salahuddin	1 (5.6%)
11. Sulaymaniyah	2 (11.1%)
Type of cancer center	
Part of a larger organization	6 (33.3%)
Stand alone	12 (66.7%)
Type of health care organization	
Academic	1 (5.6%)
Governmental	15 (83.3%)
Private	2 (11.1%)
Services offered	
Cancer surgery	5 (27.8%)
Systemic cancer therapy	17 (94.4%)
Stem-cell transplantation	2 (11.1%)
Radiation therapy	8 (44.4%)
Palliative care	11 (61.1%)
New patients served/year*	
< 1000	6 (33.3%)
$1000-2000$	11 (61.1%)
> 2000	1 (5.6%)

* The total number of cases served per year about 18,867.

DISCUSSION

The significant impact of the novel COVID-19 pandemic on cancer care in Iraq was demonstrated and highlighted in this study. The pandemic's effect touched each of the cancer patients, the health staff, and the resources. Most of the cancer centers in Iraq faced challenges in delivering their care during this pandemic. A reduction in their workload represented that, and different approaches regulated these challenges. Understanding how this impact influences cancer care will be crucial for the current and upcoming times.

When the COVID-19 outbreak started, the cancer patients began receiving suboptimal care in the whole world. The health services' capacity decreased in screening visits, diagnostic procedures, treatment modalities, and follow-up schedules. These negative impacts were demonstrated in many recent observative and analytic, local and international studies [11–13].

The precautionary measure was the more straightforward and instant adaptive strategy followed during the pandemic time to control infections among the population. This approach was the main reason behind reducing cancer care, and it was determined through the adaptive recommendations and guidelines on the management of cancer patients during this pandemic [14]. As cancer patients' treatment during pandemic diseases is crucial, it is essential to follow the national and international guidelines for this issue. The Iraqi cancer board has arranged the cancer centers' work by applying national policy and recommendations to reduce the number of infected cases among the patients and staff [8]. Multiple global guidelines were recently published in the literature to manage cancer patients during this pandemic [15, 16]. By applying the guidelines, treatment modification looks to be a better option than stopping [17]. Different national responses with inconsistent guidelines' components to regulate cancer care during the pandemic in the Middle East and North Africa (MENA) countries were reported [18].

In this pandemic situation and circumstances, the inability to access the needed health services and the lack of staff and pharmaceutical resources are additional challenges. Pharmacy arrangement and management are essential components during the crisis to maintain an adequate supply of health resources, including medications and protective equipment [19]. Different health agencies have actions to guide and deal with the shortage of drugs and equipment [20, 21]. Highlighting such a deficit in the health resources is crucial to let the health stakeholders take suitable procedures to overcome the obstacles from such pandemic issues [22, 23].

As noticed in this study, Iraqi cancer patients have faced

Table 2. Disruption of cancer care services and causes for the disruption.

Issue	Number (%)
Center closure	
No, it remained fully opened	5 (27.8%)
No, but the reduced workload	13 (72.2%)
Yes, partially closed	0 (0%)
Yes, completely closed	0 (0%)
Reasons for interruption of usual care	
Overwhelmed health care system	2 (11.1%)
Staff shortage because of infection	0 (0%)
Precautionary measure	8 (44.4%)
Lack of PPE*	4 (22.2%)
Lack of medications	2 (11.1%)
Lockdown/travel ban	1 (5.6%)
No change in care	1 (5.6%)
Continuation of surgery	
No	3 (16.7%)
Yes, fully	0 (0%)
Yes, partially	3 (16.7%)
Service not available	12 (66.7%)
Continuation of radiation therapy	
No	0 (0%)
Yes, fully	5 (27.8%)
Yes, partially	4 (22.2%)
Service not available	9 (50%)
Continuation of systemic therapy	
No	0 (0%)
Yes, fully	7 (38.9%)
Yes, partially	10 (55.6%)
Service not available	1 (5.6%)
Continuation of stem-cell transplantation	
No	1 (5.6%)
Yes, fully	0 (0%)
Yes, partially	2 (11.1%)
Service not available	15 (83.3%)
Continuation of palliative care	
No	0 (0%)
Yes, fully	2 (11.1%)
Yes, partially	10 (55.6%)
Service not available	6 (33.3%)
Access to cancer medications	
No access to any medications	1 (5.6%)
No access to a few medications	10 (55.6%)
No access to many medications	2 (11.1%)
Access to same baseline medications	5 (27.8%)

* PPE: personal protective equipment.

Table 3. Potential harms to patients reported by participants.

Issue	Number(%)
Patients missed at least one cycle of treatment, %	
<10	11 (61.1%)
11−25	3 (16.7%)
26−50	4 (22.2%)
Outpatient clinic visit	
Canceled personal clinic/ no virtual visit	1 (5.6%)
Postponement/ Minimized personal clinic/ virtual visit	12 (66.7%)
Minimized personal clinic/ virtual clinic	3 (16.7%)
Continued as usual	2 (11.1%)
Patients sought treatment in other centers	
No	8 (44.4%)
Yes	2 (11.1%)
Do not know	8 (44.4%)
Potential harm to patients	
Lack of access to cancer-related treatment	8 (44.4%)
Lack of access to non-cancer-related treatment	6 (33.3%)

different sorts of harms, such as missing the treatment cycles, lacking the cancer-related medications, and reducing the clinic visits. These harms also were reported in another single-institute local observative study [11] as well as in other countries [10, 13]. During the COVID-19 time, most countries were struggling with the challenges and shortage in different health services, including the PPE and access to various treatments [24]. Besides, the cancer-related harm during this pandemic has a broad spectrum, including stopping the screening and preventive measures, delaying diagnosis and staging, delaying treatment initiation for new patients, postponing current therapy, disrupting the palliative care and dealing with treatment complications, and affecting the clinical studies [25, 26]. By highlighting these obstacles in a specific and clear picture through different observative reviews, we could help future researchers better deal with such complications.

Telehealth issue is one of the growth strategies during the last few years, and it was widely activated during the novel COVID-19 pandemic to accommodate the complications on the cancer patients [27]. This developing tool can help cancer patients in such a crisis to continue communicating with fewer risks. Moreover, this approach could reduce the hospital visits personally and physically during the pandemic time, ensure the patient's safety by decreasing exposure risks to vulnerable people, get better access to care, and reduce healthcare costs [17]. Recent studies involving cancer patients found that telehealth was linked with a higher quality of life and less depression and distress than usual care. In line with Iraq, telehealth and telemedicine tools have also been used in many countries during this pandemic [28].

The participating centers in this study were 18 (60% of the estimated 30 cancer centers in Iraq) with an estimated number of new cancer patients of 18,867 (60% of the 31,502 new cancer patients in Iraq, based on the latest 2018 cancer registry) [29]. This rate is acceptable to represent the complete care and give a good analysis. However, the participation of the remaining may clarify the full picture in this topic. The survey has been collected early on the COVID-19 pandemic, and this may not reveal the complete picture and information about this disease. Although this is the first national initiative to assess cancer care in multiple local centers, other single-institutes' studies from each center could add more information. Moreover, including the cancer patients' feedback and their clinical outcomes in further studies will support the results and give more inputs about dealing with the pandemic diseases.

Although the COVID-19 pandemic has negatively impacted the health care systems and exposed additional risks to the population, it spurred us to gain some of the beneficial knowledge regarding how to avoid and deal with the harms and challenges in any future pandemic, and that might be of

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Table 4. Diagnosis of COVID-19 and infection control management.

Issue	Number(%)
COVID-19 diagnosis in the city	
Yes	15 (83.3%)
No	3 (16.7%)
Do not know	0 (0%)
COVID-19 diagnosis among non-oncology inpatients	
Yes	5 (27.8%)
No	12 (66.7%)
Do not know	1 (5.6%)
COVID-19 diagnosis among non-oncology outpatients	
Yes	6 (33.3%)
No	9 (50%)
Do not know	3 (16.7%)
COVID-19 diagnosis among oncology inpatients	
Yes	2 (11.1%)
No	15 (83.3%)
Do not know	1 (5.6%)
COVID-19 diagnosis among oncology outpatients	
Yes	2 (11.1%)
No	15 (83.3%)
Do not know	1 (5.6%)
No. of infected patients with cancer in the center	
Yes	3 (16.7%)
No	13 (72.2%)
Do not know	2 (11.1%)
Diagnosis of infected staff of the center	
Yes	1 (5.6%)
No	17 (94.4%)
Do not know	0 (0%)
Shortage of PPE*	
No shortage	4 (22.2%)
N95 masks	14 (77.8%)
Surgical masks	2 (11.1%)
Gloves	3 (16.7%)
Gowns	3 (16.7%)
Goggles	7 (38.9%)
Face shields	11 (61.1%)
Availability of guidelines for managing patients with cancer†	
Not available	1 (5.6%)
Local/hospital guidelines	10 (55.6%)
National/governmental guidelines	9 (50%)

* PPE: personal protective equipment.
† Can select more than one option.

Table 5. Virtual services and remote care provided by participating centers during the pandemic.

Issue	Number(%)
Availability of tumor boards	
Median	1.4
Range	0-5
Change in tumor boards	
All canceled	8 (44.4%)
All physical	2 (11.1%)
All virtual	5 (27.8%)
Virtual and physical	0 (0%)
Virtual and canceled	3 (16.7%)
VTB likely to persist after COVID-19 pandemic*	
Yes	7 (38.9%)
No	11 (61.1%)
Outpatient clinic	
All physical	8 (44.4%)
All canceled	2 (11.1%)
All virtual	2 (11.1%)
Virtual and physical	6 (33.3%)
Types of virtual clinics	
No virtual clinics	7 (38.9%)
Telephone encounter	11 (61.1%)
The virtual clinic will continue after the pandemic	
Yes	3 (16.7%)
No	15 (83.3%)
Performing laboratory tests near patients' homes	
Yes	9 (50%)
No	9 (50%)
Delivering medications to patients' homes	
Yes	7 (38.9%)
No	11 (61.1%)
Types of medications shipped	
Hormonal therapy	13 (72.2%)
Oral chemotherapy	12 (66.7%)
Narcotics	5 (27.8%)
Injectable	5 (27.8%)
IV home infusion†	1 (5.6%)
IV infusion in another facility	1 (5.6%)

* VTB: virtual tumor board.
† IV: intravenous.

a value for the health system in general and the oncology field in specific [30]. Moreover, this pandemic induced the efforts to create the relevant clinical and applicable guidelines during this crisis, doing many research types to surround such situations and fill the gaps by increasing the beneficial collaborations. We expect that the health care systems, including cancer care, will recover and return to normal condition after controlling this pandemic issue from the inspection and monitoring. Also, we may continue to apply some of the remote care and improve the technological tools that have been used during the pandemic time if they ease the care with a less negative effect on the outcome; however, this may need prospective assessment to continue.

CONCLUSION

COVID-19 pandemic impacts cancer care in Iraq. In this study, the detrimental effect of the pandemic has been highlighted concisely. For the being time and future benefit, additional research is crucial to evaluate such effects on the patients and the necessary measures to overcome this situation. The pandemic resulted in different experiences and lessons, which emphasized the need for appropriate guidelines to ad-

just and guide dealing the practice during the future crisis to avoid the possible harm to our patients and improve their care, which needs to unite the efforts of the nation with the global cancer care stakeholders.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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