

# Maintaining Essential Oncological Care and Treatment Services During Covid 19 Pandemic - Challenges and Adaptive Responses Among Care Providers in Nigeria- Online Multicenter Study

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## ABSTRACT

The COVID-19 pandemic has added a new dimension to the various challenges impacting Oncological care in low and middle-income countries. This study aimed to assess the challenges and responses of caregivers from developing countries in providing essential oncology services during the COVID-19 pandemic. This is a cross-sectional descriptive study design using a web-based, structured questionnaire administered to professional caregivers on challenges and adaptive responses to treatment cancer clients during the lockdown using the social media platform. Data was analyzed using Statistical Package for Social Sciences 20 (SPSS 20) and a  $P \leq 0.05$  was considered statistically significant. Although most respondents (82.5%) had their state of practice on lockdown for over four weeks, 7.5% of them maintained full Oncology service. Service disruptions were mainly due to the inability of patients to secure transportation services for their appointments (90%) and the fear of contracting Covid 19 by healthcare providers (70%). The immediate consequence was the feeling of abandonment (60%) and the progression of disease (67.5%). Also, despite 97.5% and 90% of respondents' institutions having an Infection control committee and plan, just 12.75% and 25% of respondents had access to Face masks and Hamzat suit respectively. Mainly, academic activities went virtual, with 40% and 47.5% of respondents having their Tumor board meetings and Journal presentations through this means. This study has shown that adopting technology in low and middle-income countries is crucial to maintaining essential Oncology services during the coronavirus pandemic.

**Keywords:** Covid-19,, Developing Countries, Pandemic ,Oncology Service

## INTRODUCTION

The global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018<sup>1</sup>. Millions of people are diagnosed with cancer around the world, and more than half of the patients eventually die from it particularly in low- and middle-income countries where approximately 70 % mortality due to cancer occurs. In many countries, it ranks the second most common cause of death following cardiovascular diseases<sup>2</sup>. Cancer is a

growing global threat and prevention is key to slowing its ravaging pace. Prevention and management techniques for cancer in developing countries have always been faced with challenges. These range from limited diagnostic and treatment facilities, lack of state-of-the art equipment to enhance care effectiveness, and other barriers to healthcare access. With the advent of Corona virus infection also known as COVID-19, the challenges increased and even became more pronounced.

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Coronavirus disease is an infectious disease caused by a newly discovered coronavirus. The coronavirus belongs to a family of viruses that may cause various symptoms such as pneumonia, fever, breathing difficulty, and lung infection<sup>3</sup>. While these viruses are common in animals worldwide, very few cases have been known to affect humans. The World Health Organization (WHO) used the term 2019 novel coronavirus to refer to a coronavirus that affected the lower respiratory tract of patients with pneumonia in Wuhan, China on 29 December 2019-4,5,6. It has been established that the elderly and those having underlying diseases such as cancer are at greater risk to the novel corona virus infection given their reduced immunity state<sup>7</sup>. There is a growing concern about people who are already infected with the virus and feel generally healthy, yet they serve as spreaders of the disease to persons around them as they go about their daily lives<sup>8</sup>.

According to Stephen Morse, an epidemiologist, it's being estimated that 1 in 4 coronavirus carriers could be asymptomatic as there is significant transmission by people not showing symptoms<sup>9</sup>. This is further corroborated by Robert Redfield, the director of the Centres for Disease Control and Prevention who affirmed that 25 percent of people infected with the new coronavirus don't present any symptoms or fall ill but can still transmit the illness to others<sup>9</sup>.

In developing countries such as Nigeria where testing capacities for COVID-19 are significantly inadequate, the tendency is high for health workers to get easily infected with the novel virus. It is on record that as of April 30, 2020, 113 health workers had tested positive to the corona virus in Nigeria<sup>10</sup>. The statistics could be a lot higher considering the low pace of testing in the country and the asymptomatic nature of the infection in some infected people. Many patients who seek healthcare for other diseases or conditions could have 'silently' transmitted the virus to their caregivers since they could not be screened before receiving healthcare. Therefore, it would be difficult to correctly estimate the proportion of caregivers infected with COVID-19 if testing is not adequate and timely. Patients with cancer are more susceptible to infections and more likely to be carriers of novel Covid-19 due to their

weakened immune systems. Yet, cancer patients are numerous and consistent management of their health condition is necessary to control the progression of the disease.

From the foregoing, it becomes extremely important at this time to get feedback from caregivers regarding operational challenges encountered in providing oncological care and treatment services since the beginning of the pandemic as well as the adaptive responses.

Other relevant findings to make are on the availability of the Personal Protective Equipment (PPE) as well as academic, Training and Research activities since majority of the centers offer capacity building for undergraduate and postgraduate students in medicine, nursing and other related medical and paramedical fields.

The objective of this study therefore is to assess the lessons, challenges and responses from care providers in developing countries on services towards cancer care and treatment in the era of COVID-19 pandemic. The study outcomes would bring about proposition of management strategies that would be safe and beneficial for cancer prevention and treatment notwithstanding the ongoing phase of COVID-19 transmission.

## MATERIALS AND METHODS

This study was carried out among care providers in selected oncological care and treatment centers within the six geopolitical zones of Nigeria.

The study was a descriptive cross-sectional design and the target population were facility-based care providers at Federal Medical Centers, Specialist Hospitals and Teaching Hospitals. Included in the sample were willing Surgical, Radiological, Gynecological, and Medical Oncologists, resident doctors rotating through oncology clinics, Psychologists, Laboratory scientists, Pharmacists in Oncology clinics, and Nurses in Oncology clinics. Facility staff who were unwilling to participate lacked internet access, or lacked a device to complete the electronic form were all excluded.

In order to ensure representative sampling, all consultant oncologists heading oncology clinics

were contacted to post a one-page recruitment poster on WhatsApp group. This poster contained a brief information about the study title, aim, procedures, declarations of confidentiality of responses, and a link to the online questionnaire.

A researcher-developed, online structured questionnaire was used for gathering data. The online questionnaire provided a better chance of preventing interference that could arise from respondents completing the questions in the presence of other respondents. The questionnaire comprised three sections. Section A described respondents demographic and occupational characteristics, section B assessed the challenges they encountered in providing Oncological care during the lockdown while Section C assessed the adaptations they made to training and research activities.

Data was analyzed using SPSS 20. Descriptive and inferential statistics analysis were used to describe items included in the survey. Mean and standard deviations were used to describe continuous variables, while frequency and percentages were used for categorical data.

A written ethical approval was obtained from the Ethics and research Committee of the College of Health Sciences, Osun State University, Osogbo while researchers were guided by the principles for ethical research as stated in the Declaration of Helsinki.

## RESULTS

Socio-demographic characteristics of the respondents listed in Table 1, comprised 10 variables that define respondents' professional status. Persons aged greater than 45 years constituted the peak age category as well as the majority of our respondents (32.5%, n=13). Radiation Oncologist (25%, n=25) were the largest number of specialists in this study while other caregivers that dominated the study were Medical Physicists (17.5%, n=7), Resident Doctors (15%, n=6), Surgical Oncologists (10%, n=4) and Nurses (7.5%, n=3). In addition, 55% (n=22) of the respondents had been practicing for over 10 years.

From Table 2, it could be noted that only 12.5% (n=5) of respondents didn't have their state of practice on

lockdown, compared to the remaining 87.5% (n=35). Among these, 82.5% (n=33) had the lockdown lasting for more than 4 weeks, with only 25% (n=10) of them experiencing full lockdown in their states. Despite the lockdown, just 25%(n=1) of respondents experienced a total shutdown of oncology services at their facility compared to the 7.5%(n=3) and 90%(n=36) of respondents' who either maintained full operation or partial operation at varying levels.

Table 3, lists lack of transportation 90% (n=36) and Fear of contracting COVID-19 among healthcare workers 70% (n=28) as the main factors contributing to oncological services disruption. In Comparing Oncological treatment practices before and after the COVID-19 pandemic (Table 4): respondents said admissions to wards 40%(n=16), Outpatient clinic consultations 37.5%(n=15) and preventive oncological practices 37.5%(n=15) markedly reduced, while clinical procedures for oncology clients 35%(n=14)), psycho-oncological care 32.5%(n=13) and chemotherapy for them 32.5%(n=13), only reduced. Contrastingly, emergency operations for these clients largely remained static 30%(n=12). Disease progression 67.5%(n=27) and feeling of abandonment 60%(n=24) were the major immediate consequences observed among cancer clients during the lockdown (Table 5). Varying Infection prevention and control measures were available at respondents' facilities during COVID 19 pandemic (Table 6). All the respondents had surgical face masks 100%(n=40), hand gloves 97.5%(n=39), an infection control committee 97.5%(n=39) and an infection control plan 90%(n=36). Also, although, half of the respondents had access to combined surgical gown with plastic apron, as much as 87.5%(n=35) and 75%(n=30)of them respectively, lacked fixed fixed paraffin embedded FFPI face masks and Hamzat suits. Expiration of consumables 20%(n=8) and faulty machines 20%(n=8) were the most common institutional constraints experienced during the lockdown (Table 7).

With regards to academic activities (Table 8): the majority of respondents 35%(n=14) said bed site teaching markedly reduced while 40%(n=16),

37.5%(n=15), and 35%(n=14) of respondents said seminar presentations, research activities and tumor board meetings only reduced respectively. Table 9 shows that oncological services were mainly either hospital based or maintained through virtual platforms. Also, majority of respondents 65%(n=26) said outpatients' clinic consultations remained hospital based while 35%(n=14) said the same about psycho-oncological care. Journal clubs 47.5%(n=19) and tumor board meetings 40%(n=16) mostly held virtually. During these virtual meetings, coordination of such meetings was mostly very good 30%(n=12) while the majority of our respondents said during the meetings- punctuality was 47.5%(n=19), concentration -47.5%(n=19) and consistency - 45%(n=18) (Table 10). In the future, the majority of respondents 42.5%(n=17) and 37.5%(n=15) were very likely to adapt technology (Table 11) for academic seminars and professional conferences respectively while 32.5%(n=13) remained neutral to its use in Tele-surgery.

**Table 1: Sociodemographic Characteristics of Respondents (n=40).**

Variable	Frequency	Percentages
<b>Age in years</b>		
Less than 30 years	8	20
30-34 years	5	12.5
35-39	6	15
40-44	8	20
Greater than 45 years	13	32.5
<b>Sex</b>		
Male	22	55
Female	18	45
<b>Marital Status</b>		
Single	9	22.5
Married	31	77.5
<b>Religion</b>		
Christian	31	77.5
Moslem	9	22.5
<b>Designation</b>		
Resident doctor	6	15
Radiation oncologist	10	25
Clinical oncologist	1	2.5
Surgical oncologist	4	10
Dietician	1	2.5
Pharmacists	1	2.5
Nurse	3	7.5
Laboratory scientist	2	5
Medical laboratory technician	1	2.5
Medical physicist	7	17.5
Medical record	1	2.5
Nutritionist researcher	2	5
Radiation therapist	1	2.5
<b>Years of Practices</b>		
Less than 5 years	11	27.5
5-10 years	7	17.5
More than 10 years	22	55

**Table 2: Lockdown Experience, Type of Lockdown, Duration and Operation of Oncological Clinics during the period.**

Variable	Frequency	Percentages
<b>State of practice placed on lockdown due to COVID-19</b>		
Yes	35	87.5
No	5	12.5
<b>If yes, number of weeks</b>		
Less than 4 weeks	7	17.5
More than 4 weeks	33	82.5
<b>Type of lock down</b>		
Partial	30	75
Full	10	25
<b>Operation of oncological services during lock down</b>		
Full operation (100%)	3	7.5
Partial operation (75%)	12	30
Partial operation (50%)	11	27.5
Partial Operation (25%)	13	32.5
No operation (0%)	1	2.5

**Table 3: Factors that contributed to oncological services disruption during the lockdown.**

Variable	Yes	No	I don't know
Inability of patients to present for appointment due to lack of transportation (n=40)	36(90%)	4(10%)	0(0%)
Patient could not afford care due to the lockdown (n= 40)	12(30%)	20(50%)	8(20%)
Hospital officially closed activities (n=40)	17(42.5)	22(55%)	1(2.5%)
Fear of contracting COVID 19 among healthcare workers (n=40)	28(70%)	7(17.5)	5(12.5)
Others (n=40)	4(10%)	16(40%)	20(50%)

**Table 4: Comparison of Oncological care and treatment practices before and after the advent of the Covid-19 Pandemic**

Variable	Markedly Increased	Increased	Static	Markedly Reduced	Reduced	Not applicable
Outpatient clinic consultations (n=40)	3(7.5%)	5(12.5%)	5(12.5%)	15(37.5)	11(27.5)	1(2.5)
Clinical Procedures for oncology clients(n= 40)	5(12.5%)	3(7.5%)	5(12.5%)	13(32.5%)	14(35%)	0(0%)
Admission into wards(n=40)	2(5%)	6(15%)	4(10%)	16(40%)	12(30%)	0(0%)
Preventive oncological services(n=40)	0(0%)	11(27.5)	5(12.5%)	15(37.5%)	6(15%)	3(7.5%)
Elective Operation for oncology clients(n=4 0)	0(0%)	5(12.5%)	9(22.5%)	14(35%)	7(17.5%)	5(12.5%)
Chemotherapy for oncology clients(n=40)	1(2.5%)	7(17.5%)	8(20%)	9(22.5%)	13(32.5%)	2(5%)
Radiotherapy for oncology clients	3(7.5%)	4(10%)	6(15%)	4(10%)	9(22.5%)	14(35%)
Emergency operations for oncology clients	0(0%)	6(15%)	12(30%)	9(22.5%)	8(20%)	5(12.5%)
Radiotherapy for oncology clients(n=40)	1(2.5%)	6(15%)	6(15%)	4(10%)	8(20%)	15(37.5%)
Psycho-oncological care for oncology clients(n=40)	2(5%)	6(15%)	7(17.5%)	7(17.5%)	13(32.5%)	5(12.5%)

**Table 5: Immediate consequences observed among cancer clients during the lockdown.**

Variable	Yes	No
Disease progression (n=40)	27(67.5%)	13(32.5%)
Reversal of initial responses(n=40)	14(35%)	26(65%)
Feeling of abandonment(n=40)	24(60%)	16(40%)
Death(n=40)	11(27.5%)	29(72.5%)
Others(n=40)	4(10%)	36(90%)

**Table 6: Infection prevention and control measures available during COVID 19 pandemic. (n=40)**

Variable	Yes	No	Don't know
Infection control committee	39(97.5%)	1(2.5%)	0(0%)
Infection control Plan	36(90%)	4(10%)	0(0%)
Surgical face mask	40(100%)	0(0%)	0(0%)
N95 filtering Face Piece	15(37.5%)	25(62.5%)	0(0%)
Hand cover	19(47.5%)	21(52.5%)	0(0%)
Hand gloves	39(97.5%)	1(2.5%)	0(0%)
Rubber boots	14(35%)	26(65%)	0(0%)
Eye Protection (googles or face shield)	25(62.5%)	15(37.5%)	0(0%)
Hazmat suit	10(25%)	30(75%)	0(0%)
Combined surgical gown with plastic apron	20(50%)	20(50%)	0(0%)
FFPI Masks	5(12.75%)	35(87.5%)	0(0%)

**Table 7: Institutional problems observed during the lockdown.**

Variable	Yes	No	
Expiration of consumables	8(20%)	13(32.5%)	19(47.5%)
Loss of Equipment (n=40)	7(17.5%)	17(42.5%)	16(40%)
Faulty machines (n=40)	8(20%)	18(45%)	14(35%)
Others specify (n=27)	3(11%)	10(37%)	14(52%)

**Table 8: Respondents' rating of academic activities, training, and research programs during the lockdown. (n= 40)**

Variable	Markedly Increased	Increased	Static	Markedly Reduced	Reduced	Not applicable
Bed site teachings	1(2.5%)	1(2.5%)	7(17.5%)	14(35%)	11(27.5)	6(15%)
Journal club meetings	0(0%)	3(7.5%)	8(20%)	11(27.5%)	13(32.5)	5(12.5%)
Seminar presentations	1(2.5%)	9(22.5%)	4(10%)	8(20%)	16(40%)	2(5%)
Research activities	1(2.5%)	8(20%)	6(15%)	9(22.5%)	15(37.5)	1(2.5%)
Tumour board meetings	1(2.5%)	4(10%)	3(7.5%)	12(30%)	14(35%)	6(15%)

**Table 9: Conduct of Journal Club meetings, Psych-oncological, Outpatient clinic consultations and Tumor board meetings during the Lockdown. (n=40)**

Variable	Hospital based	Virtual platforms (WhatsApp, google classroom e.t.c)	Not done at all	Not applicable
Journal club meetings	1(2.5%)	19(47.5%)	11(27.5%)	9(22.5%)
Psycho-oncological care	14(35%)	8(20%)	14(35%)	4(10%)
Outpatient Clinic consultations	26(65%)	6(15%)	6(15%)	2(5%)
Tumour board meetings	6(15%)	16(40%)	10(25%)	8(20%)

**Table 10: Practical Experience relating to Punctuality, Concentrations, Coordination and Consistency with Virtual Activities conducted during the lockdown (n=40)**

Variable	Very Poor	Poor	Fair	Good	Very Good	Not applicable
Punctuality	2(5%)	3(7.5%)	19(47.5%)	12(30%)	4(10%)	
Concentrations	2(5%)	3(7.5%)	19(47.5%)	12(30%)	4(10%)	
Coordination	1(2.5%)	3(7.5%)	20(50%)	12(30%)	4(10%)	
Consistency	2(5%)	3(7.5%)	19(47.5%)	12(30%)	4(10%)	

**Table 11: Possible future adoption of technology to provide oncological services beyond the lockdown (n=40)**

Item	Very Unlikely	Unlikely	Neutral	Likely	Very likely
Telemedicine for outpatient consultations	4(10%)	6(15%)	8(20%)	18(45%)	4(10%)
Academic seminars	4(10%)	1(2.5%)	4(10%)	14(35%)	17(42.5%)
Professional conferences	4(10%)	2(5%)	4(10%)	15(37.5%)	15(37.5%)
Tele -surgery	7(17.5%)	10(25%)	13(32.5%)	9(22.5%)	1(2.5%)
Tumour board meetings	4(10%)	2(5%)	9(22.5%)	18(45%)	7(17.5%)

## DISCUSSION

The COVID-19 epidemic has had a significant impact on healthcare systems globally, particularly in low- and middle-income countries, and oncological care in Nigeria has faced its own set of challenges. This study sheds light on the difficulties and adaptations made by oncology care providers in Nigeria during this period.

This study included a predominantly experienced group of professionals, with most respondents being over 45 years old. Notably, more than half of respondents had over ten years of experience, highlighting the vital role that experienced professionals played during the pandemic. The largest group was radiation oncologists, followed by medical physicists and resident doctors. However, the majority of respondents were affected by lockdowns, with most lasting over four weeks. Despite these restrictions, only 2.5% reported a total shutdown of oncology services, showcasing the resilience of these facilities in maintaining essential services, which is consistent with global efforts to prioritize essential healthcare during lockdowns<sup>11</sup>. However, the study showed that the main barriers to service delivery and major cause of service disruption were the lack of transportation services to

health facilities and healthcare workers' fear of contracting COVID-19. These findings align with other studies that have highlighted similar challenges in maintaining healthcare services during the pandemic<sup>12,13,14</sup>.

Furthermore, the pandemic has brought about changes in oncological practices. There was a significant reduction in oncological treatment practices such as ward admissions, outpatient consultations, clinical procedures, psycho-oncological care, and chemotherapy during the lockdown which resulted into disruption of in care and service deliveries. Only emergency operations were maintained at a similar level as at pre-pandemic levels indicating the prioritization of urgent care. These trends are similar to those in other regions where elective procedures and routine visits were postponed to minimize COVID-19 exposure risks<sup>15</sup>. However, these delays and disruptions in cancer treatment and identification of new cases can potentially increase cancer morbidity and mortality<sup>16,17,18</sup>.

Moreover, due to exposure and the nature of work, frontline healthcare providers are at higher risk of infection and death due to COVID-19 and as such require extra preventive measures to prevent the disease<sup>19</sup>. The study found that there were significant

gaps in access to comprehensive personal protective equipment (PPE) such as FFP1 face masks and Hazmat suits. These PPE shortages have been widely reported and have impacted the safety and confidence of healthcare workers global<sup>20</sup>. This challenge can therefore substantially increase unprecedented occupational risk of morbidity and mortality among healthcare providers during the pandemics<sup>21,22</sup>. Notably, the most observed immediate consequences among cancer clients during the lockdown included disease progression and feelings of abandonment. These outcomes are particularly concerning and align with broader reports that disruptions in cancer care can worsen prognoses and increase psychological distress among patients<sup>23,24</sup>.

Another inference from the study is the Impacts of COVID-19 on academic activities. This study found that academic activities were hard hit with a significant reduction in bedside teaching, seminar presentations, research activities, and tumor board meetings. This reduction mirrors global trends where educational and professional development activities were curtailed due to social distancing measures<sup>25</sup>. However, the main adaptive response noticed was that oncological services were primarily maintained through hospital-based or virtual platforms. Outpatients' clinic consultations and psycho-oncological care remained hospital-based while Journal clubs and tumor board meetings were mostly held virtually via WhatsApp, Google Classroom, and other online platforms. This transition to virtual platforms is consistent with global trends toward telemedicine and virtual meetings, which have been critical in ensuring the continuity of care and professional activities during pandemics. Furthermore, the likelihood of future adaptations to the use of technology was assessed. Most respondents expressed willingness to adapt technology for future academic lectures, seminars, and professional conferences suggesting a positive outlook on the continued use of virtual platforms post-pandemic. However, there was neutrality towards the use of technology in treating and reviewing patients and monitoring them through telemedicine, one of the new approaches that the

lockdown during Covid 19 has made several organizations and institutions to embrace. This reflects ongoing concerns about the feasibility and safety of remote surgical practices<sup>26</sup>. Several studies have confirmed the impact of telemedicine on enhancing care, especially during the pandemic and beyond, as well as the requirement for healthcare workers to become accustomed to using telemedicine for care and service delivery<sup>26,27,28,29,30,31</sup>. For example, Ganjali et al. (2022) discovered in their study that telemedicine effectively enhanced 87.5% of health resource use, 85% of patient results, and 100% of provider outcomes<sup>31</sup>. Technology therefore serves as an essential instrument for adaptive reaction during and after a pandemic, as well as in the pandemic preparation stage<sup>32</sup>.

## CONCLUSION

This study has shown the challenges experienced and responses by caregivers from tertiary institutions in the six geopolitical zones of Nigeria, in providing essential oncology services during the Covid-19 pandemic-induced lockdown. Apprehension over contracting Coronavirus, and a lack of adequate access to personal protective equipment, as challenges noticed by the majority of our respondents, may explain the high mortality experienced by care providers. Also, although this study showed that technology was adopted through virtual platforms, to ensure academic activities were resuscitated, it was minimally adopted for oncological treatment services. There is thus a need to develop practical methods in using such technology within low resource settings to conduct services like telemedicine for outpatient's consultation and tele-surgery.

## Conflict of Interest

Authors have no conflict of interest

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