

# THE EFFECT OF LACK OF RELEVANT ICT TOOL KNOWLEDGE, ON THE PERFORMANCE OF MEDICAL IMAGING TECHNOLOGY TECHNICIANS IN SOME SELECTED HOSPITALS IN RIVERS STATE DURING THE CORONA VIRUS (COVID-19) PERIOD

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**Abstract:** The study was carried out to determine the effect of corona Virus (COVID-19) on the performance of medical imaging technology technicians in some selected hospital of Rivers State. A descriptive cross sectional survey was used to determine the relationship between Corona Virus disease (COVID-19) and the performance of medical imaging technicians and to ascertain effect of Corona Virus disease (COVID-19) on the patient turn-up. To ascertain the effect of corona Virus (COVID-19) on performance of imaging technology technicians before, during and after the pandemic period. From the findings, it was observed that the turn-up of patients before and after the outbreak of the pandemic in the research area was very high in 2019 (120/100) and 2021(90/100) respectively compared to the year 2020 the year of the outbreak that recorded a very low turn-up of (9/30), that affected the services of the imaging technology technician as well as the hospital. In conclusion, it was recommended that i: every individual including the medical imaging technology technicians should have adequate knowledge of the disease and its precautionary measures, ii: there should be availability of Information and Communication technology centers where everyone can easily be able to reach their Care-givers iii) the medical Imaging Technology technicians should be well trained on how to use other modalities especially ICT tools to access and interact with patients in remote locations in periods and cases as this.

**Keywords:** Covid-19, Performance, Effect, Imaging Technology technician.

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## 1. INTRODUCTION

The World Health Organization (WHO)'s March 11 acknowledgement of COVID-19 to be a global pandemic has removed any doubt about the threat that the virus positions to every country in the world. The virus has now been detected in 152 countries, with more than 180,000 infected and more than 7,000 killed. Though Africa remains one of the regions with the fewest respondents, the number of countries affected has increased over the past week. As of this writing, nearly 450 respondents have been reported in 30 countries, concentrated in northern Africa and South Africa, with 10 deaths reported. In Nigeria, the case of Corona virus disease (COVID-19) outbreak has put everything on hold in the country and the figures of corona virus patients in Nigeria keep rising ever since a Nigerian female, came into Lagos on Saturday, March 14, 2020, in a Turkish airline TK1830 and a Nigerian male who arrived the country in a Lufthansa (airline) LH568 on Friday, March 13, 2020 according to Lagos State health commissioner Akin Abayomi during a press conference; suggesting that the best way is to slow the rate is to halt the movement of the virus from person to person. Abayomi said that currently, they are following over 1,300 people right now to find information about the state of the health of New Respondents and appealed to people on the two flights to self-isolate themselves and contact the government.

### 1.1 STATEMENT OF THE PROBLEM

The epidemic of corona virus disease (COVID-19) pandemic in Nigeria rise the level of tension and anxiety among citizens in the country. The virus unlike other respondents we have had in this country is highly transmittable with severe signs and symptoms. The epidemic of corona virus disease (COVID-19) might have effect of Covid-19 on the Performance of imaging technology technicians in selected hospital, The true effect that COVID-19 has had on the medical imaging productiveness still remains to be seen, as hospitals and imaging facilities strive to figure out this “new normal,” . Medical professionals are still unsure what the new business model looks like, but have been dedicating much of their time to figure this out, according to a new survey. Finally there have been studies on corona virus disease (COVID-19) but not even a single study is based on the effect of corona virus (COVID-19) on performance of imaging technology technicians; hence a need for the study.

It is well established according to Suárez-García et al., 2020, that the shortage of personal protective equipment (PPE), lack of training in infection control measures, and poor PPE usage increase the risk of patient-HCP transmission of infection, hence medical imaging services during this pandemic was a herculean task. Departments had to grapple with understaffing at the peak of the outbreak due to HCPs infections, self-isolation due to contact with positive respondents and statutory paid sick leave in many countries globally [Vox, 2020]. Faced with the challenge of limited delivering capacity and mounting wait lists, patient access to medical imaging services was profoundly affected. This was evident in Canada where waiting time for medical imaging is now twice as long when compared with pre-COVID times — significantly beyond the acceptable standards. The procedure duration was lengthened and complicated by strict infection control measures to mitigate infection risk in the radiology department.

### 1.2 AIM AND OBJECTIVES OF THE STUDY

The main aim of the research work is to determine the effect of corona virus (COVID-19) on performance of imaging technology technicians. The specific objectives of the study are:

1. To determine the relationship between corona virus disease (COVID-19) and the performance of medical imaging technology technicians.
2. To ascertain the effect of corona virus disease (COVID-19) on the Patient Turn-up, before, during and after the pandemic period.
3. To ascertain the effect of corona virus (COVID-19) on performance of medical imaging technology technicians.
4. To ascertain the level of knowledge of ICT tool in remote data collection and interaction.

### 1.3 SIGNIFICANCE OF THE STUDY

The study on the effect of corona virus disease (COVID-19) on performance of imaging technology technicians will be of immense benefit to all the Nigeria citizens, the health sector, and the federal government of Nigeria. The study will explore the prevalence of corona virus disease (COVID-19), the causes, and the effect of the corona virus disease (COVID-19) on performance of imaging technology technicians. The study will educate the masses on the mode of transmission of the corona virus disease (COVID-19) and the preventive measures to be adopted. The study will educate the Nigeria government on the policy implementation to curb the prevalence of the corona virus disease (COVID-19) and how to improve the medical imaging performance during this period. The study will serve as a source of information to other researchers that desire to carry out similar research on the above topic. Finally the study will contribute to the body of the existing literature on the effect of corona virus disease (COVID-19) on performance of imaging technology technicians.

### 1.4 SCOPE OF THE STUDY

The study will be limited to the effect of corona virus (COVID-19) on performance of imaging technology technicians in some selected hospital in Obio/Akpor LGA.

### 1.5 DEFINITION OF TERMS

#### **CORONA VIRUS DISEASE (COVID-19):**

Coronavirus disease (COVID-19): is an infectious disease caused by a new virus. The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe respondents, difficulty breathing. You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact (1 meter or 3 feet) with people who are unwell.

**Medical Imaging:** Medical imaging is the technique and process of imaging the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues.

## 2. METHODOLOGY

### 2.1 Research Design

This was a descriptive cross sectional survey. This design is best suited for this study because it explains or describes a phenomenon that happened in the past with particular reference to the account of two similar institutions from different settings. The study period was from January 2019 to July 2021.

### 2.2 Study Area

This study is carried out in some selected hospitals in Rumueme Community in Obio/Akpor Local Government Area, Rivers State.

### 2.3 Population for the study

The study generally involved the population at risk. A total of 556 respondents both males and female respectively. Of course these are adult male and female within the child-bearing years.

### 2.4 Sample and Sampling Techniques

The sampling technique used for this work was the retrospective sampling. This has to do with the use of existing record to represent the whole population.

### 2.5 Instrument for Data Collection

All vital information needed was collected from the different hospitals using interview and past recor/data.

### 2.6 Method of Data Presentation/Analysis

The data is being presented in tables and analyzed using chart, frequencies and percentages.

## 3. RESULTS AND DISCUSSION OF FINDINGS

All data collected in course of this research work are presented and analyzed. However, answers from the respondents are presented in tables with simple percentages, charts and are interpreted accordingly.

**Table 3.1: Frequency Distribution According To Sex**

Sex	No of respondents	Percentage %
Male	350	63
Female	206	37.0
Total	556	100

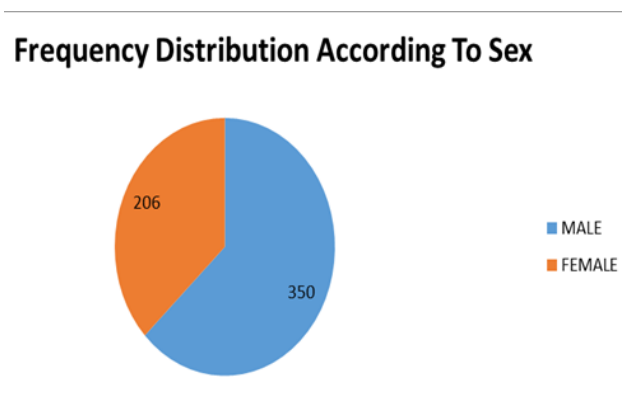


Table 3.1 above table shows that Male respondents had the highest number with 350 respondents which account for 63% and female 206 which is 37.0%.

**Table 3.2 Frequency Distribution Table According to type of Examination.**

Type of examination	No of respondents	Percentage
Chest X-Ray	200	36
Nose	60	11
HIP	20	4
L/S	40	7.1
Hand	30	5
Head	90	16
Shoulder	20	4
Knee	50	9
Others	46	8.2
<b>Total</b>	<b>556</b>	<b>100</b>

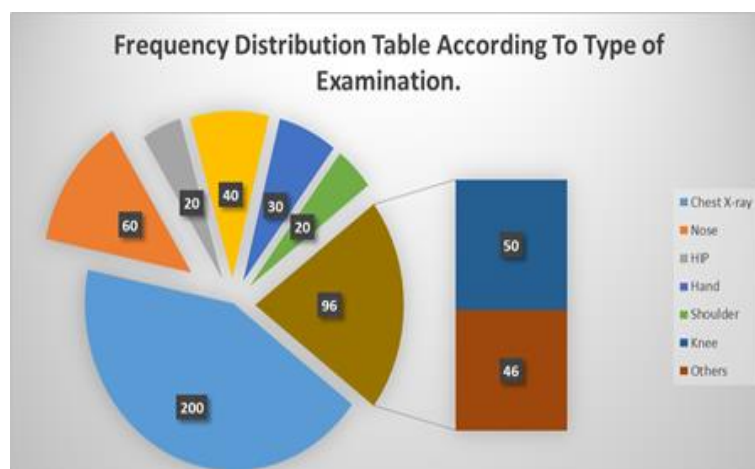


Table 3.2 shows distribution of Type of Examination, chest x-ray recorded the highest with 200 respondents which is 36%, nose examination recorded 60 respondents which accounts for 11%, L/S recorded 40 with 7.1%, Hand has 30 with 5%, head 90 with 16%, shoulder 20 with 4%, knee 50 with 9%, 46 with 8.2% goes for others while HIP examination recorded 20 with 4% which is the lowest. This indicates that during the period of this research work, they carry out more of chest x-ray examination.

**Table 3.3.1 Patient Turn-up (Rehoboth Specialist Hospital). In January to July 2019 before Covid-19**

Month of occurrence	No of respondents	Percentage
Jan 2019	80	14.3
Feb 2019	70	13
March 2019	80	14.3
April 2019	100	18
May 2019	86	15.4
June 2019	90	16.1
July 2019	50	9
<b>Total</b>	<b>556</b>	<b>100</b>

Table 3.3.1 above indicate that 106 (19.1%) is for January, 70 (13%) February, 60 (10.8%) March, 70 (12.6%), April Recorded 120 (21.6%), May recorded 90 (16.2%), June recorded 50 (8.9%) while July recorded 60 (10.8%). This shows that patient turn up before covid-19 was very high

**Table 3.3.2 Patient turn-up (Military Hospital). In January to July 2019 before Covid-19**

Month of occurrence	No of respondents	Percentage
Jan 2019	106	19.1
Feb 2019	60	10.8
March 2019	70	12.6
April 2019	120	21.6
May 2021	90	16.2
June 2021	50	8.9
July 2021	60	10.8
<b>Total</b>	<b>556</b>	<b>100</b>

Table 3.3.2 above indicate that 80 (14.3%) is for January, 70 (13%) February, 80 (14.3%) March, 100 (18%), May recorded 86 (15.4%), June recorded 90 (16.1%) while July recorded 50 (9%). This shows that patient turn up before covid-19 was very high.

**Table 3.3.3 Patient Turn-Up 2020 during Covid-19**

Months of Occurrence	No of respondents	Percentage
Jan 2020	50	15.6
Feb 2020	41	12.8
March 2020	30	9.4
April 2020	49	15.3
May 2020	40	13
June 2020	60	18.7
July 2020	50	15.6
<b>Total</b>	<b>320</b>	<b>100</b>

Table 3.3.3 above shows that the turn of patient in January 50 (15.6%), February 41 (12.8%), and March 30 (9.4%), April recorded 49 (15.3%), May recorded 40 (13%), and June recorded 60 (18.7%) while July recorded 50 (15.6%). This indicates that patient turn up during covid-19 was very low as such it affect the services of imaging Technologist technician as well as the hospital.

**Table 3.3.4(a) Patient Turn-up (Military Hospital). In January to July 2020**

Months of Occurrence	No of respondents	Percentage
Jan 2020	30	6.6
Feb 2020	10	3.3
March 2020	9	8.3
April 2020	15	16.6
May 2020	18	8.3
June 2020	40	10
July 2020	33	11.6
<b>Total</b>	<b>163</b>	<b>100</b>

Table 3.3.4(a) above shows that the turn of patient in January 30 (6.6%), February 10 (3.3%), and March 9 (8.3%), April recorded 15 (16.6%), May recorded 18 (8.3%), and June recorded 40 (10 %) while July recorded 33 (11.6%). This indicates that patient turn-up during covid-19 was very low as such it affect the services of imaging Technologist technician as well as the hospital.

**Table 3.3.4(b) Patient Turn-up (Rehoboth Special Hospital) after Covid-19**

Months of Occurrence	No of respondents	Percentage
Jan 2021	80	14.4
Feb 2021	86	15.5
March 2021	90	16.2
April 2021	70	12.6
May 2021	60	10.8
June 2019	90	16.2
July 2019	80	14.4
<b>Total</b>	<b>556</b>	<b>100</b>

Table 3.3.4(b) above shows that the turn of patient in January 80 (14.4%), February 70 (12.6%), and March 80 (14.4%), April recorded 100 (18%), May recorded 86 (15.5%), and June recorded 90 (16.2%) while July recorded 80 (14.4%). This indicates that patient turn up after covid-19 was very high as such it affects the services of imaging Technologist technician as well as the hospital.

**Table 3.4.5 Patient Turn up (Military Hospital). In January to July 2021 after Covid-19**

Months of Occurrence	No of respondents	Percentage
Jan 2021	50	9
Feb 2021	70	12.6
March 2021	80	14.4
April 2021	100	18
May 2021	86	15.5
June 2021	90	16.2
July 2021	80	14.4
<b>Total</b>	<b>556</b>	<b>100</b>

Table 3.4.5 above shows that the turn of patient in January 50 (9%), February 10 (3.3%), and March 9 (8.3%), April recorded 15 (16.6%), May recorded 18 (8.3%), and June recorded 40 (10 %) while July recorded 33 (11.6%). This indicates that patient turn up during covid-19 was very low as such it affect the services of imaging Technology technician as well as the hospital.

#### 4. DISCUSSION OF FINDINGS

The result of the present study as seen in table 4.2 shows distribution of Type of Examination with Chest x-ray recording the highest number of examinations with 200 respondents representing 36%. While HIP examination recorded 20 with 4% which is the lowest. The finding indicated that more of chest x-ray examinations was carried out during the period of this research work.

In table 4.4.1 above it was revealed indicate that, 106 (19.1%) was for January, 70 (13%) February, 60 (10.8%) March, 70 (12.6%), April Recorded 120 (21/6%), May recorded 90 (16.2%), June recorded 50 (8.9%) while July recorded 60 (10.8%). The findings showed that patient turn-up before covid-19 was very high.

The results as seen in Table 4.4.2 above indicated that 80 (14.3%) was for January, 70 (13%) February, 80 (14.3%) March, 100 (18%), May recorded 86 (15.4%), June recorded 90 (16.1%) while July recorded 50 (9%). This shows that patient turn-up before covid-19 was very high.

The result of patient turn-up during covid-19 in 2020 (Table 4.5.) showed that the turn up of patient in January 50 (15.6%), February 41 (12.8%), and March 30 (9.4%), April recorded 49 (15.3%), May recorded 40 (13%), and June recorded 60 (18.7%) while July recorded 50 (15.6%). This indicated that patient turn up during covid-19 was very low as such it affected the services of imaging Technology technician as well as the hospital. This study agrees with the study by

Royal College of Radiologists 2020, who found out that the radiographers were faced with the challenges of limited delivering capacity and mounting wait lists. Patient access to medical imaging services was profoundly affected. This was evident in Canada where waiting time for medical imaging is now twice as long when compared with pre-COVID times significantly beyond the acceptable standards

More so, in table 4.5.2 it was revealed that, the turn-up of patients in January was 30 (6.6%), February 10 (3.3%), and March 9 (8.3%), April recorded 15 (16.6%), May recorded 18 (8.3%), and June recorded 40 (10 %) while July recorded 33 (11.6%). This indicates that patient turn up during covid-19 was very low as such it affect the services of imaging Technology technician as well as the hospital.

On the result in table 4.6.1 above indicated that the turn-up of patients in January 80 (14.4%), February 70 (12.6%), and March 80 (14.4%), April recorded 100 (18%), May recorded 86 (15.5%), and June recorded 90 (16.2%) while July recorded 80 (14.4%). This indicates that patient turn up after covid-19 was very high as such it affects the services of imaging Technology technician as well as the hospital.

Similarly, Table 4.6.2 above shows that the turn-up of patient in January 2021 showed that, 50 (9%), February 10 (3.3%), and March 9 (8.3%), April recorded 15 (16.6%), May recorded 18 (8.3%), and June recorded 40 (10 %) while July recorded 33 (11.6%) in the hospital visited. This indicates that patient turn up during covid-19 was very low as such affected the services of medical imaging Technology technicians as well as the hospital. Definitely, both radiographers and radiologists were at risk of burnout. In accumulation, they were also at risk of fatigue [Waite *et al.*, 2017]. This had concerning implications as it resulted in a negative outcome in terms of patient safety in medical imaging.

## 5. CONCLUSION

Conclusively, the findings indicated that more of chest x-ray examinations was carried out during the period of this research work. There was high patient turn-up before covid-19 pandemic in 2019. The patient turn-up reduced drastically during the pandemic period. After the covid-19 pandemic period, the patient turn-up improved in such a way that it affected the services of imaging Technology technician as well as the hospital income. The lack of training in infection control measures, and poor PPE usage increase the risk of patient-HCP transmission of infection, hence most medical imaging Technology technician either went into self-isolation due to contact with positive respondents or statutory paid sick leave thereby making the medical imaging services during this pandemic a herculean task. There was little or no knowledge of any relevant ICT tool such as (Electronic Health Record) for collecting of patients data/records and aid interact between the patient and medical imaging Technology technician from remote location which would have handled (a) the effect of understaffing caused self-isolation and by surge of patients that statutory paid sick leave of many Medical imaging Technology technicians, (b) the challenge of limited delivering capacity and mounting wait lists that caused the waiting time for the service twice as long when compared with pre-COVID times which was significantly beyond the acceptable standards.

## 6. RECOMMENDATIONS

Owing to the findings of the research the following recommendations were made:

1. There should be availability of information communication technology centers where everyone easily access information about hospital visits during the period of pandemic.
2. The right type of personal protective equipment should be made available to the technology technicians, so as to enable them work effectively during this periods.
3. The medical imaging technology technicians should be well trained on how to use different modalities especially relevant ICT tools to access and interact with patients during periods of pandemic as this.

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