

**BEHAVIOURAL, SOCIAL AND ECONOMIC
REACTIONS OF COVID-19 RESPONSES AMONG
FRONTLINE HEALTHCARE PROVIDERS IN
NIGERIA**

OKPUA NELSON CHIDINMA

UNIVERSITI SAINS MALAYSIA

2023

**BEHAVIOURAL, SOCIAL AND ECONOMIC
REACTIONS OF COVID-19 RESPONSES AMONG
FRONTLINE HEALTHCARE PROVIDERS IN
NIGERIA**

by

OKPUA NELSON CHIDINMA

**Thesis submitted in fulfilment of the requirements
for the degree of
Doctor of Philosophy**

September 2023

ACKNOWLEDGEMENT

First, I want to express my gratitude to God Almighty for protecting me from the COVID-19 pandemic during this work. In a special way, I want to thank my family members; particularly my dearest wife Mrs Okpua Juliana C. and my mother Mrs. Okpua Christina. Your supports and financial sacrifices were impressive and instrumental to the success of this work. To my most wonderful supervisor, Dr. Noor Mastura Mohd Mujar, I owe you an immeasurable debt of gratitude for your tremendous supports and continuous positive feedbacks. You are a wonderful teacher and a mentor to behold. At a time when I wanted to drop from the programme for financial reasons, you stepped in and encouraged me to surmount such ugly times. I feel like my educational history began with you. To Dr. Rohayu Hami and Professor C.O. Edeogu, I also owe you eternity for your supports. I feel so blessed to have come across a wonderful team of experts led by respected supervisors with verse knowledge and experiences in community and public health issues. This acknowledgement will not be complete without a deep sense of gratitude to the management of Ebonyi State University Abakaliki Nigeria, and the entire USM community for supporting the actualization of my dreams. USM is indeed a community where love, unity and oneness reign.

DEDICATION

This work is dedicated to all the frontline healthcare workers who died on their line of duties during COVID-19 pandemic.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	ii
DEDICATION	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xii
LIST OF APPENDICES	xiv
ABSTRAK	xv
ABSTRACT	xvii
CHAPTER 1 INTRODUCTION	1
1.1 Outline of this chapter	1
1.2 Operational Definition of Terms	1
1.3 Background of the study	2
1.4 Statement of Problem and Study rationale	5
1.5 Research Questions	9
1.6 Hypothesis	10
1.7 General Objective:.....	10
1.8 Specific Objectives:.....	10
1.9 Justification of the study	11
1.10 Chapter summary	13
CHAPTER 2 LITERATURE REVIEW	31
2.1 Outline of this chapter	31
2.2 Literature search	31
2.3 Origin of Coronavirus 2019 (COVID-19).....	32
2.3.1 Epidemiology of COVID-19 pandemic	33

2.3.1(a)	Worldwide	33
2.3.1(b)	COVID-19 Infections in Africa	36
2.3.1(c)	COVID-19 Infections in Nigeria	37
2.3.2	Mode of Transmission of SARS-CoV-2	45
2.3.3	Clinical Characteristics of SARS-CoV-2 Infection	47
2.4	Global Responses to COVID-19 Pandemic	49
2.4.1	Prevention of COVID-19 Infection.....	51
2.4.1(a)	COVID-19 Vaccines and Therapy.....	51
2.5	Reactions of COVID-19 responses on Healthcare Providers.....	53
2.5.1	Behavioural Impacts of COVID-19 on Healthcare Providers in Nigeria.....	54
2.5.2	Social Impacts of COVID-19 on Healthcare providers in Nigeria.....	57
2.5.3	Economic Impacts of COVID-19 on Healthcare providers in Nigeria.....	59
2.6	Factors Associated with the Development of Covid-19 Impacts.....	62
2.6.1(a)	Socio-demographic factors	62
2.6.1(b)	Vulnerability of Nigeria’s Healthcare System.....	64
2.7	Theoretical Framework	68
2.7.1	.Bio-psychosocial Model of Health.....	68
2.7.1(a)	Application of Bio-psychosocial Model to this Study	70
2.7.2	Conceptual Framework	70
2.8	Chapter Summary.....	72
CHAPTER 3 METHODOLOGY.....		73
3.1	Introduction	73
3.2	Phase 1: Materials and Method for Systematic Review.....	73
3.2.1	Phase Outline.....	73
3.2.2	Material and Methods.....	74

	3.2.2(a)	Literature review procedures	74
	3.2.2(b)	Inclusion Criteria	75
	3.2.2(c)	Exclusion Criteria	75
	3.2.2(d)	Studies selection and screening	75
	3.2.2(e)	Appraisal for quality and risk for bias	76
	3.2.2(f)	Data Extraction and Outcome Measure	77
	3.2.2(g)	Data Analysis	77
3.3		Phase 2: Methodology for Instrument Development and Validation.....	78
	3.3.1	Phase Outline.....	78
	3.3.2	Methodology	78
		3.3.2(a) Development of COVRiQ draft.....	78
		3.3.2(b) Language version of COVRiQ	79
		3.3.2(c) Content Validity.....	80
		3.3.2(d) Face Validity.....	84
		3.3.2(e) Construct Validity.....	87
	3.3.3	Ethical Approvals	90
3.4		Phase 3.....	91
	3.4.1	Phase Outline.....	91
	3.4.2	Research design.....	91
	3.4.3	Country Profile: Nigeria.....	91
	3.4.4	Area of the study	92
	3.4.5	Target population	93
	3.4.6	Sample size Estimation	94
	3.4.7	Sampling Method	94
	3.4.8	Inclusion criteria.....	95
	3.4.9	Exclusion Criteria.....	95
	3.4.10	Instrument for Data Collection.....	95

3.4.11	Method of Data Collection.....	96
3.4.12	Ethical approval.....	97
3.4.13	Data Analysis	97
CHAPTER 4	RESULTS.....	98
4.1	Introduction	98
4.2	Phase 1 Results.....	98
4.3	Phase 2 Results.....	107
4.3.1	Face validity and content validity	107
4.3.2	Exploratory factor analysis.....	110
4.3.3	Internal consistency.....	116
4.3.4	Confirmatory Factor Analysis.....	117
4.3.4(a)	Internal Reliability.....	117
4.3.4(b)	Convergent and discriminant validity.....	117
4.3.4(c)	Model Fit Test.....	118
4.3.5	Scoring of the COVRiQ.....	120
4.4	Phase 3 Results.....	121
CHAPTER 5	DISCUSSION	133
5.1	Introduction	133
5.2	Phase 1.....	133
5.2.1	Behavioural Reaction of COVID-19.....	133
5.2.2	Social Reaction of COVID-19 Pandemic.....	136
5.2.3	Economic Reaction of COVID-19	138
5.3	Phase 2.....	140
5.4	Phase Three	143
5.4.1	Limitation of the Study	148
5.4.2	Summary of Phase 3.....	149

CHAPTER 6 SUMMARY, CONCLUSION AND RECOMMENDATIONS151

6.1 Outline of this chapter 151

6.2 Summary of the study 151

6.2.1 Implication of the Study 153

6.3 Study Conclusion 155

6.4 Recommendations 155

REFERENCES.....158

APPENDICES

LIST OF PUBLICATION

LIST OF TABLES

		Page
Table 2.1	Summary of Nigeria Preparedness and Response to COVID-19 across phases of the Pandemic	43
Table 3.1	Experts' Content validity results: Items rated 3 or 4 (n=12)	83
Table 3.2	Population Distribution of Healthcare Workers in AE-FUTHA.....	93
Table 4.1	Characteristics of included Studies	99
Table 4.2	Socio-demographic characteristics of Respondents (n = 301)	108
Table 4.3	Rotated factor matrix.....	111
Table 4.4	Inter-items correlation Matrix (n = 301)	114
Table 4.5	Descriptive Statistics and Reliability	116
Table 4.6	Descriptive statistics and reliability of CFA test.....	117
Table 4.7	Convergent and Discriminant Validity	118
Table 4.8	Results of the Assessment of Model Fit Indices	118
Table 4.9	COVRiQ Scoring	120
Table 4.9	Socio-demographic characteristics of healthcare professionals (N=317).....	121
Table 4.10	Reactions of COVID-19 Outbreak Responses on Healthcare Providers in Nigeria (N=317).....	124
Table 4.11	Reactions of COVID-19 impacts among healthcare professionals (N=317).....	126
Table 4.12	Factors associated with behavioural reaction of COVID-19 response among healthcare provider in Nigeria (N=317).....	127
Table 4.13	Factors associated with social reaction of COVID-19 response among on healthcare providers (N=317)	128

Table 4.14	Factors associated with economic reaction of COVID-19 response among healthcare providers (N=317)	129
Table 6.1	Multi-levels recommended actions against Impacts of COVI-19....	157

LIST OF FIGURES

	Page
Figure 2.1	Epidemiology of COVID-19 Pandemic (WHO 2023).....34
Figure 2.2	Regional distribution of Cases of Covid-19 infections (WHO, 2023a)35
Figure 2.3	Regional distribution of COVID-19-Related Deaths (WHO, 2023a) 36
Figure 2.4	Nigerian Map showing the distribution of cases of COVID-19 infections across States (WHO 2023b).38
Figure 2.5	Nigeria's Response to COVID-19 Outbreak41
Figure 3.1	PRISMA flow chart showing studies screening and selection process76
Figure 3.2	Questionnaire Development and Validation Flow Chart86
Figure 4.1	Three factors, 32-items CFA..... 119
Figure 4.2	Standardized residual Histogram 130
Figure 4.3	Normal P-P plot of regression standardized residual 131
Figure 4.4	Scatterplot for normality and linearity tests132

LIST OF ABBREVIATIONS

COVID-19	Coronavirus 2019
HCPs	Healthcare Providers
FHCPs	Frontline Healthcare Providers
HCWs	Healthcare workers
SARS-Cov-2	Severe Acute Respiratory Syndrome Coronavirus (type 2)
COVRiQ	COVID-19 Response Impacts questionnaire
UNTH	University Teaching Hospital Enugu
AE-FUTHA	Alex Ekwueme Federal University Teaching Hospital Abakaliki
PCA:	Principal component Analysis
EFA:	Exploratory Factor Analysis
KMO:	Kaiser-MEYER-OKIN
I-CVI:	Item Content Validity Index
UA:	Universal Agreement
S-CVI/Ave:	Scale-Level Content Validity Index Average
BSEI	Behavioural, social and economic impacts
GAD-7	General anxiety and depression scale 7 (revised)
DASS	Depression, anxiety and stress scale
ISI	Insomnia severity index
PHQ-9	Patients health questionnaire 9 (revised)
IES-R	Impact of event scale (reversed);
WHOQOL	World Health Organization Quality of life scale
SSI	Self-rated stress index
SAS	Zung's Self-rating anxiety scale
SDS	Self-rating depression scale
PSQI	Pittsburg sleep quality index
PSS	Perceived stress scale
GHQ	general health questionnaire
PSSS	Perceived social support scale;
CES-D	Centre for epidemiological studies depression scale
DSM-5(PCL-5)	Diagnostic & statistical manual checklist for Mental disorders
NSS	Nursing stress scale
JCQ	Job content questionnaire

PROQOL	Professional quality of life questionnaire
SSQ	Rosenberg self-esteem scale
MCQ	Self-administered multiple choice questionnaire
CD-RISC-10	Connor-Davidson Resilience Scale
SSCIP	Stress scale of caring for highly infectious patient by Baoyu Zhuang 2005).
RT-PCR	Real time polymerase chain reaction
PSS	Perceived sleep quality index
SDS	Self-rating depression scale
SCSQ	Simplified coping style questionnaire
JCQ	Job content questionnaire
SSI	Suicidal and self-harm ideation scale

LIST OF APPENDICES

Appendix A	USM JEPeM research ethics approval
Appendix B	Ethical approval from human research ethics committee of Alex-Ekwueme University Teaching Hospital Abakaliki
Appendix C	Ethical approval from human research ethics committee of UNTH
Appendix D	Data collection permit from UNTH
Appendix E	JEPeM final ethical report
Appendix F	COVRiQ Questionnaire
Appendix G	COVRiQ scoring system
Appendix H	Publication 1 (Phase 1 of this study)
Appendix I	Publication 2 (Phase 1 of this study)
Appendix J	Publication 3 (Phase 2 of this study)
Appendix K	Publication 4 (Phase 3 of this study)

**TINDAKBALAS TINGKAH LAKU, SOSIAL DAN EKONOMI
TERHADAP RESPONS COVID-19 DALAM KALANGAN PENYEDIA
PENJAGAAN KESIHATAN BARIS DEPAN DI NIGERIA**

ABSTRAK

Kemunculan pandemik COVID-19 mencetuskan reaksi tempatan dan antarabangsa. Tindakan pencegahan ini bagaimanapun menjana impak yang berpanjangan dan berkekalan kepada penduduk, terutamanya jururawat, doktor, saintis makmal perubatan dan pembantu wad yang berada di barisan hadapan dalam menguruskan wabak ini. Kajian yang menilai kesan wabak ke atas penyedia penjagaan kesihatan dengan menumpukan pada kesan tingkah laku, sosial dan ekonomi, mungkin masih kekurangan alat penilaian yang komprehensif. Kajian ini bertujuan untuk membangunkan soal selidik dengan meneroka reaksi holistik COVID-19 terhadap penyedia penjagaan kesihatan di Nigeria melalui tiga fasa. **Fasa Satu-** kajian sistematik telah dijalankan mengenai kesan pandemik COVID-19 terhadap penyedia penjagaan kesihatan barisan hadapan di Afrika dan Asia. Kaedah- Tinjauan literatur elektronik telah dijalankan melalui Google Scholar, PubMed, Medline, CINAHL, PsycINFO dan Science Direct menggunakan kata kunci dan frasa. Artikel yang diambil telah disaring menggunakan protokol PRISMA dan kajian-kajian yang disertakan telah dianalisis secara tematik. Keputusan: 39 kajian yang disertakan menunjukkan bahawa penyedia penjagaan kesihatan mengalami kesan tingkah laku, sosial dan ekonomi semasa pandemik. Kesimpulan: penyedia penjagaan kesihatan mengalami kesan tingkahlaku, sosial dan ekonomi semasa pandemik. **Fasa Dua:** Soal Selidik Kesan Tindak Balas COVID-19 (COVRiQ) untuk penyedia penjagaan kesihatan barisan hadapan telah dibangunkan dan disahkan. Metodologi: ini

mengikuti tiga langkah; pembangunan soal selidik, kesahan kandungan dan kesahan muka, dan pengesahan konstruk. Panel yang terdiri daripada 12 pakar menilai kesahan kandungan, manakala pengesahan konstruk diuji menggunakan 301 penyedia penjagaan kesihatan. Data dianalisis menggunakan SPSS (25.0). Keputusan COVRiQ yang terdiri daripada item 32 telah dibangunkan dengan S-CVI 0.97. Keputusan analisis faktor penerokaan menunjukkan keseluruhan Cronbach alpha (α) adalah 0.91 dan kebolehpercayaan subskala adalah 0.89, 0.76 dan 0.84 untuk kesan tingkah laku, sosial dan ekonomi. Selain itu, keputusan analisis faktor pengesahan menunjukkan keseluruhan Cronbach alpha (α) adalah 0.87. Kesimpulan- Soal selidik COVRiQ telah dibangunkan dan terbukti sah dan boleh dipercayai. **Fasa Tiga:** Pautan kepada soal selidik COVRiQ telah diberikan kepada 317 penyedia penjagaan kesihatan barisan hadapan di Nigeria secara dalam talian melalui platform media sosial. Data yang dikumpulkan dianalisis menggunakan SPSS (25.0). Keputusan- Skor COVRiQ masing-masing ialah 90%, 80% dan 62.5% untuk kesan tingkah laku, sosial dan ekonomi. Kesan lebih tinggi didapati dalam kalangan wanita, jururawat dan penyedia penjagaan kesihatan berumur 34 tahun ke atas. Berbanding dengan impak lain, kelaziman dan keterukan impak tingkah laku adalah lebih tinggi dalam kalangan penyedia penjagaan kesihatan di Nigeria. Faktor yang dikaitkan dengan kesan COVID-19 ialah kesan tingkah laku (umur, jantina dan pengalaman kerja COVID-19); kesan sosial (pendidikan, alkoholisme dan keadaan kesihatan sedia ada) dan kesan ekonomi (pendapatan dan bilangan tanggungan). Kesimpulan- Penyedia penjagaan kesihatan terutamanya jururawat, wanita dan profesional muda, lebih terkesan terhadap wabak COVID-19.

**BEHAVIOURAL, SOCIAL AND ECONOMIC REACTIONS OF
COVID-19 RESPONSES AMONG FRONTLINE HEALTHCARE
PROVIDERS IN NIGERIA**

ABSTRACT

The emergence of COVID-19 pandemic triggered both local and international reactions. These preventive responses, however, generated long and lasting effects on the nurses, doctors, medical laboratory scientists and ward assistants, who were at the forefront of managing the pandemic. Studies that attempted to assess the impacts of the pandemic on these healthcare providers (HCPs) had generally focussed on the behavioural, social and economic effects, may be due to the lack of a comprehensive assessment tool. This study aims to develop a questionnaire by exploring the holistic reactions of COVID-19 responses among the HCPs in Nigeria through three phases. **Phase One:** a systematic review was conducted on the impacts of COVID-19 pandemic on frontline HCPs in Africa and Asia. Method- Electronic literature search was conducted on Google scholar, PubMed, Medline, CINAHL, PsycINFO and Science Direct using key words and phrases. Retrieved articles were screened using PRISMA protocol and included studies were thematically analysed. Result- 39 studies included showed that HCPs experienced behavioural, social and economic reactions during the pandemic. Conclusion- HCPs suffered various impacts during the pandemic. **Phase Two:** a COVID-19 Response Impacts Questionnaire (COVRiQ) for frontline HCPs was developed and validated. Methodology - this followed three distinct steps; questionnaire development, content and face validity, and construct validity tests. A panel of 12 experts assessed the content validity, while construct validity was tested using 301 frontline HCPs. Data was analysed using SPSS (25.0).

Results- COVRiQ consisting of 32-item was developed with S-CVI of 0.97. EFA results showed an overall Cronbach's alpha (α) coefficient of 0.91 and subscales reliability coefficient of 0.89, 0.76 and 0.84 for behavioural, social and economic impacts. CFA analysis showed an overall $\alpha=0.87$. Conclusion- COVRiQ questionnaire was developed and proven valid and reliable. **Phase Three-** In a cross-sectional study, COVRiQ was administered to 317 Nigerian frontline HCPs using online social media platforms. Data collected were analysed using SPSS (25.0). Results- COVRiQ scores were 90%, 80% and 62.5% respectively for behaviour, social and economic impacts. Impacts were higher among females, nurses and HCPs aged 34 years and above. Compared to other forms of impact, the prevalence and severity of behavioural impact was higher among HCPs. Factors associated with COVID-19 impacts were behavioural impacts (age, gender and COVID-19 work experience); social impacts (education, alcoholism and existing health condition) and economic impacts (BMI, income and number of dependents). Conclusion-frontline HCPs, particularly the nurses, women and young professionals, experienced the various impacts of COVID-19 pandemic response.

CHAPTER 1

INTRODUCTION

1.1 Outline of this chapter

The chapter introduces to the background of this study, the problem statement, the objectives and justification of this study. All of the components mentioned are intended for the purpose for this study being conducted.

1.2 Operational Definition of Terms

For a better understanding of the concepts discussed in this chapter, few terminologies have been contextually used. The operational definition of the terms as used in the context of this study is as follow:

Behavioural impacts - in the context of this work refer to the emotional or physical reactions from COVID-19 pandemic that cause changes in behavioural lifestyles of healthcare providers.

Social Impacts- refer to the changes in the social lifestyles of healthcare providers during the pandemic. Example; change in social engagements and activities such as recreations, holidays and peer outdoor sports activities.

Economic Impacts- refers to negative change in the economic status of healthcare providers during the pandemic example change in income, savings, standard of living.

Frontline healthcare providers- this refers to nurses, doctors, medical laboratory scientist and ward assistants who are directly involved in the management of COVID-19.

1.3 Background of the study

The outbreak of the novel COVID-19 has dominated current public health discourse, and inarguably represents the most serious global disease outbreak in recent decades. The disease appears to be one of the most feared communicable diseases since its outbreak in late December 2019, when clusters of pneumonia cases with unknown cause emerged in Wuhan, China (Zhou et al., 2020). Sequencing of the lower respiratory lavage fluid indicated that the disease was caused by a novel coronavirus which was subsequently named 2019 novel coronavirus (COVID-19) by the World Health Organization (WHO, 2020). Furthermore, laboratory analyses showed that the deadly severe acute respiratory syndrome coronavirus type 2 (SARSCoV-2) and Middle East respiratory syndrome (MERS) viruses shared some resemblance with the novel coronavirus. Shortly after first reported case in China, the virus rapidly spread to other countries suggesting high transmissibility of the disease (WHO, 2021).

Globally, it is estimated that out of the over 758 million people infected by COVID-19, healthcare providers constitutes over 10%, and more than 6.9million have died from COVID-19 related complication as at March 12, 2020 (Mantovani 2020). In China, report shows that 2.7% COVID-19 frontline healthcare providers (HCP) have been infected while 1.1% had died from COVID-19 related complication (Wang, et al. 2020). While these figures appear high, the situation in Africa may be more challenging due to inadequate data and under reporting.

In Nigeria, 2020 statistics shows that 2362 COVID-19 frontline HCP were infected, with significant number of deaths already reported among this group (Nigeria Centre for Disease Control, 2020). This is however higher than 65 number of COVID-19 infected healthcare workers reported in Malaysia as at May 12, 2020 (Star Times

News, 2020). In Nigeria, there have been reported cases of stigmatization and low quality of care for suspected COVID-19 patients by frontline HCP due to inadequacy of facilities, shortage of trained personnel and fear of contracting the virus (Federal Ministry of Health 2020).

Health is an important state of being and providers of healthcare services are considered as essential group in the society. Health as a driver of economic growth and development has continued to take a global health priority, even during the non-pandemic era. With the emergence of COVID-19 pandemic, the level of job stress among frontline healthcare providers is being compounded by poor remunerations, poor health or life insurance package, inadequate equipment and shortage of healthcare workforce, including COVID-19 trained personnel, even as cases continue to increase. Dealing with the novel disease is one of the new challenges in global management of infectious diseases (Ahorsu et al. 2020). However, the exceedingly high infection rate and comparably high mortality of COVID-19 has led the world health organization (WHO) to launch the global COVID-19 prevention guidelines (Lai et al., 2020). The guidelines focused on improving public awareness and strengthening the standard of operation practices (SOP) to curb the infection spread through contacts with the potential sources of the virus. In line with regional peculiarities, these guidelines were either adopted or modified by various countries leading to the enforcement of movement restriction, social distancing, closure of international borders and economies, compulsory public use of nose masks, COVID-19 vaccination, among others by governments.

Standard of Operation Procedure involves the use of personal protective equipment (PPE) such as apron, facemasks, gloves among others during care of COVID-19 cases. However, the protection offered by PPE is limited to preventing

those risk for injuries associated with physical, chemical and biological contacts (Wang et al.,2020). This leaves the domains of behavioral, social and economic aspects of the health of COVID-19 frontline HCPs un-assessed for potential health risks. According to World health organization, health is measured by the state of both physical, biological, psychological, social and economic wellbeing of individual, and not only the non-presence of disease or infirmities (WHO 1948).

While these responses appear to have significantly contributed to the reduction in the spread of COVID-19, their impacts, particularly on the HCPs are not clearly understood. Although a plethora of researchers have attempted to assess the impacts of COVID-19 responses across populations, however, none have reported positive impacts. According to the recent surveys, the negative effects of COVID-19 cut cross psychological, physical, and socio-economic spheres (Balkhi et al., 2020; Chew et al., 2020; Xiaoming et al., 2020). Apart from the general impacts, reports from several studies have shown that there are additional risks and severity faced by frontline healthcare providers (HCP) due to their role during the pandemic (Hossain et al., 2020; Keubo et al., 2020; Okpua et al., 2021; Ong et al., 2020; Wang et al., 2021). It is believed that the roles of healthcare providers make them more vulnerable to infections, including psychological disorders like depression and anxiety, socio-economic and behavioural adversities. Previous studies had demonstrated that the adverse impacts from preventive responses during 2003 SARS outbreak had significant and long-lasting effects on healthcare providers (Jahrami et al. 2020). Paucity of studies, partly caused by lack of a suitable psychometric tool may be one of the reasons the impacts of COVID-19 on the frontline HCPs are not given considerable attention in current interventions against COVID-19 pandemic.

Previous studies that evaluated the effects of the pandemic using DASS and HADS had focused only on the psychological impacts (An et al. 2020; Jiang et al. 2020; Song et al. 2020a; Tan et al. 2020), while others targeted the general population instead of healthcare providers (Nicholas et al. 2020; Dai et al. 2020; Kisely et al. 2020). Moreover, apart from the fact that none of these studies used HCPs from Nigerian population, the instruments focused on only psychological impacts during a pandemic of multi-faceted impacts. No study has attempted to collectively assess the behavioural, social and economic impacts of COVID-19 in Nigeria. This may be partly due to lack of reliable instrument. Therefore, developing an instrument that could comprehensive assess the behavioural, social and economic adversities of frontline HCPs in Nigeria during the pandemic is essential in repositioning the healthcare system for a sustainable quality healthcare delivery. This study aims to assess the impacts of COVID-19 responses on HCPs who were at the forefront in the fight against the pandemic, by developing a suitable and validated instrument for assessment of the behavioural, social and economic impacts on COVID-19 on frontline healthcare workers.

1.4 Statement of Problem and Study rationale

The outbreak of the novel COVID-19 pandemic necessitated the development of various national and international preventive response guidelines such as standard of operation procedures (SOP), including social distancing, movement restriction, use of PPE, closure of economies and international borders, vaccination among others. Central to these guidelines is bridging the contacts between the virus, potential hosts and human (Zhong et al. 2021). However, these responses were not without some adverse impacts, particularly on the healthcare providers.

Experts report show that fears, anxiety and concerns over their health and safety at workplaces has risen due to COVID-19 pandemic (Keubo et al., 2020; Lai et al., 2020; Huajun et al., 2020). In addition, there is increase pressure on the already overstretched health facilities as the number of patients requiring hospitalization and treatment during the pandemic increase. In Nigeria, surveys show that apart from shortage of trained HCPs and misinformation during the pandemic, there were also inadequate facilities such as isolation centres, PPE, testing equipment and lack of appropriate remunerations and support (Amzat et al. 2020; Control 2021). These culminated to cause fears, stress, and depression, infections that consequently resulted to increase in work absenteeism, voluntary retirements of HCPs and decreased quality of healthcare services. In addition, there were also reported cases HCPs confinement to workplaces, strict social distancing, stigmatization, and closure of secondary businesses, including private hospitals and maternities owned and managed by HCPs in Nigeria due to economy closure during the pandemic (Federal Ministry of Health 2020).

Experts had suggested that workspace pressures and concerns for safety could result to burnout, and may affect job satisfaction leading to voluntary retirement (Talaee et al. 2022). This suggests that the inadequacy of HCPs in Nigeria may worsen if the pandemic continues. Nigeria is one of the low resource countries in Africa with weak healthcare infrastructure. Experts had predicted that countries with weak healthcare system such as Nigeria has high likelihood for greatest impacts of COVID-19 pandemic (Robertson et al. 2020). These concerns generated additional pressures on Nigerian HCPs during the pandemic.

Previous studies that assessed the association between psychological pressures and quality of healthcare services during the 2003 SARS epidemic reported high

likelihood for poor public health decision and medical errors among HCPs (Mcalonan et al. 2007). Similarly, during the 2014 Ebola outbreak, high levels of stress among HCPs were also reported (Raven, Wurie, and Witter 2018). In addition, there were also reports of being worried and worn out by HCPs in high-risk settings during the H1N1 influenza pandemic (Torun & Torun, 2020; Wang et al., 2022). According to research, unpleasant life experiences, such as occupational stress are often associated with increased levels of anxiety and psychological distress (Elbay et al., 2020; Wang et al., 2020; Xiao et al., 2020)

Healthcare providers are indispensable group in healthcare delivery system, particularly during epidemics. The roles of HCPs in prevention of the pandemic placed them at higher risks for infections. Statistics show that over 2million of HCPs have been infected, accounting for nearly 10% of global infections of COVID-19 (WHO 2023a). A significant number of these HCPs have died from COVID-19-related complications, calling for increased protection and support for healthcare workforce. Furthermore, being a HCP is made incredibly stressful by the increased rate of COVID-19 cases, suspected cases, hospital admissions, and patients needing critical intensive care. These challenges, in addition to high transmissibility of COVID-19 among humans and the rising number of infections and deaths among HCPs represent the actual and potential sources of fear and unease among frontline HCPs (Huang et al., 2020b). In addition, the ugly outcomes of some critical patients, the level of suffering colleagues, relatives and patients infected by COVID-19 go through during treatment, could further worsen frontline HCPs' anxiety and mental distress

Interestingly, Nigerian HCPs need these supports and protection in the face of global shortage of HCPs and inadequate healthcare infrastructures. Earlier studies that evaluated the effect of previous outbreak among HCPs reported anxiety, stress, fear,

depression, burn-out and other post-traumatic behavioural disorders (Nickell et al., 2004; Mcalonan et al. 2007; Raven et al., 2018). Fear, rising stress and workload for HCPs, and some ugly experiences in the course of COVID-19 treatment may portend a serious source of unease and worries with the potentialities for adverse outcomes. According to Mcalonan, et al. (2007), mentally and psychologically distressful experiences by HCPs indirectly reflect on the quality of services they render to the public at the healthcare settings. Unfortunately, there is paucity of studies that comprehensively assessed the reactions of HCPs to COVID-19 responses in Nigeria. This may be partly due to lack of a reliable instrument. This study appears to be the first attempt to assess the behavioural, social and economic reactions to COVID-19 responses among HCPs in Nigeria.

Knowing the effects of COVID-19 responses on the behavioural, psychosocial and economic lifestyles of HCPs may provide a clearer understanding of support needs by frontline HCPs for immediate and post-COVID-19 decision-making. It may also suggest interventions that would reduce such impacts and boost HCPs efficiency in preventing the spread of COVID-19 and other possible future epidemics.

The mental wellbeing of frontline HCPs is critical to overcoming the pandemic and other similar future outbreaks. The knowledge of the behavioural, social and economic impacts of the pandemic responses on HCPs is important in making healthcare welfare decisions, and should not be neglected. This should become a critical and fundamental goal of public health. However, until date, there is paucity of studies that assessed the behavioural and socio-economic impacts of the pandemic responses on health providers, particularly the Nigerian frontline HCP in the face of this pandemic. Majority of recent research in Africa has mainly concentrated on the clinical signs and epidemiology of covid-19 due to the severity of the problem

(Chersich et al. 2020). The COVID-19-related socio-economic and behavioural effects and suffering are frequently disregarded.

Compared to other countries, report from China also shows that a significant number of the HCPs who treated COVID-19 patients displayed signs of melancholy, anxiety, insomnia, and discomfort (Lai et al., 2020). According to Chen, et al., (2020), HCPs in high-risk units may be more prone to psychiatric problems. Additionally, compared to many other professions, a substantial proportion of HCPs reportedly had poor quality of sleep (Dai et al., 2020; Huang et al., 2020). Moreover, stress and sleep issues are intimately linked to the emergence of depression and anxiety (Jahrami et al., 2020; Wang et al., 2020). Therefore, understanding the behavioural and socio-economic reactions to the pandemic responses among frontline HCP may provide clearer picture of the immediate and post-COVID-19 support needs of frontline HCP in order to strengthen the Nigerian healthcare delivery system. This study aims to explore the behavioural, social and economic reactions to COVID-19 among frontline HCP. It may also suggest interventions that could reduce such impacts and prepare healthcare providers for similar future outbreaks.

1.5 Research Questions

The following research questions guided this study:

1. What are the reactions of the COVID-19 responses on frontline healthcare providers in Africa and Asia?
2. What is the validity and reliability of COVRiQ questionnaire?
3. What are the behavioral, social and economic reactions of the COVID-19 outbreak response among frontline healthcare providers in Nigeria?

4. What are the factors associated with the behavioral, social and economic reactions of the COVID-19 outbreak response among Nigerian frontline healthcare providers?

1.6 Hypothesis

The following null hypothesis were tested in this study:

H₀₁ There are no existing impacts of COVID-19 responses on frontline healthcare providers in Africa and Asia.

H₀₂ COVRiQ questionnaire is not valid and reliability.

H₀₃ There are no behavioral, social, or economic existing reactions to COVID-19 responses on frontline healthcare providers in Nigeria.

H₀₄ There are no factors associated with the behavioral, social and economic reactions of the COVID-19 responses among Nigerian frontline healthcare providers.

1.7 General Objective:

The general objective of this study is to evaluate the behavioural, social and economic reactions of COVID-19 pandemic responses among frontline healthcare providers in Africa.

1.8 Specific Objectives:

1. To assess the reactions of COVID-19 responses on frontline healthcare providers across Africa and Asia, and its preventive approaches.
2. To develop a questionnaire (COVRiQ) for the assessment of behavioural, social and economic reactions of COVID-19 responses on frontline healthcare providers.

3. To validate the questionnaire (COVRiQ) for assessing the behavioural, social and economic reactions of COVID-19 responses on frontline healthcare providers.
4. To determine the behavioural, social and economic reactions of COVID-19 outbreak responses among Nigerian frontline healthcare providers.
5. To identify factors associated with the behavioural, social and economic reactions of COVID-19 outbreak responses among Nigerian frontline healthcare providers.

1.9 Justification of the study

Healthcare providers (HCPs) are at the forefront of COVID-19 outbreak response and as such, are vulnerable to various hazards that put them at higher risk of infection. Hazards that increase the vulnerability of HCP includes; exposure to infectious microorganisms, long working hours, psychological distress, fatigue, occupational burnout, stigma and misdirected physical assaults (Wang et al., 2020). According to Mcalonan et al. (2007), fear and anxiety, job stress and traumatic experiences, especially when a HCP watches an infected colleague die, constitute the leading cause of depression and post-traumatic neurosis among HCPs. These mental experiences often go undiagnosed, until they have culminated to a disorder. To other experts, internalized psychosocial experiences, especially among HCPs play huge roles in job productivity, efficiency and safety of the individuals and other around him (Xiao et al., 2020). This suggest that neglecting the mental well-being of HCPs may be dangerous, as it may affect the quality of health services received by the public.

Furthermore, during epidemics, it is common for people to experience some difficulties ranging from fears to social and economic designations. Similar epidemics

like H1N1, SARS, MERS, Ebola, and Zika viruses have reportedly had major negative consequences and produced social and economic challenges for the people (Chiwariidzo et al. 2017). According to current reports, the COVID-19 pandemic could raise the risk of mental diseases, such as schizophrenia, anxiety, depression, and acute stress disorder, as well as social dysfunctions and financial losses among the general public and healthcare workers (Badahdah et al. 2020; Elbay et al. 2020). The COVID-19 pandemic's adverse impacts may also increase excessive dread of sickness, rage, alcohol and drug misuse, divorce, suicide, and the possibility that healthcare providers would make mistakes in making effective public health judgments (Tan et al., 2020; Wang et al., 2021). Experts appear to concur that frontline HCPs are more susceptible to adverse effects after pandemics, despite the fact that the effects of the COVID-19 pandemic seem to be universal (Okpua et al., 2021; Xiong, et al., 2020). This increases the risk to the delivery of healthcare services and, if the pandemic persists, may make the global scarcity of skilled HCPs worse (Chersich et al. 2020). Also, surveys have shown that the pandemic has increased the population's need for healthcare services beyond a proportionate amount, which would undoubtedly put pressure on the HCPs and services (Osterrieder et al., 2021; Dai et al., 2020). An increased risk of medical errors and bad public health judgments among HCPs was observed in earlier research that assessed the impact of psychological instability and pressures during the SARS outbreak on the HCPs (Chiwariidzo et al. 2017). Similarly, reports from previous pandemics like Ebola, SARS, and Influenza A virus (subtype H1N1) revealed that the preventive health measures imposed by the governments, such as social isolation, movement restrictions, reduced recreational and social activities, use of nose masks, among others, had significant and long-lasting effects on the socioeconomic and behavioral lifestyles of the people (Kalanidhi et al. 2021; Kisely et al. 2020). They

point to the necessity of understanding how these lifestyle changes affect HCPs in order to improve the quality of public healthcare.

However, paucity of studies, partly caused by lack of a suitable psychometric tool may be one of the reasons assessing how COVID-19 has affected front-line HCPs are not given considerable attention in current interventions against COVID-19 pandemic. Therefore, developing a valid instrument to capture a more comprehensive impacts of COVID-19 on HCPs may help to timely detect HCPs with serious impacts in order to provide appropriate support. Earlier tools that evaluated the impacts of the pandemic either limited their focus to psychological effects on the general population (Greenfield et al. 2020; Kalanidhi et al. 2021), or they specifically sampled medial staff from developed countries (Talaee et al. 2022; Zhong et al. 2021). These not only have narrowed scope in assessing the impacts of the pandemic, but also may not be suitable for Africans, particularly Nigerian population, considering the much differences in the cultural, social and economic backgrounds. Similarly, few instrument developed for assessing the impact of the pandemic on African population also focussed on phobia for COVID-19 infection (Arpaci, Karataş, and Baloğlu 2020; Reschen et al. 2021). An extensive literature search showed this study may be the first attempt to develop a comprehensive instrument for assessing the behavioural, social and economic impact of COVID-19 responses on frontline HCPs in Africa. These gave strength to the need for this study to develop a validated questionnaire that will be statistically acceptable and specifically represent the population

1.10 Chapter summary

The COVID-19 response has the potential to affect humans, particularly healthcare professionals (HCPs) who are at the forefront of pandemic management and

prevention. This is significant since COVID-19 assignments have both short- and long-term consequences on prognosis. The purpose of this study is to describe, develop instruments, and assess the behavioral, social, and economic impact of COVID-19 and related factors on frontline HCP in Nigeria.

This is one of the first studies in Africa to report on and establish a locally based social and cultural assessment instrument for frontline HCP. From the findings of elements connected to the behavioral, social, and economic implications of COVID-19 responses, the best preventative strategies could be effectively developed in the future in developing countries such as Nigeria.

CHAPTER 2

LITERATURE REVIEW

2.1 Outline of this chapter

In this chapter, a literature review was carried out to familiarize the readers with practical issues relating to the research problems. This chapter highlights on the current available literature and the loopholes in the literature that need further exploration while laying the foundation for the study. It also presents the historical background of coronavirus, epidemiology, modes of transmission and clinical manifestations of COVID-19 disease. Other key highlights discussed in this chapter are global COVID-19 prevention measures, COVID-19 vaccines, and various behavioural, social and economic impacts of COVID-19 pandemic on healthcare system in Nigeria, quality of healthcare delivery services during the pandemic and the vulnerability of Nigeria's healthcare system to COVID-19 pandemic. Towards the last sections of this chapter, a conceptual framework for behavioural, social and economic factors contributing to impacts of COVID-19 on frontline healthcare providers (HCPs) was illustrated based on the literature review. It also discussed the factors associated with impacts of COVID-19; and the bio-psychosocial model was applied as a theoretical framework to further explain the impact of the pandemic on HCPs.

2.2 Literature search

Electronic literature search was conducted on Pub Med, Medline, Google Scholar, Science Direct, CINAHL, and PsycINFO using the following keywords and phrases; "impacts AND COVID-19" AND "frontline healthcare workers" OR " Healthcare

providers” OR “health professional” OR “health personnel” OR “medical staff” AND “Africa OR Asia”. Database filters were used to limit literature hits to peer-reviewed articles published in English language (only), from 1st January to 31st October 2020. In addition, reference lists of the identified studies were also scrutinized for possible eligible studies.

2.3 Origin of Coronavirus 2019 (COVID-19)

On December 30, 2019, clusters of what appeared to be pneumonia of unknown aetiology were identified in Wuhan animals and seafood market, in the Hubei province of China. These suspicious cases were later confirmed as an outbreak of a novel coronavirus disease (Kassem et al., 2020; WHO, 2020). Reports show that the first case of the novel coronavirus was isolated in China in January 2, 2020. However, in less than two weeks, cases and fatalities outside China were reported in Thailand and Philippine respectively (Zhou et al., 2020). This rapid spread was suggestive of high transmissibility of the disease, a characteristic of the outbreak, which compelled the world health organization (WHO) to declare the outbreak a global emergency on January 30, 2020; and subsequently a pandemic on March 11 2020 (Fig. 2.1).

COVID-19 is a respiratory disease caused by severe acute respiratory syndrome coronavirus type 2 (SARS-Cov2); and constitutes the current and the worst global health challenge ever faced by public health in recent decades (Wang, et al., 2021; Wang et al., 2020; Zhao et al., 2020). Laboratory analyses that compared the genomic sequence of SARS-CoV-2 with other known coronaviruses suggest that the disease may have originated from animals (Zhao et al., 2020). This appears to support the epidemiological evidences that about 60% to 75% of emerging human infectious diseases are transmitted by animals, especially wildlife (Acharya et al. 2020). Although no precise origin has been

established for SARS-CoV-2, however, its link to the seafood and animals' market in Wuhan China, and the 98.99% genomic resemblance it shares with the genetic sequence of bat coronavirus holds a strong suspicion for zoonotic origin (Wang et al., 2020). Moreover, this is not the first time a novel outbreak of disease has been linked to the interface between human, animals and environment. Various human coronaviruses that caused serious epidemics in the past with varying degrees of mortalities were all linked to ecological dynamics. With the emergence of SARS-CoV-2, there are now seven known coronaviruses that affect human.

2.3.1 Epidemiology of COVID-19 pandemic

2.3.1(a) Worldwide

Since the outbreak of COVID-19 infection, more than 217 countries have reported cases of infections and deaths (WHO, 2023a). As at March 6, 2023, more than 758.4million infections and over 6.9million deaths have been reported(WHO, 2023b). Compared to other regions, the burden of infection and deaths are higher in Europe and America. The global epidemiology of COVID-19 infections is shown in figure 2.1

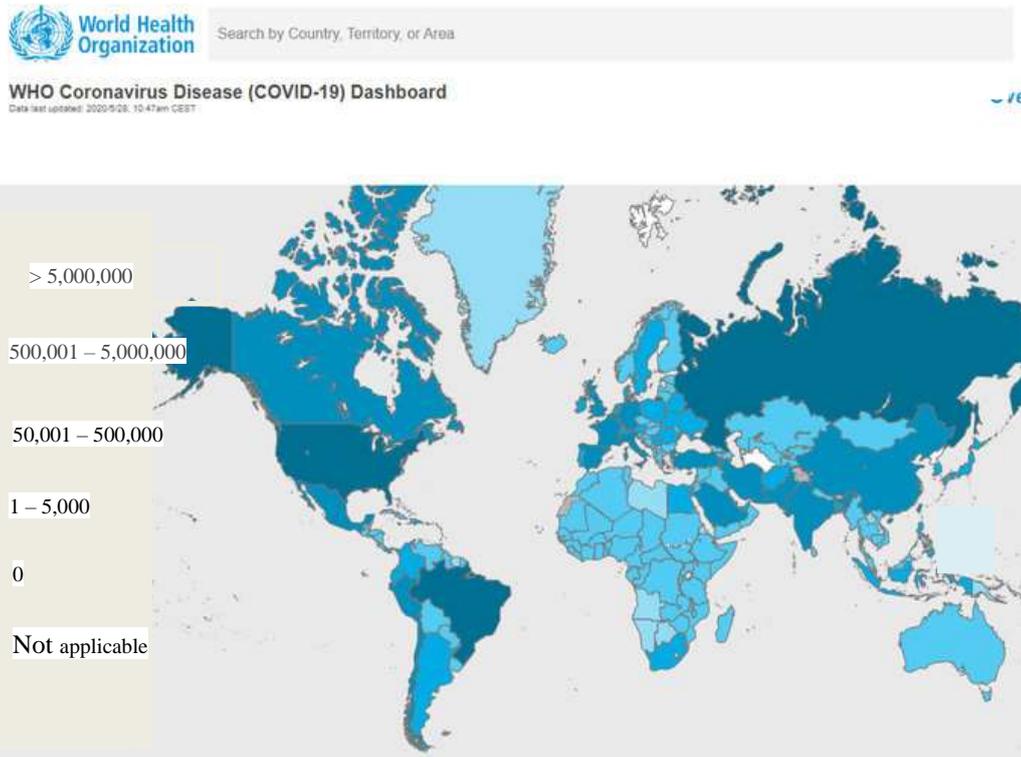


Figure 2.1 Global Epidemiology of COVID-19 Pandemic (WHO 2023)

However, the incidence vary across regions and countries, with developed regions having more burden compared to their developing counterparts. The prevalence of cases across regions is presented in figure 2.2.

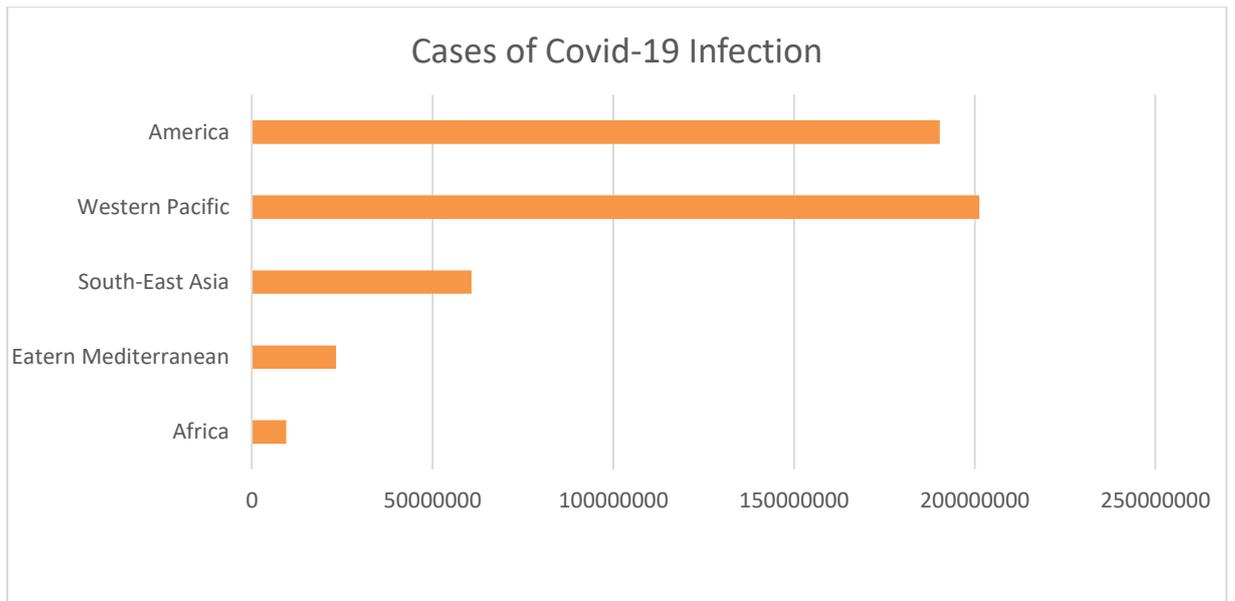


Figure 2.2 Regional distribution of Cases of Covid-19 infections (WHO, 2023a)

Although more cases of COVID-19 infections have been reported in Europe compared to America, the death rates appear to be contrary. Reports as at March 6, 2023 show that America suffered the greatest COVID-19- related mortalities with the deaths of 2.9million compared to Europe with 2.2million (WHO, 2023b). Similarly, there were more reported cases of COVID-19 infections in Western Pacific region (201.3million) compared to Eastern Mediterranean (23.3million), however, more COVID-19-related deaths (803,851) were recorded in Eastern Mediterranean (Fig. 2.3). The reasons for these are still unclear, however, appropriate data on the victims are needed to rule out other factors that promote the severity and mortalities among persons infected with COVID-19. These factors include elderlies (above 75 years), underlying health conditions such as cancer, tuberculosis, chronic cardiovascular and respiratory diseases, and immuno-compromised diseases (Weber and Rutala 2016).

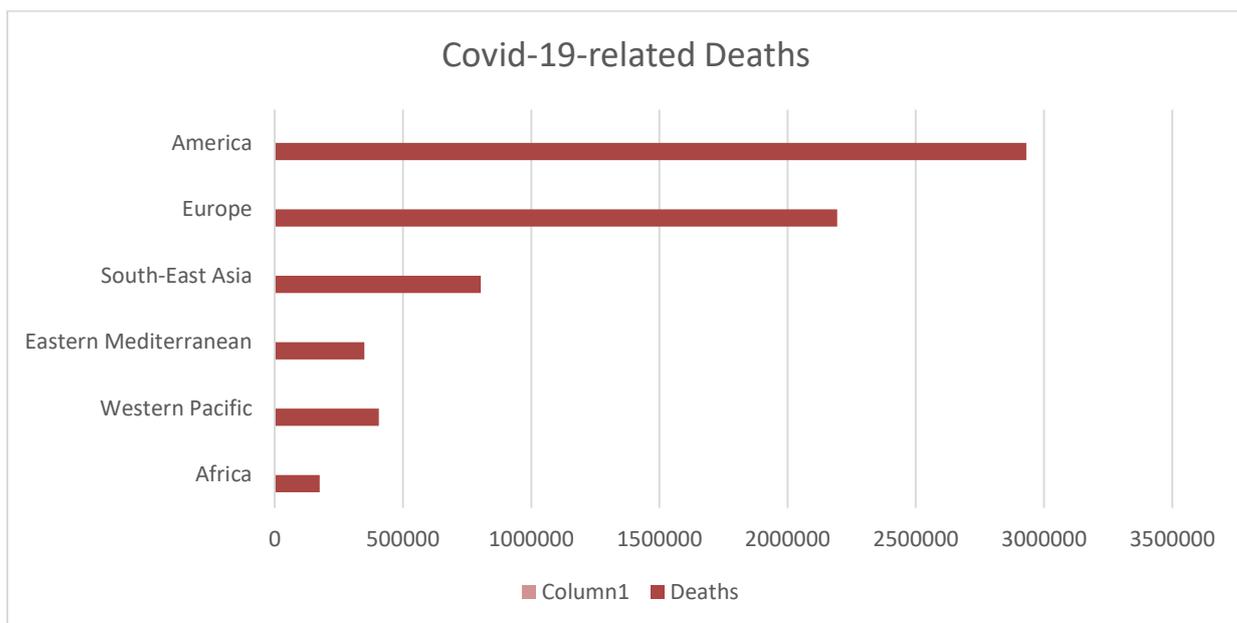


Figure 2.3 Regional distribution of COVID-19-Related Deaths (WHO, 2023a)

2.3.1(b) COVID-19 Infections in Africa

Since the outbreak of COVID-19, Africa has faced a fair share of the disease burden, with more than 9.5 million confirmed cases of infections and over 175,295 deaths as at March 6, 2023 (WHO, 2023a). Among African countries, South Africa, Egypt and Nigeria bear the greater brunts; with over 4.06million infections and 102,595 deaths reported in South Africa and 515,698 infections and 24,809 deaths in Egypt. Nigeria ranks third in African in the burden of COVID-19, with infection cases and deaths reported in all the 36 states of Nigeria (Nigeria Center for Disease Control, 2021; Federal Ministry of Health, 2020).

Health experts projected that Africa would face a hard time in putting under control the coronavirus outbreak. These concerns were linked to poverty level, weak healthcare systems, and prevalence of other diseases ravaging most parts of continent.

2.3.1(c) COVID-19 Infections in Nigeria

An index case of COVID-19 infection was identified in Nigeria on February 27, 2020. Since then, the virus has continued to spread across all states of the country. As at February 28, 2023, Nigeria has recorded 266,593 cases of infection and 1, 335 COVID-19 related deaths (WHO, 2023). Nigeria currently has the third-highest number of COVID-19 cases in Africa and is responsible for 7% of the continent's total number of confirmed cases. The case fatality stood at 2.8%. With the very low testing rate in Nigeria, this case burden may be underestimated. As at May 31, 2020, Nigeria had performed only 63,882 COVID-19 tests, representing 293 tests per million people, compared to Ghana's 184 343 (5948 per million people) and South Africa's 488 609 (8251 per million people) (Dan-Nwafor et al. 2020).

Nevertheless, when the lockdown was temporarily relaxed, the COVID-19 infection cases in Nigeria rose by 52%. With this, Nigeria experienced a steady rise in the incidence of COVID-19, which transitioned from an imported case to community transmission. The number of cases were higher in cities with high population such as Lagos, Portharcourt, Kaduna, Enugu and Kano than those with lower population (Fig.2.4).

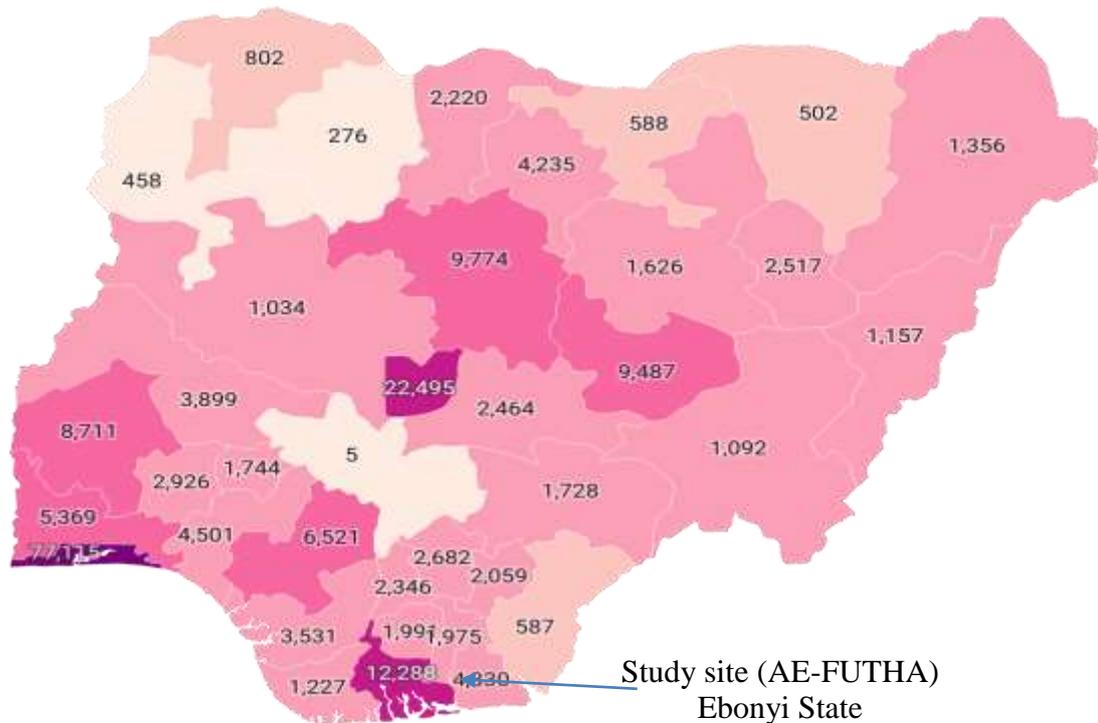


Figure 2.4 Nigerian Map showing the distribution of cases of COVID-19 infections across States (WHO 2023b).

2.3.1(c)(i) Nigeria’s Response to COVID-19 Pandemic

In response to WHO’s categorization of Nigeria as one of the 13 African nations with the highest risk of COVID-19 spreading, the Coronavirus Preparedness Group was established in Nigeria on January 31, 2020, with members from the 36 states and Federal Capital Territory. Nigeria was also considered one of the most vulnerable African countries due to its weak healthcare infrastructure (Amzat et al. 2020). Aside from the inadequate of medical personnel, there are still areas in Nigeria without access to healthcare facilities (Amzat 2011). Hence, experts projected that Nigeria may end up bearing the brunt of the epidemic, if efficient measures were not employed.

To ensure appropriate coordination, the Nigerian Center for Disease Control (NCDC) trained the rapid response teams in all the 36 states of Nigeria.

In addition, NCDC also assisted 22 Nigerian states to activate their emergency operations centers and link them to the national occurrence coordination centers (Amzat et al. 2020). Nigeria recorded its imported COVID-19 index case on February 27 despite the government having increased airport surveillance since January 2020. This sparked questions about the efficiency of airport surveillance and the nation's overall readiness. Upon detection of the index case, a multi-sectoral National Emergency Operations Centre (EOC) was activated by the NCDC to coordinate the country's response to COVID-19. On March 9, 2020, the Presidential Task Force (PTF) for Coronavirus Control was also established. Travellers from 13 COVID-19 high-risk nations were banned from entering the Nigeria, while self-isolation of those who have returned from the impacted countries was monitored by the NCDC and the Port Health Services. Many believed that the ban on high-risk nations would have good effect; however, the country had more imported cases when the prohibition went into effect. Sadly, the majority of those who entered the nation did not adhere to the 14-day self-isolation period advised by the NCDC

In addition, NCDC noted that 70% of those who tested positive for COVID-19 within one month were men and 30% were women. They were within the ages of 30 and 60. The most impacted were people between the ages of 31 and 50; however, 41.0% of the cases had insufficient epidemiological data, while 44.0% of the cases were imported from unknown infection sources (NCDC 2020). A proportion of the patients (15.0%) were known contacts of positive cases (NCDC 2020), suggesting cross-infection or community transmission. About 50% of the cases in Nigeria were located in Lagos State, Abuja (20.3%) and Osun State (8.6%). The emergence of the pandemic changed the nature of social life and realities in Nigeria. With gravely inadequate palliatives, the new social norm had negative influence on prospects for survival. No nation can effectively prepare

to contain the COVID-19 pandemic, as evidenced by the experiences and lessons learned by the world.

In addition, it has been revealed that 812 HCPs (representing 6.5% of the positive cases) contracted COVID-19 in Nigeria (Amzat et al. 2020). While stratified data on the incidence on HCPs in Nigeria is lacking, countries like USA had reported that the incidence was highest among nurses (49.4%) (Hartmann et al. 2021). There are similar reports of 16%, 6.1% and 4821 infections among HCPs in Sierra Leone, Cote D'voire and South Africa respectively (CDC 2020). Some of these cases involved patients who presented to hospitals with various diseases while concealing critical information from HCPs that they had a subclinical coronavirus infection. Another factor contributing to the infection of some HCPs were lack of PPE at some isolation sites (Adejoro, 2020).

The unethical actions of some HCPs who run private hospitals in cities like Lagos are another contributing reason. According to reports, without official authority, private clinics were allegedly treating patients who tested positive with COVID-19 in secret (Adelakun 2020). This led to rise in the incidence of COVID-19 among healthcare professionals, and consequent apprehension, which further strained COVID-19 control efforts in the country. In response, the Lagos State Government launched Eko Telemedicine, a telemedicine portal, to address the state's non-COVID-19-related health issues (Adediran, 2020).

The country should have been better prepared for the COVID-19 outbreak from lessons learned from the 2014 Ebola and Lassa fever outbreaks. Nigeria's major lesson from COVID-19 is that it was impossible for both the rich and political class to travel abroad for medical care, particularly in Germany, the UK, and the US. Most African politicians frequently travel outside of their country for medical care because their health institutions are underfunded and underdeveloped.