Impacts of pandemics on healthcare workers in teaching hospitals in Rivers State, Nigeria: Perspective from healthcare workers' experience during pandemics.

ABSTRACT

Background: Pandemics are wide-ranging incidences of infectious diseases that significantly increase morbidity and mortality in extensive geographic area. The study assessed impacts of pandemics experienced by healthcare workers in teaching hospitals in Rivers State, Nigeria.

Materials and Methods: This study was conducted among healthcare workers in teaching hospitals (University of Port Harcourt Teaching Hospital (UPTH) and Rivers State University Teaching Hospital (RSUTH) in Rivers State Nigeria. Multi-stage sampling method was adopted to recruit 754 healthcare workers into the study, and a descriptive cross-sectional study design was used. A structured questionnaire was developed and pre-tested. The reliability of the questionnaire for this study was performed with the index of internal consistency and was calculated with Cronbach's alpha coefficient which gave a considerable value of 0.72. The responses gotten from the participants were entered into, and analysed with IBM Statistical Package for Social Sciences (SPSS) software version 25. Ethical clearance to conduct the study was gotten from the Research and Ethics Committee of the University of Port Harcourt. Informed consents were obtained from each of the participants.

Result: Most (62.2%) of the participants experienced psychological impact of pandemics, (59.4%) of the participants experienced emotional impact of pandemics, (54.5%) of the participants experienced financial impact of pandemics and the overall (58.2%) of experienced impact of pandemics on the HCWs was obtained. Also, the result revealed a statistically significant association between marital status (p=0.000), sex (p=0.003), religion (p=0.000), level of education completed (p=0.039), income (p=0.000), professional category (p=0.000), duration of work (p=0.00) and overall experienced impact of pandemics on the participants. We predicted that among the participants, marital status, sex, religion, education, income professional category, and work duration at ($p \leq 0.05$), significantly contributed to the level of experienced impact of pandemics among the participants.

Conclusion: Majority of the healthcare workers reported that pandemics impacted on them However, psychological impact of the pandemics was most prevalent impact experienced by the healthcare workers. The level of pandemic impact experienced by the health workers were substantially influenced by socio-demographic characteristics of the participants. We recommend hospital management should improve the work setting and provide necessary support to the workers. Also, the healthcare workers should participant trainings on coping strategies during pandemics.

Key words: Experienced, Impacts, pandemics, healthcare workers, teaching hospitals, Nigeria.

INTRODUCTION

Pandemics are wide-ranging incidences of infectious disease that significantly increase morbidity and mortality in extensive geographic areas and cause substantial economic, social, and political disruption [1]. Studies revealed that the possibility of pandemics has increased in the past century due to a rise in international travel and incorporation, urbanization, changes in land use,

and more misuse of the natural environment [2]. Pandemic occurrences seem to increase in frequency, particularly due to the growing emergence of disease in animals. Some of the pandemic diseases include Avian Influenza, Cholera, Ebola, Plague, Yellow Fever, Meningitis, MERS, Influenza, Zika, Rift Valley Fever, Lassa Fever, Leptospirosis, etc [2,3]. Pandemic risk is driven by the combined effects of various factors such as environment, host, geographic regions, lack of preparedness, poor health system, etc [3]

Globally, several efforts have been made to prepare to limit the effects of pandemics and mitigate their impacts [4]. Multiple outbreaks revealed gaps related to the timely detection of disease, availability of basic care, follow-up of contacts, separation, and isolation measures, and readiness outside the health sector, including global management and response utilization [5]. These gaps are predominantly evident in developing and low-income countries and have posed challenges during relatively confined epidemics, with serious implications for what may happen during a full-fledged worldwide pandemic [6]. The majority of pandemics emanated from the "zoonotic" transmission of pathogens from animals to humans [7]. Zoonoses come into human populations from both domestic animals and wildlife. History has it that a lot of significant zoonoses have been introduced through increased human-animal interaction as a result of domestication, and potentially high-risk zoonoses (such as avian influenzas) continue to arise from livestock production systems [8]. Certain pathogens have been linked to having emerged from reservoirs of wildlife and passed into human populations through the hunting and consumption of wild species (for instance; bushmeat), trading of wild animals, and other contact with wildlife [9]. However, zoonotic pathogens differ in the degree to which they can survive within and spread between human hosts.

Impact of pandemics

Pandemics result not only in increased morbidity and mortality from the diseases but also significantly impact different aspects of the lives of healthcare workers [10]. These pandemics can be experienced as impacting the health, lifestyle, economic status, and mental health of HCWs, particularly those on the frontlines of the war against pandemics [10]. Healthcare workers (HCWs) are frontline workers engaged in the fight against pandemics [11]. Healthcare workers (HCWs) defense from pandemics is vital, but their protection from physiological, emotional, and financial problems is of greater importance [11]. The mental health of healthcare workers is adversely affected during pandemics due to different factors associated with the

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nature of the disease and work [12]. Psychological distress and other health issues have been linked to uncommon scenes experienced by the HCW during the pandemic [12]. Under normal circumstances, work-related psychological distress in HCWs is associated with several short and long-term adverse outcomes [13]. During pandemics, psychological problems are attributed to adverse occupational outcomes such as poor ca quality care of the patient, colleagues' irritability, negative impact on patient care due to cognitive impairments of HCW, absence from work, and intent of exiting job [13]. HCWs who experience psychological distress are also at risk of experiencing adverse personal outcomes including substance misuse, and suicide [13]. In situations such as infectious disease outbreaks, such consequences may intensify and heighten psychological distress [13].

Globally, particularly in developing countries including Nigeria, there is a substantial decrease in the workforce of all hospital staff (clinical and non-clinical staff) in health facilities during pandemics [14]. The impact of the pandemic on staffing shortages varies depending on the type of healthcare worker in addition to the hospital setting. Also, this problem of the workforce has been linked to many other factors such as poor hospital equipment, family responsibilities, fear of getting contracting the disease, and poor morale [15]. In Nigeria, workforce shortages among healthcare workers had been a serious problem in most hospitals leading to increase workload even before the pandemic [16]. The mental health of HCWs is worsened by the decreased workforce and increased workload due to increased demand for patient care, including testing, immunizations, etc [17]. Furthermore, healthcare workers contracting the pandemic diseases also added to staffing shortages and work stress This may continue to impact the workforce in the hospital, thereby contributing to increased workload and work stress for a few HCWs [18].

During pandemics, health workers often report increased stress and workload, and a continued struggle to get the supplies they needed. Healthcare workers are, for the most part, psychologically resilient professionals, trained and experienced in dealing with illness and death [19]. In Nigeria, the mental health and psychological well-being of HCWs before the pandemic was already known as an important healthcare issue, proved by the increased occurrence of stress, burnout, depression, dependence on drugs and alcohol, and suicide attempts professionals, in many countries [20]. High-stress roles combined with the exceptional demands during the pandemic crisis have indisputably placed frontline healthcare workers at more risk for mental

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health problems, with early reports from around the world showing high rates of depression, worry, post-traumatic stress disorder (PTSD), and suicide actions [21].

Additionally, the health care workers face pandemics with poor working conditions, as a result of the scarcity of biosafety equipment, lack of infection control systems, poor recognition and incentives for programs and work, physical and psychological abuse, and discrimination by patients thereby impacting the mental health of HCWs [22]. These are drivers of psychosocial and emotional problems among healthcare workers. Also, other emotional impacts of pandemics such as headaches, grinding your teeth or clenching your jaw, shortness of breath, and dizziness. tiredness, anxious stress, and depression have been associated with inadequate information about the pandemics, the continuous care of patients with pandemics, increased workload, regular exposure to critical events such as death, fear of contracting and transmitting to their families and its effects on their health [20]. Healthcare workers experience economic hardship as a result of reduced earnings common during the pandemic. There was a delay in releasing and payment of salaries in many organizations because hinges on executing payment policies by the management and Government. Most of the patients stopped working and do not have enough income for hospital bills apart from serious cases. The HCWs experience delays in receiving the risk allowance contributed to their economic hardship [23]. The adverse impact of employment loss on financial, and psychological well-being and life risk makes HCWs rethink their job and career options. Hence, this study tends to analyze the impacts of the pandemic on healthcare workers in teaching hospitals in Rivers State, Nigeria.

MATERIALS AND METHOD

Study Area

This study was conducted among health workers in teaching hospitals (the University of Port Harcourt Teaching Hospital (UPTH) and Rivers State University Teaching Hospital (RSUTH) in Rivers State Nigeria. Rivers State is one of the 36 and has its capital located in Port Harcourt LGA [24] It was estimated at a population of 7,303,900 in 2016, making it the sixth-most populous state in the country [25]. Rivers State has borders with Imo, Abia, and Anambra States on the northern part, Akwa Ibom State on the eastern part, and Bayelsa and Delta State on the western part. The State has a wide agro-ecological diversity and is economically important to the Niger Delta region [26]. It has a latitude of 5°21'N and a longitude of 6°57'E and is found as one

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of the states in the South-South geopolitical zone and Niger Delta states. There are about 23 Local Government Areas that make up the State with Port Harcourt being the biggest city in the State. Port Harcourt City has a population of about 1,865,000 inhabitants as of 2016. The city is located in the Niger Delta as it lies along the Bonny River [25]. The Port Harcourt City is part of the Port Harcourt local government area which is consisting of the former European quarters now called Old GRA and New Layout areas. The urban area of Port Harcourt consists of the Port Harcourt local government area, parts of Obio-Akpor, and some parts of Eleme [25].

Port Harcourt is the center of medical services, there are many hospitals and health facilities located in Rivers State. Port Harcourt city is a host to two tertiary health facilities or teaching hospitals, and many health facilities. The University of Port Harcourt Teaching Hospital (UPTH) is on East-West Road, Port Harcourt, Nigeria [26]. It is a major tertiary-care teaching and research facility in Rivers State. The University of Port Harcourt Teaching Hospital originally commenced its operations in 1980 and was officially commissioned by the Federal Government in 1985. When it started, there were 60 beds mainly in use [26].

University of Port Harcourt Teaching Hospital is managed through a three-tier managerial system made up of the Board of Management, Hospital Management Committee (HMC) and the Departments [26] The hospital consist of the following departments: Accident and Emergency, Accounts, Administration, Anaethesiology, Catering, Central Sterilization Service Department (CSSD), Communication, Community Medicine, Computer Science, Dentistry, Dialysis, Ear, Nose and Throat, General Out Patient Department, Intensive Care Unit, Internal Medicine, Laundry, Maintenance, Medical Illustration Unit, Medical Laboratory Services (Chemical Pathology, Haematology and Blood Bank, Medical Microbiology and Parasitology, Anatomical Pathology), Medical Records, Medical Social Welfare, Neuropsychiatry, Nuclear Medicine, Nurse Practice Development Unit, Obstetrics and Gynecology, Ophthalmology, Oral Maxillo Facial, Orthopaedic Department, Paediatric Services, Pharmacy, Physiotherapy, Radiology, Stores, Surgical Department, Works and Services. Most of the clinics are made up of a team of consultants, senior registrars, junior registrars, matron nurses, other nurses, interns, other staff, and a ward [26] However, in the recent pandemic the hospital established a COID-19 laboratory and Isolation Centre [26].

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The Rivers State University Teaching Hospital (RSUTH) is one of the oldest hospital hospitals in Rivers State and is located in Port Harcourt City in the State. It provides general, specialist medical, and surgical services in addition to a range of diagnostic and support services [27]. The RSUTH consists of 731 medical staff members and 375 licensed beds. Its departments include Medicine, Laboratories, Paediatrics, Pathology, Obstetrics and Gynaecology, Radiology, Family Medicine, Surgery, Ophthalmology, Anaesthesia, Accident Centre, and Surgical/Medical Emergency [28] The hospital's Pharmacy, Maintenance, General Administration, and Finance departments. offer health care, counseling, referral services, treatment, and management of pandemic infections such as COVID-19 patients [28].

Study Design/Sampling method

A descriptive cross-sectional study design was used in the study. This study design was used to determine the level of impact of pandemic on HCWs using multi-stage sampling method to select the participants and administer questionnaire by interviewer administer method.

Study tool and Validation

The structured questionnaire was pre-tested in FMC Bayelsa State among health workers who were randomly selected. The pre-test was conducted with a sample size of 75 which is equal to 10% of the total sample size for the study. The reliability of the questionnaire study was assessed by using the index of internal consistency with Cronbach's alpha coefficient which gave a considerable value of 0.72.

Data analysis and interpretation

Data was gotten from participants and entered into Statistical Package for Social Sciences (SPSS) software version 25. It was coded in numerical values and was analyzed with Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics were performed to report variables in frequency and percentages. We conducted inferential statistics such as the chi-square test, and logistics regression.

Ethical Considerations

We got the ethical clearance for the study from the Research and Ethics Committee of the University of Port Harcourt. Permission to conduct this study was gotten from UPTH and RSUTH Research Committee and informed consent was obtained from the eligible participants. Informed consent was obtained from each of the participants and ensured that participants' anonymity and confidentiality were maintained.

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Results

Table 1: Socio-Demographic characteristics of the respondents

Variable	Frequency (N=754)	Percentage (%)
Age (years)		
18-27	*94*	*12.5*
28-37	*314*	*41.6*
38-47	*253*	*33.6*
48-57	*62*	*8.2*
>57	*31*	*4.1*
Marital Status		
Single	*253*	*33.6*
Married	*377*	*50.0*
Separated	*10*	*1.3*
Widow	*21*	*2.8*
Widower	*31*	*4.1*
Cohabiting	*62*	*8.2*
Sex		
Male	*409*	*54.2*
Female	*345*	*45.8*
Tribe		
Igbo	*345*	*45.8*
Yoruba	*30*	*4.0*
Hausa	*2*	*.3*
Others	*377*	*50.0*
Religion		
Christianity	*701*	*93.0*
Islamic	*31*	*4.1*
Others	*22*	*2.9*

Table 1 shows that most (41.6%) of the respondents were of the age range 28-37years, half (50.0%) of the study participants were married female as more than half (54.2%) of the respondents are male. While many almost half (45.8%) of the participants were Igbos and majority of the respondents (93.0%) were Christians.

Table 2: Socio-demographic characteristics of the respondents

Variable	Frequency (N=754)	Percentage (%)
Highest level of education		
None	*5*	*0.7*
Primary education	*36*	*4.8*
Secondary education	*74*	*9.8*
Tertiary education	*576*	*76.4*
Post Tertiary	*63*	*8.4*
Income (monthly)		
≤50,000	*220*	*29.2*
50,000	*188*	*24.9*
50,001-100,000	*220*	*29.2*
100,001-150,000	*64*	*8.5*

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150,001-200,000	*62*	*8.2*
Professional Category		
Physician	*95*	*12.6*
Nurse	*252*	*33.4*
Med. Lab	*32*	*4.2*
Pharmacist	*31*	*4.1*
Community Health Worker	*125*	*16.6*
Management Staff	*93*	*12.3*
Support Staff	*94*	*12.5*
Security	*32*	*4.2*
Duration of Work in the Hospital		
<5years	*565*	*74.9*
6-14years	*157*	*20.8*
>25years	*32*	*4.2*
Level (at work)		
6	*31*	*4.1*
7	*157*	*20.8*
8	*64*	*8.5*
9	*315*	*41.8*
11	*62*	*8.2*
12	*93*	*12.3*
14	*32*	*4.2*

Table 2 indicates that the majority of the participants (76.4%) have attained a tertiary level of education, and some of the study respondents (29.2%) and (29.2%) earn ≤N50, 000 and 50,001-N100, 000 respectively. Among the professional category, many of the respondents (33.4%) are Nurses, the majority of the study participants (74.9%) have worked < 5 years and most of the participants (41.8%) are of level 9.

Table 3: Psychological impact of pandemics on health workers

Variable	**Strongly Disagree**	**Disagree**	**Neither Agree or Disagree**	**Agree**	**Strongly Agree**
	Number (%)	**Number (%)**	**Number (%)**	**Number (%)**	**Number (%)**
Experienced being stressed due to workload during the pandemics	157(20.8)	124(16.4)	31(4.1)	379(50.3)	63(8.4)
Experienced burnout due to workload during the pandemics	93(12.3)	190(25.2)	93(12.3)	284(37.7)	94(12.5)
Experienced sleeping difficulties during the pandemics	63(8.4)	188(24.9)	219(29.0)	221(29.3)	63(8.4)
Experienced symptoms of depression during the pandemics	94(12.5)	157(20.8)	157(20.8)	252(33.4)	94(12.5)
Experienced symptoms of anxiety working in the hospital during the pandemics	93(12.3)	62(8.2)	94(12.5)	442(58.6)	63(8.4)
Experienced symptoms of posttraumatic	125(16.6)	189(25.1)	94(12.5)	252(33.4)	94(12.5)

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stress disorder during the pandemics					
Experienced mental health issues during the pandemics	188(24.9)	125(16.6)	31(4.1)	315(41.8)	95(12.6)
Experienced psychiatric morbidity or general psychological distress	62(8.2)	127(16.8)	188(24.9)	346(45.9)	31(4.10)

Table 3 shows that more of the respondents (50.3%), (37.7%) agreed to have been stressed due to workload during the pandemics, experienced burnout due to workload during the pandemics, and experienced sleeping difficulties during the pandemics respectively. Also, (29.0%) of the participants had sleeping difficulties during the pandemics, (33.4%) agree to have experienced symptoms of depression during the pandemics. Most (58.6%) of the participants, less than half (33.4%) and (41.8%) agree to have experienced symptoms of anxiety working in the hospital during the pandemics, symptoms of posttraumatic stress disorder during the pandemics and had mental health issues during the pandemics respectively. The table revealed that less than (45.9%) of the respondents experienced psychiatric morbidity or general psychological distress.

Figure 1: Assessment of level of psychological impact of pandemics on health workers

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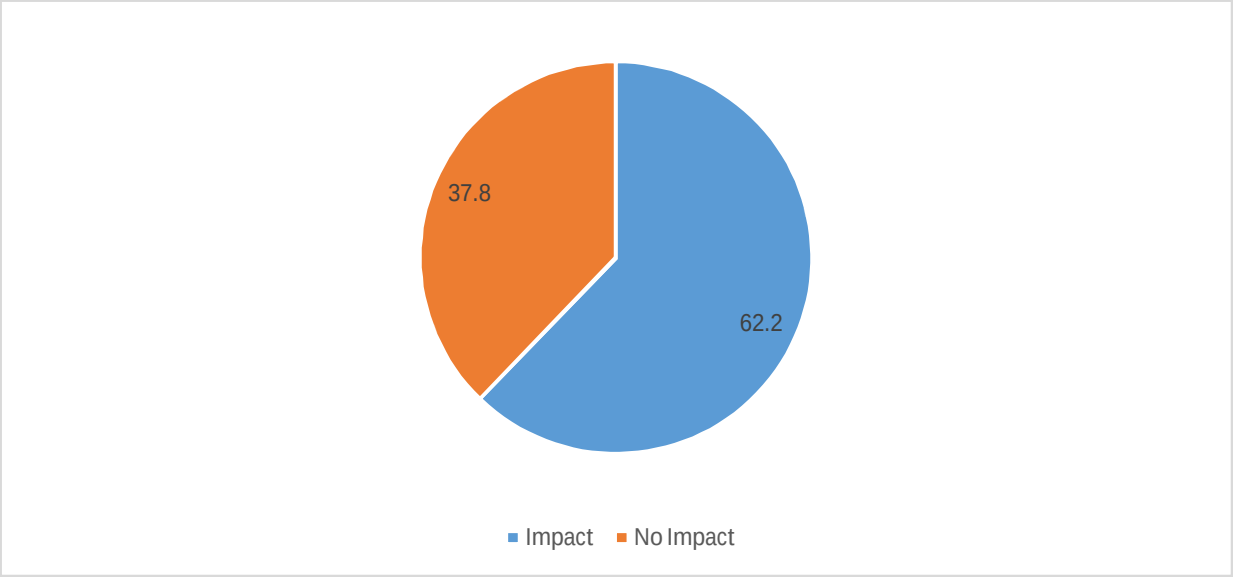

This figure shows that most (62.2%) of the participants experienced psychological impact of pandemics, while less than half (37.8%) of the participants had no experienced psychological impact during the pandemics.

Table 4: Emotional impact of pandemics on health workers

Variable	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Experienced violence and harassment at work from colleagues or patients during the due to the pandemics	31(4.1)	189(25.1)	219(29.0)	222(29.4)	93(12.3)
Experienced feeling of sadness at work during the pandemics	84(11.1)	68(9.0)	107(14.2)	401(53.2%)	94(12.5)
Experienced lack of encouragement or support at work during the pandemics	31(4.1)	125(16.6)	158(21.0)	378(50.1)	62(8.2)
Experienced stigmatization and discrimination among health workers and other people during the pandemics	62(8.2)	189(25.1)	62(8.2)	378(50.1)	63(8.4)
Experienced lack of care for family members during the pandemics	94(12.5)	188(24.9)	155(20.6)	285(37.8)	32(4.2)
Experienced fear of dying from the pandemic's infections	24(3.2)	58(7.7)	284(32.9)	301(39.9)	123(16.3)
Experienced depression due death of your colleague at work during the pandemics	156(20.7)	159(21.1)	62(8.2)	345(45.8)	32(4.2)
Experienced little interest in doing your usual work	123(16.3)	74(9.8)	114(15.1)	334(44.3)	109(14.5)

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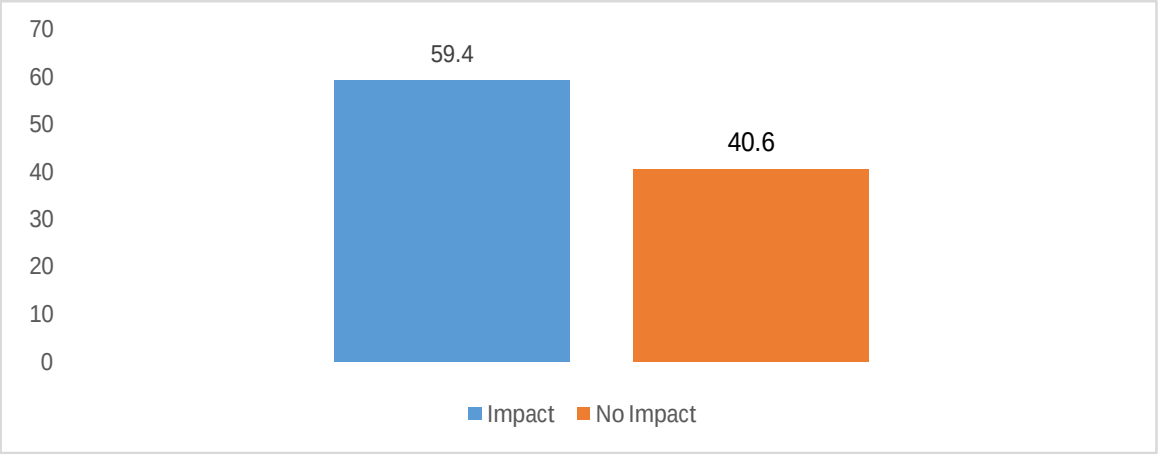
Experienced eating disorders (loss appetite or eating too much) during the pandemics	115(15.3)	93(12.3)	104(13.8)	361(47.9)	81(10.7)
Feel low esteem (personality disorders) due to your work during the pandemics	102(13.5)	102(102)	96(12.7)	381(50.5)	73(9.7)

Table 4 shows that more (29.4%) and (53.2%) of the participants agreed to have experienced violence and harassment at work from colleagues or patients during the due to the pandemics, and felt sadness at work during the pandemics respectively. About half (50.1%) and (50.1%) of the respondents reported to lack of encouragement or support at work during the pandemics, and that they experienced stigmatization and discrimination from health workers and other people during the pandemics. However, more (37.8%) of the participants agreed to lack of care for family members during the pandemics, (39.9%) agree that they experienced fear of dying from the pandemic's infections. More (45.8%) of the participants experienced depression due death of your colleague at work during the pandemics (44.3%), (47.9%) and (50.5%) stated they experienced little interest in doing your usual work, eating disorders (loss appetite or eating too much) during the pandemics and felt low esteem (personality disorders) due to your work during the pandemics.

Figure 2: Assessment of level of emotional impact of pandemics on health workers



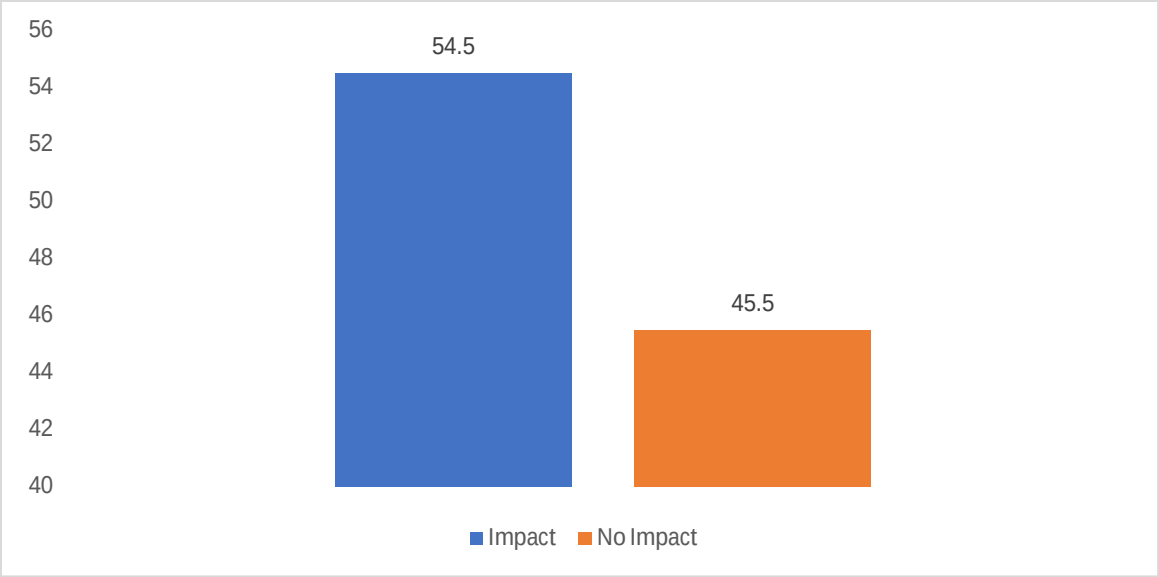
This figure shows that most (59.4%) of the participants had emotional impact of pandemics, while less than half (40.6%) of the participants experienced low or no emotional impact during the pandemics.

Table 5: Financial impact of pandemics on health workers

Variable	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Experienced lack of personal protective equipment and other working materials in the hospital due to no fund during the pandemics	62(8.2)	158(21.0)	126(16.7)	314(41.6)	94(12.5)
Experienced experience lack of incentives and insurance in the hospital during the pandemics	24(3.2)	58(7.7)	248(32.9)	301 (39.9)	123(16.3)
Experience delay or no payment of salaries during the pandemics	188(24.9)	315(41.8)	31(4.1)	125(16.6)	95(12.6)

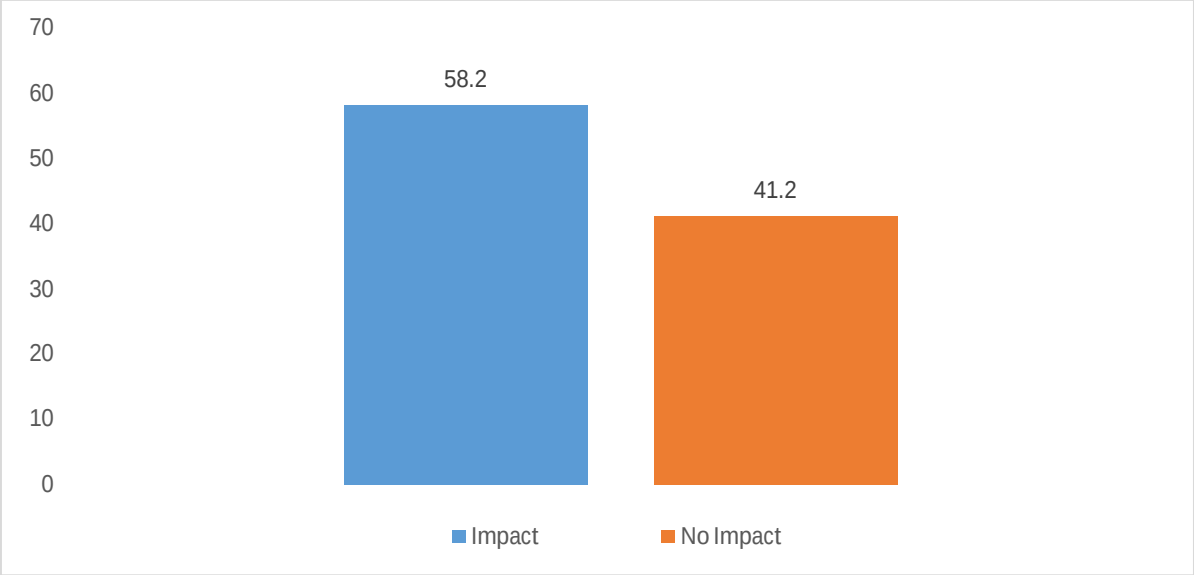
Table 5 shows that more (41.6%) of the participants accepted that they experienced lack of personal protective equipment and other working materials in the hospital due to no fund during the pandemics. More (39.9%) of the participants agreed experienced lack of incentives and insurance in the hospital during the pandemics, more (41.8%) of the participants disagreed to delay or no payment of salaries during the pandemics.

Figure 3: Assessment of level of financial impact of pandemics on health workers



This figure shows that most (54.5%) of the participants had financial impact of pandemics, while less than half (45.5%) of the participants experienced low or no financial impact during the pandemics.

Figure 4: Overall impact of pandemics on health workers



This figure shows that overall (58.2%) impact of pandemics on the HCWs, while less than half (45.5%) of all the participants experienced low or no impact during the pandemics.

Table 6: Association between socio-demographic characteristics and impact of pandemic

Variables	Impact				X^2	Odd ratio (OR)
	No impact (n(%)	Impact (n(%)	Total	df	(p-value)	95% (CI)
Age (years)						
≤47	284(43.0)	377(57.0)	661(100.0)	1	3.110	1.507
≥48	31(33.3)	62(66.7)	93(100.0		(0.078)	(0.953-2.381)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Marital status						
Married	189(50.1)	188(49.9)	377(100.0)		21.641	2.003
Unmarried	126(33.4)	251(66.6)	377(100.0)		(0.000) *	(1.492-2.688)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Sex						
Male	191(46.7)	218(53.3)	409(100.0)	1	8.903	1.562
Female	124(35.9)	221(64.1)	345(100.0)		(0.003) *	(1.164-2.094)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Tribe						
Igbo	155(44.9)	190(55.1)	345(100.0)	1	2.595	1.270
Others	160(39.1)	249(60.9)	409(100.0)		(0.107)	(0.949-1.698)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Religion						

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Christianity	276(39.4)	425(60.6)	701(100.0)	1	23.712	0.233
Others	39(73.6)	14(26.4)	53(100.0)		(0.000) *	(0.124-0.437)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Level of education completed						
Below Tertiary	38(33.0)	77 (67.0)	115(100.0)		4.255	0.645
Above Tertiary	277(43.3)	362(56.7)	639(100.0)		(0.039) *	(0.424-0.980)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Income						
≤150,000	282(44.9)	346(55.1)	628(100.0)	1	15.110	2.297
≥ 151,001	33(26.2)	93(73.8)	126(100.0)		(0.000) *	(1.498-3.521)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Professional Category						
Clinical Staff	250(46.7)	285(53.3)	535(100.0)	1	18.568	2.078
Non-Clinical Staff	65(29.7)	65(29.7)	154(70.3)		(0.000) *	(1.485-2.908)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Duration of Work						
≤14years	315(43.6)	407(56.4)	722(100.0)	1	23.979	0.564
≥ 15years	0(0.0)	32(100.00)	32(100.0)		(0.000) *	(0.529-0.601)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			
Level						
≤8years	94(37.3)	158(62.7)	252(100.0)	1	3.117	0.756
≥ 9years	221(44.0)	281(56.0)	502(100.0)		(0.077)	(0.555-1.032)
Total	**315(41.8)**	**439(58.2)**	**754(100.0)**			

***P≤0.05* (statistically significant)**

Table 6 reveals that there was a statistically significant association between marital status (p=0.000), sex (p=0.003), religion (p=0.000), level of education completed (p=0.039), income (p=0.000), professional category (p=0.000), duration of work (p=0.00) and impact of pandemic. There were no statistically significant associations between age, tribe, level of education completed, level at work and impact of pandemics. Table 6 shows that there is no statistically significant association between age and impact of pandemic experienced by the HCWs. Participants in the age range of ≥48years have a higher impact of the pandemic than those between ≤47years (66.7% vs 57.0%; p=0.078). Also, the table revealed that the older ones (≥48years) are 1.507 times more likely to experience higher impact of the pandemic than the younger ones (≤47years) (OR: 1.507; CI = 0.953-2.381).

The same table shows that there is a statistically significant association between marital status and impact of pandemic. Unmarried participants reported to have experienced higher level of impact of pandemic compared to those that were married (66.6% vs 49.9; p=0.000). Also, the

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table revealed that respondents who were unmarried were 1.000 times more experienced the impact of pandemic compared to married person in the study (OR: 2.003; CI =1.492-2.688). Also, the result indicated that there is a statistically significant association between sex and impact of pandemic. Females reported to have experienced more impacts of the pandemic compared to the males (64.1% vs 53.3%; p=0.003). The female in this study were 2.032 times more likely to have experienced impact of pandemic than the male (OR: 1.562; CI =1.164-2.094). Table 6 shows that there is no statistically significant association between tribe and impact of pandemic. Participants who were of other tribes have high impact of pandemic compared with those of Igbo tribes (60.9% vs 55.1%; p=0.107). Also, the table revealed that respondents who are of other tribes was 1.270 times more likely to have impact of pandemic than respondents who are from Igbo tribes (OR: 1.270; CI =0.949-1.698).

The result showed that there is a statistically significant association between religion and impact of pandemic. Participants who were Christians have impact of pandemic compared with those who were of other religion (60.6% vs 26.4%; p=0.000). Also, the table showed that respondents who were Christians 0.233 were times more likely to have impact of pandemic than respondents who were of other religions (OR: 0.233; CI =0.124-0.437). Table 6 shows that there is a statistically significant association between level of education and impact of pandemic. Participants who attained education have below tertiary impact of pandemic compared with those who attained above tertiary (67.0% vs 56.7%; p=0.039). Also, the table revealed that those who attained below tertiary are 0.645 times more likely to have good impact of pandemic than those with above tertiary (OR: 0.645; CI =0.424-0.980)

Also, the table shows that there is a statistically significant association between income and impact of pandemic. Participants who earn ≥ 150,001 have experienced less financial impact of the pandemic compared to those who earn ≤ 150,000 (73.8% vs 55.1%; p=0.0001). Also, the table revealed that respondents who earn ≥ 150,001 were 2.297 times more likely to have less financial impact of the pandemic than respondents who earn ≤ 150,000 (OR: 2.297; CI = 1.498-3.521). Our result shows that there is a statistically significant association between professional category and impact of pandemic. Participants who are clinical staff have impact of pandemic compared with those who are non-clinical staff (53.3% vs 29.7%; p=0.000). Also, the table revealed that those who are clinical staff were 2.078 times more likely to have experienced impact of the pandemic than those who are non-clinical staff (OR: 2.078; CI = 1.485-2.908). The

same table indicated that there is a statistically significant association between duration of work and impact of pandemic. Participants who worked ≥ 15 years have experienced risk compared with those who worked ≤14 years (100.0% vs 56.4%; p=0.0001). Also, the table revealed that respondents who worked ≥ 15 years are 0.564 times more likely to have impact of pandemic than respondents who worked ≤14years (OR: 0.564; CI = 0.529-0.601).

Table 6 shows that there is a statistically significant association between level/rank and impact of pandemic. Participants whose level were ≤8 years have experienced risk compared with those whose level are ≥ 9 years (62.7% vs 56.0%; p=0.077). However, those who attained ≤8 years are 0.756 times more likely to have experienced risk than those whose level are ≥ 9 years (OR: 0.756; CI = 0.555-1.032).

Table 7: Regression analysis of socio-demographic characteristics and overall impact of pandemic among the respondents

					95% Confidence Interval	
Professional Category	**B**	**Std. Error**	**p-value**	**Exp(B)**	**Lower Bound**	**Upper Bound**
Marital Status	-4.967	0.595	0.0001	0.007	.002	.022
Sex	.694	.150	0.0001	2.003	1.492	2.688
Religion	.446	.150	0.003	1.562	1.164	2.094
Education	-1.456	.321	0.0001	.233	.124	.437
Income	-.439	.214	0.040	.645	.424	.980
Prof category	.832	.218	0.0001	2.297	1.498	3.521
Work Duration	.732	.171	0.0001	2.078	1.485	2.908
Level	18.660	2264.609	0.993	127015259.	0.000	.

P≤0.05 (statistically significant)

Table 7 showed that participants' marital status, sex, religion, education, income professional category, and work duration were predicted to influence on impact of pandemics ($p \leq 0.05$), while level at work was not predicted.

Discussion

This study found that one-third of the study respondents stated that work profile involves no direct contact with pandemic infected patients in the hospital. About, one-third of the participants are concerned that they might contract the pandemic disease. More than half (58.2%) of the respondents when compared to their colleagues of the same sex and same age, believed were less likely to contract pandemic disease. Our finding is in line with finding by Chakraborty et al [29] who found that more of the participants felt more worried and depressed. They reported that a little above half of the participants (52.1%) were concerned of contracting the pandemic disease.

Finding in our study revealed that less than half of the participants are undecided to when compared to the local population of Africa if likely to contract pandemic disease and few of participants experienced that the preventive measures against pandemic disease are effective. Furthermore, one-third of the respondents were undecided on how serious would be the prognosis if they contracted pandemic disease, while slightly above half of the participants think it is somewhat not difficult for pandemic infection to be transmitted from one person to another. Less than half of the of study participants stated they were unlikely to contract pandemic disease and few of the participants were somewhat confident that if they were exposed to pandemic disease, that they can avoid pandemic infection by personal skill or diligence. The found that shows that most of the participants experienced the impact of pandemics and were worried about their health and had fear for their existence. This finding is similar to the reports of the findings by Chakraborty et al [29] that index survey suggested common worry and problems associated with sleep among the respondents, and threat to their existence which had a considerable effect on their mental health.

Findings in this study revealed that about half of the respondents disagree to experience shortage of health workers, much work load and being stressed due to workload during the pandemics respectively. More of participants disagree to experienced burnout due to workload and sleeping difficulties during the pandemics. There is consistency between Alrawashdeh et al [30] who found that most of the participants had burnout, this was linked to female gender, workload long working hours, doing night shifts, lack of sufficient access to personal protective equipment. Our result showed that less than half of the respondents agreed to have experienced symptoms of depression during the pandemics, while more than half and one-third of the study participants disagree to have experienced symptoms of anxiety working in the hospital and symptoms of post-traumatic stress disorder during the pandemics respectively. Almost half of the respondents disagree to had experience mental health issues during the pandemics. There was lack of personal protective equipment in the hospital, lack of incentives and insurance in the hospital, violence and harassment, lack of psychological support and stigmatization and discrimination among health workers during the pandemics. Similarly, Abdelhafiz et al [31] burnout among the participants was and was linked to need for personal protective equipment (PPE), workload, own money, harassment by patients' families, and older age. Findings in this study indicated that less than half of the respondents had experienced lack of care for family members and death of

colleague or health worker during the pandemic. We found that most of the participants had psychological impact of pandemics, while less than half of the participants experienced low or no psychological impact during the pandemics. There is similarity between our finding by Stuijfzand et al [32] who reported that the HCWs experienced mental health problems in the short and longer term, particularly: psychological distress, insomnia, alcohol/drug misuse, and symptoms of posttraumatic stress disorder (PTSD), depression, anxiety, burnout, anger, and higher experienced stress. Our study revealed that majority of the participants had emotional impact of pandemics, while less than half of the participants experienced low or no emotional impact during the pandemics. Similarly, Cotrin et al [33] reported that physicians and nurses experienced emotional impact of the pandemics such as feeling of more tired than usual, depressed and anxiety. Finding in this study indicated that most of the participants had financial impact of pandemics This finding is in keeping with finding by Chakraborty et al [29] who reported that majority of the participants were anxious about the financial loss they were experiencing during the pandemics due to lockdown and restrictions. There is consistency between our finding and finding by Cotrin et al [33] and healthcare workers who a substantial impact of COVID-19 pandemic in their income, with differences among physicians, nurses and dentists. We noted that most of the participants had general impact of pandemics, while less than half of the participants experienced low or no impact during the pandemics. Finding in this study is in keeping with finding by Preti et al [34] who reported that 11 and 73.4% of HCWs experienced psychological and emotional impact during pandemics, which includes post-traumatic stress symptoms, depressive symptoms, insomnia, and severe anxiety symptoms in 45%. The overall psychiatric symptoms ranged from 17.3 and 75.3% with high levels of work-related stress at 18.1 to 80.1% were recorded.

Furthermore, reveals that there was a statistically significant association between marital status (p=0.000), sex (p=0.003), religion (p=0.000), level of education completed (p=0.039), income (p=0.000), professional category (p=0.000), duration of work (p=0.00) and impact of pandemic. There were no statistically significant associations between age, tribe, level of education completed, level at work and impact of pandemics. Finding in this study is in keeping with the finding by Alnazly et al [35] who reported that sex, and having more clinical experience were associated with psychological impact of the pandemic. Our finding revealed that HCWs' marital status, sex, religion, education, income professional category, and work duration were predicted

with impact of pandemic ($p \leq 0.05$), while level at work was not predicted. There is some similarity between our findings and finding by Brooks et al., [19] who found that impacts of pandemics were related with the occupational role; training and knowledge; work-related factors; personal protective behaviour-related factors; guidance; distress and risk perception of the HCWs. Also, there is consistency between our finding and finding by Birhanu et al [36] who reported that psychological and emotional impacts of pandemics were considerably influenced by age, education, occupation, and place of residence ($p < 0.05$). These similarities in the finding may be attributed to the similar work place settings.

Conclusions

Majority of the healthcare workers reported that pandemics impacted on them However, psychological impact of the pandemics was most prevalent impact experienced by the healthcare workers. The level of pandemic impact experienced by the health workers were substantially influenced by socio-demographic characteristics of the participants.

Recommendation:

Findings revealed high level of overall impact of pandemics on the healthcare workers, majorly of psychological, financial and emotional. We recommend hospital management should improve the work place setting and provide essential materials for efficient healthcare service delivery by HCWs during pandemics. Also, HCWs should avail themselves the opportunity of trainings on coping strategies, update courses on prevention and control measures of pandemics in hospitals.

Consent for publication

All authors are aware of the publication.

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