Original Article

Preparedness of Nigerian Health Institutions toward Managing Lassa Fever Epidemic and Covid-19 Pandemic

Shehu S. Umar[1], Bilqis O. Muhammad[2], Babandi Zaharadeen S.[3]

Departments of [1]Radiotherapy and Oncology, [2]Anaesthesia and Critical Care and [3]Community Medicine, Ahmadu Bello University Teaching Hospital Zaria, Zaria, Nigeria

Abstract

Objectives: The objective is to assess standard practice of healthcare workers and preparedness of their healthcare institutions toward controlling spread of infectious diseases. **Background:** With the on - going epidemic of Lassa fever and the rising incidence of Covid-19 pandemic in Nigeria, there has been efforts from government and stakeholders in health towards controlling the surge of these diseases. This study is a multi-center survey involving frontline health-care workers, from 102 health institutions. **Methodology:** Pretested self-administered questionnaires were sent through online Google form to health-care workers across various health institutions through their respective social media platforms. Their consent was sought and the questionnaires were filled through registered emails. Multiple entry from same individual was prevented. The number of respondents was 451. The information gathered include biodata of health-care workers, details of their cadre and years of practice, their level of standard precautions and preparedness of their health institutions. Data gathered were collated, summarized, and analyzed using simple tables with proportions. **Results:** The practice of standard precaution was inadequate with only 59.4% of respondents washing their hands regularly after touching patients or carrying out procedures, while only 34.4% of them used face masks while consulting patients with respiratory symptoms. As for preparedness of health institutions in control of Lassa fever and Covid-19, 63.1% and 77.6% of respondents affirmed that their health institutions had written protocol of managing infectious diseases and had organized workshop on Lassa fever and/or Covid-19, respectively, while only 45.5% and 20% of respondents had dedicated isolation wards and functional intensive care units in their health institutions. **Conclusion:** The standard safety precautions by health-care workers were suboptimal and preparedness of their health institutions was generally inadequate for the management and control of infectious diseases.

Keywords: Covid-19, health institution, healthcare workers, Lassa fever, preparedness

Introduction

Epidemic diseases as well as newly emerging and reemerging ones and even deliberately disseminated infectious diseases continue to pose a substantial threat throughout the world.[1] For a very long time, well before the discovery of causative agents, the appearance of unpredictable infectious diseases has been described.[2] The threats of these infectious diseases have further been compounded by the ease of international travel and global interdependence with consequent loss of lives and huge economic impact. Lassa fever and the recent Covid-19 pandemic are only a few of many examples of emerging infectious diseases in the modern world. Each of these diseases has caused global societal and economic impact related to unexpected illnesses and deaths, as well as interference with travel, business, and many normal life activities.[2]

Since first reported in Lassa community in Borno state Nigeria, repeated outbreaks have been reported in Nigeria and the disease has continuously been recognized as endemic in many parts of West Africa with estimated annual cases of 300,000–500,000 in West Africa with 5000 annual deaths. In 2020, Nigeria reported the highest number of Lassa fever cases of about 973 and 188 deaths as at the end of week 15, with case fatality rate of 19.3%.[3] Infection of health-care workers is a

Address for correspondence: Dr. Shehu S. Umar, Department of Radiotherapy and Oncology, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.
Email: askofbraza@gmail.com

Access this article online

Quick Response Code:

Website: www.njmonline.org

DOI: 10.4103/NJM.NJM_71_20

How to cite this article: Umar SS, Muhammad BO, Zaharadeen SB. Preparedness of Nigerian health institutions toward managing lassa fever epidemic and Covid-19 pandemic. Niger J Med 2020;29:303-7.

Received: 12-May-2020 **Revised:** 27-May-2020
Accepted: 31-May-2020 **Published:** 26-Jun-2020

major threat posed by Lassa fever in Nigeria with up to 8% of all cases in 2018 occurring among health-care workers.[4]

Since the emergence of COVID-19 on November 19, 2019 in China and spread to all continents of the world except the Antarctica, the pandemic has become the defining global health-care crisis of our time and the greatest challenge the world has faced since World War II.[5] Daily increase in cases are recorded in Africa, the Americas, and Europe. Over 2.4 million people have been affected within 5 months with over 160,000 deaths so far. In Africa, over 23,000 cases and over a thousand deaths have occurred so far. The spread of Covid-19 in Nigeria has continued with over 70% of states affected. Nigeria has recorded over 600 cases and 27 deaths within 2 months of confirmation of the index case.[6]

Different countries have come up with measures to slow the spread and control the virus by employing various measures that include; testing and treating patients, contact tracing, travel restrictions, quarantine and isolation, and cancelling large gatherings with consequent devastating social, economic, and political crisis.[5]

Hospitals and other healthcare facilities play critical roles in national and local responses to emergencies, such as infectious diseases outbreaks and global pandemics.[7] To contribute to efforts at controlling an epidemic the hospital must harness many of its functions and resources and must use them in a coordinated fashion. If a hospital has not put in place adequate preparedness measures; such as infection prevention control protocol, observance of standard precautions among health-care workers, provision of personal protective equipment (PPE), well-equipped isolation/treatment centers among others; it may amplify an epidemic by spreading the infection to patients, staff, and visitors and fail to cope with patients loads and care requirement it may be faced with.[7] The Epidemics may also overwhelm a hospital's capacity to deliver health-care services, as the epidemic may last for long duration involving several weeks or months.[7]

This research assessed the emergency preparedness of Public Hospitals in Nigeria especially as the Covid-19 pandemic and Lassa fever have continued to spread in the country with a background weak heath system.

Methodology

This study is a multi-center survey on healthcare workers and their respective health institutions, from 102 health institutions across 35 states of the Federation, including the Federal Capital Territory. It assesses preparedness of health-care workers and their respective health institutions in controlling the spread of infectious diseases, particularly Lassa fever and Covid-19.

Information about health-care workers' biodata, their practice of standard safety precautions, and their health institutions' preparedness toward management and control of Lassa fever and Covid-19 were obtained from 451 respondents using self-administered questionnaire designed on Google form. Convenience sampling techniques was employed and the questionnaires were distributed using various social media plat forms of the healthcare workers. This was controlled to prevent multiple entries from same respondents as questionnaires were only returned through Google registered email addresses. The data were collected over 1 week from 1st to April 7, 2020, collated and analyzed using Google form. Data were summarized and presented in tables.

Results

Demographic characteristics of respondents

Table 1 summarizes demographic characteristics of respondents. The mean age of the respondents was 35.2 ± 6.9 years, with 277 (61.6%) of respondents between 30 and 39 years while only 15 (3.1%) were 50 years and above. Majority 287 (63.6%) of the respondents were males.

One hundred and fifty-three (34%) and 144 (31.2%) of respondents have practiced for 10–14 years and 5–9 years

Table 1: Demographic characteristics of respondents

Variable	Frequency (%)
Total population	451 (100)
Male	287 (63.6)
Female	164 (36.4)
Age group (years)	
<30	78 (17.3)
30-39	277 (61.4)
40-49	81 (18.0)
50 and above	15 (3.3)
Duration of medical practice (years)	
<5	103 (22.8)
5-9	141 (31.2)
10-14	153 (34.0)
15-19	36 (8.0)
20 and above	18 (4.0)
Current cadre in medical practice	
House officer	19 (4.2)
Medical officer	97 (21.5)
Registrar	143 (31.7)
Senior registrar	133 (29.5)
Consultant	45 (10.0)
Others HCWs	14 (3.1)
Geo-political region of practice of respondents	
Northwest	157 (34.8)
Northeast	29 (6.5)
North central	71 (15.7)
Southwest	51 (11.3)
Southeast	66 (14.6)
South South	77 (17.1)
Type of healthcare institution of practice of respondents	
Tertiary	378 (83.8)
General hospital	48 (10.7)
Private hospital	10 (2.2)
Other hospitals	15 (3.3)

HCW: Healthcare workers

respectively. Over three-fifth (61%) of the respondents were either Registrars or Senior Registrars. Consultants, Medical Officers, and House Officers accounted for 10%, 22%, and 4% of respondents, respectively. There was a fair distribution of respondents across all geo-political zones of the country with 83.8% of respondents from tertiary health-care institutions.

Practice of standard precaution by respondents

Table 2 shows practice of standard precaution by respondents. Only 40.1% of respondents always wash hands before touching patients or carrying out medical procedures, while 74.3% do so after touching patients. In between contact from one patient to another, only 29.5% of respondents always washed their hands. After removing hand gloves, only 59.4% washed their hands, while only 34.4% of the respondents used facemasks while consulting patients with respiratory symptoms. The major reasons of respondents not observing appropriate standard precautions in use of PPEs include lack of availability (48.8%), lack of accessibility (34.6%), and occasional forgetfulness (33.3%).

Preparedness of health institutions in prevention and control of Lassa fever and Covid-19

Table 3 shows preparedness of health institution in prevention and control of Lassa fever and Covid-19. Only 30.1% of respondents reported screening of people for fever with infrared thermometer at entrances of their health institutions while 22.4% had adequate supply of hand gloves and sanitizers. Only 4.5% of respondents were provided with facemasks by their health institutions. Steady running water in health institutions was reported by only 23.3% of respondents, while only 21.5% reported proper segregation and disposal of hospital wastes. Availability and accessibility of PPEs for donning when handling suspected cases of infectious diseases were reported by only 13.3% and 6.9% of respondents, respectively.

Majority of the respondents (63.2%) reported their health institutions having protocol for managing infectious diseases (Lassa fever and Covid-19); while only 41.5% of them affirmed these protocols were adequately communicated. As for organizing seminars or workshops for health-care workers on Lassa fever and/or Covid-19, 77.6% of respondents affirmed their health institutions have done so. Only 45.5% of respondents have dedicated wards as isolation centers for suspected or confirmed cases of Lassa fever or Covid-19, while only 20% affirmed having functional intensive care units in their health institutions.

Table 2: Practice of standard precautions by respondents

Variable	Frequency (%)
Respondents having personal hand sanitizers	
Yes	370 (82.0)
No	81 (18.0)
Washing hands before touching patients or carrying out medical procedures	
Always	181 (40.1)
Sometimes	243 (53.9)
Rarely	27 (6.0)
Washing hands between consulting a patient and before another	
Always	133 (29.5)
Sometimes	264 (58.5)
Rarely	54 (2.0)
Washing hands after touching patients or carrying out medical procedures	
Always	335 (74.3)
Sometimes	111 (24.6)
Rarely	5 (1.1)
Washing hands after using latex gloves	
Always	268 (59.4)
Sometimes	171 (37.9)
Rarely	12 (2.7)
Use of surgical facemasks when consulting patients with respiratory tract infection	
Always	155 (34.4)
Sometimes	181 (40.1)
Rarely	112 (24.8)
Not applicable	3 (0.7)
To those who do not, or sometimes wash hands or use face masks; what were the major reason(s)?	
Hand gloves, face masks etc., not available	220 (48.8)
Hand gloves, face masks etc., not accessible	156 (34.6)
Occasional forgetfulness	150 (33.3)
Wearing of ward coats outside clinical areas	
Always	25 (5.5)
Sometimes	118 (26.2)
Rarely	308 (68.3)
Washing hands or changing clothing before coming in contact with family members	
Always	160 (35.5)
Sometimes	174 (38.5)
Rarely	117 (26.0)

Discussion

The mean age of 35.2 ± 6.88 years with 78.7% of respondents <40 years of age and 63.6% males follows similar demographic features of a study on standard precautions on health-care workers in Northern Nigeria.[8] Resident doctors (registrars and senior registrars) accounted for 61.2% of residents while House Officers, Medical Officers of various cadre, and Consultants represent 4.2%, 21.5%, and 10% of respondents. They are at increased risks of contracting these infectious diseases especially when standard precautions are not adhered to strictly. There have been documented reports on healthcare workers contracting Lassa fever and Covid-19 from infected patients under their care with some mortalities recorded.[9,10]

The adherence to standard precautions healthcare workers was below standards recommended by the WHO in nonepidemic situations. This could predispose them to increased risk of contracting these infectious diseases and spreading them while managing suspected or confirmed cases. These may lead to

Table 3: Preparedness of health institution in prevention and control of Lassa fever and coronavirus disease-19

Variable	Frequency (%)
Screening of people for fever at entrances of health institutions using infrared thermometer	
Always	136 (30.1)
Sometimes	133 (29.5)
Rarely	182 (40.4
Adequate supply of hand gloves and sanitizers to healthcare workers by health institution	
Always	101 (22.4)
Sometimes	123 (27.3)
Rarely	227 (50.3)
Adequate supply of face masks to health workers by healthcare institution	
Always	44 (4.5)
Sometimes	118 (26.1)
Rarely	289 (64.1)
Steady water supply in wards, clinics and theaters	
Always	105 (23.3)
Sometimes	199 (44.1)
Rarely	147 (32.6)
Provision of automated hand sanitizers at designated areas within health institution	
Always	76 (16.9)
Sometimes	375 (83.1)
Proper segregation and disposal of hospital wastes	
Always	97 (21.5)
Sometimes	139 (30.8)
Rarely	203 (45.0)
Not sure	12 (2.7)
Proper covering of hospital waste bins	
Always	106 (23.5)
Sometimes	176 (39.0)
Rarely	164 (36.4)
Not sure	5 (1.1)
Are waste bins kept safely and away from passerby, vectors or animals?	
Always	114 (25.3)
Sometimes	161 (35.7)
Rarely	170 (37.7)
Not sure	6 (1.3)
Availability of PPE's for donning when handling suspected cases of infectious diseases	
Always	60 (13.3)
Sometimes	221 (49.0)
Rarely	156 (34.6)
Not sure	14 (3.1)
Accessibility of PPE's for donning when handling suspected cases of infectious diseases	
Always	31 (6.9)
Sometimes	170 (37.7)
Rarely	237 (52.5)
Not sure	13 (2.9)
Written protocol by health institution on management of suspected cases of infectious diseases	
Yes	285 (63.2)
No	144 (31.9)
Not sure	22 (4.9)
Adequate communication of the written protocol to healthcare workers within health institutions	
Yes	187 (41.5)
No	245 (54.3)
Not sure	19 (4.2)
Any seminar or workshop organized for health workers on Lassa fever and/or COVID-19?	
Yes	350 (77.6)
No	94 (20.8)
Not sure	7 (1.6)
Functional ICU beds in health institutions	
None	90 (20.0)
1-2	48 (10.6)
3-5	197 (43.7)
6-9	76 (16.9)
10 and above	19 (4.2)
Not sure	21 (4.6)
Functional ventilators with multi-parameters in health institution	
None	119 (26.4)
1-2	136 (30.1)
3-4	87 (19.3)
5 and above	28 (6.2)
Not sure	81 (18.0)
Isolation centers in health institution	
Yes	205 (45.5)
No	240 (53.2)
Not sure (for health institutions with isolation centers)	6 (1.3)
Bed capacity of isolation center	
<5	124 (60.5)
5 and above	81 (39.5)
Adequate water supply and separate sewer system in isolation ward	
Yes	66 (32.2)
No	134 (65.4)
Not sure	5 (2.4)

ICU: Intensive care unit, PPE: Personal protective equipment

avoidable morbidities and mortalities.[11,12] Strict adherence to standard precautions outlined by the WHO should be practiced by all health-care workers while managing patients; especially during the Lassa fever epidemic and Covid-19 pandemic.

The nonavailability and nonaccessibility of basic PPEs such as hand gloves and facemasks for use by respondents in many of the health-care institutions were among the major reasons of the sub - optimal compliance to standard precautions by respondents. In addition, in adequacy of basic sanitation facilities such as alcohol-based hand rubs and running water in these health facilities contributed to respondents' difficulties in observing standard precautions. Although the Covid-19 pandemic led to accelerated scarcities of these PPEs, not just in Nigeria but globally, the frontline health-care workers in the prevention, control, and management of infectious diseases

should be adequately protected by providing appropriate and adequate PPEs needed. This would prevent loss of manpower through illness or death and boost their morals while providing critical healthcare.

Although there was good efforts of healthcare institutions to produce written protocols on the management of infectious diseases and also workshops/seminars for their health-care workers on Lassa fever and Covid-19; the preparedness of many in other aspects were inadequate. It is worthy of note that many developed countries with stronger health-care systems and better preparedness are also struggling to cope with Covid-19 as it peaks in incidence.[13]

Conclusion

The study found poor compliance to standard precautions amongst health-care workers majorly attributed to nonavailability and/or nonaccessibility of basic PPE. Furthermore, the preparedness of health-care institutions toward control of infectious disease epidemics was inadequate in various aspects.

We recommend that (1) health-care workers adhere strictly to practice of standard safety precautions as recommended by the WHO, (2) health institutions provide adequate PPEs and training on infection prevention and control to their healthcare workers. (3) The governments should provide their health institutions with adequate funding, facilities, and coordination to ensure adequate preparedness toward effective management of Lassa fever and COVID-19 pandemic.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Fauci AS. Emerging and reemerging infectious diseases: The perpetual challenge. Acad Med 2005;80:1079-85.
2. David MM, Fauci A. Emerging infectious diseases: Threats to human healthcare and global stability. PLoS One 2013;9:e1003467.
3. Lassa fever Situation Report, Nigeria Center for Disease Control. Abuja, Nigeria; Epi Week 15, 6-12 April 2020. Available from: http://ncdc.gov.ng/diseases/sitreps. [Last accessed on 2020 May 28].
4. Dan-Nwafor CD, Ipadeola O, Smout E, Ilori E, Adeyemo A, Umeokonkwo C, *et al*. A cluster of nosocomial Lassa fever cases in a tertiary healthcare facility in Nigeria: Description and lessons learned, 2018. Int J Infect Dis 2019;83:8-94.
5. UNDP. Covid 19 Pandemic Humanity Needs Leadership and Solidarity to Defeat the Virus. UNDP; 2020. Available from: http://www.undp.org/content/undp/en/home/coronavirus.html&ved. [Last accessed on 2020 May 28].
6. Waldometer. Covid 19 Pandemic. Live Update; 2020. Available from: https://www.worldometers.info/coronavirus/. [Last accessed on 2020 Apr 30].
7. World Healthcare Organization. Hospital Preparedness for Epidemics. World Healthcare Organization; 2014. Available from: http//:www.who.int/about/licensing/copyright_form/en/index.html. [Last accessed on 2020 May 28].
8. Amoran O, Onwube O. Infection control and practice of standard precautions among healthcare workers in northern Nigeria. J Glob Infect Dis 2013;5:156-63.
9. World Healthcare Organization: Emergency Preparedness Response: Lassa Fever – Nigeria; Feb 2020. Available from: https://who.int/csr/don/20-february-2020-lassa-fever-nigeria/en. [Last accessed on 2020 Apr 26].
10. Available from: https://www.dailytrust.com.ng/77-nigerian-healthcare-worker-infected-with-covid-19-lassa-fever.html. [Last accessed on 2020 Apr 26].
11. World Healthcare Organization. Standard Precautions in Healthcare 2007. Available from: https://www.who.int/docs/default-source/documents/healthcare-topics/standard. [Last accessed on 2020 Apr 26].
12. Nigeria Centre for Disease Control. National Guideline for Infection Prevention and Control for Viral Haemorrhagic Fevers (VHF). Nigeria Centre for Disease Control; 2020. p. 14-6.
13. Timmis K, Brüssow H. The COVID-19 pandemic: Some lessons learned about crisis preparedness and management, and the need for international benchmarking to reduce deficits. Environ Microbiol 2020; doi:10.1111/1462-2920.15029.