



Lassa Fever in Nigeria: The Burden and Socio-Medical Response So Far

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Abstract

In recent times, Nigerians have been plagued by one of the most dreaded virus diseases; Lassa fever within the West Africa continents. The aim of this review, therefore, is to assess the socio-medical response to Lassa fever in Nigeria. Data for this study were sourced from the Nigeria Center for Disease Control monthly report from 5th January to 30th November 2020. The incidence of Lassa fever is currently growing in Nigeria as the current Outbreak supersedes previous outbreaks in community transmission. So far the country has recorded an overall case fatality ratio of between 1-15% among patients who are hospitalized with severe illness within the space of 11 months of the year 2020 outbreak in Nigeria. This paper presents a concise response framework to highlight some specific multi-sectoral responses to the Lassa fever virus outbreak in Nigeria. A combination of social and medical responses to a large extent is helping Nigeria curtail the spread of the virus. Currently, the potentials of Lassa fever are very much present and still eminent in Nigeria as the number of cases is increasing with no effort put in place to enhance proper sanitation and clean environment by the government and the citizens. This could mean sacrificing public health gains for selfish interests.

Keywords: Lassa fever, Socio-medical, Burden of disease, Disease outbreak, Nigeria Centre for Disease Control

Introduction

Lassa fever is one of the dreadful virus infections that have ravaged West African continents over the years. Lassa fever is transmitted by the Mastromy rats. The peak of the human case is between December and April that is the dry season following the



reproduction cycle of the Mastromy rats in the wet season between May and June (World Health Organization, 2020). Lassa fever is endemic to Nigeria. According to the Nigeria Centre for Disease Control (NCDC) reports of 30th November 2020, there is a total number of 1148 confirmed cases with 237 deaths for a 47-week duration. Ondo, Edo and Ebonyi are the three most affected states with 406, 369 and 80 confirmed cases respectively. Lassa fever is said to be transmitted to humans through close contact with food or other essential household items already contaminated with the faeces or urine of the rodents. Also, human-to-human contact is made possible through direct contact with the blood, bodily fluids and secretion of the affected person (WHO, 2020). Interestingly, it has been observed that 20% of the illness manifests as a febrile illness of variable severity which oftentimes, is associated with multiple organ dysfunction. The remaining 80% of the infected persons are asymptomatic (Richmond and Baglole, 2004). According to the WHO declaration, there is hope for countries ravaged by the Lassa virus as long as they adopt good community hygiene to discourage rodents from entering their homes. According to World Health Organization, proper storage of foodstuffs, grains and other essential food materials in rodent-proof containers by families and households are essential in promoting good health. Also, good hygiene and proper sanitation are required to curtail the activities of rodents in the environment.

According to UNICEF and WHO (2019) reports, about 47 million Nigerian's practice open defecation. This is the height of environmental hazard that makes the environment unfriendly and difficult for a man to inhabit. Poor environmental sanitation can increase the spread of the Lassa virus within the neighbourhood if such practice as open defecation is associated with a high percentage of the population. Rodents are likely to survive in a dirty environment where good hygiene is lacking. In an environment where rodents reside, there is a high likelihood that the rodents will infect the humans in such an environment. Africans are known for communal living enshrined in their values, norms and tradition. For instance, a popular quote from a South African Professor (Mbiti,) goes thus: "I am because we are and because we are therefore I am". It simply means I am because of you and that whatever affects you affects me. Therefore, risky behaviour such as poor hygiene, poor sanitation as well as improper disposal of garbage does not affect only one person but rather affects all those who are connected with the individual



involved in the risky behaviour as long as they live in the same environment. This singular act can aid the spread of the Lassa virus in Nigeria and other African countries where they share a similar philosophy. The cultural transmission of the Lassa virus is one of the dysfunctions or latent functions of dirty environment, poor hygiene and communal living where they share their resources, food as well as eating together. Since the people are prone to accepting both the good and bad that is associated with living together, therefore, it offers both catastrophes and opportunities to the people in that environment. Since the world is also a global community, it becomes imperative that the health of the people should be intertwined such that it is connected irrespective of time and social space.

Theoretical framework

The germ theory as propounded by Louis Pasteur was used for this work. The theoretical description is based on the fact that diseases are caused by infection with microorganisms, typically visualized under high magnification (BD Editors, 2017). The disease ranges from viral and fungal although the environment can be a predisposing factor influencing the severity of the infection to man. This is a typical case of Lassa fever in which any human environment where poor hygiene and inadequate sanitation is pronounced, becomes prone to contracting the virus. This is in line with the WHO report (2019) where 432,000 deaths in low-income countries are attributed to poor sanitation and an unhygienic way of life. The spread of Lassa fever in Nigeria has shown that the citizens are susceptible to the virus due to a poor hygienic environment.

Materials and Methods

The data for this study were sourced from the NCDC. The data covers the six (6) geopolitical zones, that is the 36 states and 774 Local Government Areas within Nigeria. This data of Lassa fever is a monthly report from 5th January to 30th November 2020. The Lassa fever data from the NCDC were sorted and extracted. The relevant data on monthly cases, deaths and survivals were collected and carefully examined for correctness.

Results and Findings

NCDC Lassa fever case definition

A suspected case of Lassa fever is defined as any person with an illness with symptoms of inexplicable bleeding, vomiting, and weakness; and a history of contact with excreta or

urine of rodents. A probable case is anybody who after having the above-named symptoms abscond without the collection of specimen for laboratory test or confirmed case with laboratory confirmation and individuals who died as a result of the above-named symptoms. These definitions correspond with the NCDC Guidelines for the management of Lassa fever.

Table 1: Monthly Cases of Lassa fever in Nigeria.

Monthly - 2020	Suspected Cases	Confirmed Cases	Confirmed Mortality
January	733	258	43
February	1,940	430	45
March	1,565	264	33
April	364	36	3
May	357	35	6
June	287	19	6
July	191	11	1
August	209	23	4
September	145	21	2
October	236	24	5
November	349	28	5

Source: Culled from Nigeria Center for Disease Control Report 2020.

The Trend of Lassa fever so Far in Nigeria (January 4 – November 7, 2020)

A report from the Nigeria centre for disease control NCDC (2020) shows that in time past, training of health care workers across the 36 states of the federation were conducted in constant preparation for a new phase of Lassa fever as the outbreak keeps surfacing on annual basis. Emergency operations in five states of Edo, Ondo, Ebonyi, Bauchi and Abia, began for the NCDC team at the beginning of the year 2020. Despite the surveillance effort that was put up by the government just at the beginning of the year, a new outbreak of Lassa fever surfaced and was announced on the 4th of January 2020. This raised concern about the effectiveness of previous surveillance and by extension depicting the poor hygienic state of Nigeria and the general preparedness towards curbing the Lassa fever virus. The new cases were not just discovered in one state but five states, therefore, raising alarm in the nation at large. It also shows that the general preparedness for a subsequent outbreak of Lassa fever was poorly coordinated because as a country we were also battling with the Covid-19 outbreak that was new to our society. This made Nigerians panic at the first instance of the outbreak. The health risks of communicable disease could be endemic and as such, requires immediate reporting to the appropriate health departments or government agencies in the locality of the outbreak (Edemekong,



Kopparapu, & Huang, 2020). Inadequate sanitation, poor hygiene and communal sharing can instigate the spread of Lassa fever since local people commune virtually every day and also share from the environment all its benefits and disaster due to rodents droplets on human food. From a few index cases in January 2020, many states in Nigeria have recorded multiple cases of Lassa fever and deaths.

Although there has been a little drop in the cases as public health enlightenment has been the ongoing aim at sensitizing the public. There are local emergency operation centres activated to oversee what is happening in the local communities. Subsequently, World Health Organization continues to warn that proper hygiene, sanitation and good disposal of waste, as well as adequate preservation of food and other essentials food materials on a tight container, is necessary for the prevention of Lassa fever virus (WHO, 2020). The concern from the various facet of Nigerian society is that we have poor hygiene and inadequate sanitation system in Nigeria hence, it should be reactivated. The report so far from NCDC, from the first week to the forty-seventh week of the Lassa fever virus outbreak in Nigeria for the year 2020, shows that the ailment is caused by rodents that have contaminated food with their excreta, urine and droplets thereby making the food harmful for human consumption. NCDC report shows that a total of 26 states in Nigeria are plagued with the Lassa fever virus for the year 2020 from January to November. The total number of cumulative suspected cases from the 1st week of January to the 47th week of November 2020 is 6333, confirmed cases are 1148 and total death is 237.

While trying to curtail the spread of the Lassa fever virus in Ondo state, Governor Akeredolu advised all the local government chairman in the state to deploy cleaners to the market and public places, while residence should maintain a high level of hygiene. Meanwhile, health practitioners were advised also to take precautionary measures in their place of work to avoid being infected (Igomu, 2020). Although there are drugs for patients with Lassa fever virus, inefficient diagnosis of patients and delayed hospital admission is one of the leading cause of death of the virus. Tables 2 and 3 show the cumulative number of weekly and state suspected and confirmed cases of Lassa fever virus in Nigeria.

Table 2: Cumulative Summary of Lassa fever in Nigeria from Week 1-47

Weekly	Suspected Cases	Confirmed Cases	Confirmed Mortality
1	98 (80)	18	2
2	255 (173)	82	14
3	389	163	24
4	689	258	41
5	1226	365	47
6	1708	472	70
7	2176	586	103
8	2633	689	118
9	3054	775	132
10	3416	855	144
11	3735	906	161
12	4012	932	176
13	4194	951	185
14	4287	963	188
15	4386	973	188
16	4475	979	188
17	4558	987	188
18	4622	991	191
19	4693	1000	192
20	4761	1006	194
21	4841	1015	197
22	4914	1021	121
23	5005	1026	212
24	5079	1031	214
25	5134	1036	216
26	5201	1040	218
27	5253	1043	218
28	5286	1046	218
29	5366	1051	219
30	5392	1051	219
31	5438	1054	220
32	5494	1060	220
33	5527	1061	222
34	5574	1072	225
35	5601	1074	225
36	5647	1078	225
37	5694	1084	225
38	5705	1088	226
39	5746	1095	227
40	5784	1098	227
41	5837	1103	228
42	5931	1116	230
43	5982	1119	232
44	6061	1131	233
45	6161	1136	234
46	6252	1138	235
47	6333	1148	237

Source: Culled from Nigeria Center for Disease Control Report 2020.

Table 3. Cumulative number of suspected and confirmed cases for 2020 by States

States	Cumulative (Week 1-47)		
	Cases		Deaths (Confirmed Cases)
	Suspected	Confirmed	
Abia	61	5	2
Adamawa	20	4	1
Akwa Ibom	12	-	-
Anambra	34	2	1
Bauchi	360	49	22
Bayelsa	7	-	-
Benue	49	10	4
Borno	34	4	1
Cross River	14	-	-
Delta	157	18	3
Ebonyi	362	80	23
Edo	2624	369	40
Ekiti	14	-	-
Enugu	71	10	2
FCT	73	3	2
Gombe	55	9	2
Imo	21	-	-
Jigawa	30	-	-
Kaduna	132	7	5
Kano	15	5	1
Katsina	50	6	2
Kebbi	31	4	2
Kogi	116	40	8
Kwara	15	-	-
Lagos	33	1	-
Nasarawa	49	9	4
Niger	10	-	-
Ogun	40	1	-
Ondo	1403	406	76
Osun	34	2	-
Oyo	13	1	-
Plateau	178	32	8
Rivers	22	9	3
Sokoto	25	5	3
Taraba	146	57	22
Yobe	3	-	-
Zamfara	18	-	-
Total	6333	1148	237

Nigeria health authority is intensifying efforts to curb the outbreak such as operating five laboratories for testing and dozens of treatment centres. NCDC is also providing a toll-free phone number and issuing health advisories to promote prevention measures. As part of the effort to curb the spread of Lassa fever, the country in 2019 lunched a one health plan to get the Federal Ministry of Health, Federal Ministry of Environment and Federal Ministry of Agriculture and Rural Development working together to stop the



prevention, detection and response to Lassa fever (Global Health, 2020). Although, the government still need to intensify effort since the virus has become an annual disease in Nigeria.

Epidemiology and Early Response to Lassa fever in Nigeria in the year 2020

The current dominant age group affected with the Lassa fever virus is 21-30 years while the ratio for confirmed cases for males and females is 1:0.9. Besides, the number of suspected cases has significantly increased compared to the figure reported for the same period in the year 2019 (NCDC, 2020). The median age of the most affected patients is 30 years (NCDC, 2020). This means that going by the spread of the Lassa fever virus young people are the target of the virus. Almost all the affected cases occur in rural certain. Since the source of the ailment comes from the consumption of contaminated foods with rodent's excreta and urine, it simply means that there could be a community as well as cross-infection. Common characteristics of the three most affected states with Lassa fever is a poor hygienic environment and poor sanitation. It, therefore, means that the increase in contact between man and rodents is the cause of the disease infecting man. The poor health system, weak surveillance and response system and poor funding for research into drugs for vaccination are part of the cause of the outbreak in Nigeria (The Nigeria Academy of Science, 2020). Lassa fever is regarded as the disease of the poor since it commonly affects local people and few health workers who come in contact with victims of the disease. The delay in tackling Lassa fever is probably because of the status of people affected by the disease. They are mainly indigent in society (NCDC, 2020). The behavioural change such as poor hygiene and sanitation which is majorly lacking in areas where infections are common becomes change imperative transforming the nature, social life and realities of Nigerian's. The challenge so far remains a weak health system, poor surveillance and response team, inadequate healthcare personnel to manage the patients, insufficient medical resources (especially personnel protective equipment), inadequate facilities and treatment centres, poor sanitation and hygiene practices in Nigeria.

As part of a positive response to Lassa fever in Nigeria, NCDC activated emergency operation centres in January 2020 to coordinate surveillance and response as well as



technical support to states in controlling the outbreak (Nigeria Health Watch, 2020). Current laboratory diagnosis of Lassa fever test in Nigeria is carried out using the Revers-Transcription Polymerase Chain Reaction (RT-PCR) (NCDC, 2020). Nevertheless, only patients who have shown a symptom of Lassa virus infection are tested in Nigeria. Predominantly, Lassa fever is one of the communicable diseases that constitute health hazards as well as public health burdens to Nigeria and the African continent (Okpetu, Abembola, Koot, Kane, 2018). This is due to contact with an infected patient, lack of equipment and some unethical practices that some healthcare workers engage in while discharging their duties (NCDC, 2020). It should be noted that the infection of healthcare personnel could create apprehension in the country as their services are needed to cater for sick people.

Public Awareness and Response to Lassa fever

As soon as the first outbreak of Lassa fever for the year 2020 was announced in Nigeria by the ministry of health, public awareness, education and communication campaign began. All the social media platforms such as WhatsApp, Twitter, Instagram, radio, television were used in disseminating information to the general public on the need to take caution and ensure they keep their environment clean. NCDC was constantly updating Nigerian's on the trend, case fatality and death due to the virus. Added to the above, the NCDC also provided guidelines that are needed to avoid the spread of Lassa fever such as proper waste disposal of refuse, constant sanitation and good hygiene practice as well as proper covering of food and other food materials in containers that are rodents free. Despite the awareness, many people have defied the laid down guidelines as the number of cases continues to increase.

Generally, the response to the Lassa fever virus in Nigeria could be described as medico-centric and reactionary. The federal government has only five centres in the 36 states for sample testing of patients' blood or fluid as the case may be for the Lassa fever virus. It, therefore, means that other than the five states where the laboratories are located, patients samples from other states needed to be taken down to the states where the laboratories are located for diagnosis before they could get the result of the patients' test and commence the right treatment (NCDC, 2020). This situation portrays the deplorable

state of the Nigerian health system. It also suffices for the weekly increase in the number of deaths recorded in the year 2020 as against the number of death in the year 2019. This is shown in figure 1

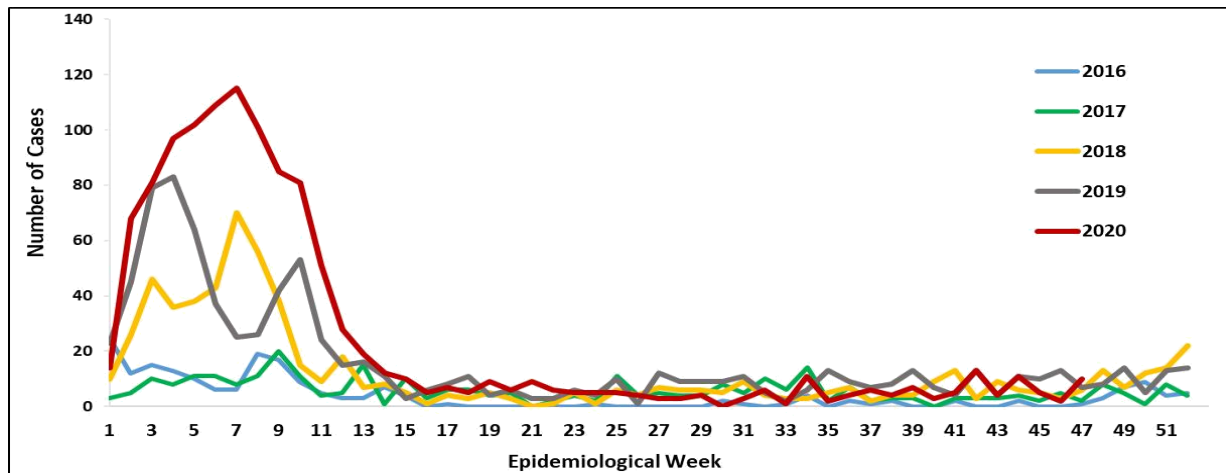


Figure 1: Trend of confirmed cases by epidemiological week, 2016 -2020 (47), Nigeria
Source: NCDC (2020)

Discussion, Conclusion and Recommendations

A total of 6,333 cases, were reported between the 5th of January to the 30th of November 2020, of these numbers, 1,148 cases were confirmed cases while a total of 237 cases were recorded as mortality. A cumulative summary of the Lassa fever trend shows that the outbreak for the year 2020 is higher than a previous outbreak in the year 2019. Lassa fever high death toll for the year 2020 occurred around the 7th week. Also, the Lassa fever trend for the year 2020 shows that the median age is 30th years. The study records show that the prevalence of Lassa fever was high from western Nigeria having the highest figure so far. The findings of this study correspond with a previous report of NCDC on the endemic nature of Lassa fever in Nigeria and the West African continent. The case fatality of Lassa fever in Nigeria could be attributed to poor hygienic culture. The recurrent case of Lassa fever in Nigeria suggests that there is a need for proper preparedness from the Nigerian health sector and the citizens especially in the improvement of their hygiene culture. There is also the incidence of cross-border transmission going by the state so far that has been affected by the disease. This poses a great threat to the health system in Nigeria therefore; Nigerian government through its health sector needs to engage in



sharing information about Lassa fever and the way forward to bridge the cross-border gap among the states.

Lassa fever destroys the fabrics of communal living and sharing, a typical characteristic of rural life. The flow of people living in an unhygienic environment increases the flow of infectious diseases. Meanwhile, Nigerian's health system is poorly equipped with a shortage of health personnel's who in turn also face the risks of getting infected as they lack facilities that will enable them to discharge their duties and protect themselves efficiently. The fight for Lassa fever cannot be sustained and effective without properly motivating health workers who are at the front line of action therefore, they should be covered by insurance hence; their protection should be paramount in the fight against Lassa fever. Personal protective equipment should be provided and in the absence of PPE, suspected patients with Lassa fever should be rejected, which might lead to an upsurge in mortality rate. Also, there is concern that the fragile health system of Nigeria might not be able to care for the high incidence of the Lassa fever virus in Nigeria, which could lead to dreadful consequences in terms of morbidity and mortality. Again, Nigeria could carry the most onerous burden if more effective precaution against the Lassa virus is not continuously enforced. The rural increase in the case fatality of the Lassa fever virus will spell doom for Nigeria as the number continues to rise. Furthermore, environmental sanitation should be implemented in all states of the federation on weekly basis. Nigeria as a country must be proactive in preventive and public health campaigns. Multi-sectoral coordination and proactiveness should be encouraged such that NCDC could establish a link with state coordinators to promote efficient planning and implementation across the federation.

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Ethical Approval

Ethical approval for this study was not required following our institution's policy since the work did not involve the use of human subjects or animal experiments.

Conflict of interest

The authors have no conflict of interest to declare.

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