

**THE ROLE OF KNOWLEDGE AND ATTITUDE IN THE MANAGEMENT OF  
LASSA FEVER AMONG HEALTH CARE PROVIDERS IN BINGHAM  
UNIVERSITY TEACHING HOSPITAL JOS**

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**Abstract**

The study examined the role of knowledge and attitude in the management of Lassa fever among healthcare providers in Bingham University Teaching Hospital Jos. A descriptive cross-sectional design was adopted in the study. 115 respondents took part in the study. Data were collected using structured questionnaire. Data were analyzed using descriptive statistics and chi-square statistics. Result of findings showed that majority (57.4%) of the study participants were female with married participants (72.2%). Nursing profession represented (59.1%). Chi-square analysis obtained shows that majority of the participants had good attitude about prevention of Lassa fever. Isolation proved to be the most reported way for curtailing the spread and management of Lassa fever among healthcare workers in BUTH. Based on the above findings recommendations were made; provision of IPC facilities and equipment in adequate amounts to health facilities, training and retraining of healthcare workers should be intensified regularly to improve the adoption of a positive attitude regarding Lassa fever among them. Also, an assessment of the knowledge level of healthcare workers on their knowledge of Lassa fever risks, and its prevention and control measures should be done regularly to identify existing gaps knowledge base of Lassa fever and to channel such intervention strategies, these is because findings from the study has identified that majority of health workers within the study area had good knowledge/attitude regarding Lassa fever management The study therefore recommend that all healthcare providers should be taught on how to appropriately use the personal protective equipment (PPE) as an effective prevention measures for Lassa fever involving, encouraging good community hygiene that will prevent rodents from gaining access to people's homes and food stuff. The Ministry of Health should increase awareness of Lassa fever in Plateau State and work with the Ministry of Education to introduce Lassa fever lessons in school through health modules especially in primary and secondary schools.

**Keywords:** Attitude, Healthcare Providers, knowledge, Lassa fever & Management

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**Introduction**

Good adherence to standard precautions and control practices in health care settings has been identified as an important factor in the control of potential outbreaks of Lassa Fever (LF) within the Hospital setting (Ireye, Harrison, Alphonsus, Ekundare, Ehoho, Charles & Anthony, 2019). Poor health care worker's knowledge of the disease and infection control techniques are a major contributing factors to hospital acquired Lassa Fever (LF) causes significant morbidity and mortality worldwide with estimated 3 – 5 million individuals being infected yearly (Centre for Disease Control, (CDC) 2021). Lassa Fever has accounted for the deaths of a number of health care workers (HCW's) since its discovery in a Northern Nigeria town Lassa in 1969 (Tobin, Asogun, Odia & Ehidiamhen, 2013, Ijarotimi, et al, 2018). It has resulted in the loss of quality health care manpower across many cadres in the health workforce (Fisher-Hoch et al., 1995; Aigbiremolen et al., 2012).

Unfortunately, within healthcare setting, the transmission of the disease is promoted by non – adherence to standard precautions and poor infection prevention and control (IPC) practices. Adherence to or non adherence to infection prevention and control (IPC) measures in healthcare settings has been identified as an important factor to be considered in the control potential outbreaks of Lassa Fever (Ajayi, Nwigwe, Azuogu, Onyire, Nwonwu & Ogbonnaya 2013).

In their own contribution, Ijarotimi, Oladejo, Jegede and Nasidi, (2015) believes that contributing factors to hospital acquired Lassa infection include poor knowledge of the disease and poor knowledge of infection control techniques on the part of the health facility personnel among others studies have minimal in hospital with improved IPC practices

Lassa fever is an acute viral haemorrhagic illness caused by the Lassa virus, a single stranded RNA virus (Bowen, Rollin, Ksiazek, Husted, Bausch, Demby & Nichol

2000). It is a member of the virus "Arenaviridae" and transmitted by the multimammate rat *Mastomys natalensis*.

The first confirmed cases of the disease were reported in Nigeria (1969). The disease was named after the town where it first occurred in Lassa, Borno state (CDC, 2014; VHFC 2020). The host of the LASV, the Multimammate rat, once infected could excrete the virus from its urine for a prolonged period and at times for the rest of their lives (CDC, 2014; Lolacono, 2015; VHFC, 2020).

In addition, these rats can produce a large number of offspring frequently. They are predominant forest dwellers but can also colonize human homes especially areas where food is stored. Lassa fever is a zoonotic disease transmitted from animal to human homes and they arise from contaminations with the excreta, urine and other secretions of the rats (Lolacono, 2015). Other frequently reported routes are human to human transmission (Secondary transmission), occurring through direct contact with infected blood or bodily secretions.

This occurs mainly between individuals caring for sick persons, although anyone who comes into close contact with a person caring the virus is at risk of infection (Taiwo, 2018). Nosocomial transmission of Lassa fever in healthcare facilities represents a significant burden on the healthcare system (VHFC, 2020).

West Africa is said to be endemic for Lassa fever with a prevalence of 100,000 to 300,000 per annum with mortality approaching 5000. (Frame, 1997; Bowen, 2000; Gunther, 2000; WHO, 2000; WHO, 2005)

A study by Richmond and Baglolle (2003), in Sierra Leone, Guinea and Nigeria revealed that up to 60 million sero – negative population is at risk with three million coming down with the disease yearly and with mortality of about 70, 000. According to the Nigeria Centre for Disease Control (NCDC, 2019), from

January to March, 2019), there were 495 confirmed cases of Lassa fever from 21 states including Kaduna with 114 deaths. 16 health care workers were affected with two deaths. The virus has the capacity for person to person spread. Out of every 100 people who get infected, only 20 have symptoms with an incubation period of 6 – 21 days (WHO, 2000).

The 2012 Lassa fever outbreak recorded 623 cases including 70 deaths reported from 19 out of the 36 states in the country. The doctor and four Nurses were reported to be among fatalities (WHO, 2016). Furthermore between August 2015 and May 2016, the World Health Organization (WHO) was notified of 273 cases of Lassa fever reported from 23 states in Nigeria. These included 149 deaths and these, ten cases were health care workers (HCWs) and four were acquired infections (Ijarotimi, 2018; WHO 2016). As at 3<sup>rd</sup> June, 2018, out of the 432 (42%) confirmed Lassa fever cases were from Edo state and 13 out of these were Health care workers (CDC, 2018).

The 2017/2018 Lassa fever outbreak in Nigeria was unprecedented, heralded by an initial report of a cluster of cases and deaths amongst health care workers in a tertiary health facility by 2 of 2018 (Dan-Nwafor, 2019). Three states contribute about 95% of the Lassa fever positive cases in Nigeria, namely Edo, Ondo, and Ebonyi. (WHO, 2020) Liberia recorded its first Lassa fever outbreak in 1972 (Ibekwe, 2012), and since recorded outbreaks almost every alternate year (Dalopel, 2018).

Infection prevention and control (IPC) practices, training and retraining of health care workers have been documented as important factors in controlling outbreaks of Lassa fever and other infectious agents within Health care facilities (Ajayi, 2013). The onset of illness of Lassa fever typically comprises non-specific signs and symptoms difficult to distinguish from many other febrile diseases. Some patients progress to severe vascular instability and multi-organ system failure, with case fatality ratios in

hospitalized cases reaching about 20% (Ireye, 2019). These unspecific signs and symptoms make it difficult to recognize and diagnose in a typical hospital setting which puts health care workers at greater risk.

Despite the outbreak across the country and in other African countries primary health care workers who are the first point of call during outbreaks have been documented to have poor knowledge of Lassa fever that reflects on infection control (Tobia, Asogun & Ehidihamhen, 2013).

In a study conducted by Reuben and Gyar (2016), they argued that awareness of being at risk of getting Lassa fever was approximately equal in distribution in both endemic and non-endemic countries. This might indicate the fact that some level of awareness has been created in both endemic and non-endemic countries especially on Lassa fever risk factors. Respondents believe that a person can have Lassa fever but not show signs and symptoms; this is a common attitude among endemic and non-endemic respondents mentioned the health facility as the point of contact if someone had Lassa fever, with this practice being mutual in endemic countries. These findings were also similar to what was seen in a study conducted by Faith and Harrison (2019) in Edo State, Nigeria. In addition, the practice of providing care for a person sick with Lassa fever was common in non-endemic countries compared to endemic countries. It might appear that people in endemic areas prefer to have minimal contact with Lassa fever patients compared to non-endemic areas positive attitude towards. The study respondents with higher knowledge about Lassa fever were more likely to have positive attitude towards Lassa fever compared to others. Generally, attitude to Lassa fever was poor among respondents. The possible explanation could be due to poor opinion of thought towards Lassa fever by people living in both endemic and non-endemic countries.

There is also dearth of knowledge concerning Lassa fever control among

primary health care workers in Bringham University Teaching Hospital, Jos.

Objective of the Study: The objective of the study was:

1. To determine the level of knowledge about Lassa fever among health workers in BHUTH Jos.
2. To identify practices related to Lassa fever transmission among health workers in BHUTH Jos.
3. To determine knowledge and practice of Lassa fever among health workers working with BHUTH.

### **Methodology**

The study was conducted at Bingham University Teaching Hospital Jos. Bingham University Teaching hospital is a 250 Bed Facility located in Jos, North Central Nigeria. It was established as ECWA Evangel Hospital in 1959 and was the vision of SIM (then Sudan Interior Mission) missionary named Dr. Lonnie Grant to provide Health care to the Missionaries in Nigeria and also meet Health care needs of the indigenous populace.

The target population for this study are all adult health workers (25 years and above) who are working with Bingham University Teaching Hospital as health care providers. Convenience sampling technique was used to select 115 participants for this study. The choice of this technique was based on the availability and accessibility of these participants. This is an easy and inexpensive way to gather data. The sample size for the study was determined using Taro Yamane (1967) formula.

Data were collected through a semi structured questionnaire, the questionnaire captured information on socio-demographic data's and information on Lassa fever, knowledge of Lassa fever was assessed using a 20 point scoring system on basic knowledge of the disease, mode of transmission, clinical features and

preventive measures against Lassa fever. A score of less than 10 was assessed as poor knowledge; 10-14 assessed as fair knowledge while a score of greater than 15 was assessed as a good knowledge.

Before the commencement of the study, the consent of the respondents was sort and obtained by the researcher, the respondents were made to understand that participation was voluntary, information obtained was kept confidential and there was no consequence for non-participation. Approval for the study was obtained from Bingham University Teaching Hospital Jos. The researcher with two (2) trained research assistants administered the questionnaires.

Data were analyzed through descriptive and inferential statistics. The researcher used simple percentage and chi-square technique to analyze the data by way of hypotheses testing at 0.05 significant levels.

### **Results**

Result of table one above shows that majority of the study's participants are females 57.4% while male were 42.6%. Participants ages 30 – 39 (31.3%) are the most respondents, more married participants 72.2% were involved in the study, followed by single 25.2% and lastly widows/separated 8.7%. Participants that attended tertiary education constituted the majority 52.2%, followed by secondary school certificate holders (29.6%) and lastly primary school certificate holders constitutes 14.8% of the studied population respectively.

The nursing profession is the most represented (59.1%), followed by pharmacist (10.4%), medical doctor (8.7%), next is laboratory personnel (8.6%), community health (8.0%) and lastly others (6.0%). Participants with more than 10 years' experience in practice were the majority (40.0%), followed by 5 – 10 years (30.4%) and lastly less than 5 years constituted 29.5% respectively.

**Table 1: Socio-Demographic Characteristics**

Variable	Frequency	Percentage
Sex		
Male	49	42.6%
Female	66	57.4%
Age Group		
20 – 29	32	27.8%
30 – 39	36	31.3%
40 – 49	23	20.0%
50 & Above	15	13.0%
Marital Status		
Married	76	66.1%
Single	29	25.2%
Widow / Separated	10	8.7%
Level of Education		
Primary education	17	14.8%
Secondary Education	34	29.6%
Tertiary	60	52.2%
Profession		
Medical Doctor	10	8.7%
Nurse	68	59.1%
Pharmacy	12	10.4%
Laboratory Personnel	10	8.6%
Community Health	8	7.0%
Others	7	6.0%
Duration of Practice		
≤ 5 years	34	29.5%
5 – 10 years	35	30.4%
≥ 10 years	45	40.0%

**Hypothesis One:** There would be a significant knowledge that relates with the management of Lassa fever in health care

providers in Bingham University Teaching Hospital.

**Table 2: Participants Knowledge on Transmission of Lassa Fever**

In what ways can Lassa fever be Transmitted?						
Mode of transmission of Lassa Fever	Hunting Rodents	Bitten by infected rat or bat	Contaminated food	Contact with infected person	Body fluid	Total
	8 (7.8%)	17 (14.8%)	31 (27.0%)	26(22.6%)	27(23.5%)	
	8	17	31	26	27	109

Table two presents causative agents by Lassa fever of the 109 responses that was given by participants who said they knew the agent that causes Lassa fever 27.0% believed it was caused by contaminated

food, 23.5% said body fluid, 22.6%, reported it is through contact with infected person. 14.8% said it is caused by infected rats or inhalation.

**Table 3: Inferential Possibilities from Response**

Category	Observed N	Expected N	Chi-square ( $\chi^2$ )	df	P-value
Hunting rodents	8	21.8			
Infected rat/bat	17	21.8			
Contaminated food	31	21.8	15.725	4	.003
Contact with infected person	26	21.8			
Body fluid	27	21.8			

When participant's response on the hypothesis was subjected to the Chi-square analysis, the result obtained was significant,  $\chi^2 = 15.725$ ,  $df = 4$ ,  $P = .000$  ( $P < .05$ ) by implication, contaminated food

was the major cause of Lassa fever as reported by participants.

**Hypothesis Two:** There are significant positive attitudes of health care providers in the management of Lassa fever in Bingham University Teaching Hospital.

**Table 4: Attitude of Respondents Regarding Lassa Fever**

Variables	Overall	Attitude			$X^2$	P Value
		Poor	Fair	Good		
Cadre						
Doctor	0(0.0)	5(15.6)	27(84.4)	169.9	0.001	
Nurse	0(0.0)	89(86.4)	14(13.6)			
CHEW	0(0.0)	11(12.0)	81(88.0)			
Lab Sci. Tech.	0(0.0)	3(30.0)	9(90.0)			
Health attendant	0(0.0)	7(15.0)	45(93.3)			
Duration						
Less than 5 years	0(0.0)	9(56.5)	74(43.5)	67.83	0.001	
5 – 10 years	0(0.0)	9(11.4)	70(88.0)			
$\geq 10$ years	0(0.0)	3(6.7)	42(93.3)			

Findings from table four above shows that the level of attitude was generally good (63.3%) among all categories of health care workers. Majority of the studied participant (nurses, 90%) and doctors had good attitude towards Lassa fever prevention. Community health workers had 88.0% attitude over 88% of the participants had worked between 5 – 10 years; while more than 90% the respondents that worked over

10 years had good attitude towards the prevention of Lassa fever. Overall results show that there was a statistical significance from the outcome of the findings.

**Hypothesis Three:** There is significant knowledge on effective management of Lassa fever among health care providers in Bingham University Teaching Hospital.

**Table 5: Ways of Curtailing the Spread of Lassa Fever**

Variable	Response	Frequency	Percentage
What special care is required for the management of Lassa fever patients?	Isolation	87	75.7%
	Barrier Nursing	10	8.7%
	Medication	3	2.6%
	Temperature Control	1	9%
	Supportive Management	1	9%
	Fluid Management	4	3.5%

Result of table 5 above revealed that 75.7% of the participants reported that isolation was the best way of managing Lassa fever, followed by barrier nursing (8.7%) next is fluid replacement (3.5%) and lastly temperature control and supportive management made up 1% respectively.

**Table 6: Inferential Possibilities for Response**

Category	Observed N	Expected N	Chi-square ( $\chi^2$ )	df	P-Value
Isolation	87	17.0	329.623	5	.000
Barrier Nursing	10	17.0			
Medication	3	17.0			
Temperature control	1	17.0			
Supportive management	1	17.0			
Fluid replacement	4	17.0			

Participants response on the hypotheses was significant as shown  $\chi^2 = 329.623$ ,  $df = 5$ ,  $p = .000$  ( $P < .05$ ). Therefore, isolation proved to be the most reported way for curtailing the spread and management of Lassa fever among healthcare workers in Bingham University Teaching Hospital.

### Discussion

The study assessed knowledge and attitude on the management of Lassa fever among healthcare providers in Bingham University Teaching Hospital. Findings revealed that the result obtained was significant; by implication contaminated food was the major cause of Lassa fever as reported by participants. This finding is in agreement with the work of Babatunde (2022) who assessed knowledge, attitudes and practices regarding Lassa fever among healthcare workers in a tertiary hospital, Enugu, South-East, Nigeria: Implications for

control and found out that majority of health workers had good knowledge regarding Lassa fever. However, preventive practices were poor.

The level of attitude was generally good (63.3%) among all categories of health care workers. Majority of the studied participant (nurses, 90%) and doctors had good attitude towards Lassa fever prevention. Community health workers had 88.0% attitude over 88% of the participants had worked between 5 – 10 years; while more than 90% the respondents that worked over 10 years had good attitude towards the prevention of Lassa fever. Overall results show that there was a statistical significance from the outcome of the findings. This finding is in agreement with the work of Tomori, (2022) who conducted a study on the Knowledge, Attitude and Practice of Healthcare Workers toward Lassa Fever Prevention in Ifedore Local

Government Area, Ondo State, Nigeria. The study showed high awareness, a fair knowledge of the disease and poor infection control measures among respondents.

Furthermore, findings revealed that 75.7% of the participants reported that isolation was the best way of managing Lassa fever, followed by barrier nursing (8.7%) next is fluid replacement (3.5%) and lastly temperature control and supportive management made up 1% respectively. This finding is in agreement with the work of Wada (2022) who investigated the knowledge of Lassa fever, its prevention and control practices and their predictors among healthcare workers during an outbreak in Northern Nigeria.

### **Conclusion**

Lassa fever is fast gaining prominence as emerging nosocomially transmitted pathogen with significant public health impact in the west Africa sub – region. West Africa is said to be endemic for Lassa fever with a prevalence of 100, 000 to 300, 000 per annum with mortality approaching 5000 (Bowen et al, 2000; Gunther et al, 2000; WHO 2000; WHO, 2005).

Despite the outbreak across the country in other African country, primary Health Care workers who are the first point of call during outbreaks have been documented to have poor knowledge of Lassa fever the reflects on infection control. There is also dearth of knowledge concerning Lassa fever control among primary health care workers in the northern part of the country. Healthcare workers are expected to display high levels of knowledge, and positive attitudes and practices regarding the prevention and control of Lassa fever in healthcare settings.

**Recommendations:** The following recommendations were made:

- i.** Provision of IPC facilities and equipment in adequate amounts to health facilities.
- ii.** Training and retraining of healthcare workers should be intensified regularly

to improve the adoption of a positive attitude regarding Lassa fever among them.

- iii.** Also, an assessment of the knowledge level of healthcare workers on their knowledge of Lassa fever risks, and its prevention and control measures should be done regularly. This would help to identify existing gaps in their knowledge base of Lassa fever and to be able to channel intervention strategies to address such gaps.
- iv.** The Ministry of Health should increase awareness of Lassa fever in Plateau state and work with the Ministry of Education to introduce Lassa fever lessons in school health modules, especially in primary and secondary schools in Nigeria.
- v.** Provision of standard PPE equipment to its healthcare providers and teach them how to appropriately use them.
- vi.** Effective prevention measures for Lassa fever involve encouraging good community hygiene that will prevent rodents from gaining access to people’s homes and food stuff. These include, “storing grain and other foodstuffs in rodent-proof container, disposing of garbage far from the home, maintaining clean households and keeping cats”.
- vii.** In addition, priority should be given the setting up of functional IPC committees at the state level and in all local government areas to ensure all health facilities in the local government areas meet the minimum IPC requirements necessary to guarantee effective control of nosocomial Lassa fever.
- viii.** Health education packages and training regarding Lassa fever should be introduced and sustained in all health facilities.

There is need for Bingham University Teaching Hospital to consolidate on the measures taking to improve a positive attitude to the care and management of Lassa fever patients.



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