

# SOCIOCULTURAL CONTEXT OF THE ANNUAL EPIDEMIC OF LASSA FEVER IN EKPOMA COMMUNITY, EDO STATE, NIGERIA

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## **Abstract**

*This study aimed at finding out the socio-cultural context of the annual epidemic of Lassa fever in Ekpoma community, Edo state. Lassa fever first emerged in Lassa town of Borno state in 1969. It is a hemorrhagic disease and has been emerging and re-emerging yearly since then in different locations of the country especially in Edo state. One of the efforts made to curtail the ailment by the federal government was the establishment of the Institute of Lassa Fever Research and Control (ILFRC) in Irrua Specialist Teaching Hospital, Irrua Edo state. Both primary and the secondary sources of data collection were used, and the quantitative and the qualitative method of data collection were employed. A sample size of two hundred respondents was used for the quantitative method and five persons were interviewed orally. The descriptive statistics was done with the use of table and pie chart, and the testing of the hypothesis was by an inferential statistics (chi - square) and the entire hypotheses were accepted. Necessary recommendations were proffered to help stop the annual occurrence of Lassa fever in Ekpoma community. In conclusion, it was discovered that the absence of potable water and the behaviour / lifestyle (way of life) of the inhabitants of the communities promote Lassa fever in the population.*

**Key Words:** Sociocultural, Lassa Fever, Epidemic, Hemorrhagic diseases, Endemic

This study examined the socio-cultural context of the annual epidemic of Lassa fever in Ekpoma community of Edo state, Nigeria. Forty – eight years after it was first detected in Lassa town in Borno state Nigeria, Lassa fever is still endemic in Nigeria, and other West African countries like Guinea, Sierra Leone, Liberia and recently in Central Africa in the Republic of Congo, Mali and Senegal (Agbonlahor, 2016; Centre for Disease Control Fact Sheet, 2015).

Lassa fever is a severe viral disease, and it is a hemorrhagic disease, because at some point in the disease the patient bleeds through the orifices, that is, the opening of the human body like the mouth, nose, urethra, anus, vagina and ear. The overall case-fatality rate is 1%, up to 15% among hospitalized patients. Death usually occurs within 14 days of onset in fatal cases. The disease is especially severe late in pregnancy, with maternal death and foetal loss occurring in greater than 80% of cases during the third trimester. Lassa fever befalls all age groups, in both men and women (Agbonlahor, 2016; Ajayi, 2016; Obi, 2014).

Lassa fever is present in Sub-Sahara Africa because the climatic/ weather condition favours the successful adaptation of the reservoir of the virus, - the *mastomys natalensis*, where they easily breed and have enough food. Climatic effect on health can be direct or indirect. The direct effects are heat stroke or cold injuries, while the indirect effects are conditions favouring the ecology of invading pathogenic micro-organisms or disturbing human metabolism (McMichael et. al, 2003).

According to Enahoro, (2016) “Lassa fever has been with us since 1969 and is still regrettably being talked about with more frenzy today with a case fatality rate almost thrice the 15% that WHO considers a very bad situation”. Lassa fever first emerged in Nigeria, in 1969 and was described in early scientific reports as a ‘new virus disease of man from West Africa’ (Wilkinson, 2015; Dry and Leach, 2010). Lassa fever emerged in Ihumudumu, Ekpoma in Edo state in 1989, twenty years after it first emerged in Lassa town Borno State. From 1989 till date, there has been reports indicating that cases of Lassa fever are seen annually between November and February in Ekpoma, Edo state and in other parts of the country after the rainy season. (Agbonlahor, 2016; Ajayi, 2016; Obi, 2014).

Those living in rural areas are at the greatest risk where *Mastomys* are usually found, especially in areas of poor sanitation or crowded living conditions. Health care workers are also at risk if proper test/ screening, barrier nursing and infection control practices are not maintained. Incidence

is highest during dry season but transmission occurs all year round (Daso, 2016; Illesanmi, 2015; Tobin et al. 2013).

The un-curtailement of the disease led to the establishment of the Institute of Lassa Fever Research and Control (ILFRC) in Irrua Esan Central, Edo State, in January 2007. The institution's vision is to be the preeminent institute for Lassa fever in Nigeria, a Centre of Excellence in Africa and a Reference centre in the world. The mission is to build capacity at all levels and provide quality service in the control of Lassa fever resulting in reduced or zero threat to human life (Ochei et al., 2014; Profile of ILFRC, 2008). According to Kupoiyi, (2016), Lassa Fever Research and Control has recorded well over 50, 000 deaths from the infection, yearly. Over the years Lassa fever has continued to re – emerge in Esan West and Central of Edo state and other parts of the country and this has become a major cause of concern to the federal government and its citizens. The federal government confirmed 212 suspected cases of Lassa fever in sixty – four (64) local government areas across seventeen states in the country (Ojeme, et al., 2016).

With all these reports, one will not but wonder what should be done or what has not been done in the quest to curtail the dreadful disease. In epidemiology, the chain of infection can be broken if the knowledge of the reservoir and the source of infection is known. Then the disease can be effectively controlled and curtailed (Lal Sunder et al, 2009). We are aware of the fact that the *Mastomys natalensis* commonly known as the “multimammate rat” is the reservoir and that we should avoid contact with rats. It was first identified in Sierra Leone in 1972 (AbdulRaheem, 2002). Applying rodent control measures like trapping and killing of rats, and good personal hygiene are ways of combating the dreadful diseases, yet the yearly re-emergence of Lassa fever is yet to be broken (Agbonlahor, 2016).

According to Winkelman (2009), some causes of disease are genetic, most are not genetic but by interactions with factors in the environment.

**FIGURE 1: MAP OF NIGERIA SHOWING THE PRESENCE OF LASSA VIRUS**



Source: ILFRC, 2016.

Since Lassa fever gained the attention of the federal government and science, various efforts have been made to understand it. The mode of transmission was discovered to be through the droppings like the urine, faeces or blood. Concerning solutions to the epidemic, scientific means like the establishment of research laboratories were employed and lately the inauguration of the National Committee on the Control of Lassa fever (Agbonlahor, 2016). Presently, the best outcome /solutions

proffered have been sensitization programmes, lectures and seminars on the prevention of contacting the virus.

### **Factors Leading to Emergence and Re-emergence of Infectious Diseases**

According to Lal Sunder et al (2009), some major reasons for the emergence infectious diseases are, high population growth and uncontrolled urbanization, poor environmental sanitation, migration of population, natural diseases, growing in international trade, tourism and travel, alteration in micro-organisms, resistance to antimicrobials, insecticide resistance, weak public health system, illiteracy and ignorance. Furthermore, Fraser et al, (2004), asserted that there are numerous factors that increase the probability of the emerging and the re- emerging of infectious diseases. For an infectious disease to emerge in a human population, something must have changed in the ecological balance, meaning there is likely a form of disturbance or changes which will then result in risk emergence. In general, these factors deal, directly or indirectly, with changes in the relationships of humans, animals, and potential microbial pathogens. It has been asserted by scholars that 60 to 80 per cent of new human infections likely originated in animals, especially from rodents and bats. (Committee on Microbial Threat to Health, Institute of Medicine 1992; Karesh et al, 2009).

According to Fineberg and Wilson (2010), the driver of emergence and re-emergence of infectious diseases are: Human, environment and animal factors. Human Factors Contributing to the emergence/ re-emergence of infectious diseases include such elements as behaviour and lifestyle, mobility (travel and immigration), and economic and technological conditions of living. The size of the human population and density of habitation also affect emerging infections. The environmental factors' contributing to the emergence / re-emergence of infectious diseases include climate, which is a very important factor influencing the incidence of infectious diseases, The soil, vegetation, weather and season, longer-term climate change, and local conditions such as altitude, temperature, humidity that influence animal and vector populations all dependent on the atmospheric condition of the place. Once the climate and weather favour the disease, it thrives and it is sustained. A good example is malaria in Africa.

### **Statement of the Problem**

Lassa fever epidemic has remained endemic in Edo central senatorial districts in spite of the nine (9) years presence of a well funded, resourced and dedicated institute of Lassa fever research and control. This means either that the solutions are not addressing the root cause of the problem or the kind of knowledge on which solutions are based is limited. (Profile of ILFRC, 2008; Ajayi, 2016; Obi 2014)

The study on the socio-cultural context of the annual epidemic of Lassa fever is important because it examines what causes and sustains the disease in the population. It is also important in the prevention and control of further outbreak of Lassa fever and will help in healthcare policies and planning for the overall assistance and management of healthcare and diseases in the population. It will draw the attention of the government and the relevant authorities to particular areas the people of Ekpoma and its environs need the urgent assistance of the federal government. For example, in terms of funding for more research laboratories with state of the art equipments, and materials like vaccines and sources of potable water for the people of Ekpoma community and its environs.

From research findings, over a hundred thousand (100,000) people have died in Nigeria as a result of Lassa fever from 1969 to 2016 (Agbonlahor, 2016). Therefore, this study will contribute to the various programmes in place to reduce the annual death, caused by Lassa Virus. The exploration of the socio-cultural context of the epidemic will yield informed insight that will assist those whose responsibility it is to design more appropriate and relevant policy and strategies for addressing the problem.

### **Objectives of the Study**

The main objective of this study is to investigate the socio-cultural context of the annual epidemic of Lassa fever in Ekpoma community. The specific objectives are to:

1. ascertain whether certain cultural practices contribute to the annual epidemic of Lassa fever.
2. ascertain whether disturbance in the ecological balance contributes to the annual occurrence of Lassa fever disease in Ekpoma community.

3. assess whether poor hygiene/lack of water is a contributing factor of annual epidemic of Lassa fever in Ekpoma Community.
4. assess the knowledge and attitude of health workers and the citizenry toward the endemic nature of Lassa fever.
5. assess the effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak

### **Area of the Study**

The study was carried out in Esan West and Esan Central of Edo state. Esan West is made up of Ekpoma, Ihumudumu, Eguare, Emaudo, Uhie, Ujemen, Idumebo, Uke, Ireuekpen, Emuhi, Illeh, Ujoelen and Ukpenu communities. Ekpoma is the headquarters of Esan West Local Government Area of Edo State, Nigeria. According to the National Population Commission (2006), Esan West LGA has a population of 147,655 and it occupies a land mass of 502km<sup>2</sup>. Irrua is the headquarters of Esan Central Local Government Area of Edo State, Nigeria. Esan Central is made up of Irrua, Opoji, Ewu, and Ugbegun. It has a population of 105,311 and it occupies a land mass of 266.31sq.km.

Both local government areas are rural-urban settlements, most of the people are mainly farmers, businessmen and civil servants. The two major seasons are rainy (April - October) and dry season (November to March), it is a typical rain forest belt suitable for agriculture. Esan West has the Ambrose Ali University (AAU), while Esan Central has Irrua Specialist Teaching Hospital (ISTH), as the major source of employment. There are other business, and commercial activities. The study was conducted in Ekpoma specifically in Ihunmudumu because Lassa fever has been endemic in the community and at the Irrua Specialist Teaching Hospital (ISTH), the Institute of Lassa fever Research and Control (ILFRC) to obtain information on the patients and staff health behaviours, experiences and efforts of the institution in general.

### **Research Hypotheses**

1. Cultural practices do not contribute to the annual epidemic of Lassa fever in Ekpoma
2. Disturbances in ecological balance do not contribute to the annual occurrence of Lassa fever disease in Ekpoma
3. There is no relationship between poor hygiene and the non-availability of water in the annual epidemic of Lassa fever in Ekpoma
4. The knowledge and attitude of the health worker and the citizenry will not affect the endemic nature of Lassa fever.
5. The effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak will have no significant impact.

### **Methodology**

The cross sectional study and retrospective study designs were adopted for this study. The cross sectional is a one time or a snap shot study design to learn about the characteristics of a population at a point in time while the retrospective study dealt with the past behaviours and patterns of the population. The retrospective study unveils past patterns and behaviours relating to the prevalence of Lassa fever in the study population. The designs allowed the researcher to gather information on the risk factors and behaviours leading to the prevalence of Lassa fever in the population.

### **Population of the Study**

The population of the study consisted of the residents in Ihunmudumu quarter of Ekpoma in Esan West Local Government Area and the health workers in the Institute of Lassa Fever Research Control (ILFRC), Irrua. The population size of 58 used was the residents of Ihumudumu quarter and the staff of the Institute for Lassa Fever Research and Control (ILFRC). That comprises, 1 medical doctor who is the co-ordinator/head, 18 nurses, 27 laboratory scientists, 1 head laboratory attendant, 3 administrative officers, 1 confidential secretary, 1 statistician, 1 chief computer operator, 4 ward orderlies, and 1 clerical officer.

### **Sample Size and Sampling Technique**

The sampling technique used was the probability and the non- probability sampling methods which are stratified random sampling, simple random sampling, purposive and the accidental sampling methods. Getting information from everyone in the study population will be a difficult task; therefore, a small size from the whole population was selected as a representative of the whole population. Therefore, Ihunmudumu community was purposively selected. G1 and G2 roads/streets off Ihunmudumu road were sampled. The simple random sampling technique was used to select the houses.

Stratified random sample was used for the health workers in the Institute for Lassa Fever Research and Control at the Irrua Specialist Teaching Hospital. The population was stratified according to their job/ occupational description (Doctors, Nurses, Laboratory staff, Administrative staff and Ward orderlies). A convenient sample size of 200 respondents were issued the questionnaire and five (5) health workers: one doctor, nurse, laboratory scientist, administrative staff and ward orderly were interviewed from among the health workers.

The simple ballot method was used to determine the houses for administering the questionnaires. Where the house picked is a non - residential area, the ballot paper was kept aside and the process was repeated. Only adults from 18 years and above in each house were served the questionnaires. The staff of the Institute of Lassa Fever Research and Control were accidentally selected for the interview because only those on duty were interviewed.

### **Methods of Data Collection**

The study employed both the quantitative and qualitative methods of data collection. In the quantitative method of data collection, the structured questionnaire was used. It was administered by the researcher with the help of the field assistants to elicit responses from the respondents. While for the qualitative method of data collection, the unstructured interview guide was used for the in-depth interview. The interview was conducted with key informants at the hospital, the most experienced / senior staff present in each section was interviewed. One out of the staff of each section was accidentally sampled because, duties in hospitals run in shifts and only those on duty would be available to the researcher. For the distribution of the questionnaires, the respondents that were served the questionnaires were accidentally sampled, only those found at home and were 18 years and above were served the questionnaires. The houses were chosen by simple random sampling method. Any house that was not a residential building was left out. Within the houses, every adult who was 18 years and above at home was issued a questionnaire, whether literate or not, because the research assistants were well grounded in Esan language, moreover, both the researcher and the research assistants were able to communicate in pidgin English which is very popular in the community.

### **Data Analysis and Results**

The descriptive statistical method such as tables and simple percentages were used to analyse data collected through the quantitative method (the questionnaires). For the qualitative method (the in-depth interview), manual content analysis was used to analyse the data collected. For testing the hypotheses, inferential statistics like the chi square was used to test stated hypothesis, either to accept or reject the stated hypothesis.

### **Socio-Demographic Characteristics of Respondents**

**Table 1: Percentage Distribution of Respondents by Sex**

Sex	Frequency	Percentages
Male	91	47%
Female	101	53%
<b>Total</b>	192	100%

**Source:** Field Survey, 2017

**Table 2: Percentage Distribution of Respondents by Age**

Age	Frequency	Percentages
18 – 27	39	20%
28 – 37	49	26%
38 – 47	41	21%
48 – 57	28	15%
58 –67	19	10%
68 – 77 and above	16	8%
<b>Total</b>	<b>192</b>	<b>100%</b>

**Source:** Field Survey, 2017

**Table 3: Percentage Distribution of Respondents by Marital Status**

Marital status	Frequency	Percentages
Single	93	48.4%
Married	85	44.3%
Separated/divorced	6	3.1%
Widowed	8	4.2%
<b>Total</b>	<b>192</b>	<b>100%</b>

**Source:** field survey, 2017

**Table 4: Percentage Distribution of Respondents by Occupation**

Occupation	Frequency	Percentages
Student	51	27%
Civil servant	46	24%
Transporter	19	10%
Farmer	33	17%
Business/Trader	16	8%
Retired	6	3%
Others	21	11%
<b>Total</b>	<b>192</b>	<b>100%</b>

**Source:** Field Survey, 2017

**Table 5: Percentage Distribution of Respondents by Educational Qualification**

Educational qualification	Frequency	Percentages
Primary	16	8%
Secondary	47	25%

Tertiary	123	64%
None	6	3%
<b>Total</b>	192	100%

**Source:** Field Survey, 2017

**Table 6: Percentage Distribution of Respondents by Residential Type**

Residential type	Frequency	Percentages
(A). Mud with single rooms	61	32%
(B).Bricks/block with single rooms	66	34%
(C).Bricks/blocks with two or three bedroom flats	36	19%
(D).Duplex	3	2%
(E).Storey building with flat	16	8%
(F).Storey building with single rooms	10	5%
<b>Total</b>	192	100%

**Source:** Field Survey, 2017

**Table 7: Percentage Distribution of Respondents by Number of Persons in an Apartment**

No. of persons in an apartment	Frequency	Percentages
Living alone	22	11%
Two persons	38	20%
More than two	58	30%
Above five	74	39%
<b>Total</b>	192	100%

**Source:** Field Survey, 2017

## Findings

**Table 8: Cultural Practices Contribute to the Annual Epidemic of Lassa Fever**

Variables	Response	Frequency	Percentage%
Which of the practices are you aware of in the community?	Washing/bathing of the dead	10	5%
	Traditional autopsy	6	3%
	Bush burning / deforestation	82	43%
	Spreading of farm produce & clothes on tarred road, well & on grasses	54	28%
	Hunting and eating of rodents	8	4%

	All of the above	32	17%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you think that certain cultural practices are reasons for the annual re-occurrence of Lassa fever in this community?	Yes	98	51%
	No	50	26%
	Not sure	44	23%
	<b>Total</b>	<b>192</b>	<b>100</b>
Are you aware of the fact that burial rites like traditional autopsy, body washing/bathing and dressing of the deceased by the children or any relative is a harmful practice that could transmit infections?	Yes	111	58%
	No	34	18%
	Not sure	47	24%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you know that during the planting season, farm lands are burnt and rodents run for safety and move closer to man's dwellings?	Yes	178	93%
	No	4	2%
	Not sure	10	5%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you know that drying farm produce like maize, rice attracts rodents to man's dwelling?	Yes	156	81%
	No	13	7%
	Not sure	23	12%
	<b>Total</b>	<b>192</b>	<b>100</b>

*Source: Field survey, 2017*

In complementing this quantitative response with the qualitative responses from in-depth interviews, here is a response from a respondent:

Deforestation is the main danger faced by most people living in this environment because from several observations, the issue of Lassa fever outbreak is at its peak in the dry season which implies that when their habitation is threatened they tend to come into people's houses. (IDI-8/03/17)

Another respondent added this;

She mentioned cultural practices, deforestation, bush burning and poor hygiene as the major reasons for the annual occurrence of Lassa fever. (IDI-8/03/17)

**Table 9: Disturbance in the Ecological Balance Contributes to the Annual Occurrence of Lassa Fever Disease in Ekpoma Community**

Variables	Response	Frequency	Percentage (%)
Do you think that the weather condition of this place is the reason for the presence of the mastomys rats in this community?	Yes	80	42%
	No	44	23%
	Not sure	68	35%
	<b>Total</b>	<b>192</b>	<b>100</b>
Is there the possibility of the fact that the more residential buildings spring up in this community, the mastomys rats are displaced and are moving closer to your	Yes	118	61%
	No	26	14%
	Not sure	48	25%

dwelling?	<b>Total</b>	<b>192</b>	<b>100</b>
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*Source: Field survey, 2017*

**Table 10: Poor Hygiene and Non-Availability of Water are Contributing Factors of Annual Epidemic of Lassa Fever in Ekpoma Community**

Variables	Response	Frequency	Percentage (%)
Do you practise good hygiene?	Yes	190	99%
	No	0	0%
	Not sure	2	1%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you know that water is the basis of good hygiene?	Yes	181	94%
	No	0	0%
	Not sure	11	6%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you have enough water to clean your house and personal belongings?	Yes	83	43%
	No	37	19%
	Manageable	72	38%
	<b>Total</b>	<b>192</b>	<b>100</b>
What is the major source of water in this community?	Pipe borne water	0	0%
	Well	128	67%
	Rain	54	28%
	Bore hole	10	5%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you buy water, if yes, how much is a keg/jerry can of water here?	₦-10	0	0%
	₦-20	14	7%
	₦-20 and above	178	93%
	<b>Total</b>	<b>192</b>	<b>100</b>
How many jerry cans/ kegs can you afford in a day?	1	2	1%
	2	80	42%
	3 and above	110	57%
	<b>Total</b>	<b>192</b>	<b>100</b>
Will the water be enough for your domestic use?	Yes	73	38%
	No	28	15%
	Manageable	91	47%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you patronize food, snacks and staple food vendors?	Yes	131	68%
	No	61	32%
	<b>Total</b>	<b>192</b>	<b>100%</b>
Are you sure of the hygienic practices of these food vendors?	Yes	50	26%
	No	82	43%
	Not sure	60	31%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you still take “garri” soaked in water?	Yes	155	81%
	No	37	19%
	<b>Total</b>	<b>192</b>	<b>100</b>

*Source: Field survey, 2017*

In complementing this quantitative response with the qualitative responses from in-depth interviews, here is a response from a respondent:

‘The unavailability of water supply is a factor responsible for the difficulty in practicing good hygiene’. (IDI-8/03/17)

Another respondent added this;

‘Water is a basic necessity and it should really be considered as a major factor for good hygiene practices’. (IDI-8/03/17)

**Table 11: Knowledge and Attitude of Health Workers and the Citizenry on the Endemic Nature of Lassa Fever**

Variables	Response	Frequency	Percentage%
Are you aware of the fact that Lassa fever is an annual occurrence in this	Yes	122	64%
	No	68	35%

community?	Not sure	2	1%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you know that the mastomys rat is the carrier of the Lassa virus and they can transmit it to humans?	Yes	32	17%
	No	150	78%
	Not sure	10	5%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you have rats in your house?	Yes	94	49%
	No	80	42%
	Not sure	18	9%
	<b>Total</b>	<b>192</b>	<b>100</b>
Can you tell the difference between the mastomys rats and other rats?	Yes	50	26%
	No	124	65%
	Not sure	18	9%
	<b>Total</b>	<b>192</b>	<b>100</b>
Do you make efforts to prevent and eliminate rats from your home?	Yes	158	82
	No	26	14
	Sometimes	8	4
	<b>Total</b>	<b>192</b>	<b>100</b>

Source: Field survey, 2017

**Table 12: Efforts of the Health Sector and the Populace in the Prevention and Curtailment of the Annual Epidemic of Lassa Fever Outbreak**

Variables	Response	Frequency	Percentage%
<b>What efforts are you making to avoid being infected with the Lassa virus?</b>	Avoiding certain predominant cultural practices	6	3
	Good hygienic practices	112	58
	Avoid certain predominant cultural practices and practised good hygiene	74	39
	None	0	0
	<b>Total</b>	<b>192</b>	<b>100</b>

Source: Field survey, 2017

In complementing this quantitative response with the qualitative responses from the in-depth interview, here is a response from a respondent:

‘The centre had done its best and is still doing more in terms of curtailing the constant re-emergence of the Lassa fever virus by carrying out grass-root sensitization, campaigns/workshops and Jingles on the media. (IDI-8/03/17)

Another respondent added this;

The people in the community are doing their best towards adhering to the recommended measures/advice like keeping good hygiene and avoiding some negative cultural practices to curtail the Lassa fever disease. (IDI-8/03/17)

### Hypotheses Testing

The hypothesis was tested with Chi-square using the following formula:

$$\chi^2 = \frac{\sum(O-E)^2}{E}$$

Where:

$\chi^2$  = Chi-Square

$\Sigma$  = Summation

O = Observed Frequency

E = Expected Frequency

### Testing of Research Hypothesis One

**H0:** Cultural practices do not contribute to the annual epidemic of Lassa fever in Ekpoma.

**Table: 13: Contingency Table on the Contribution of Cultural Practices**

Response	Observed O	Expected E	O-E	(O-E) <sup>2</sup>	$\frac{(O-E)^2}{E}$
Yes	98	64.0	34.0	1156	18.0625
No	42	64.0	-22.0	484	7.5625
No sure	52	64.0	-12.0	144	2.25
Total	192				27.875 <sup>a</sup>

Source: SPSS Output Result (2017)

$$\frac{\sum(O-E)^2}{E} = 27.875^a$$

**H<sub>0</sub>** Cultural practices do not contribute to the annual epidemic of Lassa fever in Ekpoma.

	Do you think that certain cultural practices are reasons for the annual re-occurrence of Lassa fever in this community?
Chi-Square	27.875 <sup>a</sup>
Degree of freedom	2
Significance level	.000

a. 0 cells (.0%) have expected frequencies less than 5.

Source: SPSS Output Result (2017)

From the chi square analysis above, at 0.05 level of significance and degree of freedom at 5.991 which is the table value and the calculated value state 27.875<sup>a</sup>, the result above states that the calculated value is greater than the table value. On this premise the Null hypothesis is rejected and the alternative hypothesis which states that Cultural practices contribute to the annual epidemic of Lassa fever in Ekpoma is accepted. Based on the results, we can states that cultural practices are significant in the annual epidemic of Lassa fever.

### Hypothesis Two

**H<sub>0</sub>**: Disturbances in ecological balance do not contribute to the annual occurrence of Lassa fever disease in Ekpoma

**Table: 14: Contingency Table of Residential Buildings Springing Up and Weather Conditions Responsible for the Presence of the Mastomys Rats in Human Dwelling**

Variables	Is there the possibility of the fact that as more residential buildings spring up in this community; the mastomys rats are displaced and are moving closer to your dwellings?			
	Yes	No	Not sure	Total
<b>Do you think that the weather condition of this place is the reason for the presence of the mastomys rats in this community?</b>				
Yes	80 (41.7%)	0 (0%)	0 (0%)	80 (41.7%)
No	38 (19.8%)	6 (3.1%)	0 (0%)	44 (22.9%)
Not sure	0 (0%)	20 (1.4%)	48 (25.0%)	68 (35.4%)
<b>Total</b>	<b>118 (61.5%)</b>	<b>26 (13.5%)</b>	<b>48 (25.0%)</b>	<b>192 (100%)</b>

Chi-square value = 176.579 df = 4 P- value = 0.000

Source: Fieldwork (2017)

From the table above, the calculated Chi-Square value is  $x^2 = 176.579$

df= 4

P value= 0.000 (P < 0.05)

Chi-Square table value at Degree of freedom (12), at a level of significance of 0.05 = 9.488. Given that the calculated Chi-Square value (176.579) is greater than the table value (9.488), the null hypothesis is rejected while the alternative hypothesis which states that disturbances in ecological balance contribute to the annual occurrence of Lassa fever disease in Ekpoma is accepted. Similarly, the P-value of 0.000 is less than the level of significance of 0.05, it therefore shows that the disturbances in ecological balance contribute to the annual occurrence of Lassa fever disease in Ekpoma.

**Hypothesis Three**

**H0:** There is no relationship between poor hygiene and the non-availability of water in the annual epidemic of Lassa fever in Ekpoma.

**Table 15: Contingency Table of Poor Hygiene and Non-Availability of Water**

Variables	Do you have enough water to clean your house and personal belongings?			Total
	Yes	No	Manageable	
Do you know that water is the basis for good hygiene?				
Yes	72 (37.5%)	27(14.1%)	82 (42.7%)	181 (94.3%)
No		-	-	-
No sure	11(5.7%)	0(0%)	0(%)	11 (5.7%)
<b>Total</b>	<b>83(43.2 %)</b>	<b>27(14.1%)</b>	<b>82 (42.7%)</b>	<b>192 (100%)</b>
<b>Chi-square value = 15.324 df = 2 P- value = 0.000</b>				

From the table above, the calculated Chi-Square value is

$x^2 = 15.324$

df= 2

P value= 0.000 (P < 0.05)

Chi-Square table value at Degree of freedom (2), at a level of significance of 0.05 = 5.991. Given that the calculated Chi-Square value (15.324) is greater than the table value (5.991), the null hypothesis is rejected while the alternative hypothesis which states that there is a relationship between poor hygiene and the non-availability of water in the annual epidemic of Lassa fever in Ekpoma is accepted. Similarly, the P-value of 0.000 is less than the level of significance of 0.05, it therefore shows that there is a significant relationship between poor hygiene and the non-availability of water in the annual epidemic of Lassa fever in Ekpoma.

**Hypothesis Four**

**H0:** The knowledge and attitude of the health workers and the citizenry will not affect the endemic nature of Lassa fever.

**Table 16: Contingency Table of Knowledge and the Endemic Nature of Lassa Fever**

Variables	Are you aware of the fact that Lassa fever is an annual occurrence in this community?			
	Yes	No	Not sure	Total
Do you know that the mastomys rats are the carriers of the Lassa virus and they can transmit it to humans?				

Yes	0 (0%)	112 (58.3%)	10 (5.2%)	122 (63.5%)
No	30 (15.6%)	38 (19.8%)	0 (0%)	68 (35.4%)
Not sure	2 (1%)	0 (0%)	0 (0%)	2 (1%)
<b>Total</b>	<b>32 (16.7%)</b>	<b>150 (78.1%)</b>	<b>10 (5.2%)</b>	<b>192 (100%)</b>
<b>Chi-square value = 73.940 df = 4 P- value = 0.000</b>				

From table above, the calculated Chi-Square value is

$$\chi^2 = 73.940$$

$$df = 2$$

$$P \text{ value} = 0.000 (P < 0.05)$$

Chi-Square table value at Degree of freedom (4), at a level of significance of 0.05 = 9.488. Given that the calculated Chi-Square value (73.940) is greater than the table value (9.488), the null hypothesis is rejected while the alternative hypothesis which states that the knowledge and attitude of the health worker and the citizenry will affect the endemic nature of Lassa fever is accepted. Similarly, the P-value of 0.000 is less than the level of significance of 0.05, it therefore shows that the knowledge and attitude of the health worker and the citizenry will have a significant effect on the endemic nature of Lassa fever.

**Hypothesis Five:**

**H0:** The effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak will have no significant impact.

**Table 17: Contingency Table Showing the Effort of the Health Sector and the Populace in the Prevention and Curtailment of the Annual Epidemic of Lassa Fever Outbreak**

Response	Observed O	Expected E	O-E	(O-E) <sup>2</sup>	$\frac{(O-E)^2}{E}$
Avoid certain cultural predominant practices	6	64.0	-58.0		
Good Hygienic practices	112	64.0	48.0		
A and B	74	64.0	10.0		
None	0	0	0	0	0
Total	192				

Source: SPSS Output Result (2017)

$$\frac{\sum(O-E)^2}{E} = 90.125^a$$

**H<sub>0</sub>** The effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak will have no significant impact.

	What efforts are you making to avoid being infected with the Lassa virus?
Chi-Square	90.125 <sup>a</sup>
Degree of freedom	2
Significance level	.000

a. 0 cells (.0%) have expected frequencies less than 5.

Source: SPSS Output Result (2017)

From the chi square analysis above, at 0.05 level of significance and degree of freedom at 5.991 which is the table value and the calculated value state 90.125<sup>a</sup>, the result above state that the calculated value is greater than the table value. On this premise the Null hypothesis is rejected and the alternative hypothesis which states that the effort of the health sector and the populace in the

prevention and curtailment of the annual epidemic of Lassa fever outbreak will have a significant impact is accepted. This implies that the effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak will have a significant impact.

### **Summary of Findings**

The major focus of this study was to examine the socio-cultural context of the annual epidemic of Lassa fever in Ekpoma community of Edo state. The findings indicated that Cultural practices contribute to the annual epidemic of Lassa fever in Ekpoma. Based on this finding, we can state that cultural practices like bush burning, spreading of farm produce and clothes on tarred roads, wells and on grasses, hunting and eating of rodents are significant in the annual epidemic of Lassa fever in Ekpoma Community of Edo State. Although some of the practices like washing and bathing of the dead by relatives and traditional autopsy are gradually fading out, bush burning/deforestation, spreading of farm produce and clothes on tarred roads, on top of flowers and grasses and hunting of rodents are still very much evident in the environment.

The findings also indicated that disturbances in ecological balance contribute to the annual occurrence of Lassa fever disease in Ekpoma. As a result of the springing up of more buildings to accommodate the growing population, the rodents are disturbed in their natural habitat and are moving closer to man's dwellings. A brief tour of the community will prove the fact that new hostel accommodations for students, hotels and residential buildings are springing up everywhere.

It was also found that poor hygiene and the non-availability of water contributed to the annual epidemic of Lassa fever in Ekpoma. A large proportion of the respondents accepted that water was the basis of good hygiene, they did not have public source of water, they bought water at the cost of N40 per jerry can/keg and a greater percentage of the population managed the water that they were able to afford for their domestic use. Apart from lack of adequate supply of water in the community, it was discovered that the people still patronised food vendors in an environment where water was scarce and they were not sure of the hygienic practices of these food vendors. Majority of the respondents still take garri soaked in cold water. In the process of distributing the questionnaire, it was also discovered that some persons opened packets of biscuit and some other snacks with their teeth in a place endemic with Lassa fever. Moreover, it was observed that people spread clothes on top of flowers and grasses which is an unhygienic habit.

The findings also indicated that the knowledge and attitude of the health workers and members of the public affected the endemic nature of Lassa fever. Respondents were aware of the annual occurrence of Lassa fever in the community, but majority were not aware of the fact that the mastomys rat was the carrier of the virus and could not tell the difference between mastomys rat and other rats. Some said that the carrier of the Lassa virus was the "long mouth" rat (hog-nose rat/ pig nose rat, shrew rat).

Finally, the findings also indicated that the effort of the health sector and the populace in the prevention and curtailment of the annual epidemic of Lassa fever outbreak would have a significant impact on its total eradication. The Centre was doing its best to curtail the constant re-emergence of the Lassa fever virus by carrying out grassroots sensitization, campaigns/workshops and Jingles on the media, but there is the need for adequate funding for the Centre. Members of the public were also making necessary efforts to eliminate rats from their homes to avoid being infected with the Lassa virus.

### **Conclusion**

This study has discussed and provided an insight into the socio-cultural contexts of the annual epidemic of Lassa fever in Ekpoma community in Edo state. Several researches and reports have shown that Lassa fever is endemic in the community and that efforts made so far by the Federal Government through the establishment of the Research Institute in the community and the efforts of the public have not stopped the annual occurrence of Lassa fever.

Based on the responses from the respondents in this study, we can categorically claim that the absence of potable water and the behaviour / lifestyle (way of life) of the inhabitants of the communities promote Lassa fever in the population.

### **Recommendations**

From the findings above, the following recommendations are made:

1. Harmful Cultural practices such as bush burning jeopardises the health of people and should be checked and where necessary, abolished.
2. Communal eating should also be discouraged because people with bad hygiene who have contacted Lassa fever may infect others.
3. Enlightenment programmes should be conducted by Public Advocates and Community Health Centres to educate the people on the need to:
  - a. Stop spreading their clothes directly on the grasses, flowers and fences but instead spread their clothes on lines or ropes to avoid the waste passage by rodents possibly carrying Lassa fever.
  - b. Eliminate all sorts of rodents by the use of traps, poisons or physically killing them and disposing of them properly by burning or flushing them down the latrine immediately.
  - c. Observed personal hygiene such as washing their hands properly, washing cooking utensils, covering their food properly, preserving their food, cooking ingredients and utensils properly, rinsing plates and cutlery before using, use scissors or sharp objects to open sachets like biscuits, bread, etc. instead of using the teeth.
4. Federal government through its agencies should get involved directly and by collaboration with UNICEF and other non - governmental agencies that can help finance the project to:
  - a. Tackle the issue of providing borehole so that the communities can have clean and potable water.
  - b. Build more centres for the prevention, treatment and control of Lassa fever in the country.
  - c. Sponsor grassroots enlightenment programmes in the local dialects and in English language for elementary to tertiary institutions and the communities generally through the use of personal advocacy, audio and visual media, play and drama.
  - d. Train doctors, nurses and support staff on the best practices to treat, and prevent the spread of Lassa fever from patients to family members or friends, from ward to ward, etc. They should be constantly reminded to practice 'barrier nursing' and waste management.
  - e. Encourage health care workers and citizens both in the public and private sectors to help prevent and eliminate the spread of Lassa fever by engaging in best hygiene practices, conveying sick people to the hospitals or health centres for treatment and discourage home remedy and self-help.

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