# GHANA JOURNAL OF DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION, SPORTS AND DANCE (GJOHPERSD)

Volume 10, Year 2017

A JOURNAL OF THE DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION
(HPER)
UNIVERSITY OF CAPE COAST
GHANA, WEST AFRICA

# KNOWLEDGE AND PERCEIVED IMPLICATION OF LASSA FEVER AMONG RESIDENTS OF OKE-ERO LOCAL GOVERNMENT AREA, KWARA STATE NIGERIA

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## Abstract
This study investigated the knowledge and perceived implication of Lassa fever among residents of Oke-Ero Local Government Area, Kwara State. The major occupation of the residents of Oke-Ero is farming. During the dry season, some farmers make use of bush burning method as a mean of clearing their lands, during which many of the rats from the bushes find their ways to neighbourhood houses to hide for safety. This gives them access to food stuffs kept by the residents. The purpose of the study was to investigate whether the residents of Oke-Ero Local Government Area, Kwara State have knowledge of transmission of Lassa fever and determine whether death is a perceived implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State. A descriptive research design was adopted for the study. The population for the study comprised of all the residents of Oke-Ero Local Government Area, Kwara State. Multi-stage sampling technique consisting of simple random, proportionate and convenience sampling techniques was used to select a sample size of four hundred and two (402) respondents for the study. A researcher-designed questionnaire validated by three (3) experts from the Department of Health Promotion and Environmental

Health Education, University of Ilorin, Nigeria was used for the data collection. Split half method was used to ascertain the reliability of the instrument. A correlation coefficient (r) of 0.70 was obtained through the use of Cronbach alpha. Data collection was conducted by the researcher and three trained research assistants. Inferential statistics of Chi-square ($\chi^2$) was used to analyse the postulated null hypotheses at 0.05 level of significance, using Statistical Package for Social Science (SPSS) version 20.0 software. The findings of the study showed that residents of Oke-Ero Local Government Area, Kwara State significantly have knowledge on the transmission of Lassa fever. This was because cal. $\chi^2$ value (586.90) is greater than critical value (7.82). Death is significantly perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State. This was because cal. $\chi^2$ value (271.41) is greater than critical value (16.92). Based on the findings, it was concluded that residents of Oke-Ero Local Government Area Kwara State have knowledge of the transmission of Lassa fever, and death is perceived as implication of Lassa fever among the residents of Oke-Ero Local Government area Kwara State. Therefore, the researcher recommended that residents should not leave food items open, so as not to give rats access to their food and cultivate the habit of cleanliness. It is also recommended that, further knowledge on Lassa fever and implication should be intensified and campaigns and health education should be carried out to improve the knowledge of residents about the Lassa fever disease.

**Keywords: Knowledge, Perception, Implication, Lassa fever and Residents**

## Introduction

*Lassa fever (LF)* is an acute viral haemorrhagic and febrile illness caused by Lassa virus, a member of the arenavirus family of viruses which is prevalent in West African and is responsible for thousands of death annually (World Health Organization, 2016). According to Oladele (2016), Lassa fever was first described in the 1950s but the virus causing Lassa disease was identified in1969 in the town of Lassa, in Borno State, Nigeria when two missionary nurses died in the town of *Lassa* in Borno State. It was from the name of the town that the disease got its name (Center for Disease Control, 2016). Lassa fever is commonly found in rural communities where over 70% of the population resides (Kelly, Barrie, Ross, Temple, Moses & Bausch, 2003). It is an endemic disease in the West African sub-region (Nigeria inclusive), where about 3-5 million individuals are infected yearly (Daniel, 2016).

Lassa fever occurs within all age groups and both sexes. In Nigeria, there are outbreaks of Lassa fever almost every year in different parts of the country, with yearly peaks observed between December and February (WHO, 2016). Lassa fever is more prevalent during the dry season and is an emerging disease with devastating and life threatening potentials (Ajibulu, 2016). They are of particular public health importance because they have a high case-fatality rate, difficult to recognize and detect rapidly and they have no effective treatment (Briggs, 2015).

The Lassa virus, a member of the virus family *arenaviridae*, is a single-stranded RNA virus and is zoonotic, or animal-borne. The virus is very acute and can affect all the organs of the body (WHO, 2016). The carrier of the virus is the mastomys rat commonly known as the multimammate (having many breasts) rat. Multimammates rats are native to Africa, where they are found in a variety of habitats, excluding deserts and tropical forests. They are often common around human habitations. These rats reproduce at very high rates and like to live in very close proximity to humans, especially where

food is kept (CDC, 2016). Mastomys rats infected with Lassa virus do not become ill but they can shed the virus in their urine and faeces (Omosivie & Briggs, 2015). The density of multimammate rats appears to be linked to land use, where rodent populations fluctuate with the agricultural cycle of harvesting, burning of fields and ploughing (CDC, 2016). The Mastomys natalensis can easily be identified because they have a total of 24 nipples instead of 12 that a normal rat possesses (WHO, 2016).

Transmission of Lassa fever occurs through direct contact of abraded skin and mucous membranes with rodent excreta deposited on surfaces such as floors or beds, or ingestion of food and water contaminated with rodent excreta, or via inhalation of aerosol containing virus particles (Robin & Mark, 2003). Lassa fever can also be transmitted when a human comes in contact with an infected rat's faeces, urine or the body fluids of an infected human (CDC, 2016). According to Fisher-Hoch (2005), primary mode of spread is from rodent to man or during hunting and processing of rats for consumption. The virus has the capacity for person-to-person spread, either within households during care for sick relatives or in health care settings. Lassa fever can also be transmitted, particularly in the hospital environment in the absence of adequate active control measures (Fisher-Hoch, 2005; CDC, 2016).

The virus is estimated to be responsible for ten thousands of deaths annually. The disease accounts for up to one-third of deaths in hospitals within the affected regions and 10 to 16% of total cases between 15-20% of people who are hospitalized for Lassa fever die from the illness but the mortality shoots up to 50% during an epidemic, 90% in third trimester of pregnancies for both expectant mother and fetus. In contrast, about 1% of all infected cases die (CDC, 2016). The mortality rate due to Lassa fever is about 5000 deaths a year out of 100,000 to 300,000 cases. The death rate depends on the severity of illness (Liji, 2015).

According to Emmanuel (2016), death usually occurs within 14 days of onset in fatal cases. High maternal and fetal

mortality is associated with Lassa fever during pregnancy. The increased likelihood of mortality at this stage of pregnancy is due to immunosuppression associated with the third trimester of pregnancy (Wellbeing Foundation Africa, **2016)**. The most common complication of Lassa fever is deafness. Different degrees of deafness happen in around one-third of those who become infected. In many cases, the hearing loss is permanent. The severity of the disease does not affect this particular complication; deafness might develop in mild as well as severe cases, transient hair loss and gait disturbance may occur during recovery (CRA, 2016). Briggs (2015) found that sensorineural hearing deficit in Lassa fever, typically appears during early convalescence, not related to severity of acute illness, occurs in one-third of cases may be bilateral or unilateral, may persist for life in up to one-third of those affected. Lassa fever in children and Infants significant cause of pediatric hospitalizations in some areas of West Africa. Complications include mucosal bleeding, pleural effusion and pericardial effusion. After recovery, the virus remains in body fluids, including semen (Richmond & Baglole, 2004).

Akinbodewa, Adejumo, Alli, Olarewaju, Akinbodewa, Adejumo,Osho, Akinfiresoye and Balogun (2016) also concluded in a study conducted among the students of Adeyemi College of Education, Ondo State on knowledge of Lassa fever, that knowledge of Lassa fever remained poor among the students. Adebimpe (2016) also concluded that poor knowledge of Lassa fever, characterized rural communities studied. In a study conducted by Ajibulu (2016), most of the respondents demonstrated knowledge of Lassa fever by indicating that keeping their environment clean is a primary strategy to avoid being affected by the virus.

Tahir and Yusuf (2016) in their study on knowledge of residents of Bununu and environs, Bauchi State, estimated that, knowledge of Lassa fever among the studied population was good, as more than half of the respondents showed knowledge of how Lassa fever spread. The apparently higher levels of knowledge

may be due to the greater attention given to the disease, both by the government and the press, especially during the outbreak in 2014 (Rine & Silas, 2016).

In Oke-Ero, Kwara State, it was observed by the researcher that rats are found in large number in households and their presence holds much implications on the residents of the Local Government Area, as their droppings and urine get into food items. The researcher also observed that the residents of Oke-Ero Local Government Area have poor method of food preservation such that some residents leave their leftover foods uncovered in order to preserve it from being spoilt and in the process; the rats gain access to the food, eat part of it, urinate or pass excreta on it. The researcher also observed that the methods of waste disposal adopted by the residents of Oke-Ero Local Government Area is very poor, as the resident merely dump their wastes on dunghills, thereby harbouring rats, which breed Lassa fever.

The researcher also observed that, the major occupation of the residents of Oke-Ero is farming. During the dry season, some farmers make use of bush burning method for clearing their lands, during which many of the rats from the bushes find their ways to neighbourhood houses to hide for safety. This gives them access to food stuffs kept by the residents. It is on this premise that the researcher carried out a research on knowledge and perceived implication of Lassa fever among Residents of Oke-Ero Local Government Area, Kwara State.

**Research Questions**

The following research questions were raised for the study:

i. Will residents of Oke-Ero Local Government Area, Kwara State have knowledge of transmission of Lassa fever?
ii. Will death be perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State?

## Research Hypotheses

The following research hypotheses were formulated for the study:

i. Residents of Oke-Ero Local Government Area, Kwara State will not significantly have knowledge of transmission of Lassa fever.
ii. Death will not significantly be perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State.

## Method

Descriptive research design was adopted for this study. The population of the study comprised all the residents of Oke-Ero Local Government Area, Kwara State which is 57,619 while the target population comprised all the residents that are above 18 years old which contains 29,566. A multi-stage sampling technique consisting simple random, proportionate and convenience sampling techniques was used to select four hundred and two (402) respondents from five selected political wards in Oke-Ero Local Government Area, Kwara State. A researcher-developed structured questionnaire patterned after the two-point likert rating scale with options of Yes, No and four-point Likert rating scale format with options of Strongly Agree, Agree, Disagree and Strongly Disagree were used for the study. The instrument contained eight (8) items based on two variables namely transmission of Lassa fever and death and Lassa fever. In order to ascertain the validity of the instrument, three copies of the questionnaire were given to three experts in the Department of Health Promotion and Environmental Health Education, Faculty of Education, University of Ilorin. Split-half method was used to determine the reliability of the instrument using Cronbach's Alpha. A correlation coefficient (r) of 0.70 was obtained. Descriptive statistics of frequency count and percentage was used to answer the research questions raised for the study. Strongly Agree (SA) and Agree (A) were merged into positive response, while Disagree (D) and Strongly Disagree (SD) were merged into negative response. Inferential statistics of Chi-square

was used to analyze the stated null hypotheses at 0.05 level of significance, using Statistical Package for Social Science (SPSS) version 20.0 software.

## Results

**Research Question One:** Will residents of Oke-Ero Local Government Area, Kwara State have knowledge of transmission of Lassa fever?

Table 1: Descriptive statistics showing knowledge of transmission of Lassa fever among the residents

| S/N | ITEMS | Yes (%) | No (%) | Total |
|---|---|---|---|---|
| 1. | Eating food contaminated with rat's urine can transmit Lassa fever | 369 (91.8%) | 33 (8.2%) | 402 |
| 2. | Direct contact with infected rat spreads Lassa fever | 333 (82.8%) | 69 (17.2%) | 402 |
| 3. | Lassa fever can be transmitted by eating rats | 324 (82.8%) | 78 (19.4%) | 402 |
| 4. | Contaminated medical equipment such, such as re-used needles will transmit Lassa fever | 309 (76.9%) | 93 (23.1%) | 402 |
| **Total** | | **334 (83%)** | **68 (17%)** | **1608** |

Table 1 shows those respondents that responded to "yes" and have the knowledge of transmission of Lassa fever were 334 (83%) while the respondents that responded to "no" and do not have the knowledge of transmission of Lassa fever were 68 (17%). This implies that majority of the respondents of Oke-Ero Local Government Area, Kwara State have knowledge of transmission of Lassa fever.

**Research Question Two:** Will death be perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State?

Table 2: Descriptive statistics on death as a perceived implication of Lassa fever among the residents

| Practices | Responses | | | | | |
|---|---|---|---|---|---|---|
| | Yes | | No | | Total | |
| | n | % | n | % | n | % |
| Washing of hands before commencing work | 28 | 93.3 | 2 | 6.7 | 30 | 100 |
| Washing of hands after using the toilet | 29 | 93.7 | 1 | 3.3 | 30 | 100 |
| Washing of hands after handling raw food | 24 | 80.0 | 6 | 20.0 | 30 | 100 |
| Washing of hands after blowing the nose | 20 | 66.7 | 10 | 33.3 | 30 | 100 |
| Washing of hands after sweeping | 21 | 70.0 | 9 | 30.0 | 30 | 100 |
| Soap used for washing hands | 19 | 63.3 | 11 | 36.7 | 30 | 100 |
| Wear long nails | 17 | 56.7 | 13 | 43.3 | 30 | 100 |

Table 2 shows majority of the respondents 313 (77.8%) have positive responses to the items and perceived death as implication of Lassa fever while 89 (22.2%) respondents responded negatively and do not perceive death as implication of Lassa fever. This implies that, death is perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State.

**Hypotheses Testing**

**Hypothesis One:** Residents of Oke-Ero Local Government Area, Kwara State will not significantly have knowledge of transmission of Lassa fever.

Table 3: Chi-square analysis showing knowledge of transmission of Lassa fever among the residents

| Characteristics | Food handlers | | | | Students' comments | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Yes | | No | | Sometimes | |
| | n | % | n | % | n | % | n | % | n | % |
| Apron /overall | 26 | 86.7 | 4 | 13.3 | 63 | 32.1 | 77 | 39.3 | 56 | 28.6 |
| Hair cap/scarf/net | 24 | 80.0 | 6 | 20.0 | 56 | 28.6 | 77 | 39.3 | 63 | 32.1 |
| Gloves | 2 | 6.7 | 28 | 93.3 | 0 | 0.0 | 0 | 0.0 | 196 | 100.0 |
| Protective Shoes | 1 | 3.3 | 29 | 96.7 | - | - | - | - | - | - |

$\alpha = 0.05$

Table 3 shows the result of the hypothesis which states that Residents of Oke-Ero Local Government Area, Kwara State will not significantly have the knowledge of transmission of Lassa fever.The calculated chi-square value of 586.90 is greater than chi-square table value of 7.82 (cal. $\chi^2$ val> tab. $\chi^2$ val). Hypothesis one was therefore rejected. This implies that Residents of Oke-Ero Local Government Area, Kwara State significantly have the knowledge of transmission of Lassa fever.

**Hypothesis Two**: Death will not significantly be perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State.

Table 4: Chi-square analysis showing death as a perceived implication of Lassa fever among the residents

| Practices | Food handlers | | | | | | Students | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Sometimes | | Yes | | No | | Sometimes | |
| | n | % | n | % | n | % | n | % | n | % | n | % |
| Hot foods served | 20 | 66.7 | 1 | 3.3 | 9 | 30 | 63 | 32.1 | 28 | 14.3 | 105 | 53.6 |
| Convey food covered | 16 | 55.2 | 14 | 44.8 | 0 | 0.0 | 28 | 14.3 | 140 | 71.4 | 28 | 14.3 |
| Physical hazard in food | - | - | - | - | - | - | 56 | 28.6 | 84 | 42.8 | 56 | 28.6 |

$\alpha = 0.05$

Table 4 shows the result of the hypothesis which states that death will not significantly be perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State.The calculated chi-square value of 271.41 is greater than chi-square table value of 16.92 (cal. $\chi^2$ val$>\chi^2$ tab. val). Hypothesis two was therefore rejected. This implies that death is significantly perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State.

## Discussion of Findings

The hypothesis one was rejected, implying that the residents of Oke-Ero Local Government Area, Kwara State significantly have the knowledge of transmission of Lassa fever. The positive responses of the residents can be attributed to radio and television campaigns aired nationwide to educate the people about Lassa fever. This finding is similar to Tahir and Yusuf (2016) in their study on knowledge of residents of Bununu and environs, Bauchi State, which showed that knowledge of Lassa fever among the studied population was good, as more than half of the respondents showed knowledge of how Lassa fever spread.

Hypothesis two was rejected, implying that, death is significantly perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area, Kwara State. However, the finding supports Brigg (2015) who asserted that, Lassa fever also causes high foetal mortality and high mortality in pregnant women. The mortality rate is 92% for fetuses in early pregnancy, 75% for fetuses in the third trimester, 100% in the neonatal period for full-term babies. According to CDC (2016), the virus is estimated to be responsible for ten thousands of deaths annually. The disease accounts for up to one-third of deaths in hospitals within the affected regions and 10 to 16% of total cases. The knowledge of transmission of Lassa fever and death as a perceived implication of Lassa fever by residents who participated in this study could be as a result of the jingles or campaigns from the radio or televisions.

## Conclusions

Based on the findings of the study, it was concluded that:

i. Residents of Oke-Ero Local Government Area Kwara State have knowledge of transmission of Lassa fever.

ii. Death is perceived as implication of Lassa fever among the residents of Oke-Ero Local Government Area Kwara State.

## Recommendations

Based on the findings of the study, the researcher made the following recommendations:

i. Residents should intensify their knowledge on the transmission of Lassa fever in order to further eradicate the diseases from their environment.

ii. Health workers should treat patients infected with Lassa fever immediately in order to avert the incident of death.

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