KNOWLEDGE, PERCEPTION AND PRACTICE AMONG AGBOWO COMMUNITY RELATING TO LASSA FEVER, IBADAN, OYO STATE, NIGERIA

BY

Olaitan Johnson, BALOGUN
***B.sc(Ed) Health Education* (UNIVERSITY OF IBADAN)**
MATRIC NO: 150675

A PROJECT SUBMITTED TO THE
DEPARTMENT OF HEALTH PROMOTION AND EDUCATION,
FACULTY OF PUBLIC HEALTH, COLLEGE OF MEDICINE,
UNIVERSITY OF IBADAN IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF PUBLIC HEALTH
(HEALTH PROMOTION AND EDUCATION)
OF THE
UNIVERSITY OF IIBADAN

OCTOBER, 2017

DEDICATION

This project work is dedicated to Jehovah Yaweh, who reflected in the prior, is sighted in the present and foreseen in the future. I say to HIM, I owe everything I had been; I am and will ever be. I am grateful for seeing me through the MPH programme.

And

To my late Dad and sister: Taiwo Williams BALOGUN and BiodunOmowumi BALOGUN

ACKNOWLEDGEMENT

My sincere gratitude goes to my supervisor Dr. Frederick O. Oshiname who took his time in correcting my work from time to time despite his busy schedule, though not easy but it turned out to be success today, I say from my heart that God bless you and the works of your hand .

I greatly appreciate all the lecturers and staff of the Department of Health Promotion and Education starting from Prof. Oladepo O. Prof. A.J Ajuwon, Prof (Mrs.) O.S Arulogun, Dr. O.E Oyewole, Dr. M.A Titiloye, Mr. A. John Imaledo, Mr. F. Dipeolu, Mrs. M.M Oluwasaanu and Mrs. A.T Desmenu and all the non-teaching staff in the department. Thank you all for watering my dry soul at the time the water of knowledge is needed most and all I could say is thank you and God bless you accordingly.

I appreciate my brothers and friends, those in whom God has place around me so I could compete with the intellectuals of this world and stood on the shoulders of giant, I appreciate my brother, Olukunle Oluwaseun Ogundeji and his wife, AinaGbenga, Tosin.Adeyeye, Tolulope Victor Olonisola, Oyelakin Blessing (Mrs Okanlawon)and a host of others whose names could not be mentioned here.

I appreciate the family of Okanlawon for their supports and prayers as well as Pastor Abraham Imaledo, Pastor Toyin Adedibu and everyone that stood by me in the course of this programme. I sincerely appreciate my friends Ayobami Okanlawon, Tayo Okanlawon, Dayo Okanlawon Akindele Opeoluwa, Prince Adebayo Gafar, Mr Sule Tunde, Eniola Adejuyigbe, Mrs Egbekunle and the host of others who have contributed to this success.

I appreciate my mum, Mrs Idowu Balogun for not getting tired of me and for believing in me thus far, I appreciate my big Mum and Dad Adeyeye who shouldered my financial responsibility most of the time things were so tough for me and also appreciate all my sisters.

I also appreciate Agbowo group members(field work) who gave me the opportunity to show-case my leadership skills as well as Alhaji Owolabi of Aanuoluwapo zone of Agbowo community. My sincere appreciation also goes to DrAdebiyi of the Department of

Community Medicine for his expertise ideas in the course of this study and also my colleagues whom we were supervised together

I appreciate my 'Treasure' whose effort in prayer for my life, moral support and financial support cannot be overemphasized, you stood in gap for me even when I was tired to kneel in prayer, Oluwafunmilola Esther Balogun God bless you beyond what anyone can ever imagine and I say to you I LOVE YOU dearly.

Finally, I appreciate my big brother, adviser, an intelligentia man, a liberal mutaba who never got tired of me but keeps telling me you are on your way to greatness, Dr. Bolaji Iyanda, only God can bless you beyond human imagination and preserve you and your family until the coming of the Lord Jesus Christ

ABSTRACT

The emergence and the occurrence of highly virulent and contagious Lassa virus in many districts and states in endemic countries of the West African sub-region and the increasing sporadic cases of Lassa fever outside the endemic regions within and outside Africa as a result of huge inter-border traffic and international travels, necessitates that health care providers as well as the general populace should have comprehensive information about the virus and the disease it causes. Several works have been done on prevalence as well as the causes but little research effort has been directed towards knowledge, perception and practice relating to lassa fever. Therefore this study investigated knowledge, perception and practice of residents of Agbowo community relating to lassaferer, Oyo State, Nigeria

Descriptive cross-sectional survey research design was adopted. Purposive sampling technique was used to select 276 respondents in the community. A validated self-developed questionnaire (r=.73) was used as instrument for data collection. Knowledge was assessed on a 28-point scale and score was categorized as good (20-28), (14-19) score as fair and <13 was categorized as poor. Data from the questionnaire were analyzed using descriptive statistics and inferential statistics of chi-square test at significant level.

Respondents' age was 35.8±15.5 and majority (56.2%) of the respondents being in the range of (25-29) years. Majority (60.9%) of the respondents was married, 56.5% of the respondents had tertiary education, (41.7%) had secondary education, (1.4%) had primary education while those that had no formal education were (0.4%). Majority (81.6%) accounted for monogamous family while (18.4%) were from polygamous family. Age, gender, awareness and level of education had significant association between mean knowledge score of the respondents. Half of the respondents (58.7%) reported that LF can mainly be caused by arenaviruses and those who disagreed accounted for (13.4%) while those who were undecided accounted for (27.5%). Few (12.3%) of the respondents agreed that there is an immunization against LF in Nigeria, (23.9%) of the respondents were undecided and (63.8%) disagree. 1.4% of the respondents agreed that Lassa fever cannot be prevented, (9.1%) were undecided while 87.0% of the respondents disagreed. Most (50.0%) of the respondents reported frequently spreading their food items in an open space to dry, 24.3% reported occasionally spreading of food items in an open space to dry, 17.0% of the respondents rarely

spread their food items in an open space to dry while 1.1% reported never spreading their food items in an open space to dry.

Awareness of the disease was very high among the respondents but some practices exhibited by the respondents were not hygienic which could promote the future occurrence and incidence of the disease. Community mobilization, awareness, continuous sensitization and public enlightenment should be instituted by government and health authorities as well as media houses to curtail and prevent the spread of the disease.

Keywords: Lassa fever, Agbowo community, knowledge, perception and practices

Word count: 465

CERTIFICATION

This is to certify that this study was carried out by Olaitan Johnson, BALOGUN of the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria

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SUPERVISOR

Dr. Frederick O. Oshiname

B.Ed, (Benin), MPH, (Ibadan), M.A. (CWRU, Cleveland), Ph.D, (Ibadan)

Senior Lecturer

Department of Health Promotion and Education,

Faculty of Public Health, College of Medicine,

University of Ibadan

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CDC:	Centre for Disease Control and Prevention
LF:	Lassa fever
KGH:	Kenema Government Hospital
MMWR:	Morbidity and Mortality Weekly Review
NCDC:	Nigeria Centre for Disease Control
IBNLG:	Ibadan-North Local Government
LGA:	Local Government Area
PHC:	Primary Health Centres
SPSS:	Statistical Package for Social Sciences
WHO:	World Health Organization
RA	Research Assistant
FMOH	Federal Ministry of Health
HBM	Health Belief Model
ILFRC	Institute of Lassa fever Research and Control

Operational Definition of Terms

Knowledge: This is refers to the information, education or experience about something or situation etc

Perception: This is refers to the belief, feelings and understanding of things by people that certain state of affair exist or true regardless of whether it is or not.

Practice: This is the behavior, ideas, beliefs and methods people exhibits from their day to day activities

Adults from 25 years and above: These are individuals whether married or single but can take full responsibility of themselves.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Lassa fever (LF), a fatal zoonotic disease of public health importance in Nigeria (WHO 2000), is caused by a highly contagious virus of the family *Arenaviridae* (Asogun, Adomeh, Ehimuan, Odia and Gabriel, 2012, Fichet-Calvet and Rogers 2009, Richmond and Baglole 2003). Lassa fever is one of the diseases for which weekly epidemiological reporting to the health authorities is being done in Nigeria. It has been noted thata rapidly changing epidemiological pattern had been reported over the years (Ogbu, Ajuluchukwu and Uneke, 2007). The disease causes mortality and morbidity where ever outbreaks occur. The disease was first identified in 1969 in Nigeria. Lassa fever is caused by a single stranded RNA virus (Healing and Gopal, 2001). The main feature of this fatal infection is impaired or delayed cellular immunity leading to fulminant viraemia, usually starting as fever of unknown origin (Chen and Cosgriff, 2000).

The natural hosts for the virus are multimammate rats (*Mastomysnatalensis)*, which are widely distributed throughout West, Central, and East Africa (Healing and Gopal, 2001).Both zoonotic and human to human contacts are possible (Ogbu, Ajuluchukwu and Uneke, 2007).Lassa fever is an acute viral hemorrhagic illness caused by Lassa virus, a member of the family Arenaviridae, the disease is endemic in Sierra Leone, Guinea, Liberia, and Nigeria (Bowen, Rollin, Ksiazek , Hustad , Bausch , Demby, Bajani , Peters , Nichol 2000).

The number of Lassa fever virus infections per year worldwide is estimated at 100,000 to 300,000 with approximately 5,000 deaths (Bowen, Rollin, Ksiazek, 2000; Gunther, Emmerich, Laue, Kuhle, Asper and Jung, 2000; WHO, 2005; WHO, 2000). Outbreaks have been reported in Ghana, and Serological evidence of human infection has been found in Ivory Coast, Senegal and Mali. (Richmond and Baglole, 2003)

The emergence and the occurrence of highly virulent and contagious Lassa virus in many more districts and states in endemic countries of the West African sub-region and the increasing sporadic cases of Lassa fever outside the endemic regions within and outside

Africa as a result of huge inter-border traffic and international travels, necessitates that health care providers should have comprehensive information about the virus and the disease it causes (NCDC, 2012). There is also the need for the communities to be aware of the disease in term of its mode of transmission, treatment, prevention and control. Lassa fever has been associated with nosocomial outbreaks with high mortality(WHO, 2000).

Population movements, poor sanitation, overcrowding, inadequate resources to manage victims and poor epidemic preparedness are some of the factors contributing to disease outbreak (WHO, 2000).

Outbreaks of Lassa have been reported in various parts of Nigeria including Edo, Ebonyi, Onitsha, Aboh-Mbaise, Jos, Taraba, Nasarawa, Yobe, Rivers, Ogun and Ondo states (NCDC, 2016). Despite the epidemic nature of Lassa fever in Nigeria, details of outbreaks and subsequent interventional responses to curtail it have not been well documented (Tobin, Asogun, Isah, Ugege and Ebhodaghe, 2012). In early 2012, a total of 623 suspected cases, including 70 deaths were recorded from 19 of the 36 States of Nigeria (NCDC, 2012).

Laboratory analysis undertaken at the Lassa Reference Laboratory at Irrua Edo State, had confirmed the presence of Lassa in several cases (WHO, 2012). Since then, community residents' knowledge, perception and practices relating to the disease have been not adequately explored yet effective control and prevention of the disease require the involvement of the community. Agbowo community is one of the communities in Ibadan with several factors which is consider to predispose the community to the menace of the disease and also favour the breeding of the rats in the community.

According to Nasir and Sani,(2015), NCDC reported 21 cases, out of which 4 confirmed cases and 1 death of Lassa fever between 1st of January to 8th of March, 2015. Out of these 21 cases, Bauchi state had the most recent with 3 confirmed cases and 1 death.

1.2 Statement of the Problem

Everyone is at risk of Lassa fever in endemic areas in Nigeria where there is significant high poverty levels and already overburdened health care systems. It is therefore, a prevailing health concern for communities, health practitioners and policy makers (Apwah, 2013).

Most studies on lassa fever in Nigeria have focused on health workers or health care providers leaving community relatively understudied. Community members' knowledge, perception and practices, which have potential for promoting the occurrence of lassa fever is

needed to design locally appropriate lassa fever prevention, control and intervention programmes. Environmental factors with several potentials for the emergence of the disease exist in the community.For instance, field work activities conducted in the community have shown the existence of rats in the community, overcrowding as well as cultural practices which can promote rapid occurrence and transmission of the disease. A systematically conducted studies relating to the perception, knowledge and practices relating to the disease are yet to be fully investigated,it is in an effort to fill this gap in knowledge; this study was designed to investigate the knowledge, perception and practice of residents of agbowo community relating to lassa fever.

1.3. Justification

Lassa fever occurs in all age groups and sexes. With the growing burden of disease on the healthcare system in Nigeria, the need to adopt preventive strategies that will reduce the occurrence of infectious disease such as lassa fever with high morbidity and fatality rate cannot be overemphasized (Apwah, 2013).

Usually, majority of the outbreaks often emanates from the community before spreading to health facilities. Generally, most women are deeply involved in some traditional domestic food processing and storage practices which can predisposes anyone to contacting the disease and also create opportunities for the outbreak of Lassa fever. The findings of this study will therefore be very useful in providing baseline information which can be used in designing preventive intervention for the transmission of Lassa fever.

It will help in formulating appropriate measure relating to the control of Lassa fever and also facilitate the involvement of urban residents such Agbowo community in Lassa fever prevention, control and treatment.

1.4 Research Questions

The study was designed to provide answers to the following questions:

1. What is the level of knowledge of Agbowo community residents relating toLassa fever?
2. What is the perception of the community residents relating to Lassa fever?
3. What are the food storage and food processing practices which favour the occurrence of Lassa fever?

1.5 Broad Objective

The broad objective of this study was to investigate the knowledge, perception and food practices of residents of Agbowo community which can promote the transmission of Lassa fever

1.6 Specific Objectives

The specific objectives of the study were to;

1. Assess the level of knowledge of Lassa feveramong residents of Agbowo community
2. Identify theperceptionsrelating tolassa fever among residents of Agbowo community
3. Determine the food processing and storage practices of residents of agbowo community which may favour the occurrence of Lassa fever

CHAPTER TWO

LITERATURE REVIEW

The review of literature for this study shall be under the following sub-headings:

Overview of the origin, cause, distribution and seriousness of Lassa fever

Epidemiology of lassa fever

Knowledge of Lassa fever

Perception relating to Lassa fever

Prevention Relating to Lassa fever

Factors affecting the spread of Lassa fever in Nigeria

Theoretical framework

Conceptual framework

2.1 Overview of the origin, cause, distribution and seriousness of Lassa fever

Lassa fever is one of the diseases for which weekly epidemiological reporting to the health authorities is being done in Nigeria. A rapidly changing epidemiological pattern has been reported over the years (Ogbu, Ajuluchukwu and Uneke, 2007). The emergence of Lassa fever (LF) in Nigeria may be due to environmental changes and/or a reappearance of the disease after a decline in incidence (Lederberg, Shope,Oaks and Editors, 1992).

Re-emergence of Lassa fever is likened to the interaction between human elements such as – population growth, density, distribution; immune-suppression; and behavioural changes (Inegbenebor, Okosun and Osagie. 2010).

The virus could be imported into countries where it is not endemic, for example, by returning travelers (Gunther, Emmerick, Laue, Kuhle and Asper 2000). The virus is characterized by persistent, asymptomatic infection, with profuse urinary virus excretion in *Mastomysnatalensis*, the ubiquitous and highly commensal rodent host. The virus is shed in their excreta (urine and feces), which can be aerosolized and inhaled by humans (Viral Haemorraghic fever Consortium, 2011).

Primary mode of spread is from rodent to man through contact with the excreta or urine of rats or through contact with food that is contaminated (Lecompte,2006). The virus has the capacity for person-to-person transmit, either within households during care for sick relatives

or in health care settings (Fischer-Hoch, 2005). Percutaneous or per-mucosal exposure to blood and other infected body fluids, especially if the fluids contain blood, can result in secondary human spread. This type of transmission is the most likely route in health care settings (Aranoff et al., 1997).

This nosocomial hazard can be minimized by proper and timely infection-control measures, careful management of infected patients, and, in some cases, administration of prophylactic therapy to health care workers after exposure (Weber and Rutala 2001). Lassa fever presents at its early stage with symptoms and signs indistinguishable from those of other viral, bacterial or parasitic infections common in the tropics such as malaria, typhoid and other viral haemorrhagic fevers (Richmond and Baglole, 2003). Laboratory testing is required for its confirmation (WHO, 2012). Untreated, Initial flu-like and gastrointestinal symptoms give way to bleeding, organ failure and neurological complications (Bausch et al., 2001). The drug *ribavirin* is effective if administered early following infection (McCormick et al., 1986).

When the disease is in an advanced stage, even state-of-the-art intensive care cannot prevent a fatal outcome(Fischer-Hoch, 2005). A suspect must be rapidly excluded or verified to facilitate appropriate case management, including treatment(Haas et al., 2003). Late diagnosis and treatment also increases the likelihood of secondary transmission, including nosocomial transmission (Chen, 2000). It is therefore imperative that health care workers in endemic communities are adequately sensitized on the disease, its clinical features and diagnosis. Lassa fever is more commonly found in rural communities (Kelly et al., 2003).

Lassa fever is a rodent-borne Viral Haemorrhagic Fever (VHF) which can infect humans with devastating effect (NCDC 2014). Since the discovery of Lassa fever in 1969, only Sierra Leone, Liberia, Guinea and Nigeria have recorded regular outbreak of cases, with various regions in each country considered endemic(WHO 2014). Lassa fever's home territory appears to be growing with cases identified in Ghana and previously non-endemic areas of Sierra Leone and Nigeria (Sogoba, Traore, Raffel, Fischer, Ebihara and Gire. 2012).
At the end of 2014 an outbreak occurred in Benin, Nigeria killing nine people. (NCDC,2012).

In a decade it has transitioned from being a neglected, albeit renowned, tropical disease into a high priority pathogen of international importance which attracts considerable research funding (CDC,2012).

As a zoonotic disease, understanding the relationship between animal, human and disease ecosystems offers considerable potential for disease control policy (Richmond and Baglole, 2003). Lassa has been occurring in Nigeria as sporadicoutbreaks from the year it was identified in 1969(WHO, 2000).Population movements, poor sanitation, overcrowding, inadequate resources to manage victims and poor epidemic preparedness are some of the factors contributing to disease outbreak (WHO, 2000).

Increasing international travel and the possibility of use of the Lassa virus as a biological weapon necessitated the need for greater understanding of Lassa fever and more effective control and treatment programs (WHO, 2000).

According to Adebimpe (2015), Osun State is geographically close to Edo State that has persistently been having the highest number of both suspected and confirmed cases of Lassa fever in Nigeria in recent times, with the symptoms of Lassa fever mimicking that of malaria which is endemic in Nigeria, the potential of missing the diagnosis of Lassa fever is high.

Primary health care workers in both public and private clinics are often the first set of personnel to handle suspected cases of Lassa fever which is also a possible source of nosocomial infection (Adebimpe, 2015). In situation where health workers are not adequately equipped with requisite knowledge and materials to handle cases of Lassa fever, transmission and outbreak of the infection is likely not only in health care settings but in the community as well (NCDC,2012).

Among the haemorrhagic fevers, Lassa fever affects by far the largest number of people, creating a geographical patchwork of endemic foci encompassing a population of perhaps 180 million from Guinea to Eastern Nigeria (NCDC,2012).The co-speciation of *arenaviruses* and rodents has recently been confirmed by molecular analyses. The distribution of Mastomys in West Africa is highly variable and in some areas, 50% of domestic rodents may be Mastomys (Bishop, 1993).

It has been reported that since the rodents do not move far from their nest, and because Lassa virus is transmitted vertically in rodents, infection in local populations of rodents tends to cluster(Bishop, 1993). Consequently, according to Fisher-Hoch (2005), human infections tend also to be focal with periodic familial or village clusters with secondary cases due to person-to-person spread. These outbreaks are seen against the background of primary infections from rodents that make up the bulk of endemic disease. Infections peak between January and May during the dry season – but cases are seen year round(Bishop, 1993).

Person-to-person spread of Lassa virus occurs within homes as well as in hospitals. This is where the major outbreaks have been and continues to be. The outbreaks are associated with inadequate disinfection and direct contact with infected blood and contaminated needles. Increasing indiscriminate use of needles for intravenous therapy, or intramuscular injections in West African hospitals along with inadequate needle and syringe sterilization has led to large scale epidemics. These epidemics can be devastating, resulting in the deaths, not only of patients but also medical staff, surgeons, nurses and other trained laboratory personnel (Fisher-Hoch *et al*, 1995).

2.2 Epidemiology of lassa fever

Lassa fever occurs in all age groups and sexes, and not surprisingly given the ubiquity of the rodent host, antibody prevalence increases with age, this is compatible with virus transmission to humans in and around the homes where the Mastomys live. Estimates of antibody prevalence range from 4%–6% in Guinea to 15%–21% in Nigeria, though in some villages in Sierra Leone as many as 60% of the population have evidence of past infection. Among hospitalized patients, the mortality is 17% if untreated. In endemic areas, Lassa fever may account for about 30% of adult deaths. Lassa fever also affects children, with considerable mortality in infants (Monson *et al*, 2000). Mastomysnatalensis are probably the most common rodent in tropical Africa and are found predominantly in rural areas and in dwelling more often in surrounding country side (McCormick, 1999).

Lassa fever is prevalent in Africa, precisely the West African sub-continent where the disease is highly endemic and about three – five million people are estimated to be affected yearly by the disease (Ibekwe 2012, Buchmeier et al 2007). In spite of this, approximately, 80% of human infections are mild and asymptomatic, and 1% of infection results in death (Ogbu et

al. 2007). Several countries in West Africa were identified endemic hot spots for LASV, namely Sierra Leone (McCormick et al. 1987; Monath et al, 1974), Guinea (Lukashevich et al. 1993; Ter-Muelen et al. 1996), Liberia (Frame et al. 1984; Monath et al 1973; Monson et al. 1984), and Nigeria (Carey et al. 1972; Tomori et al 1988; White 1972; Troup et al 1970).

Humans could be infected by contact with rats or by eating them. Rats found in houses of infected people are seropositive for the virus ten times more often than those in control houses (Dorlemann, 1996). Virus antibodies occur after a febrile illness in twice as many people who eat rats as in those who do not, and deafness (an effect of Lassa fever) occurs four times more frequently (Termeulen, Lukashevich ,Sidibe , Inapogui , Marx and Dorlemann, 1996).

Inhalation of tiny particles of infective materials (aerosol) is believed to be the most significant means of exposure(Trevejo, 2000). It is possible to acquire the infection through broken skin or mucous membranes that are directly exposed to infective materials, transmission from person to person has also been established, presenting a challenge for health care workers (Micheal, Buchmeier, Michael, Bowen and Clarence, Peters, Bernard and Fields, 2001).

Sexual transmission and transplacental transmission of the virus have also been established, transmission through breast milk has been observed (Trevejo, 2000; CDC, 2008)

Lassa fever affects people of all ages and both sexes (WHO, 2005). The disease is mild or has no observable symptoms in about 80% of people infected, but 20% have a severe multisystem disease. Incubation period is 6-21 days. The virus could be excreted in urine for three to nine weeks from infection and in semen for three month (WHO, 2000).

Presentation of cases are often highest during the dry season (January to March) and lowest during the wet season (May to November). However, recent data from Kenema, Sierra Leone show that admissions were highest during the change from the dry to the wet season (Liao, Byl and Adour, 1992).

In Sierra Leone, Lassa fever was responsible for 10-16% of all adult medical admissions in 1987 into hospitals, it was also responsible for 30% of adult deaths and the case fatality rate varied from 12% -23% for the period of 1997 -2002. During pregnancy, high rate of

maternal death (29%) and fatal and neonatal loss (87%) have been recorded, with 20% of all maternal deaths in Sierra Leone being due to Lassa fever (Richmond and Baglole, 2003).

According to WHO (2012), details of outbreaks and subsequent interventional responses to contain it have not been well documented. Unfortunately, with this nature of infection response, it is very difficult to gain experience from previous outbreaks to improve the management of future reemergence (WHO, 2012).

At the beginning of 2012, the World Health Organization (WHO) was notified by the Federal Ministry of Health in Nigeria of an outbreak of Lassa fever (WHO, 2012). Twenty - three states in the country were affected, out of which 87 deaths were recorded. Laboratory analysis confirmed the presence of Lassa virus infection in 108 patients (WHO, 2012). Three doctors and four nurses were reported to be among the fatalities. Over 100,000 lives were lost to Lassa fever between 1969 and 2013 (WHO, 2014). A patient was admitted on 4th January 2014 in Benin with symptoms of severe fever and bleeding which compelled the medical personnel to send blood specimen to the Lassa fever diagnostic Centre where it was confirm positive and the first case in 2014.

The latest outbreak, believed to have started in November, 2015, Nigerian center for disease control reported 21 cases, 4 confirmed cases and 1 death of Lassa occurred between 1st January to 8th March, 2015, out of these 21 cases, Bauchi state had the most recent with 3 confirmed cases and 1 death (WHO, 2015).

Ten of the 36 states of the Nigeria were initially affected which include: Bauchi, Nassarawa, Niger, Taraba, Kano, Rivers, Edo, Plateau, Gombe and Oyo States (FMOH, 2016). As of January 24, 2016, 18 states were following up contacts or had suspected cases with laboratory results pending or laboratory confirmed cases, Response to the outbreak has been prompt, led by the FMOH (NCDC, 2016).The measure initiated includes the immediate release of adequate quantities of Ribavirin (the specific antiviral drug for Lassa fever) to all the affected states. In addition to the following steps were instituted deployment of rapid response teams to all the affected states to assist in investigating and verifying the cases, as well as tracing of contacts; mobilization and training of clinicians and relevant healthcare workers in areas of patient management and care in the affected states, Promoted awareness

campaigns across the nation on the signs and symptoms including preventive measures, fumigation of public places, such as markets, to rid them of rodents and consequently the vector *(multimammate rat)* (NCDC, 2016).

What has been found to be disturbing about the recent outbreak is the unusually high number of deaths compared to previous outbreaks. Food storage and preservation, measures/procedures have been implicated in the outbreak, therefore measures to control the epidemic has also included campaigns to avoid certain preservation methods (Adebimpe, 2015).

Sun-drying of store food produce is a common practice in Nigeria, especially in the Northern parts with characteristically dry and high temperature weather. Sun-drying easily exposes food to contamination by rodents, including the implicated *multimammate rat* (NCDC, 2016).

Gari is a common food in Nigeria made from cassava tubers which can be consumed by simply soaking in cold water or further prepared by cooking in hot or boiling water.The common habit of taking garri soaked in water may favor Lassa fever infection. Many other types of staple foods are also processed in the open sun; these include rice, plantain chips, yam chips and cassava chips, which are processed into rice flour, plantain flour, yam flour, and raw cassava flour (Tomori*et al*., 1988). The amount of heat involved in processing them into edible pastes, may be enough to denature the lassa fever virus, which is heat labile, it is advised that such foods be properly cooked before consumption to avoid infection ((NCDC, 2016).

Risk factors for the transmission of the virus include the use of rat meat as a source of protein by people in some Communities, contamination of exposed food by rat feces and urine, traditional autopsy, where the operator may injure himself with scalpel and contaminate the injury with the blood of the deceased, who may have died of Lassa fever and forceful ingestion of water used in bathing a dead husband by a widow suspected to be involved in his death. In many communities, family members may be forced to drink water used in bathing dead relatives in order to prove their innocence (Inegbenebor et al., 2010).

Bush burning of savannahs may be carried out by meat hungry youths during the dry season, in order to be able to have access to rodents and other animals(Fisher-Hoch, 2005).

In studies carried out in special referral centres in Nigeria and Sierra Leone have result has showed thatlassa fever was responsible for 13% and 30% of adult deaths respectively. The death rates were in adult medical wards where 7% is in Nigeria and 10-16 % in Sierra lone, of the total number of admissions was for lassa fever.

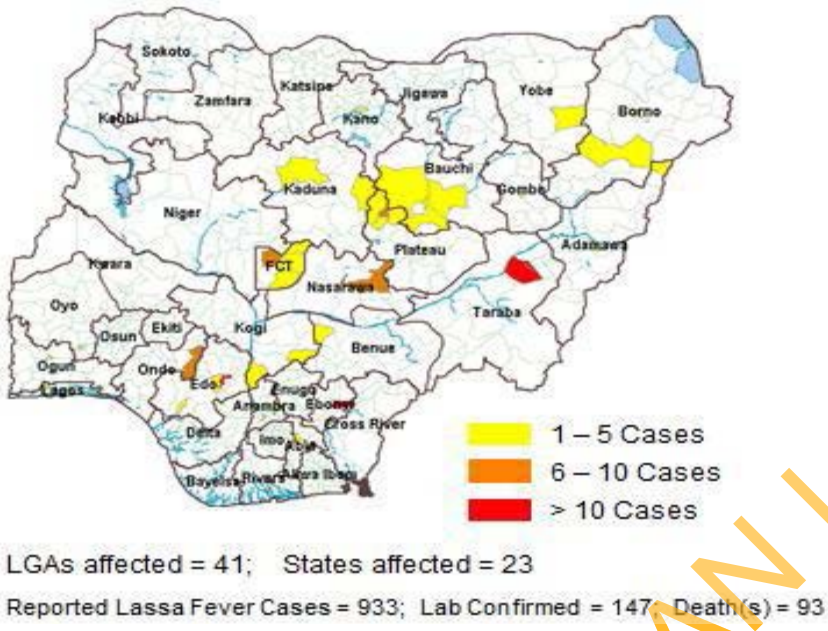

Figure 2.1: Map of Nigeria showing areas affected by Lassa fever - week 01 to 24, 2012

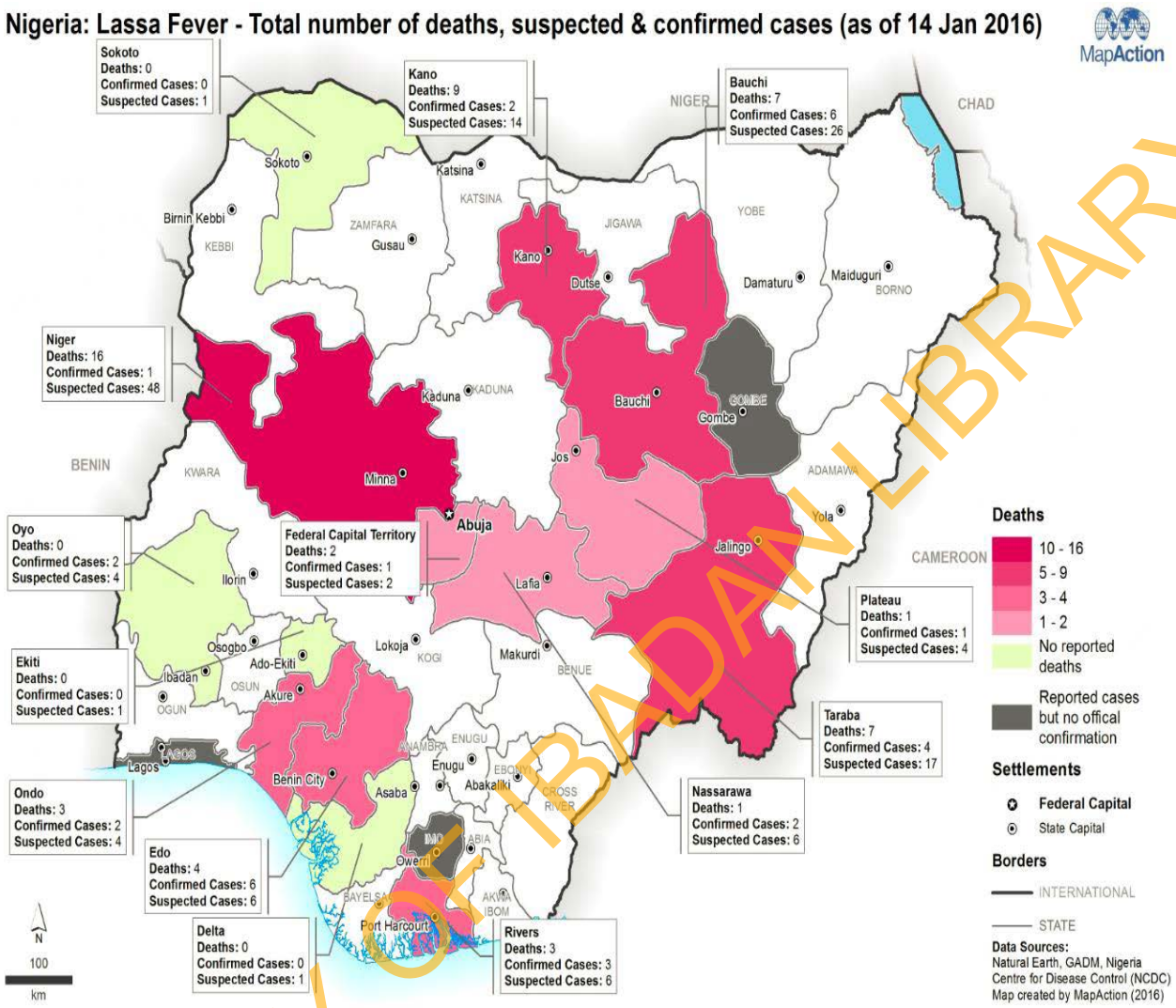

Figure 2.2: Map of Nigeria showing areas affected state by Lassa fever

2.3 Knowledge of Lassa fever

An unpublished report conducted over a six month period in Gwagwalada area council in the Federal Capital territory of Nigeria, to determine the knowledge of lassa fever and the rodent vector, involving two hundred adults comprised of 55.0% males and 45.0% females revealed that 83.5% knew lassa fever virus as a dangerous viral infection while 15.0% were not aware of the the virus. Some 28.0% subjects knew the rodent vector as a rat, 62.0% subjects did not know the rodent vector of the disease. Slightly 51.0% of the subjects knew that the disease was similar to Ebola viral disease while 40.0% respondents did not agree with the similarity (Omowumi, 2006). In a study conducted in Osun state, Nigeria, it was revealed that the case fatality rate in males was 23% compared to women with 44%, though males were four times more commonly affected than females (Yunusa, 2014).

In a survey conducted by Aigbiemolen et al (2012) among primary health care workers in Esan West and Central Local Government areas in Edo State, 100% of their respondents were aware of the disease while about 70% of participants had knowledge about Lassa fever. They also pointed out that health campaigns and awareness programmes were important means of communicating health information and existing knowledge to lay audience. These activities however encourage behavioural changes and are particularly important in the control of infectious diseases such as Lassa fever and Ebola virus (Aigberimolen et al. 2012; Omowumi 2006).

Mmaduike (2012), carried out a survey on Knowledge and attitude of healthcare workers regarding Lassa fever at University of Ibadan Teaching Hospital, it wasrevealed that there was poor knowledge 71.6% of the disease among the study population. This was attributed to low frequency of occurrence of the disease in the area. Consequently on the above, it was revealed that participants in the study demonstrated positive attitude towards Lassa fever reporting and this was also attributed to awareness campaigns that were carried out at that time due to a case of an outbreak admitted to the hospital. Tobin et al. (2013), in one of surveys among primary care providers also reported that 97.0% of their respondents had previously heard of the disease. For the majority 60.8% of those that were aware, fellow colleagues were their sources of information about the disease. Other sources included Radio 6.2%, Television 14.6%, Print media 3.8%, and Public health campaigns and enlightenment programmes 6.2%. This was slightly in opposition to the reports of Aigberimolen et al. 2012,

were the most sources of information were from the mass media and only a few from continuing education and colleagues

Awareness can be described as a precursor to seeking for more indepth knowledge about the core subject under consideration, (lassa fever in this case).

The media and awareness campaign remains one of the important means of disseminating health information and health-related events, although bias of perception may result (Wilson et al., 2004; Young, Norman & Humphreys, 2008).

According to Adebimpe (2015), most studies reviewed did not break down the knowledge of LF into occurrence, causes, transmission and prevention and control. Rather, they addressed generalized knowledge towards LF as a disease. However, less than one fifth of the respondents in the study reviewed had good knowledge in each of the four categories examined. This is rather low when compared with another community-based study in which just under half of the respondents had good knowledge of LF (Richmond &Bagloe, 2003).

When compared with another community-based Nigerian study that reported 7.4% of respondents having good knowledge of lassa fever (Oladeinde, Omoregie&Odia, 2014). While these differences in figures call for concern, they point towards a growing need to step up awareness and, subsequently, in-depth knowledge of LF and rodent control.

A study conducted by Adebimpe, (2015), on knowledge and preventive practices against lassa fever among primary health care workers in Osogbo revealed that 79.3% of the health care workers had heard about Lassa fever. Major sources of information include the TV/radio 40.0% and fellow health care workers 33.3%. One hundred and forty four 48.0% were aware that there was regular epidemics in Nigeria, 18.7% of respondents saw a rodent in their household in the last 24 hours preceding the survey.

It also revealed that 67.7% of respondents had good knowledge of occurrences of Lassa fever. Sixty three percent had good knowledge of causes of Lassa fever. Over 60% of respondents had good knowledge of Lassa fever disease transmission while 56% of respondents had good knowledge of prevention and control of Lassa fever.

2.4. Perception relating to Lassa fever

Perception can be defined as a belief that a certain state of affair exist or is true (regardless of whether it is or not) (Donovan and Harley, 2003). In many cases, an expressed attitude will depend on what perception come to mind when a person is asked about a particular issue (Donovan and Harley, 2003).

In an unpublished research work by Mike (2014), the study revealed that majority 77.0% of respondents had favourable perception about Lassa fever, though, there were perceptions that were unfavourable that could lead to risky practices and further have implications for future outbreaks in Ekpoma. For example, majority 72.1% disagreed with the opinion that witches and wizards were the cause of Lassa fever while eleven point nine percent agreed and 16.0% were indecisive regarding this perception. Also, majority 92.3% were of the perception that the disease was better managed in hospitals than seeking traditional remedy. The high proportion in this study clearly signifies a high index of perception among respondents.

A rumour circulating in Sierra Leone during the Ebola epidemic was that Ebola, or some mutant Lassa-Ebola hybrid, had been created and released from the laboratory, either deliberately or as bio-warfare gone wrong. It is perhaps unique, that an Ebola outbreak occurred in a setting where viral haemorrhagic fevers were already being studied and treated routinely; inviting the question of why Sierra Leone was not better prepared(CDC,2012).

2.5 Prevention Relating to Lassa fever

Lassa haemorrhagic fever is a highly virulent and contagious viral infection. Avoiding contact with the reservoir host (rodents) is the primary mode of prevention from the disease (Ibekwe 2012). However, the wide distribution of *Mastomys*in endemic foci makes control measures of the rodent reservoir somewhat impractical (Keenlyside et al. 1983; Monath et al. 1974; Granjon et al., 1997).These challenges are perhaps due to the geographical distribution of the rodents. Despite the intricacies in observing control measures, efforts can be made to reduce the presence of rodents around human dwellings by observing good household hygienic practices like storing grains and foodstuffs in cover-tight containers, proper disposal of garbage, and general household cleanliness (Inegbenebor, 2010; Ibekwe, 2012). Using rodents as a source of food should not be encouraged. However, trapping and using chemicals in and around homes can help reduce rodent populations as well as maintaining a clean environment and clearing of bushes around homes.

As part of clinical management, all suspected cases and those who test positive of the disease should first be isolated and treated for the disease as quickly as possible (WHO, 2005). Transmissions to other persons should be avoided by instituting strict barrier nursing until the disease runs its course (Fisher-Hoch et al, 2005, McCormick 1987). Preventive measures such as wearing protective gears like face masks, gloves, gowns and goggles should be implemented at all times. Therefore, absolute care should be taken when collecting pathological materials for laboratory investigations (Ibekwe 2012). Correct procedures for transporting materials suspected to contain highly virulent virus or micro-organisms must be observed (McCormick 1987; McCormick et al., 1987).

The prevention of human contact with the Mastomys rodents is an essential factor in the control of Lassa fever, widespread prevention of such contact is presently impractical in the endemic regions of West Africa, therefore, provision of a vaccine for community and hospital use is an imperative public health need (Fisher-Hoch et al. 2000). Currently, there is no vaccine for Lassa fever (Geisbert, Jone, Fritz, Shurtleff, liebscher,Gonzales,Saluzzo and Meunier 2005), but a previous report indicated that a vaccinia virus expressing the Lassa virus glycoprotein protected four non-human primates against lethal challenge with Lassa virus (Fisher-Hoch et al. 1989). This was followed by the finding that single administration of a vaccine expressing the full-length Lassa virus glycoprotein affords protection against Lassa fever in primates, with or without expression of the nucleoprotein (Fisher-Hoch, 2000).

Ibekwe,(2012) in a survey conducted it was revealed that preventive recommendations by respondents for households and communities include protection of all food items from contacts with rodents 66.7%; keeping pets (like cats) in the house 54.7%; proper storage of food items 84.0%; proper disposal of food items and other refuse29.3%; destruction of rats 94.7%; proper waste disposal 88.0%; avoidance of overcrowding 77.3% and personal and environmental hygiene 96.0%.

2.6 Factors affecting the spread of Lassa fever in Nigeria

Urbanization process in many developing counties particularly Nigeria, has not been accompanied with a corresponding supply of adequate amenities, such as modern houses, drainages and other infrastructures (Osuide and Dimuna, 2005). These have created demands

on housing stocks leading to overcrowding, heap of refuse dump and development of slums and squatter settlements which have serious impacts on the sanitation of the urban environment and enormous consequences on the health of the city residents. These conditions leads to rats infestations which serves as a vectors causing diseases such as lassa fever and other deadly diseases which are predominantly practiced in Agbowo community (Osuide, 2006).

Use of rat meat as a source of protein by people in some communities where Agbowo community of Oyo state is not excluded, it was observed that some of the residents in the community uses trap in catching the rats for consumption purposes; contamination of exposed food by rat feces and urine; traditional autopsy, where the operator may injure himself with scalpel and contaminate the injury with the blood of the deceased, who may have died of Lassa fever(Tomori *et al*., 1988).

Corrupt practices by staple food producers, which involve drying cassava flour (garri) in the open air in the daytimeand sometimes at night; this enables all types of rat including *Mastomysnatalensis* to contaminate the flour with their urine or excreta (Fabiyi and Tomori, 1988). This constitutes a public health hazard when the infected cassava flour (garri) is sold to consumers in the market. The common habit of eating garri soaked in water may favor Lassa fever infection. Many other types of staple foods are also processed in the open sun; these include rice, plantain chips, yam chips and cassava chips, which are processed into rice flour, plantain flour, yam flour, and raw cassava flour. Though these are also processed into staple foods such as tuwoshinkafa, plantain based amala, yam based amala and lafun respectively, the amount of heat involved in processing them into edible pastes, may be enough to denature the lassa fever virus, which is heat labile (Tomori *et al*., 1988).

2.7. Theoretical framework

The model that was reviewed and adopted to this study is the Health Belief Model (HBM)

The health belief model is a psycho-social health behaviour change model originally developed to explain and predict preventive health behaviours, particularly in regard to the uptake of health services. The health belief model was developed in the 1950s by social psychologist at the U.S. Public health Service.It remains one of the most well-known models in health behaviour research (Brown, 1998). HBM suggests that people's belief about health problems, perceived benefits of action, barriers to action, and self-efficacy explain

engagement (or lack of engagement) in health promoting behaviour. A stimulus or cues to action must also be present in order to trigger the health promoting behaviour. The theoretical constructs or tenets includes perceived susceptibility, perceived seriousness/severity, perceived benefits, perceived barriers/ constraints, cue to action and self-efficacy.

*Perceived susceptibility***:** It refers to subjective assessment of risk of developing a health problem. HBM predicts that individuals who perceive that they are susceptible to a particular health problem will engage in behaviours to reduce their risk of developing the health problem. Individuals with low perceived susceptibility may deny that they are at risk for contracting a particular disease.

It is sure that when the community members see themselves as a direct recipient of various health implications pose by rats, dirty environment which may leads to the infection of lassa fever, they will consider themselves susceptible to having lassa fever and some other infectious diseases. When they perceived themselves to be susceptible, there is likelihood that they will rise against unhealthy behavior and also initiate preventive measures such as dirty environment, poor hygienic condition and practices that may lead to infestation of rat causing lassa fever within the community. In this while, the socio-demographic characteristics of the community members could serves as modifying factors which will be influenced by variable to measure.

*Perceived severity***:** It refers to subjective assessment of the severity or seriousness of a health problem including its potential consequences. The model proposes that individuals who perceive a given health problem as serious are more likely to engage in behaviours to prevent the health problem from occurring (or reduce its severity). Perception of the residents of the community about the seriousness of the Health impacts associated with lassa fever may influence whether or not to take specific action. If they perceive lassa fever as a serious health risk there is likelihood for all the stakeholders involved in the community to clamour for measures aimed at preventing and curtailing the spread of the disease.

Perceived benefits: Health related behaviours could be influenced by the perceived benefits of taken action. Perceived benefits refer to an individual's assessment of the value or efficacy

of engaging in a given health promoting behaviour to decrease risk of disease.Perception of the community members about the benefits involves in addressing the poor environmental conditions, overcrowding, housing pattern relating to indiscriminate dumping of refuse and unhealthy behavioural practice in the community which can promote the breeding of lassa fever associated rats which has great potentials in influencing whether action will be taken or not. One of the perceived benefit used in this study is storing of food in well covered containers can prevent Lassa fever

Perceived barriers or constraints: Health related behaviours are also a function of perceived barriers to taking action. Perceived barriers could refer to an individual's assessment of the obstacles to behaviour change. Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health promoting behaviour.Perception of the community members and other stakeholders is consider if the cost of taking healthful actions on the behavior is of benefit to them or the behaviour that promote infestation of rats in the community outweighed that of the benefitt. When adequate information orientation and education about health impacts of lassa fever are provided, there could be prompt response to encouraging, environmental sanitation and practices that prevent the infestation of rats in the community thereby leading to prevention of lassa fever in the community.

Cues to action: the model posits that a cue or trigger is necessary for promoting engagement in health promoting behaviours. Cues to action can be internal or external. Physiological cues e.g., pains and symptoms symptoms are example of internal cues to action. Increase in the knowledge and awareness of community members, cultural practices etc through mass media such as television, radio, newspaper, information from witnesses on the adverse effect of lassa fever in the community are examples of cue to initiating action. These will trigger readiness to act and curtail the activities that often leads to the spread of lassa fever in the society, community and the nation at large.

Self-efficacy: This refers to an individual's perception of his or her competence to successfully perform behavior or task. Self-efficacy was added to the HBM in an attempt to better explain individual differences in health.The community member and all other

stakeholders see the confidence in themselves to take necessary healthful actions. The community member shows high confidence levelwhich enables them kick against indiscriminate dumping of refuse, poor sanitation process and unhealthy behavior and encourages the residents of the community to embrace healthy practices that promote good health.

Conceptual framework of Health Belief on Lassa fever

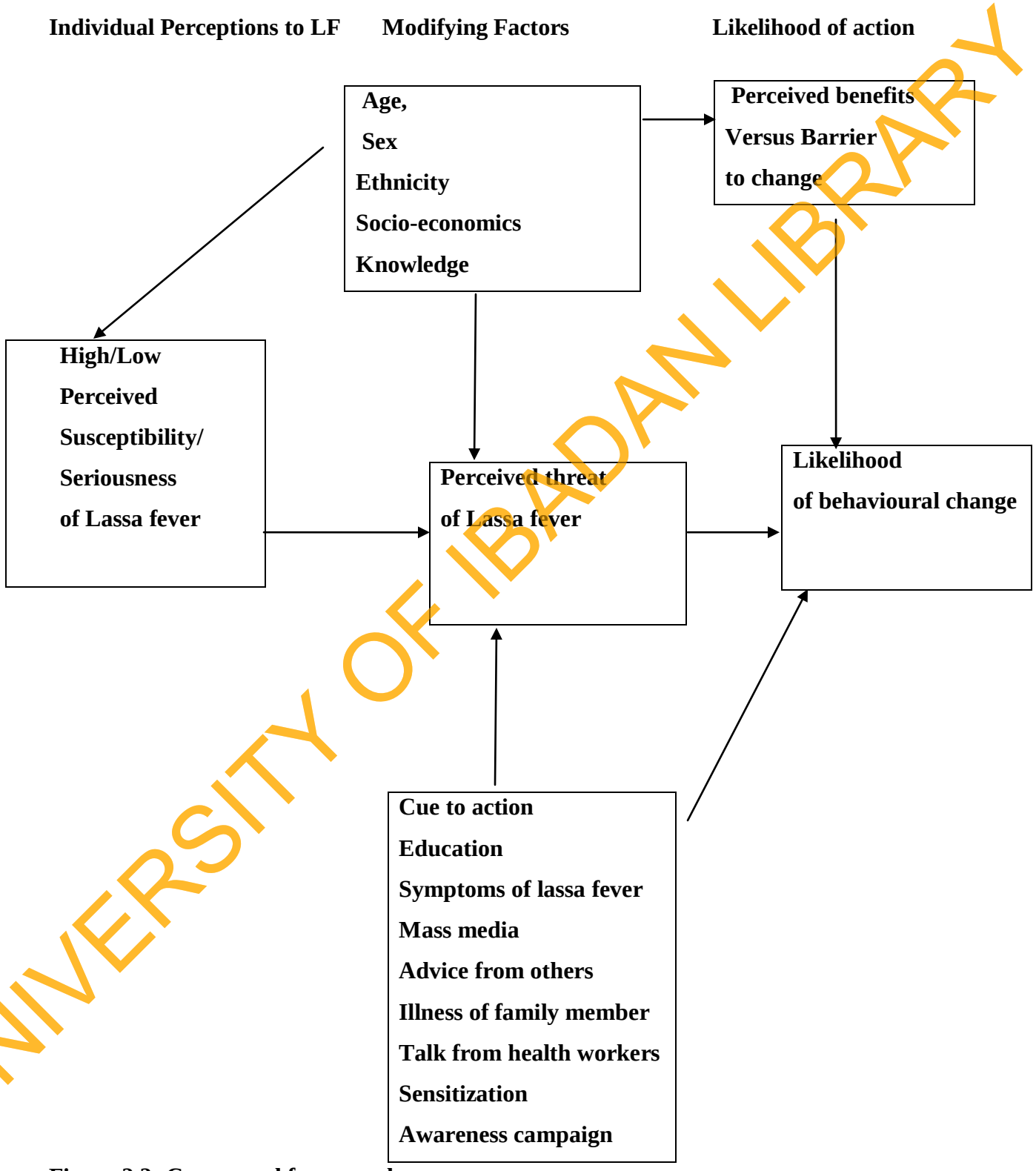

Figure 2.2: Conceptual framework

CHAPTER THREE

METHODOLOGY

This section deals with the following research design and scope; study population; sampling technique; methods and instruments for data collection; procedure for data collection; as well data management and data analysis

3.1. Study design and Scope

The descriptive cross-sectional study design type was adopted for this study. This method is appropriate for this study because it is an effective way of collecting data from a population within a given short period of time (Kothari, 2004). The study is limited in scope to the assessment of the knowledge, perception and practice of residents of Agbowo community relating to lassa fever, Ibadan, Oyo state, Nigeria

3.2. Description of study setting

Agbowo is community situated in Ibadan North Local Government Area which was created by the then Federal Military Government of Nigeria led by General Ibrahim BadamosiBabangida on 27th September 1991. The Local Government Area was carved out along with others from the defunct Ibadan Municipal Government.

According to history *Agbowo*was initially an outskirt of Ibadan, it was revealed that origin of *Agbowo* community can be traced back to over 100 years ago. It was reported in those days, there were three major routes to Ibadan which converge at Dugbe. These were; Abeokuta, Ibadan road, Oyo to Ibadan road, and Ife -Ibadan road all these three major roads interlinked one another at the area now known as *Agbowo*. To gain passage through this area, merchants and travelers had to pay a little amount of money as a toll fee. This is how the name '*Agbowo*' which means "to collect money" in Yoruba dialect eventually became the name of the community. It was formerly a revenue arena where people coming from outside Ibadan will have to stop and pay money before entry.

Agbowo which is located in North East of the Ibadan North Local Government Area of Oyo State is in ward 12 of the Local Government Area. The community is bounded by other communities such as Ojoo (Agbowo North), Sango (Agbowo South West) and Bodija (Agbowo South East). Between early 1920s and 1940s, there were 14 villages in Agbowo. Out of these villages are Abadina which is the present University of Ibadan. As a result of the presence of University of Ibadan, Agbowo has become a popular area both within and

outside Oyo State. Currently Agbowo community has 14 local administrative zones and each of the zones has an executive body called Landlords' Association and it is headed by a chairman. The 14 zones are as follow ;*Apata, Agbegba, Ajekunle, Aanuoluwapo, Ajetumobi, Barika, Ifelodun / Kajola, Ifeoluwa, Ilupeju, Ifedore, Oke-ayo, Ojokondo, Okeola, Jalesanmi*. The 2006 National Population Census provisional results indicated that the population of Agbowo was more than 65,000. Fifty percent of the total population was males while 49.9 percent were females. The community lies on the Latitude 6.8049 and Longitude 3.561. The area presents an undiluting topography with a stream colted cutting across the community.

It was observed and documented during the field-work activities in Agbowo community that there are alots of overcrowding housing pattern which could promote the breeding of rats or infestation of rats in the community, the drainage system in the community is nothing to write home about. The community is very prone to flooding due to lack of proper drainage system in the community, dumping of refuse is on the increasing rate as many of the houses in the community disposes their refuse indiscriminately which were some of the factors which promote the breeding of the vectors carrying infectious diseases such as lassa fever.

It was also reported that the major market within the community is the Bodija market which shared her boundary with the community thereby serves as business enterprise for the residents of Agbowo. As a result of this, most dirt generated in the market was shared between agbowo and the market and this could promote the infestation of rats in the community.

Agbowo has two Primary Healthcare Centres; (Primary Healthcare Centre at Aba Apata and Primary Healthcare Centre at Barika) which cover Agbowo and part of Bodija. Apart from the Government owned Primary Healths Care Centres, there are other private hospitals which provide health care services for the community members.

3.3. Study population

The population for this study consistedof male and femaleadults from 25 years and above.

3.4. Sample size determination and Sampling size

The sample size for this study was estimated using the Leslie Kish formula for single proportion which is as follows:

$$n = \frac{Z_{\alpha}^2 pq^2}{d^2}$$

Where,$N^{=}$ Minimum sample size required

Z= Standard normal deviation set at 1.96 normal interval

P= the prevalence of lassa fever according to Ute Igbenebor, (2012) in Nigeria is 21%

Q= proportion of lassa fever under investigation

q = 1- p = (1-0.21) =0.79

d = degree of precision taken as 5% (0.05)

$$N = \frac{1.96^2 \times 0.21 \times 0.79}{0.05^2}$$

$$N = \frac{3.8416 \times 0.1659}{0.0025}$$

$$N = \frac{0.6373214}{0.0025} \quad N = 254.92856 \approx 255$$

The 10% non-response/attrition was added to the calculated sample size

ie $\frac{10}{100} \times 255 = 26$

Therefore, 26 was added to the calculated sample size to make the sample size (N=255+26=281)

3.5.Sampling Procedure

The respondents were drawn through a purposive sampling technique since the total number of people living there was not available, 276 respondents were successfully selected within the 12 street in the zone through the help of the chairman and the health committee in the zone as well as the research assistants by sampling houses in each street.

The zone comprised of 12 streets which are Adebayo, Adegbite, Adesola, Fadeyi, Irawo, Iroko, Irepodun, Olayinka, Odekunle, Olugbodi, Orisun, and Hostel.

3.6. Inclusion and Exclusion Criteria

Inclusion Criteria

I. Those who participated in this study consisted of men and women who were presently residing within the study area and have lived in the area for a minimum of one year.

II. Young adults aged 25 years and above

Exclusion Criteria

Those that were excluded from participating in the study were

I. Respondents who did not give their consent to participate in the study
II. Respondents who were not residents in the community for up to a year

3.7. Methods and Instrument for data collection

A validated self-developed questionnaire prepared in both English and Yoruba version was used. The questionnaire contained both open-ended and closed-ended questions. It consists of the following sections;

a. Socio-demographic characteristics
b. Knowledge of residents of Agbowo community on Lassa fever
c. Perception of residents of Agbowo community on Lassa fever
d. Practice of residents of Agbowo community on lassa fever

The section on knowledge included a twenty eight (28) point's knowledge scale on lassa fever. Using this scale, knowledge score ranges from developed to score the knowledge of respondents on Lassa fever. The score point was categories as 20-28, 14-19 and <14 was categorized as poor fair and good respectively. The instrument was designed in English and was translated to Yoruba by a language expert; it was also translated back to English to ensure accuracy of translation.

3.8. Recruitment of Research Assistants, Validity and Reliability

Four research assistants (males and females) were recruited to assist in data collection. The research assistants were trained for the period of two days by the researcher on the use of the instrument. They were university graduates who resided within the Ibadan North Local Government Area. This was done because already familiar with the community and would not encounter major challenges relating to the recruitment and interviewing of eligible respondents.

3.9. Validity of the Study

The instrument was presented to the researcher's supervisor and other lecturers in the Department of Health Promotion and Education, University of Ibadan, Ibadan for review so

as to ensure content and construct validity. Comments and suggestions from these experts were used to improve the quality of the instruments.

The instrument was given to the experts in the faculty of art for translation from English to Yoruba version and to another expert from Yoruba back to English to ensure consistency and reliability of the instrument before going to the field for administration for data collection.

3.10. Reliability of the Study

In order toensure that the instrument was reliable, 10% of the sample population (28) was pretested. The pretest took place at Eleyele. Eleyele community residents shared similar socio-demographic characteristics with the actual study population. (ie in Agbowo). Copies of the pretested questionnaire were cleaned, coded and entered into the computer, facilitated by use of SPSS; the reliability of the questionnaire was determined using Cronbach's Alpha model techniques, of SPSS (Version 20). Using this approach, a score of 0.5 and above deemed to be reliable,the obtained reliability coefficient was 0.920 implying that the instrument was very reliable.

3.11. Data Collection Process

The researcher obtained a signed letter of introduction and consent from the Head of Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan. The letter was taken to the study site for authentication of data collected and the assistance provided by the community chairman. The study was carried out within a space of two and half weeks in Aanuoluwapo zone of *Agbowo* community. Aanuoluwa Landlords meeting was equallyattended after meeting with the chairman prior to the commencement of the study to formally inform them of the purpose of being in the meeting. The objectives and importance of the study to the community were clearly explained to them. A total of **280** questionnaires were administered, but **276** valid questionnaires were retrieved due to attrition and incompleteness.

The questionnaires were administered at the selected households visited in the evenings between 5.00pm and 7:00pm. Except for Saturdays where data was collected both in the mornings and evenings. Every household selected for data collection was visited and

participants were properly greeted upon reception. A quick rapport was established with the participant. Consent of the participant was sought before administering the questionnaire after explaining to them the purpose of the research, time that would be spent and benefits of the research.

3.12. Data management analysis and presentation

The reseacher checked all copies of administered questionnaire one after the other for the purpose of completeness and accuracy. A serial number was assigned to each questionnaire for easy identification and for correct data entry and analysis. A coding guide was developed this was used to facilitate the entry of the data into a computer for analysis. The data were analyzed using descriptive statistics, chi-square. The generated results of the study are presented in tables and charts in chapter four (4).

3.13. Ethical Consideration

Ethical approval was obtained from the Oyo State Ministry of Health Ethical Review Committee. The committee helped to ensure that the research work conforms to the generally accepted scientific principles and international ethical guideline required in human subject research.

The nature, purpose and processes involved in the study were well explained to the participants with emphasis on confidentiality, privacy and anonymity of information provided. In other to ensure anonymity of responses, code numbers were given to each participant; any form of identification was excluded from the questionnaire. Ethical consideration relating beneficence, non-maleficence, respect for persons and justice were ensured.

Introduction was done by the researcher and the purpose of the study was explained to the eligible respondents informing them of their voluntary participation in the study and their ability to quit the study at any point in time they wish to. Their oral and written consent were obtained before administering the questionnaire to them

3.14. Limitation of the Study

In an effort to administered the questionnaire to the respondents' in aanuoluwapo, some of the respondents displayed an hostile behavior while some insisted on filling the questionnaire due to the absence of some households at the residential zonal meeting that took place at the chairman's house where proper introduction of the researcher and the purpose of research work was done to the people in the community.

Some of the respondents collected the questionnaires and asked the researcher to retrieve it later, some were not well filled while some were not returned but through the help of the community chairman and the youth leader in the community, majority of the questionnaires were administered and were retrieved.

CHAPTER FOUR

RESULTS

4.1 Respondents' Socio-Demographic Characteristics

In this section, results of respondents' socio-demographic characteristics are presented in table 4.1 and 4.2.Respondent's age ranged from 25-45 years and above and a mean age of 35.8±15.5, majority of the respondents(56.2%) being in the age range of 25-29. Majority of the respondents (60.9%) were married while few (39.1%) were single, (56.5%) of the respondents had tertiary education, followed by secondary education (41.7%) while those that had primary education (1.4%) and no formal education accounted for (0.4%). Majority of the respondents (70.3%) were male while female accounted for (29.7%). Majority of the respondents (81.6%) were from monogamous family while (18.4%) were from polygamous family (see table 4.1 and 4.2 for more details). However, most (38.6%) of the respondents had 1-2 children ever born by them and the mean number of the children was 7.9±2.7, the mean family size of the respondents was 8.3±3.5 with most (30.8%) comprised 1-3 in the family and (16.3%) of the respondents had children who lives with them and the mean number of children born who lives with respondents was 5.7±2.7. (seeFigure 4.1, 4.2 and 4.3 for more details)

Table 4.1: Respondents' Socio-demographic Characteristics

N= 276

Characteristics	N	(%)
Age (in Years)		
25-29	155	56.2
30-34	80	29.0
35-39	18	6.5
40-44	11	4.0
45 and above	12	4.3
Sex		
Male	194	70.3
Female	82	29.7
Religion		
Christianity	254	92.0
Islam	8	2.9
Traditional	14	5.1
Ethnicity		
Yoruba	142	51.4
Hausa	2	0.7
Igbo	77	27.9
Others	55	19.9
Marital Status		
Single	108	39.1
Married	168	60.9
Level of education		
No formal education	1	0.4
Primary	4	1.4
Secondary	115	41.7
Tertiary	156	56.5

Occupation		
Civil Servant	50	18.1
Artisan	29	10.2
Fashion Designer	12	4.3
Contractor/Business	109	39.5
Unemployed	17	6.2
Banker	10	3.6
Students	48	17.4
Farmer	7	2.5

Mean age 35.8±15.5

Table 4.2: Family type and living situation of the respondents

N=276

Characteristics	N	(%)
Family Type (n=201)		
Monogamous	164	81.6
Polygamous	37	18.4
Types of resident (N=276)		
Self- contained flat	214	77.5
Living with other tenants	62	22.5
Living with co-tenants (n=196)		
1-2	103	52.6
3-4	42	21.4
5-6	51	26.0

n=46

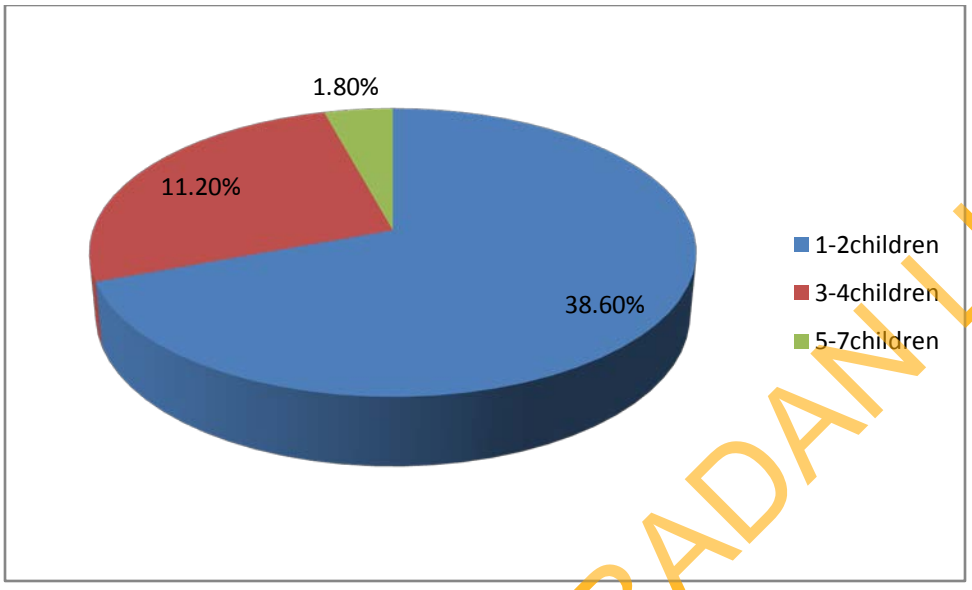

Figure 4.1 Children ever born by respondents

Mean 7.9±2.7

n=50

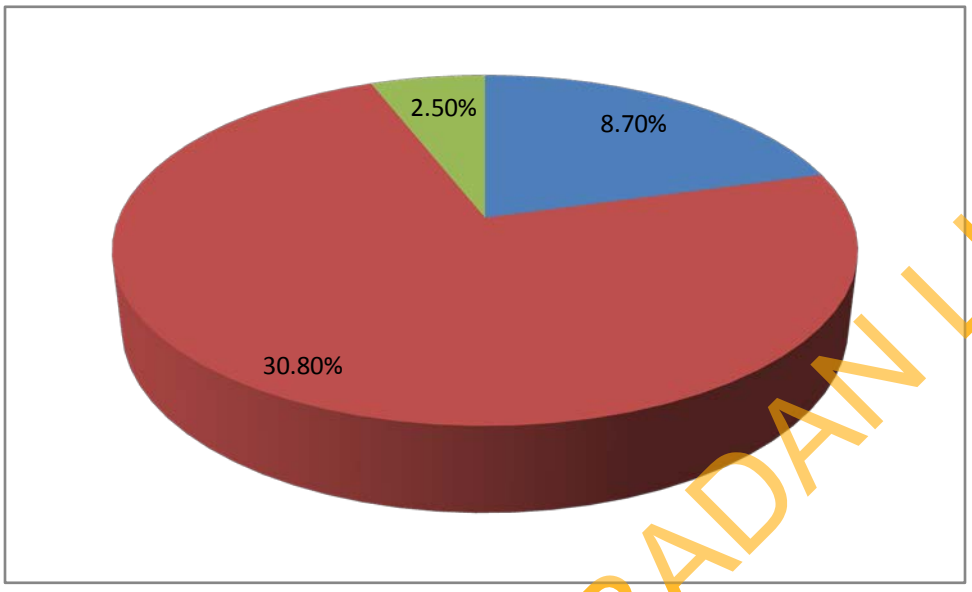

Figure 4.2: Respondents' total family size

The mean family size of the respondents is 8.3 ± 3.5

n=42

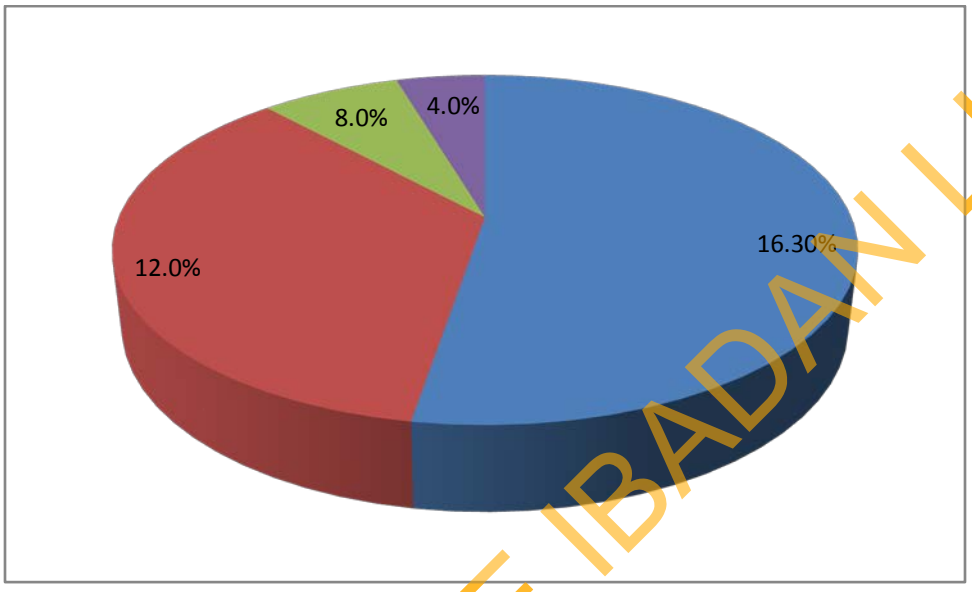

Figure 4.3: Proportion ofchildren living with respondents

Mean 5.7± 2.7

4.2 Respondents' awareness, sources of information and knowledge of transmission of LF

Most respondents (98.9%) reported that they had heard of lassa fever (LF), with four highest reported sources of information on LF from the friends/neigbhours (87.0%), internet (85.5%), health workers/ centre (85.1%) and from awareness campaign (96.7%) ((See table 4.3 for details). Table 4.4 highlights respondents' knowledge of the disease condition which presents with a given signs and symptoms, high fever accounted (93.1%), sore throat (58.3%), cough (70.3%), facial swelling (60.9%), mouth bleeding (72.5%), nose bleeding (76.8%), back pain (38.4%), chest pain (35.1%) and vomiting (68.5%).

Respondents' categories of knowledge scores were however determined using a 28-point scale. Respondents who scored between 0 – 13, 14 – 19 and 20 – 28 were graded as having poor, fair and good knowledge respectively. Half of the respondents (50.0%) had good knowledge of LF, (31.2%) had fair knowledge of LF and (18.8%) had poor knowledge of LF respectively.

The association between respondents' categories of knowledge scores and socio-demographic characteristics are presented in the table 4.5 and 4.6. The table reveals that there is a significant association between respondents' knowledge scores and their level of education and religion status ($P \leq 0.05$). Table 4.8 shows respondents mean knowledge scores by their age, marital status, gender, awareness and level of education. The table revealsthat the relationship between respondents' age and mean knowledge score was statistically significant at $P \leq 0.05$. Similarly, gender, awareness status and level of education of respondents' were statistically significant.

Table 4.3: Respondents' awareness and sources of information of LF

Awareness related variable	No	%
Ever heard of LF (n=276)		
Yes	273	98.9
No	3	1.1
Sources of information (n=276)		
Posters	211	76.4
Billboards	190	68.6
Friends/neigbours	240	87.0
Health workers/Centre	235	85.1
Awareness campaign	267	96.7
Internet	236	85.5

*Multiple responses present

Table 4.4: Respondents' knowledge of signs and symptoms of LF

N=276

Signs & Symptoms of LF	N	%
High fever *	257	93.1
Sore throat*	161	58.3
Cough*	194	70.3
Facial swelling*	168	60.9
Abdominal pain	186	67.4
Mouth bleeding*	200	72.5
Nose bleeding*	212	76.8
Back pain*	106	38.4
Chest pain*	97	35.1
Vomiting*	189	68.5
Jaundice	60	21.7
Deafness	1	0.4

*Correct responses

Table 4.5: Association between respondents' categories of knowledge scores and age, sex, religion, ethnicity and marital status

Socio-Demographic Characteristics	Poor Knowledge n (%)	Fair Knowledge n (%)	Good Knowledge n (%)	X^2	df	P-value
Age						
25-29	8(5.2)	27(17.4)	120(77.4)	10.378	8	0.240
30-341(1.3)	8(10.0)	71(88.8)				
35-39 1(5.6)	5(27.8)	12(66.7)				
40-44	0(0.0)	2(18.2)	9(81.8)			
45 and above	0(0.0)	4(33.3)	8(66.7)			
Sex						
Male	7(3.6)	38(19.6)	149(76.8)	4.035	2	0.133
Female	3(3.7)	8(9.8)	71(86.6)			
Religion						
Christianity	7(2.8)	41(16.1)	206(81.1)	15.121	4	0.004
Islam	2(25.0)	3(37.5)	3(37.5)			
Traditional	1(7.1)	2(14.3)	11(78.6)			
Ethnicity						
Yoruba	8(5.6)	22(15.5)	112(78.9)	5.776	6	0.449
Hausa	8(10.0)	30(40.0)	22(50.0)			
Igbo	2(2.6)	14(18.2)	61(79.2)			
Others	10(3.6)	9(16.7)	62(79.7)			

Marital Status						
Single	7(6.5)	21(19.4)	80(74.1)	5.529	2	0.063
Married	3(2.8)	25(14.9)	140(83.3)			

Fisher's exact test was used

Mean age is 35.8±SD 15.5

Table 4.6: Association between respondents' categories of knowledge score and socio-demographic characteristics of level of education, occupation and types of house living in

Socio-Demographic Characteristics	Poor Knowledge n (%)	Fair Knowledge n (%)	Good Knowledge n (%)	X^2	df	P-value
Level of Education						
No formal education	3(1.8)	25(14.9)	140(83.3)	12.174	6	0.002
Primary	1(25.0)	1(25.0)	2(50.0)			
Secondary	3(2.6)	22(14.1)	128(82.1)			
Occupation						
Civil servant	2(4.1)	8(16.3)	39(79.6)	35.906	22	0.031
Trading	3(12.5)	6(25.0)	15(62.5)			
Fashion designer	1(8.3)	3(25.0)	8(66.7)			
Business	109(39.5)	14(17.1)	21(43.4)			
Farmer	7(28.0)	2(28.6)	21(43.4)			
Banker	8(66.7)	1(8.3)	3(25.0)			
Students	1(2.1)	3(6.3)	44(91.7)			
Unemployed	2(11.8)	5(29.4)	10(58.8)			
Types of house living in						
Self-contained flat	7(3.3)	35(16.4)	50(79.7)	0.767	2	0.805
Living with tenants	3(4.8)	11(17.7)	48(77.4)			

Fisher's exact test was used

Table 4.7: Distribution of respondents' knowledge scores by age

Age group in years	Categories of Knowledge score			
	Poor	Fair	Good	Total
25-29	8	27	120	155
30-34	10	30	40	80
35-39	1	5	12	18
40-44	4	5	2	11
45 and above	2	3	7	12

Figure 4.4: Categories of Knowledge scores among respondents

Good Knowledge: (20-28)

Fair Knowledge: (14-19)

Poor Knowledge: (0-13)

Table 4.8: Comparison of respondents mean knowledge score by socio-demographic characteristics

Socio-demographic characteristics	N	$\bar{X}$	Sd	Mean difference	t-test	P-value
Age						
≤35	235	2.1915	0.77455	0.80851	119.386	.000*
>35	41	3.0000	0.0000			
Marital status						
Single	108	2.2130	0.82088	0.16204	3.071	0.81
Married	168	2.3750	0.73156			
Gender						
Male	194	2.2938	0.80237	0.05984	5.676	.002*
Female	82	2.3537	0.69161			
Awareness						
Ever heard	273	2.3040	0.77119	0.69597	11.882	.001*
Never heard	3	3.0000	0.0012			
Level of Education						
Secondary	115	1.5478	0.49989	1.30474	1.30474	.000*
Tertiary	156	2.8526	0.35568			

***Significantat(p<0.05)**

4.3 Perception relating to Lassa fever

Table 4.10 shows respondents' perception to LF. Half of the respondents (58.7%) reported that lassa fever can mainly be caused by *arenaviruses* compared with those who were of the view that lassa fever is not mainly caused by *arenaviruses* (13.4%) while those who neither agree nor disagree but were undecided accounted for (27.5%) of respondents, (52.2%) of the respondents reported that food storage practices can leads to occurrence of LF while (46.4) disagree that food storage practices cannot leads to occurrence of LF (see Table 4.10 for more details)

Similarly, table 4.10 shows respondents perception relating to perceived vulnerability to and seriousness of LF. Majority (65.6%) of the respondents disagree that LF is only common among rural dwellers while respondents who agree and were undecided shared equal percentage (11.2%) and (11.2%) respectively. Majority of the respondents (80.8%) agree that LF is better managed in hospitals compared with management by herbalist while (18.5%) accounted for respondents who disagree, half (56.2%) of the respondents reported storing of food in well covered container can prevent LF while (40.9%) of the respondents disagree (see Table 4.11 for more details).

Majority (67.8%) of the respondents reported that rats were very common in their houses while (25.0%) reported rats were not common in their houses (see Figure 4.5 for details)

Table 4.9: Respondents' perception relating to cause and transmission of LF

Perception relating to cause and treatment	**Agree** n (%)	**Undecided** n (%)	**Disagree** n (%)	**Total**
Lassa fever is a disease that can be caused by any virus	24(8.7)	73(26.4)	179(64.9)	276
The mosquitoes that spread malaria can also spread lassa fever	42(15.2)	116(42.0)	14(5.1)	172
Lassa fever cannot be transmitted from person to person	14(5.1)	116(42.0)	146(52.9)	276
Eating any food contaminated with of rat Cannot lead to lassa fever	116(42.0)	132(47.8)	28(10.1)	276
LF can be spread by coackroaches	30(10.9)	193(69.9)	53(19.2)	276
LF is mainly caused by arenaviruses	162(58.7)	76(27.5)	37(13.4)	276
LF can be spread through the air we breathe	66(23.9)	150(54.3)	60(21.7)	276
The cause of LF is not yet known	1(.4)	241(87.3)	34(12.3)	276
LF is a punishment from gods for abandoning their traditional Practices or culture	14(5.1)	240(87.0%)	22(8.0)	276
LF can only spread in poor villages	3(1.1)	249(90.2)	24(8.7)	276

LF can be contacted from domestic animals such as goats, dogs, sheep and fowls	13(4.7)	55(19.9)	208(75.4)	276
One cannot prevent LF because it is caused by supernatural forces	48(17.4)	6(2.2)	222(80.4)	
Food storage practices can leads to Occurrence of LF	144(52.2)	4(1.4)	128(46.4)	276

Table 4.10: Respondents' perception relating to perceived vulnerability to and seriousness of LF

Perception relating to Vulnerability/Seriousness	**Agree** n (%)	**Undecided** n (%)	**Disagree** n (%)	**Total**
Vulnerability				
LF is a disease for adults alone	18(6.5)	208(75.4)	50(18.1)	276
LF is only common among rural dwellers	31(11.2)	31(11.2)	181(65.6)	276
Only children readily get Lassa fever	15(5.4%)	25(9.1)	236(85.5)	243
LF cannot occur in our community	5(1.8)	20(7.2)	251(90.9)	276
LF affects only children and elderly	30(10.9)	187(67.8)	59(21.4)	276
Members of my family cannot get LF	59(21.4)	16(5.8)	201(72.8)	276
Seriousness				
LF is a mild disease	15(5.4)	43(15.6)	218(79.0)	276
I can never be susceptible to LF	42(15.2)	6(23.9)	168(60.9)	216

N=276

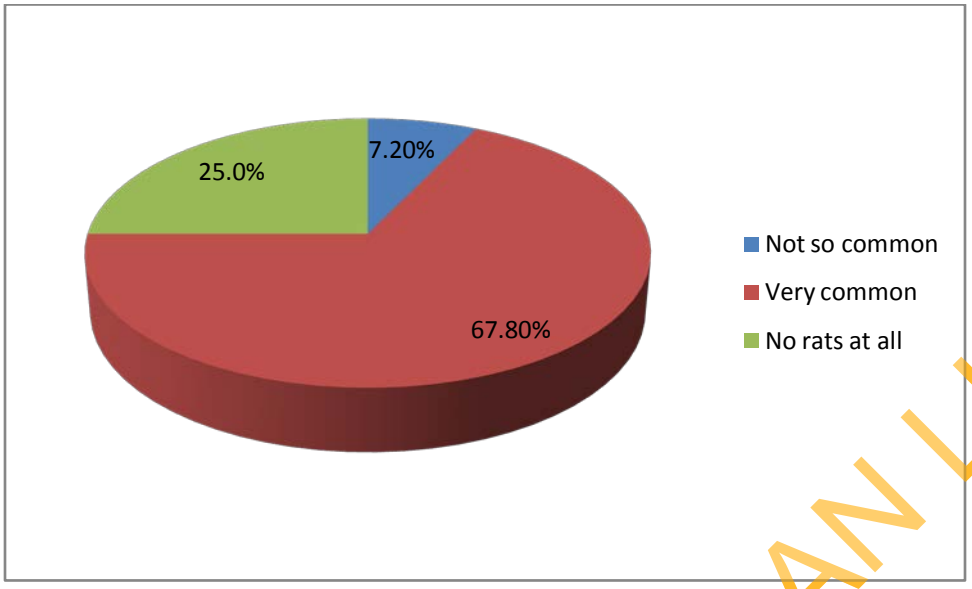

Figure 4.5: Respondents' perception relating to how common rats were in their houses

4.4 Respondents' food related practices

Respondents who reported that food items reportedly consume by rats in their house accounted for yam (14.1%), bread (29.3%), pepper (7.2%), maize (7.6%), banana (1.8%), rice (24.3%) and spaghetti (17.0%). Majority (67.8%) of the respondents reported that they would throw away the food reportedly eaten by rats in their houses away, (25.0%) of the respondents reported that they would cut the affected part while (3.3%) of the respondents reported that they would eat it like that

Table 4.14 highlights what respondents would do to food items reportedly eaten by rats in their houses. (68.8%) of the respondents reported that they will throw the food away, (25.0%) of the respondents reported that they would cut the affected part while (3.3%) reported that they would eat the food like that (see Table 4.14 for details)

Half of the respondents (50.0%) accounted for frequently spreading of food items in an open apace to dry, (24.3%) reported occasionally spreading of food items in an open space to dry, (17.0%) of the respondents reported rarely spreading of food items in an open space to dry and (1.1%) of the respondents reported never spreading of food items in an open space to dry (See Table 4.14 for details)

Table 4.13: Food items reportedly consumed by rats in respondents' house

N=276

Food items consume by rats	N	(%)
Yam	39	14.1
Bread	81	29.3
Pepper	20	7.2
Maize	21	7.6
Banana	5	1.8
Rice	67	24.3
Spaghetti	47	17.0

*Multiple response present

Table 4.14: What respondents would do to food items reportedly eaten by rats in their houses

N=276

Food items (what was done to it)	**N**	**(%)**
Onion		
Throw it away	187	67.8
Cut the affected part	69	25.0
Eat it like that	20	7.2
Bread		
Throw it away	36	13.0
Cut the affected part	231	83.7
Eat it like that	9	3.3
Fish		
Throw it away	111	40.2
Cut the affected part	162	58.7
Eat it like that	3	1.1
Yam		
Throw it away	91	33.0
Cut the affected part	174	63.0
Eat it like that	11	4.0
Meat		
Throw it away	111	40.2
Cut the affected part	162	58.7
Eat it like that	3	1.1
Beans		
Throw it away	92	33.3
Cut the affected part	153	55.4
Eat it like that	31	11.2

Garri		
Throw it away	1	0 .4
Cut the affected part	31	11.2
Eat it like that	244	88.4

Table 4.15: Respondents' food processing and Practices relating to LF

N=276

Food processing & practices	**Frequently**	**Occasionally**	**Rarely**	**Never**	**Total**
N (%)	**N (%)**	**N (%)**	**N (%)**		

Spreading of food items in an open space to dry	138(50.0)	67(24.3)	47(17.0)	3(1.1)	255
Living some food items in the sun to dry	134(48.6)	87(31.5)	27(9.8)	28(10.1)	276
Store food in a bucket with a cover	49(17.8)	44(15.9)	123(44.6)	60(21.7)	276
Store food in a bucket without a cover	18(6.5)	87(31.5)	93(33.7)	78(28.3)	276
Store food in basin with cover	(18.5)	74(26.8)	109(39.5)	42(15.2)	276
Store food in basin without a cover	19(6.9)	69(25.0)	84(30.4)	104(37.7)	276
Store food in bags/sacks without a the mouth tied	107(38.8)	82(29.7)	26(9.4)	50(18.1)	265
Store food in bags/sacks with the mouth tied	144(52.2)	55(19.9)	30(10.9)	47(17.0)	276
Store food in pot with cover	73(26.4)	21(7.6)	135(48.9)	47(17.0)	276
Store food in pot without a cover	67(24.3)	35(12.7)	124(44.9)	50(18.1)	276
Leave food on shelves in the store	55(19.9)	30(10.9)	144(52.2)	47(17.0)	276
Leave food on the floor of the store	63(22.8)	84(30.4)	85(30.8)	44(15.9)	276

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1. Respondents' socio-demographic information

Level of the education of the respondents' shows that (51.5%) of the respondents had tertiary education, followed by secondary education (41.7%), followed by primary education (1.4%) while those that had no formal education were (0.4%). The study reveals that the level of education of the respondents shows that half of them have had very good forms of education while only few reported having no formal education.

The study revealed that the age of the respondents ranged from 25-65 years and above with the mean age of 35.8±15.5. It also reveals the mean number of the proportion of children living with respondents which was 5.7±2.7 and 8.3±3.5 as the mean family size of the respondents. The study also revealed that most (70.3%) of the respondents were male while (29.7%) were female,this shows that Lassa fever affects all age and sexes.

The study byMonson *et al* (2000) supported the result of the findings that Lassa fever occurs in all age groups and sexes which supported the findings in this study, and not surprisingly given the ubiquity of the rodent host, antibody prevalence increases with age; this is compatible with virus transmission to humans in and around the homes where the Mastomys live. Estimates of antibody prevalence range from 4%–6% in Guinea to 15%–21% in Nigeria, though in some villages in Sierra Leone as many as 60% of the population have evidence of past infection. Among hospitalized patients, the mortality is 17% if untreated. In endemic areas, Lassa fever may account for about 30% of adult deaths. Lassa fever also affects children, with considerable mortality in infants.

Similarly,WHO (2005) also revealed that Lassa fever affects people of all ages and both sexes.

Respondents' age in this study ranges from 25 – 65 years with a mean age of 35.8 ± 15.5. This was found to be higher than the mean age documented in a similar study carried out by Tobin, Asogun, Odia & Ehidiamen (2013) even though their study was among health workers.

The findings in this studyrevealed that (81.6%) of the respondents were from monogamy family while (18.4%) of the respondents were from polygamous family. This study also

revealed that more than half of the respondents (60.9%) were married while (39.1%) of the respondents were single, it was also observed in this study that (77.5%) of the respondents were living in a self-contained flat while (22.5%) of the respondents were living with other tenants.

5.2 Awareness and Knowledge of Transmission of LF

The study reveals that majority (98.9%) claimed to have ever heard about Lassa fever and their common sources of information were; Posters (76.4%), Billboards (68.6%), Friends/neighbours (87.0%), Health workers/Centre (85.1%), awareness campaign (96.7%) and Internet (85.5%).This finding in this study shows that 98.9% of the respondents have heard about Lassa fever which when compared with the recent study by Tobin et al (2013), where 97.0% of the respondents were aware of Lassa fever and their sources of information were majorly from colleagues, mass media and awareness campaigns, it was therefore observed that the awareness level of the respondents increased greatly in this study.However, this study was contrary with a similar research on Lassa fever awareness and practices in a rural community by Asogun et al (2010), which reported thatless than half of the respondents 36.0% were aware of the disease. The increase in awareness may be due to enlightenment campaign on Lassa fever by the health authorities in Oyo state and also mass media contributions in a bid to curtail the spread of LF and the rate of morbidity and mortality rate.

It is equally worthy of note that based on the epidemiological pattern of outbreaks observed over the past few years, the Institute of Lassa Fever Research and Control (ILFRC) proposed as a matter of urgency a comprehensive strategic plan of action spanning an initial period of five years (2008 – 2013) with the aim of bringing this disease under control. Within this time period, the set out goals was to:

1. reduce the incidence of the disease in the target communities by 80%
2. reduce the case-fatality rate by 75%
3. reduce nosocomial transmission to 0%
4. reduce secondary cases in households to <1%
5. establish and maintain an adequate surveillance system

Through joint efforts from collaborative partners, and local health authorities, the institute was then compelled to map out key activities aimed at making these goals achievable. Key activities included were: community health education through mass awareness campaigns;

capacity development in case definition, diagnosis, management and prevention; provision of laboratory facilities for diagnosis and monitoring of treatment; adequate case management, including provision of dedicated facilities for renal dialysis and intensive care; surveillance and programme evaluation; research and publication/dissemination of results (ILFRC 2001).

Similarly, this study reported the respondents' knowledge of signs and symptoms of LF which were: high fever, sore throat, cough, facial swelling, abdominal pain, mouth bleeding, nose bleeding, back pain, chest pain, vomiting, jaundice and deafness.

This study reveals that majority (93.1%) of the respondents reported high fever as one of the signs and symptoms of lassa fever, followed by nose bleeding (76.8%), followed by mouth bleeding (72.5%), followed by cough (70.3%), followed by cough (70.3%), followed by facial swelling (60.9%) and chest pain (35.1%) respectively.

The study reveals the level of knowledge of respondents who were aware of the Lassa fever were however determined using a 28-point scale. Respondents who scored between 0 – 13, 14 – 19 and 19 – 28 were graded as having poor, fair and good knowledge respectively.

(31.2%) of the respondents in the study reveals that they had fair knowledge of Lassa fever while those with good and poor knowledge were 50.0% and 18.8% respectively.

In the same vein, a study by Aigbiremolen et al. (2012) revealed that respondents had good knowledge (77.9%) of Lassa fever. Though, it can be argued on the ground that their findings were conducted among health workers who may be thought to be knowledgeable to some extent due to their kinds of job.

In addition, the findings in this study was in contrast with some other studies where respondents had poor or less than average knowledge about Lassa fever (Asogun et al. 2010, Mmaduike 2012, Richmod and baglole 2003). However, it was noted that the study conducted by Richmond and Baglole (2003) in Kenema was conducted in a community who may probably not have had any form of enlightenment and awareness aboutLassa fever. This study was quite different because it was assumed that the community has heard of the outbreaks of the diseases in the country before the study was conducted either through mass media or awareness campaign.

The findings in this study revealed that there was a statistically significant association between knowledge of Lassa fever and level of education. For instance, no one with any formal education had poor knowledge of Lassa fever and the proportion of respondents with

good knowledge of Lassa fever was found to increase by their level of education even though knowledge was generally good among the respondents.

The findings also reveals that age of the respondents' gender and awareness status were statistically significant when comparison of respondents mean knowledge score was done.

5.3 Perception relating to Lassa fever

Generally, the study revealed that majority (87.0%) of respondents had favourable perception about Lassa fever, though, there still about perceptions that were unfavourable that could lead to risky practices and further have implications for future outbreaks in Agbowo community. For example, majority (85.5%) disagreed with the perception that traditional medicine is the best for the treatment of Lassa fever while six point two percent agreed and 8.3% were indecisive regarding this perception.

This study reveals that half of the respondents' perceived that Lassa fever can mainly be caused by *arenaviruses* (58.7%) compared with those who were of the view that Lassa fever is not mainly caused by *arenaviruses* (13.4%) while those who neither agree nor disagree with the perception but were undecisive accounted for (27.5%) of respondents.

Majority (85.5%) of the respondents disagrees that only children readily get Lassa fever, (9.1%) were undecided while (5.4%) of the respondents agree

The study revealed that half of the respondents (52.2%) reported that food storage practices can leads to occurrence LF compared to (5.1%) who accounted that LF was a punishment from gods.

The study also reveals that (15.2%) of the respondents were of the perception that they can never be susceptible to LF, (23.9%) accounted for respondents who were undecided while (60.9%) accounted for those that disagree with the perception of not being susceptible to lassa fever.

This study supports Ibekwe (2012) who revealed that preventive recommendations by respondents for households and communities include protection of all food items from contacts with rodents, keeping pets (like cats) away from house, proper storage of food items,proper disposal of food items and other refuse, destruction of rats, proper waste disposal, avoidance of overcrowding and personal and environmental hygiene.

The high proportion in this study clearly signifies a high index of perception among respondents.It is therefore important to cross examine the link between knowledge, perception and attitude in this perspective. Knowledge on its own part has the potential to

influence people's perception and attitude (Omowumi, 2006). However, attitudes are feelings, values or sentiments which an individual places on a course of action which is determined or influenced by his belief. Therefore, a perception can be defined as a belief that a certain state of affair exist or is true (regardless of whether it is or not) (Donovan and Harley, 2003). In many cases, an expressed attitude will depend on what perception come to mind when a person is asked about a particular issue (Donovan and Harley, 2003)

This study indicated that majority (90.9%) of the respondents disagree with the perception that Lassa fever can be prevented by making sure there are no rats in our houses only prayer can protect us from lassa fever while only few agreed with the perception which portray a favourable perception. This study was in contrast with the study conducted by Mike (2014) where the findings revealed that few (23.0%) respondents had perceptions which were not favourable. For instance, over half (60.4%) were of the perception that only prayers can protect them from Lassa fever. This wrong and widely held perception among respondents can potentially put them at risk of the disease and perhaps have implications for future cases of Lassa outbreak in the community. Though there may not be any significant public health benefits from such perception but one might argue that such beliefs are just important indications that myths about Lassa fever are high in the community.

This study also reveals that majority(63.8%) of the respondents were of the perception that there is no immunization against LF in Nigeria. This is line with what was noted byFisher-Hoch (2000), the prevention of human contact with the Mastomys rodents is an essential factor in the control of Lassa fever, widespread prevention of such contact is presently impractical in the endemic regions of West Africa, therefore, provision of a vaccine for community and hospital use is an imperative public health need. In addition to the assertion of Fisher-Hoch (2000) this was also followed by the finding that single administration of a vaccine expressing the full-length Lassa virus glycoprotein affords protection against Lassa fever in primates, with or without expression of the nucleoprotein.

5.4 Food related practices

This study revealed thatmajority (60.0%) of the respondents had practices that were risky while others 40.0% had non- risky practices. In this study, majority of the respondents were

found in the frequent habits of sun-drying some particular food items outside in the open air.This was also reported by NCDC (2016) that people practices of sun-drying of store foods produced is a common practice in Nigeria, especially in the Northern parts with characteristically dry and high temperature weather, sun-drying easily exposes food to contamination by rodents, including the implicated *multimammate* rat. The general perception is that the habit of sun-drying of some food items is to preserve the food for longer period of time which is believed to be a generally acceptable cultural practice for all ethnic groups in Nigeria. The findings of this study also reveal that majority (67.8%) of the respondents will throw away the food items reportedly eaten by the presence of rats in their various houses.

This study also reveals that (31.5%) of the respondents occasionally stores food in a bucket without a cover whilefew of the respondents (22.8%) reported leaving food on the floor of the store.This is in line with Fabiyi and Tomori (2013), corrupt practices by staple food producers, which involve drying cassava flour (garri) in the open air in the daytime and sometimes at night; this enables all types of rat including *Mastomysnatalensis* to contaminate the flour with their urine or excreta. Similarly, Tomori *et al*. (1988) this constitutes a public health hazard when the infected cassava flour (garri) is sold to consumers in the market. The common habit of eating garri soaked in water may favor Lassa fever infection. Many other types of staple foods are also processed in the open sun; these include rice, plantain chips, yam chips and cassava chips, which are processed into rice flour, plantain flour, yam flour, and raw cassava flour.

Though these are also processed into staple foods such as *tuwoshinkafa*, plantain based *amala*, *yam based amala* and *lafun* respectively, the amount of heat involved in processing them into edible pastes, may be enough to denature the lassa fever virus, which is heat labile.

This was also in line with Inegbenebor et al (2010) that risk factors for the transmission of the virus include the use of rat meat as a source of protein by people in some Communities, contamination of exposed food by rat feces and urine, traditional autopsy, where the operator may injure himself with scalpel and contaminate the injury with the blood of the deceased, who may have died of Lassa fever and forceful ingestion of water used in bathing a dead husband by a widow suspected to be involved in his death.

5.5 Implication for health Promotion and education

This study on knowledge, perception and practice of residents of Agbowo community relating to Lassa fever has implications for health promotion and education. The findings from this study clearly shows the respondents had good knowledge about lassa fever and its mode of transmission but can be improved upon, and the implication is that it will reduce the burden of diseases in the community, reduce morbidity, mortality rate and the prevalence of the disease in the community which also reflected in the research conducted by (Oladeinde, Omoregie&Odia, 2014).

The study revealed that there were practices that could predispose people to contacting and spreading of Lassa fever and other endemic diseases in the community such as frequent spreading of some food items in the sun to dry, hunting of bush meat for consumption, keeping of food items on the floor of the shelve, unhygienic way of storing food items in the pot without being covered and dirty environment such as throwing of waste indiscriminately and blocking of drainage system which could help invites rats into the community and residential surrounding. Since health promotion and education is an holistic means of helping people to be able to attain their full health potential.

This could be done through adequate health education programs designed to help improve people's practices, sensitization programs and campaigns that could help control or reduce overall health care cost by emphasizing prevention of health problems, promotion of healthy lifestyle, improvement on food processing and storage. It is also expedient to know that the prevalence of a particular disease in a given community is a function of behavior exhibited by the people in the community which is usually guided by certain factors such as the susceptibility of the phenomenon, it severity, benefit and barrier which eventually will determine whether they will tour the steps of taking appropriate action towards it or not.

Health education and education generally adopts different strategies at three different stages which includes primary prevention, secondary prevention and tertiary prevention, to ensure high quality of life among the populace, as well as increase the community life expectancy. These strategies are not just been applied, but rather the choice of such programs and strategies are usually guided by evidence based data, information, research and studies like this. This will help to ensure appropriate choice of model to be used to plan, implement and evaluate programs that are aimed towards making members of the community to attain their full health potential.

Lassa fever outbreak is responsible for large percentage of case fatalities both among children, young and adults which simply means that it affects all ages; this is attributed to certain factors such as poor knowledge of the disease, unfavourable perception and their practices especiallyunhygienic practices etc. It is important to plan and develop a behavioural communication as well as sensitization program that will be aimed at improving the practices relating to Lassa fever among the residents of Agbowo community of Oyo state, it will also sharpen their perception and improve their preventive practices about the re-emergence and the spread of Lassa fever.

It will also help reduce the occurrence of outbreaks, as well as reduce case fatality rate of the disease outbreaks. This can be achieved successfully through the use of different health promotion strategies which include training, community development, partnership or resource linking, awareness campaign, advocacy and social marketing (Grunert and Wills, 2007; Mhurchu and Gorton, 2007; Nørgaard and Brunsø, 2009). The findings from this study also suggest that there is an infestation of rats in people's dwelling which is a result of the practices they indulges in such as sun-drying of food items which necessitated why rats were very common, environmental factors and unhealthy behavior among others where the research was carried out.

5.6. Conclusion

The findings of this study revealed that the awareness of the disease was high among the respondents and also had good knowledge of Lassa fever which signifies good means of reducing burden of disease in the community and the re-occurrence of outbreak of Lassa fever in the society, community and the country at large.

On the other hand, there abound among the respondents' some unfaviourable perceptions and practices which can promote the incidence of the disease which if not addressed may have an implication for future incidence of outbreaks of disease in the community. However, there is a need for government in collaboration with local health authorities to further strengthen educational intervention programmes in the community which will be targeted at behavior modification and good environmental health that can promote health status and be sustained.

The findings of this study also revealed the significant relationship between respondents' age, gender, awareness status, level of education and their mean knowledge score. Hence,

there is need for continuous awareness campaign against the outbreak of deadly diseases particularly lassa fever

5.7 Recommendations

1. There should be health promotion and education strategies such as public enlightenment, awareness campaign through the use of both print and non-print media that must be instituted for preventing infections in people living in endemic areas and should focus on rodent control and minimizing contact with rodent excreta.
2. People should be sensitized on the need to adopt healthy practices, proper and adequate environmental sanitation of their immediate surroundings which will be targeted at reducing the infestation and also control rat population within the community.
3. Government, individual, families and community should actively be involve the Community awareness program, training and reorientation on ways of preventing infectious diseases particularly lassa fever in its bid to providing sustainable Lassa fever prevention and control measures

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APPENDIXI

QUESTIONNAIRE

KNOWLEDGE, PERCEPTION AND PRACTICE AMONG AGBOWO COMMUNITY RELATING TO LASSA FEVER

Dear Respondent,

Good day ma/sir. I am a Postgraduate student of Public Health student from the Department of Health Promotion and Education, University of Ibadan. Am currently carrying out a research on the**, Knowledge, practice and perception of among Agbowo community relating to Lassa fever.**

The outcome of this study will go a long way to help government, health promoters, medical practitioners and health workers and others concerned with well- being of the environment, prevention of diseases and welfare of the citizens in the communities. This kind of study may also boost the morale of health workers and other health personnel involved in prevention, diagnosis and treatment. You are therefore invited to feel free to participate in this research, which simply means to answer the interview questions. Information provided will be kept confidential and used for research purposes only.

Thanks for your cooperation.

Balogun Olaitan Johnson

Willingness to participate in the study kindly tick (√) either Yes or No in the boxes provided

Yes ☐

No ☐

For official use only

I. Date _____

II. Serial Number _____

Section A: Socio- demographic information.

Instructions: Please answer the questions in this section by ticking (√) the available boxes or by completing the blank spaces provided

1. Ward; ……

2. Community/ Neighbourhood ……

3. Age at the last birthday in years: ----------

4. Sex: (1) Male ☐ (2) Female ☐

5. Religion: (1) Christianity ☐ (2)Muslim ☐ (3) Traditional ☐ (4) Others (specify)……

6. Ethnicity : (1) Yoruba ☐ (2) Hausa ☐ (3) Igbo ☐ (4) Others (specify)……

7. Marital status: (1) Single ☐ (2) Married ☐ (3) Divorced ☐ (4) Separated (5) Co-habiting ☐

8. Level of education: (1) Primary ☐ (2) Secondary ☐ (3)Tertiary ☐ Others (specify)…..

9a. Occupation: (1) Civil Servant ☐ (2) Trading ☐ (3) Artisan ☐ (4) Fashion designing ☐

(5)Contractor/ Business ☐ (6) Unemployed ☐ Others (Please specify) ……

9b. If civil servant please specify your profession……..

10. Family type: (1) Monogamous (one man with one wife) ☐ (2) Polygynous (one man with two wi☐ (3) Others (Specify)……

10.0.**Household related information:**

10.1. Total number of children born by you that are alive…….

10.2. Number of children born by you who currently live with you……..

10.3. Number of other relatives and dependants living with you……

10.4. Total family size (ie 10.2+ 10.3)…….

10.5. What type of house do you live in? (1) Living in a self-contained flat ☐ Living in a house with other households/tenants ☐

10.6. If living in a house with other households or tenants, how many other tenants/ **households** do you live with in the same house? .....

SECTION B: Awareness and Knowledge of transmission of Lassa fever

11. Have you ever heard about Lassa fever (1) Yes ☐ (2) No ☐

If No to the question 11 above, please kindly go to section E

12. Table 1 contains a list of symptoms

For each kindly tick (√) Yes if it is a symptoms of lassa fever or "No" if it is not a symptoms of lassa fever; if you are not sure please tick (√) "Do not know"

Table 1

	Signs and Symptoms	Tick(√) one for each statement		
S/N	**Items**	**Yes**	**No**	**Do not know**
12.1	High fever			
12.2	Sore throat			
12.3	Cough			
12.4	Facial swelling			
12.5	Abdominal pain			
12.6	Mouth bleeding			
12.7	Nose bleeding			
12.8	Back pain			
12.9	Chest pain			
12.10	Vomiting			
12.11	Jaundice			
12.12	Deafness			

13. Table 2 contains a list of statements relating to sources of information on lassa fever

For each kindly tick (√) either Yes or No; if you are not sure please tick (√) "Do not know"

Table2

	Sources of information	Tick(√) for each source		
S/N	**Items**	**Yes**	**No**	**Do not know**
13.1	Posters			
13.2	Billboards			
13.3	Friends/ Neigbours			
13.4	Health worker/ centre			
13.5	Awareness campaign			
13.6	Internet			

14. Has lassa fever ever affected anyone here in Agbowo? (1) Yes ☐ (2) No ☐ (3) Do not kn☐

15. Are you aware whether lassa fever has ever affected some people in any of the communities in Ibada☐ (1) Yes ☐ (2) No (3) I☐ot know

16. If yes to the question 15 above which part of Ibadan has it affected? Kindly state it please …….

SECTION C1: Perceptions related to cause and transmission of lassa fever

17.0. Table 3 contains a list of statements relating to cause and transmission of lassa fever. For each statement kindly tick (√) whether you agree or disagree with it. If you cannot make up your mind tick (√) "undecided/ cannot say"

Table 3

S/N	Perception related Statements	Tick(√)one for each statement		
	Items	Agree	Undecided/cannot say	Disagree
17.1	Lassa fever is a disease that can be caused by any virus			
17.2	The mosquitoes that spread malaria can also spread lassa fever			
17.3	Lassa fever cannot be transmitted from person to person			
17.4	Eating any food contaminated with urine of rats cannot lead to lassa fever			
17.5	Lassa fever can be spread by Cockroaches			
17.6	Lassa fever is mainly caused by arenaviruses			
17.7	Lassa fever can be spread through the air we breathe			
17.8	The cause of lassa fever is not yet known			
17.9	Lassa fever is a punishment from the gods			

	because people have abandoned their traditional practices or culture			
17.10	Lassa fever can only spread in poor Villages			
17.11	Lassa fever can be contacted from domestic animals such as goats, dogs, sheep and fowls			
	Items	Agree	Undecided/cannot say	Disagree
17.12	One cannot prevent lassa fever because it caused by supernatural forces			
17.13	The way we store our food can create opportunity for lassa fever to spread			

SECTION C2: Perceptions relating to Vulnerability and seriousness of lassa fever

18.0. Table 4 contains a list of statements relating vulnerability and seriousness of lassa fever. For each statement kindly tick (√) whether you agree or disagree with it; If you cannot make up your mind tick (√) "undecided/ cannot say"

Table 4

S/N	Perception related Statement	Tick (√) one for each statement.		
	Items	Agree	Undecided/cannot say	Disagree
18.1	Lassa fever is a disease for adults alone			
18.2	Lassa fever is only common among rural dwellers			
18.3	Only children readily get lassa fever			
18.4	Lassa fever cannot occur in our community			
18.5	Lassa fever affects only children and the elderly			
18.6	Lassa fever is a serious disease			
18.7	Members of my family cannot get lassa fever			
18.8	Lassa fever is a mild disease			
18.9	I cannot be susceptible to lassa fever			

SECTION C3: Perception relating to treatment, cure and prevention of lassa fever

19.0. Table 5 contains a list of statements relating to treatment, cure and prevention on lassa fever. For each statement kindly tick (√) whether you agree or disagree with it. If you cannot make up your mind tick (√) "undecided/ cannot say"

Table 5

S/N	Perception related Statement	Tick (√) one for each statement		
	Items	Agree	Undecided/cannot say	Disagree
19.1	Lassa fever cannot be prevented			
19.2	Lassa fever cannot be treated			
19.3	Lassa fever is better managed in hospitals compared with management by herbalists			
S/N	Perception related Statement	Agree	Undecided/cannot say	Disagree
19.4	Traditional medicine is best for the treatment of lassa fever			
19.5	Lassa fever can be prevented by making sure there are no rats in our houses			
19.6	Only prayer can protect us from lassa fever			
19.7	Storing of food in well covered containers can prevent lassa fever			
19.8	Lassa fever can easily be treated at home without going to the hospital			
19.9	There is an immunization against lassa fever in Nigeria			

SECTION D: Food storage / processing practices

20. What will you do to each of the food items in table 6 when you notice part of it have been eaten by rats in your house?

Table 6

S/N	**Food item**	**What you will do**

20.1	Garri	
20.2	Onion	
20.3	Bread	
20.4	Fish	
20.5	Meat	
20.6	Water melon	
20.7	Yam	
20.8	Beans	

21.How common are rats in your house? (1) Not so common ☐ Very common ☐ No rats at all ☐

22. What are the food items which rats eat in your house (list all the foods) in the spaces provided below

……

……

23. Table7 contains a list of statements relating to food/ processing practices. For each tick (√) either Yes or No which you or a member of your family indulges in. In addition for each tick (√) frequently or, occasionally or rarely or never to indicate how often you/ your family does it.

Table 7

	Food Processing/Practices	**A**		**B** If yes tick one for each(√)			
		Yes	No	Frequently	Occasionally	Rarely	Never

S/N	Items						
23.1	Spreading of food items in an open space to dry						
23.2	Leaving some food items in the sun to dry						
23.3	Store food in bucket with a cover						
23.4	Store food in bucket without cover						
23.5	Store food in basin with cover						
23.6	Store food in basin without a cover						
23.7	Store food in bags/sacks without the mouth tied						
23.8	Store food in bags/sacks with the mouth tied						
23.9	Store food in pot without a cover						
23.10	Store food in pots with a cover						
23.11	Leave food on shelves in the store						
23.12	Leave food on the floor of the store						

Total knowledge score ……

Thank you for agreeing to answer my questions

YORUBA TRANSLATION

IMO, IRO ATI ASA AWON OLUGBE TIAWUJO AGBOWO NIPA IBA ORINRIN

Eyinoludahun,

Eku ọjọ rere ma / sir. Mo je omo-ile iwe giga ti fasiti Ibadan, e ka ti ile-iwo-san orita-mefa ti eka ilera eniyan. Mo je akeko ti n se iwadi nipa loriimo, iro ati asa awon olugbe tiawujo agbowo nipa iba orinrin. Inu mi yio dun pipo bi e ba le ran mi lowo lati dahun awon ibeere yii, mo se ileri pe oun koni gba akoko yii.

Awọn abajade iwadi yi yio wulọ ni ona pupo lati ran ijoba lowo, eleto ilera, onisegun , awọn oṣiṣẹ ati awon osise ilera ati awọn miran ti nipa bibojuto ayikan ara eni, idena ti arun ati iranlọwọ ti awọn olorijori eniyan ni awọn awujo wa. Irú iwadi le tun fun awon onise ilera ni igboya nipa didena ohun okunfa aisan ati itoju.Nitorina, mo pe o jowo ara e lati kopa ninu iwadi yi, eyi ti o tumo si lati dahun awọn ibeere wonyi. Gbogbo idahun yii ni apamo beni a se ni menumo fun iwadiìdí nikan.

O ṣeun fun ifowosowopo.

Balogun Olaitan Johnson

Jowo yọnda lati kopa ninu iwadi jowo fi ami yii si (√) ọkan ninu awọn apoti ti apese ni isalẹ

Bẹẹni ☐

Beeko ☐

Fun lilo ofisi nikan

*I. Ọjọ igbaro sile:*_____

II. Nomba ni sisetele: _____

ABALA A: OHUN GBOGI NIPA ENIYAN

Ilana: Jọwọ dahun awọn ibeere ti o wa ni apa yi nipa fi fi ami yi si (√) awọn apoti tabi nipa pipari awọn alafo ti pese yi.

1. Odi (Ward); ……

2. Agbegbe / Adugbo ……

3. Ojo ori e ti o se kẹhin ojo ibi: ----------

4. Iru Omo ti o je: (1) Okunrin ☐ (2) Obirin ☐

5. Esin: (1) Kristiẹniti ☐ (2) Musulumi ☐ (3) Ibile ☐ (4) Awọn miran (nipato) .....……

6. Eya : (1) Yorùbá ☐ (2) Hausa ☐ (3) Igbo ☐ (4) Awọn miran (pato) .....…

7. Ipo igbeyawo: (1) Apon ☐ (2) ìgbéyàwó ☐ (3) Kiko oko ☐ (4) Pínyà (5) Alagbepo ☐

8. Ipele ti eko: (1) alakobere ☐ (2)Iwe Giran ☐ (3) Iwe ☐ (4) Awọn miran (nipato)...

9a. Iru Ise:: (1) Osise Ijoba ☐ (2) Ohun taja ☐ (3) Onise Owo ☐ (4) Oluranso ☐

(5) Kangila ☐ (6) Ailanise lowoO ☐ an nipato. ……

9b. Ti o ba je onise ijoba jowo so ni pato iru ise re ……..

10. Iru ebi: (1) Oni iyawo k ☐ (2) Oni iyaw ☐ meji (3) Omiran ni pato ……

10.0. **Alaye to jẹmọIle:**

10.1. Apapọ nọmba iye awọn ọmọ inu eto wa laaye …….

10.2. Nomba iye ọmọ ti obí ti n gbelọwọlọwọ pẹlu e……..

10.3. Nọmba àwọn ìbátan ati gbarale o ti ngbe pẹlu e ……

10.4. Apapo iwọn ebi (ie 10.2+ 10.3)…….

10.5. Iru ile wo ni o gbe? (1) Mo gbe ni fulatialadagbe ☐ (2)Mo gbe ni ile pẹlu awon ìdílémiiran / ayale☐e

10.6. Ti o ba ngbe ni ile pẹluìdílémiiran tabi awọn ayalegbe, bi awon melọ ni awọn ayalegbe ti gbe pẹlu ni ile kanna? .....

ABALA B:**Ikiyesi ati Imo nipariran iba orinirin**

11. Nje o gbọ nipa iba orinirn ri; (1) Bẹẹni ☐ (2) Beeko ☐

Ti idahun re ba je beeko si ibeere kokanla (11) loke, jọwọ lọ si abalan E

12. Tabili kini(1) ni a akojọ awọn aami aisan

Fun ọkankan jowo fi ami yi sabe (√) Bẹẹni ti o ba jẹ a àpẹẹrẹ ti iba orinrin tabi "beeko" ti ko ba da o loju jọwọ fi ami yii si (√) "Hun kò mọ"

Table 1

	Àmi ati Àpẹẹrẹ	(√) ọkan fun kọọkan gbólóhùn		
S/N	**Ounka**	**Beeni**	**Beeko**	**Nko mo**
12.1	Ara gbigbona			
12.2	Ọgbẹ ọfun			
12.3	Ikọ			
12.4	Oju wiwu			
12.5	Irora inu			
12.6	Enu nti sẹjẹ			
12.7	Imu nti sẹjẹ			
12.8	Irora Eyin			
12.9	Àya riro			
12.10	Eebi			
12.11	Iba ponjuponju			
12.12	Iditi			

13. TabiliKeji ni akojọ ti awọn gbólóhùn ti o jọmọ awọn orisun ti alaye lori iba orinrin Fun kọọkan jowo fi ami yi si (√) boya Bẹẹni tabi Bẹẹkọ; ti o ba niaridaju jọwọ fi ami yi si (√) " nkò mọ"

Tabili 2

	Orisun Iroyin	(√) ọkan fun kọọkan gbólóhùn		
S/N	**Ounka**	**Beeni**	**Beeko**	**Nko mo**
13.1	Posita			
13.2	Patako Iroyin			
13.3	Ore / Alajogbe			
13.4	Osise oniseleira /Ile iwosan			
13.5	Sise ipolongo			
13.6	Ero aiyelujara			

14. Nje iba orinrinti se ẹnikẹni niawujo abi agbegbe agbowo yi ri?? (1) Bẹẹni ☐ (2) Beeko ☐ (3) Nko mo☐

15. Nje owa ti mọ boya iba orinrin ti muenikenini eyikeyi ninu awọn agbegbe ni ilu Ibadan? (1)Bẹẹni ☐ (2) Beeko ☐(3) Nko mo☐

16. Ti o ba je pe bẹẹnini idahun re si ibeere 15 loke, apa wo ni Ibadan ni o ti koju? Jowo ko sile…….

ABALA C1: ABALA C1: Ero to jẹmọ okufa ati kiko iba orinrin

17.0. Tabili 3 ni akojọ ti awọn gbólóhùn o jọmọ okufa ati kiko iba orinrin. Fun kọọkan gbólóhùn jowo lo ami yi (√) boya o ti gba tabi o koo pẹlu o e. Ti o ba si ru oloju lo ami yi (√) "nle ponkanpo/ ko le so"

Table 3

S/N	Gbólóhùn to jomo Iro	(√) ọkan fun kọọkan gbólóhùn		
		Mogba	Nko le so	Nko gba
17.1	Iba orinrin jẹ arun ti o le ṣẹlẹ nipasẹeyikeyi kokoro			
17.2	Awọn efon ti o tan iba tun le tan iba orinrin			
17.3	Iba orinrin ko le tan arin eniyan si eniyan			

17.4	Jiję eyikeyi ounje ti eku ti to si ko le ja si keniyan ni iba orinrin			
17.5	Ayan a ma fa iba orinrin			
17.6	Nipasẹ arenaviruses ni iba orinrin se nsele			
17.7	Iba orinrin le tan nipasẹ awọn eemi ti a mi			
17.8	Ko ti si okufa ohun ti nfa iba orinrin			
17.9	Iba orinrin jẹ ijiya lati odo orisa nitori awon eniyan ti kọ ohun-ibile tabi asa wa			
17.10	Ibà orinrinma tan ni agbegbe ileto ti ko dara			
17.11	Ale ko iba orinrin lati ara nkan osin gege bi aja,ewure, agutan ati ẹiyẹ			
17.12	Ọna ti an gba pa ounje mo le ṣẹda anfani fun iba orinrin lati tan			

ABALA C2: **Ero ti o jọmọ ipalara ati nilagbara iba orinrin**

18.0. Tabili 4 ni a akojọ ti awọn gbólóhùn jọmọ ipalara ati nilagbara iba orinrin. Fun kọọkan gbólóhùn jowo lo ami yi (√) boya o ti gba tabi o ko gba; Ti o ba pinnu lọkàn rẹ fi ami si (√) "npinnu / nko le sọ

Table 4

S/N	Gbólóhùn to jomo Iro	(√) ọkan fun kọọkan gbólóhùn		
		Mogba	Nko le sọ	Nko gba
18.1	Iba orinrin jẹ arun fun awọn agbalagba nikan			
18.2	Iba orinrinma wọpọ laarin awon ara agbegbe igberiko			
18.3	Awon ọmọde nikan lo ma saba ni iba orinrin			
18.4	Ibà orinrin ko le waye ni awujo wa			
18.5	Iba orinrinma gbinle laarin awọn ọmọde ati awọn agbalagba			

18.6	Iba orinrin jẹ arun to lagbara			
18.7	Awọn ara molebi mi ko le ni iba orinrin			
18.8	Iba orinrin jẹ arun ti kolagbara			

ABALA C3: Iroto jọmọ itọju, nmularada ati idena iba orinrin.

19.0. Tabili 5 ni a akojọ ti awọn gbólóhùn to jọmọ itọju, nmularada ati idena ti iba orinrin. Fun kọọkan gbólóhùn jowo lo ami (√) boya o gba tabi o ko gba. Ti o ba pinnu lokàn rẹ lo ami yi si(√)"npinnun/nkolesọ"

Table 5

S/N	Gbólóhùn to jomo Iro	(√) okan fun kọọkan gbólóhùn		
		Mogba	Nko le sọ	Nko gba
19.1	Iba orinrin ko se dena			
19.2	Iba orinrin ko niitoju			
19.3	Iba orinrin se toju daradara ni ile iwosan ju ki o wa ni isakoso onisegun ibile lo			
19.4	Isegun ibilẹ lo dara ju fun itọju iba orinrin			
19.5	Didena iba orinrin le waye nipasẹ ale ekute jina rere ni ile wa			
19.6	Adura nikan lo le dabobo wa laini ni iba orinrin			
19.7	Titoju ounje ninu apoti dardara le dena iba orinrin			
19.8	Eniyan le se itoju iba orinrin niile lai lo si ilewosan			
19.9	Abere ajesara ti wa fun iba orinrin ni orilede Nigeria			

ABALA D:**Ounjepipamọ / Asa sise ayan re**

20. Kini iwọ o ṣe si kọọkan ninu awọn ounje wọnyi ninu tabili 6 nigbati o ba se akiyesi pe ekute ti je apakan nibe ninu ile re ?

Tabili 6

S/N	**Orisi ounje**	**Kini wa se**

20.1	Garri	
20.2	Alubosa	
20.3	Buredi	
20.4	Eja	
20.5	Eran	
20.6	Water melon	
20.7	Yam	
20.8	Ewa	

21.Bawo ni ekute se wọpọ to ni ile rẹ? (1)Ko wọpọ(2 ☐ wọpọ (3) ☐ si ekuterara ☐

22. Awon ounjewo ni ekute ma njẹ ninu ile rẹ (akojö gbogbo awọn ounjẹ) ni alafo ti a pese ni isalẹ

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23. Tabili 7 ni a akojọ ti awọn gbólóhùn to jọmọ si ounje / ipese. Fun kọọkan fi ami (√) boya Bẹẹni tabi Bẹẹkọ ti iwo tabi awon omo molebi re mba se. Ni afikun fun kọọkan fi ami (√) nigbagbogbo tabi, lẹẹkọọkan tabi ṣọwọn tabi ki o ko lati fihan igba ti iwo / ebi re se.

Tabili 7

	Ipese Ounje oun Asa	**A**		**B** (√) ọkan fun kọọkan gbólóhùn			
		Beeni	Beeko	Gbogbogba	lẹẹkọọkan	ṣọwọn	kosi
S/N							
23.1	Titan awon ounje sigbagba lati gbẹ						
23.2	Fifi awon ounje kan ninu oorun lati gbẹ						
23.3	Pipa ounje mo sinu garawa pẹlu ideri						
23.4	Pipa ounje mosinu garawa laini ideri						

23.5	Pipa ounje mo sinu basia laini ideri						
23.6	Pipa ounje mo sinu basia pelu ideri						
23.7	Pipa ounje mosinu baagi / àpo lai so ẹnu re						
23.8	Pipa ounje mosinu baagi / àpo pẹlu ẹnu re ni soso						
23.9	Pipa ounje mosinu ikoko laini ideri						
23.10	Pipa ounje mosinuikoko pẹlu ideri re						
23.11	Fifi ounje sinu kobondu yara nkounje si						
23.12	Fifi ounje si ilele inu yara nkounje si						

Fun lilo ofisi nikan:

Nomba ni sisetele ----------

Nọmba gbọdọ dọgba pẹlu awọn ibeere ni tẹlentẹle ----------

APPENDIX II

INFORMED CONSENT FORM

My name is BALOGN, Olaitan Johnson, a Master of Public Health student of the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.The purpose of this study is to investigate Knowledge, Perception and Practice of residents of Agbowo Community relating to Lassa fever, Oyo state, Nigeria, so as to improve the quality of health and life, reduce mortality and morbidity among the people and the health workers as a whole.

A self- structured administered questionnaire will be used to obtain information on socio-demographic information, Awareness and knowledge of transmission of lassa fever, signs and symptoms, sources of information, perceptions related to cause and transmission of lassa fever, perceptions relating to vulnerability and seriousness of lassa fever, perception relating treatment, cure and prevention of lassa and food storage/ processing practices related to lassa fever. You are expected to answer the questions at the time of administration of the

instrument. The administration of this instrument will last for about 15 minutes. Your participation in this research will not cost you anything other than your time of answering the questions in the questionnaire. There are no risks associated with this study. All information collected will be treated as anonymous. It will not be linked to you in any way.

Yourparticipation in this research study is entirely voluntary and you can withdraw at any time if you choose to. I will greatly appreciate your help in taking part in the study.

Statement of the person giving consent:

I have read the description of the research and have had it translated into language I understand. I have also talked it over with the researcher to my satisfaction. I understand that my participation is voluntary and I can withdraw at any time if I choose to. I will be willing to participate in the research.

DATE: _____ SIGNATURE: _____

APPENDIX III

Oyo Ethical Approval