Original Research Article

KNOWLEDGE, ATTITUDE AND PREVENTION OF LASSA FEVER TRANSMISSION AMONG WOMEN IN NNEWI NORTH LGA, ANAMBRA STATE, NIGERIA.

ABSTRACT

PURPOSE: Lassa fever is a disease of public health concern associated with significant morbidity and mortality. It is noted to be endemic in the west-African Lassa fever belt with seasonal variations usually associated with epidemics. Nigeria among other countries is known to suffer from this. This study aims to determine the Knowledge, attitude, and prevention of Lassa Fever transmission among women in Nnewi North LGA of Anambra State and contributory factors.

METHODOLOGY: A cross-sectional study conducted among women in Nnewi between 1st to 30th September, 2022. Data was collected using pretested interviewer-administered questionnaire among 252 respondents. It was analyzed with SPSS version 25.0.

RESULTS: Their mean age was 33.40 years ranging from 18-69 years. Overall, 86.1% of the respondents have heard of lassa fever, 77.8% and 84.9% had an overall positive attitude towards prevention of lassa fever transmission respectively. Educational level was a statistically significant factor in all these. 21% of respondents reported knowledge through health workers.

CONCLUSION: There is a high level of knowledge, attitude, and transmission prevention among women resident in Nnewi. This will significantly help to reduce the burden of transmission and of the disease and care for infected person. The means of awareness differed among different people.

PRACTICAL IMPLICATION: There is a need to improve public health awareness by health workers in order to improve the integrity and content of the population's health education.

Keywords: Anambra, Epidemic, Hemorrhagic fever, Lassa fever, Nnewi, Transmission, Virus

1 INTRODUCTION

1.1: BACKGROUND OF STUDY

Lassa fever (LF) also called Lassa hemorrhagic fever is a disease caused by infection with a zoonotic virus called Lassa virus (LASV), which is a bi-segmented single stranded RNA virus of the family,Arenaviridae.[1] The virus was first described in the 1950s, it was not identified until 1969 and was subsequently named after a town in the present Borno state of Nigeria where the first case of the disease was recorded when two Nurses died of a seemingly mysterious disease in Lassa village, Borno State, Nigeria.[2,3,4] LF is an acute and sometimes fatal viral haemorrhagic disease which occurs along the Lassa belt in West Africa and the disease is known to be endemic in Guinea, Liberia, Nigeria and Sierra Leone with recurrent seasonal epidemics, outbreaks have been reported in Ghana, and serological evidence of human infection has been found in Ivory Coast, Senegal and Mali. However, several imported cases with hazardous outcomes have been reported in countries where it is not endemic.[3,4]

The natural or primary host of Lassa virus is a rodent *Mastomys natalensis*, also referred to as 'multimammate rat', a common households' rat in West Africa. *Mastomys erythroleucus* (Guinea multimammate mouse) and *Hylomyscus pamfi* (African wood mouse) are newly reported hosts of the LASV in Nigeria and Guinea Republic. Once infected, Mastomys rats do

not become ill but can shed the virus. Humans become infected primarily through contact with the urine, faeces, blood of an infected rat or during hunting and inadequate processing of infected rats for consumption. Eating of food and inhalation of contaminated dust containing body secretions of infected rats are other recognized modes of transmission of the infection to human.[1,3,4]

Secondary person-to-person transmission can occur through exposure to infected persons' blood or bodily secretion of infected cases (dead or alive), percutaneous or per-mucosal exposure to blood and other infected body fluids like urine, saliva or faeces or other secretions from the infected person.[4,2] It has also been reported to have been transmitted through sexual intercourse. A recent study reported presence of viral nuclei acid in semen up to 103days after onset.[1]

This spread between humans can occur either in the community or during the care of infected people in healthcare settings.[1] The rural communities are mainly affected as occasioned by socio-cultural practice, poor environmental hygiene, illiteracy,[2] while Nosocomial transmission of Lassa fever in healthcare facilities represent a significant burden on the healthcare system.[5] Infection prevention and control (IPC) in healthcare settings has been documented as an important factor in controlling potential outbreaks of Lassa fever.[5,6]

The disease affects humans of all ages and both sexes, though 80% of infected people are asymptomatic.[2] Lassa fever presents initially with symptoms and signs that are common with other viral and bacterial infections and indistinguishable from those of febrile illnesses such as typhoid, malaria and other viral haemorrhagic diseases such as Ebola. All age groups are susceptible and it has an incubation period of 6-21days, it is difficult to diagnose clinically, however, case definition of suspected Lassa fever consists of known exposure to a person who has had LF, fever >38 ^{0}C that does not respond to antimalarial and antibiotic drugs for less than three weeks with absence of signs of local inflammation, and any two major signs (Bleeding, swollen neck or face, conjunctival or sub conjunctival haemorrhage, spontaneous abortion, petechial or haemorrhagic rash, new onset tinnitus or altered hearing, persistent hypotension) or one major and two minor signs (headache, sore throat, vomiting, diffuse abdominal pain/tenderness, chest/retrosternal pain, cough, diarrhea, generalized myalgia or arthralgia or profuse weakness). Swollen face and neck are classic signs of Lassa fever but only occur in about 10% cases.[4,3] Diagnosis is by blood samples which are examined using LASV specific real time reverse-transcriptase polymerase chain reaction (RT-PCR).[1,7] Death may occur within two weeks after symptom onset due to multi-organ failure. While approximately 15%-20% of patients hospitalized for Lassa fever die from the illness, only 1% of all lassa virus infections result in death.[5]The major control strategy is the control of the rodents around dwellings, avoiding of rats consumption and contact.[1]

A single case of Lassa fever is regarded as an outbreak, and a suspected case of Lassa fever is defined as illness with gradual onset with one or more of the following: Malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhea, myalgia, chest pain hearing loss, and a history of contact with excreta of rodents or with a case of Lassa fever, while a confirmed case of Lassa fever is a suspected case that is laboratory confirmed (positive IgM antibody, PCR, or virus isolation) or epidemiologically linked to a laboratory-confirmed.[8]

Currently, there are no vaccines against LASV. Although, off-label treatment consider the use of ribavirin, an expensive treatment that is effective when administered for the first six days after the onset of symptoms,[1] though the use of ethnomedicinal remedies in treatment of people and animals infected with viral infections have been documented.[3]

1.2: PROBLEM STATEMENT

LF is a zoonotic disease of public health importance with several reported outbreaks over the year and is known to be endemic in certain area of West Africa.[3] The annual incidence of LF in this region is estimated as 100,000 to 300,000 cases with about 5000 deaths and 58 million people at risk. Twenty percent of infected individuals require hospitalization while 80% are asymptomatic infections. The case fatality rate of hospitalized cases ranges from 15 to 20% in Africa.[1,3,8]

The disease has assumed an endemic status. About two-third of the 36 states in Nigeria are endemic. There appears to be a seasonal pattern in the outbreak of Lassa fever in Nigeria, with most cases occurring in the dry season,[9] In recent years, the deviation from the usual dry seasonal to incessant all year transmission suggests a shift in the epidemiology of the disease, although high transmission still occurs in the dry season between December and March. Factors such as seasonal changes, urbanisation, poor environmental sanitation, deforestation and voluntary or involuntary migration may have contributed to the sustained increase in LASV transmission and spill-over into human populations.[10] There have been several Lassa fever outbreaks in various parts of Nigeria since it was first reported in 1969. In the year 2012, 623 cases including 70 deaths were reported from 19 out of the 36 states. Three doctors and four nurses were reported to be among the fatalities. Between August 2015 and 17 May 2016, WHO was notified of 273 cases of Lassa fever reported from 23 states in Nigeria; these included 149 deaths. Of these, ten cases were health care workers (HCWs) and four were hospital acquired infections. As at 3rd June, 2018, 181 out of the 432 (42%) confirmed Lassa fever cases were from Edo State and 13 of these were HCWs.[9] Between January 1 and December 29, 2019, a total of 5057 LF suspected cases were reported from 36 states and the Federal Capital Territory, of which 833 (16.6%) were laboratory confirmed cases, with 19 probable cases, Deaths among confirmed cases were 174, with a case fatality rate of 21%.[10]

Twenty-three states recorded at least one confirmed case across 86 local government areas (LGAs). LF naïve states such as Kebbi and Zamfara reported confirmed cases for the first time. Majority (78%) of the confirmed cases were reported from Edo (37%), Ondo (34%) and Ebonyi (7%), the three historical "hotspot" States characterised by high incidence and prevalence with sustained all year-round transmission. Those in the age-group 21–40 years (47%) were majorly affected with a male to female ratio of 1:1. Twenty (3%) of total confirmed cases occurred among health care workers (HCWs). A total of 9379 contacts were identified from 21 States, of which 144 (1.5%) became symptomatic and 68 (0.7%) tested positive.[10]

Since 2016, there has been an increase in the number of reported LF cases from West Africa, affecting between 2 to 3 million people each year in certain portions of the West African region and causing a mortality of about 10,000 during the same period. With the large 2018 outbreak in Nigeria, this increase has mainly been attributed to the complex interplay of increasing human–rodent interactions, improved case detection, heightened awareness, availability of diagnostics and therapeutics, improved disease surveillance systems, and changing demographics as opposed to the initial speculation of the emergence of a new Lassa virus (LASV) variant.[10] The increasing number of cases has also significantly led to increasing mortality rate due to lassa fever.[11]

There is, however, evidence suggesting that community knowledge of Lassa fever in Nigeria is poor. It has been postulated that increasing health communication messages on Lassa fever may result in improved behaviour of people towards the infection. Thus, there has been a call for community interventions to improve the knowledge of Lassa fever among community members. This is based on the expectation that good knowledge of Lassa fever and adequate preventive measures for the disease could reduce the rate and spread of Lassa virus infection.[2]

2. LITERATURE REVIEW

2.1 KNOWLEDGE OF LASSA FEVER TRANSMISSION.

The knowledge of Lassa Fever among the populace including the cause, mode of transmission and symptoms, which decisively impact on the outcome viz-a viz decreasing or continual upsurge of the infection. Many studies have provided reasonable insights into this because the level of knowledge influences decisive actions on the plan/strategies of minimizing spread and management of the disease at local and global level.

In a report of a fatal case of Lassa fever in Parakou, Benin Republic which highlighted the diagnostic difficulties of viral hemorrhagic fevers in general and Lassa fever in particular in the context of resource-limited countries, showed that Several factors contributed to the delayed diagnosis, top on the list was inadequate knowledge of the disease by caregivers and healthcare workers which played a definite role in the delayed diagnosis, also the lack thereof of specific clinical and paraclinical manifestations, especially at the beginning of the disease, makes it impossible to think about it very early.[12]

Moreso, A Study in Bo district in the Southern Province of Sierra Leone titled Rat-atouille: A Mixed Method Study to Characterize Rodent Hunting and Consumption in the Context of Lassa Fever, which employed both qualitative and quantitative methods, it noted that most informants had previously heard of LF and considered it a serious and fatal disease, expressing familiarity with the symptoms and the special burial practices required for deceased cases (such as the use of body bags and not touching the deceased during burials). For the quantitative survey, less than half of respondents associated LF with animals (38.3%,173/429) and during discussions none of the informants knew the exact LF reservoir but frequently mentioned that shrews(a species of rodent) in particular could transmit LF, this was in part due to the difference in behavior,(often aggressive) nutrition (mostly carnivorous) and morphology (musk gland, elongated snout), an understanding that may have been compounded by errors in the delivery and/or comprehension of previous sensitization messages citing shrews as the reservoir for LASV.[13]

In a descriptive cross-sectional study, which used a semi-structured questionnaire on Knowledge and preventive practices against Lassa fever among heads of households,[2] a survey carried out in Abakaliki metropolis, Southeast Nigeria found out that the majority (96.2%) were aware of Lassa fever. A minority (11.0%) currently consume rats, however Less than half (49.5%) of the entire respondents were aware that Lassa fever occurs frequently in Ebonyi state. One fifth (20%) of respondents knew that there is no available vaccine for Lassa fever. The majority (60.0%) had good knowledge of Lassa fever, the main sources of information on Lassa fever included television (66.4%) and radio (64.3%).[2] This was in keeping with findings from a similar study among traders in Izzi Community in south - East Nigeria,[14] among adults in Kosofe Local Government Area, Lagos state,[15] in another rural community in south west Nigeria,[16] and among community residents in Ondo State, Nigeria.[17]

In a cross-sectional descriptive study on Knowledge of Lassa Fever and Its Determinants among Traders in Izzi Community in South-East Nigeria using a pretested, semi-structured, interviewer administered questionnaire to obtain data, it was noted that more than three-quarter of the traders had heard about Lassa fever, with the major source of information being the electronic media mainly radio, others were health workers and friends. It however noted that the high level of awareness in this study did not translate to good knowledge of the disease since knowledge of the Lassa fever transmission process is key to breaking the chain of infection.[14] More than two-third of the respondents had poor knowledge of the etiology and mode of transmission and only

one-third had good/excellent knowledge of Lassa fever transmission and etiology,[14] similar to findings in a study in Lafia,Central Nigeria.[18]

In a cross-sectional descriptive study carried out to assess the level of knowledge of Lassa fever among University of Nigeria Nsukka undergraduate using a self-administered questionnaire, the study reveals that most of the respondents had poor Knowledge about Lassa fever (67.4%), the poor knowledge of these students was however attributed to the fact that a course on Lassa fever is not introduced into their curriculum.[19]

Another cross-sectional study was conducted among eligible heads of households using a structured interviewer-administered questionnaire, on the perception of Risk for Lassa Fever among Residents of a Rural Community in Edo State, Nigeria. It was found that (86.8%) of the respondents were aware of Lassa fever and majority agreed that LF was a problem in the community and in Nigeria. A greater proportion of the respondents (85.3%) also agreed that LF was the cause of preventable deaths in Nigeria while only (14.7%) disagreed with it.[20] About (49.7%) of the respondents agreed that they were at risk of contracting LF, while majority (92.7%) of the respondents agreed that complying with preventive measures would protect and also believed that they could protect themselves against LF and intend to adopt measures to protect themselves against LF. Noteworthy is the fact that the study also attributed the respondents' level of education, religion and knowledge of LF as significantly associated with perception of risk of Lassa fever. Respondents' knowledge of LF was the only significant predictor of perception of risk of Lassa fever on binary logistic regression analysis. good perception of risk of LF than those with poor knowledge.[20]

More so, in a study to assess the knowledge, attitude and practices of foodstuff sellers on Lassa fever in major markets in Ibadan which was a Cross-sectional research design and the study, being both explanatory and exploratory, came forward with the following findings:

a) The majority of the interviewees have limited knowledge of Lassa fever. Their knowledge was inclined mainly through hearing about the virus. Though they were aware of the Lassa fever, few had good knowledge of the fever. This implies that awareness of a social phenomenon or reality does not translate to proper or adequate knowledge of it.
b) The knowledge of the clinical signs and symptoms and prevention of Lassa fever was poor although some of the respondents had heard about bleeding from open parts of the body, persistent headache and fever.
c) On the knowledge of Lassa fever, some of the interviewees said that it is one of God's way of punishing the people for their sins. This is a reflection of the belief in the spiritual causation of disease
d) The sources of information about fever in this study include the radio, television, newspapers, posters and health talk/ awareness rally in the market and thus the media remain a veritable means of disseminating information about health and health-related events
e) Radio discussions and the news were the most frequent means of spread of the information about Lassa fever. This shows that people in the market listen to radio programs and the news and it is an effective means of transferring information that if properly used, a significant amount of information can be passed across not only on Lassa fever but on other viral diseases especially those with epidemic potential.[21]

Furthermore, in a Comparative cross-sectional study on the Assessment of Knowledge, attitude/practices and prevention of Lassa fever among community dwellers and Contacts of

Confirmed Patients in Endemic Areas of Ondo State,[22] Nigeria using a structured questionnaire showed that the distribution of the sources of Information on the awareness of Lassa fever among respondents has radio(majorly) and public health campaigns as the sources of awareness of Lassa fever, among the community dwellers (CD) and contacts of confirmed patients (CCP) also it was noted that although most of the respondents have tertiary education, this study showed that a reasonable number still have the erroneous belief that Lassa fever is transmitted by mosquitoes. This could account for the reason why hunting of rodents such as bush rats still persists despite the annual recurrent outbreak in the study area. Furthermore, our report agrees with previous studies that reported misconceptions in transmission of Lassa fever among respondents in a community study. It also showed that over 40% of the study population have a fair level of Lassa fever knowledge, despite the state having been a hotspot for Lassa fever in recent years. This could be the reason why the Lassa fever outbreak is becoming perennial in States.[22]

More so, in a descriptive cross-sectional study on Knowledge and risk perception towards Lassa fever infection among residents of affected communities in Ebonyi State, Nigeria: implications for risk communication, using a pretested interviewer administered questionnaire, it was found that half of the respondents demonstrated a poor knowledge of LF fever symptoms but a comparatively better knowledge of LF risk factors suggesting a gap in risk communication information dissemination in the state and the need for risk communication content in the state to contain more LF symptoms for early identification of suspected cases. Fever, bleeding, body weakness and headache were the symptoms most correctly known by the respondents. Pregnancy loss was the least known symptom of LF. Eating of poorly cooked food was the least known risk factor for Lassa fever infection. Also noted was a high level of awareness of LF which was attributed to the high sensitization and awareness campaign about the infection during past epidemics in the state[21]. However the proportion of source of Lassa fever information from hospital/health care workers was low (17.7%), thus positing the need for greater enlightenment of the public by the hospitals and health care personnel on Lassa fever when patients visit the hospitals irrespective of their diagnosis as this would help in dissemination of the correct information regarding Lassa fever infection[23].

2.2 ATTITUDE TO LASSA FEVER TRANSMISSION

In a case-control Study on Rodent control to fight Lassa fever: Evaluation and lessons learned from a 4-year study in Upper Guinea which assessed perception of residents to rodents and their control, it was noted that:

a. Rodents are considered a nuisance because of their effects on food stocks and personal properties.
b. Some Individuals believed that it would be impossible to kill 'all' rodents for them, they live in rural areas, surrounded by fields and vegetation, and are therefore in permanent cohabitation with rodents. Persons living in the periphery, bordering the bush, complained that rodents came back sooner to these houses than to those in the middle of the village
c. Locally, preventive measures taken against rodents are very limited. This include acute poisons available on the market are used in households, while several people use Indomethacin, instead of poison because they want to prevent small children and domestic animals from accidental intoxication with poison. Adults may have cats, and the presence of cats was reported to result in fewer rodents in some houses. Children perform rodent trapping by hand when they find a nest in the house or have dogs with them to hunt rodents in the fields.[24]

Similarly, A Study carried out in Bo district in the Southern Province of Sierra Leone titled Rat-atouille: A Mixed Method Study to Characterize Rodent Hunting and Consumption in the Context of Lassa Fever, which employed both qualitative and quantitative methods, The qualitative and quantitative surveys showed that rat hunting and consumption are often practiced. Many informants (qualitative) and respondents (quantitative) declared having hunted over their lifetime, and that Mastomys spp. and Praomys spp. are the most commonly caught species, majority(more than two-thirds) of rat hunters handled live rats during hunting (69.0%, 125/ 186) and about one-third reported having been in contact with urine or having been bitten (32.2%, 61/186 and 28.0%, 53/186) respectively. It was further noted that all species of rat were consumed with the exception of the Shrews and town rats with respondents saying that such attitude was out of hunger, while others were due to acts of defiance against public health authorities.[13]

In a cross-sectional descriptive study carried out in four community markets (CM) in a Military Barrack in Kaduna State, Nigeria, using a structured questionnaire to examine their knowledge attitude and practice relating to Lassa fever,[25] education played a vital role in the attitude of respondents towards LFV, as respondents who had tertiary education scored higher than those in the other categories. This was attributed to the fact that the respondents (educated) in this group had access to various mass media on LFV. Also, the average score of respondents' attitude towards Lassa fever was 5.6 out of 9 with 95% of respondents agreeing to seek prompt medical attention when sick or take their sick dependents to the hospital. This might be because there is a well-equipped military reference hospital with highly trained staff near the barracks.[25]

Also, a cross-sectional study on perception of Risk for Lassa Fever among Residents(heads of households) of a Rural Community in Edo State, Nigeria,[20] using a structured interviewer-administered questionnaire, respondents' level of education, religion and knowledge of LF were significantly associated with perception of risk of Lassa fever[20] and by extension, attitude toward the disease, and of the three factors, educational status of the respondents was reported to have had the highest impact on their attitude to Lassa fever as those with formal education tend to have access to most channels of health communication and adopt relevant behavioral changes thereby reducing exposure to the infection and the resultant morbidity, prolonged hospitalization, loss of work, economic challenges and stigmatization in the society unlike those who aren't educated.[20]

Another study which adopted a qualitative approach using focus group discussion as the method of data collection, on the effectiveness of Yoruba language radio jingles in promoting knowledge, attitude and practices regarding Lassa fever among women in Ondo State, Nigeria, argues that radio jingles on infectious diseases such as Lassa fever should be all-inclusive-and made to involve the indigenous language of the people because the language barrier obscures meaning since health matters demand joint action from the citizenry and hence everyone should be aware and be able to protect themselves and society at large. The study also noted that despite the radio jingles being played in local indigenous language, the attitude to Lassa fever is still poor irrespective of the fact that most respondents perceived Lassa fever as a life threatening disease.[26] This is in concert with a study which claims: that people know more does not mean they would act differently.[27] The poor attitude was however attributed to a lack of an alternative method of drying food and also lack of adequate waste disposal facilities.[26]

Moreover, in a cross-sectional descriptive study on the knowledge, attitude and practices of foodstuff sellers on Lassa fever in major markets in Ibadan,[21] which utilized interview as method of data collection, it was noted that some of the interviewees said that they are bothered to see rats in their stalls since they are aware of what the (rats) can cause, While some of the

interviewees had a positive attitude towards controlling pests in their stalls, some believed rats should not be killed because they need to feed too and that the more you try to keep the m away, the more they multiply. They also argued that rats are God's creations and believed that killing them is tantamount to destroying God's creature.[21]

A cross-sectional descriptive study on the knowledge beliefs and sources of information on Lassa fever among residents of a community in Ilorin Nigeria,[28] which used a self-administered questionnaire which included closed and open ended questions, showed that the place of cultural beliefs on the knowledge and by extension attitude towards Lassa fever among the respondents could not also be overemphasized. It noted that in spite of the majority of the respondents having had tertiary education (84.3%), about half of that number (42.7%) still believe that Lassa is caused by the devil, one third 30.0% believed that Lassa fever can be used to afflict a person, while one fifth 24.7% of the respondents believed the Lassa fever emerged as a result of the sin committed by mankind and serves as punishment from God.[28] This result showed the ethnic and cultural diversity of Nigeria and the studied population and the significance of cultural (and religious) beliefs in shaping people's belief on illness and diseases and hence their attitude towards the disease.

2.3 PREVENTION OF LASSA FEVER TRANSMISSION

A cross-sectional study carried out on the knowledge and preventive practices against Lassa fever among heads of households in Abakaliki metropolis, Southeast Nigeria,[2] using a pretested semi-structured questionnaire, it showed that the majority (88.8%) were aware that Lassa fever is preventable. A minority (18.1%) were aware that there is no relationship between bush meat and Lassa fever. A higher proportion (66.4%) demonstrated good preventive practices against Lassa fever, this result is comparable to that obtained in Southwest,[15] South South,[3] and North Central Nigeria.[25] In other studies, lower proportions of respondents demonstrated good preventive practices,[4,8] From the results of this study, almost equal proportions of respondents had a good knowledge of Lassa fever and showed good preventive practices. This result is different from that of other studies where proportions that demonstrated good preventive practices were higher.[3,4] This may be an indication that there is a poor understanding of Lassa fever among the population. It has already been observed in Nigeria that there is a weak integration of culture and socio-behavioral preventive measures which could be effective for the prevention of Lassa fever.[29] This was demonstrated in the results of this study, as those who consume rats were 2.3 times more likely to have a good knowledge of Lassa fever compared to those who do not consume rats. Yet, the majority of respondents (79.3%) knew that consumption of rats could cause Lassa fever. Similarly those respondents who were in a low socio-economic class were twice as likely to have good preventive practices against Lassa fever when compared to those in a high socio-economic class {AOR(adjusted odd ratio) =2.1; 95% CI (confidence interval) 1.3–3.6}. Those respondents who had a good knowledge of Lassa fever were 10 times more likely to have good preventive practices against Lassa fever when compared to those who had a poor knowledge (AOR=10.2; 95% CI 6.2–17.0).

Furthermore, it was revealed in a cross-sectional descriptive study to assess community hygiene practices against Lassa fever and its determinants, among residents of Gangara, a rural agrarian community in Giwa local government area, Kaduna State, North West Nigeria, that there are certain predictors for good hygiene practice and by extension prevention of lassa fever transmission, these predictors include having no formal education a possible explanation is that those without a formal education in this setting listen to radio – a major source of information in rural areas – more often. Educational attainment and being married were significant predictors of

maintaining a clean environment, while good knowledge of Lassa fever was independently associated with maintaining good housing standards. This is possible because housewives conduct the environmental sanitation at homes, and having a formal education enables them to take preventive measures necessary for good health. However, the study concluded with findings that the practice of preventive measures against Lassa fever was poor. It also indicated that the practice of each preventive measure was determined by sociodemographic factors.[30]

2.4 JUSTIFICATION OF THE STUDY

Lassa fever as a disease, has assumed an endemic and public health emergency status[3] evidenced by its steady contribution to hospital admissions which increased from 0.3% in 2001 to 3.4% in 2018, the contribution to deaths rose from 1.5 to 8.8% over the same period[11].Also, since the outbreak of LASV in December 2016, Nigeria have reported 2787 confirmed cases of this virus; a total of 298 confirmed cases were observed in 2017, In 2018, a total of 528 cases were confirmed, in 2019 and 2020, the number of confirmed cases were 796 and 1165 respectively.[1]

Inspite of the increasing spread of Lassa fever infection, little or no study has been carried out to ascertain the knowledge, attitude and prevention of this infection amongst women who are usually in charge of buying, storing and even preparing the family meals as well as managing the environmental hygiene of the homes. It is therefore on this premise that this study was designed, to determine the knowledge, attitude and preventive practices against Lassa fever among women in households in Nnewi North LGA of Anambra State, Southeast Nigeria. Owing to the rising number of lassa fever cases each year, this study will help ascertain the level to which women, who in most homes are in charge of the foodstuff (buying, storing and/or cooking) are aware of the important role they play in preventing or decreasing the rising case of LF. Furthermore, findings from this research could also be used to deepen the impact of the multi-sectoral One Health approach for surveillance, early detection of spill over into human populations, and rapid public health emergency response during outbreaks of LF[10] through furtherance of campaigns/ awareness on LF in community gatherings especially those involving women such as in churches, primary health centres, etc. The aim of the study is to determine the Knowledge, attitude, and prevention of Lassa Fever transmission among women in Nnewi North LGA and factors that may affect these outcomes.

3 METHODOLOGY

3.1 AREA OF STUDY

The Study was conducted in Nnewi North a Local Government Area in Anambra State, south-eastern Nigeria. Nnewi is the only town that make up Nnewi North LGA. It has four communities (sub-towns) that make up the one-town local government, which includes; Otolo, Uruagu, Umudim and Nnewichi. It has an estimated land area of 520km^2 (200 square miles) and an estimated population of 391,227 according to 2006 Nigerian census.

The population is predominantly business owners and being a major industrial and commercial hub in Africa, Nnewi experiences voluminous financial activities, therefore hosts major banks, and other financial institutions. Industries are dotted around the city and adjoining towns. Palm oil, cosmetics, motor, and motorcycle spare parts, books, and stationery, textiles, electric cables, and so on are produced in commercial quantity in the area.

3.2 STUDY DESIGN

A cross-sectional descriptive study design was adopted for this work.

3.3 STUDY POPULATION

The population comprised of women living in Nnewi North LGA, Anambra State, Nigeria

3.4.1 INCLUSION CRITERIA

Respondent must be a woman residing in Nnewi North, LGA.

3.4.2 EXCLUSION CRITERIA

Elderly women 70 years and above, and women who are too sick to participate in the study.

3.5 SAMPLE SIZE DETERMINATION

The formula below will be used to calculate the sample size

$N= Z^2PQ / d^2$

where N is the minimum sample size:

z is the standard normal deviate (1.96) at 95% confidence level.

p is the prevalence = 17.5%[20], (~ 0.18)

q= 1-p (1- 0.18) = 0.82

d is the degree of precision is usually set at 5% (0.05)

$$N= \frac{(1.96)^2 \times 0.18 \times 0.82}{(0.05)^2}$$

N=226.80

Therefore, anticipating a non-response rate (f) if 10% as used in a previous study[14],the adjusted Sample size would be

$$Ns= \frac{N}{1-f} = \frac{226.80}{1-0.1} = \frac{226.80}{0.9} = 252$$

3.6 SAMPLING TECHNIQUE

A multi – Stage sampling Technique was used for the purpose of this Study.

In the first stage, a simple random-sampling technique of balloting was used and two communities were selected out of the four communities that make up Nnewi North.

The second stage involved selection of wards by simple random-sampling technique involving balloting, two wards were selected from each of the selected communities.

In the Third Stage, a simple Random technique involving balloting was used to select one village from each of the selected wards.

Stage Four involved selection of two clusters by a simple random sampling system of balloting from each of the selected village.

Stage Five, Selection of respondents across each of the selected clusters and this involved choosing consecutive houses from which women will be recruited for the study until the required sample size is obtained.

3.7 DATA COLLECTION

Data was collected between 1st to 30th September, 2022 through a pre-tested semi structured interviewer-administered, questionnaire after seeking verbal consent following a proper orientation of the participants on the objectives of the study.

3.8 DATA MANAGEMENT

Data was analyzed using SPSS version 25. Descriptive and inferential statistics were applied where necessary. Numerical variables were reported as mean, median and standard deviation, while categorical data will be reported using proportion and percentages. Respondents were assessed as having good or poor knowledge, attitude, or prevention of Lassa fever transmission based on the correctness or wrongness of 50% of their responses for each category. Statistical level of significance was set at 0.05.

4 RESULT

252 women from Nnewi-North Local Government Area were sampled and the result obtained are presented in the tables and figures below:

TABLE 1 SHOWS THE SOCIO-DEMOGRAPHICS FEATURES OF THE RESPONDENTS

Variable	Frequency	Percentage
Age(Years)		
>20.0	20	7.9
20.0 - 29.0	99	39.3
30.0 - 39.0	62	24.6
40.0 - 49.0	36	14.3
50.0 - 59.0	19	7.5
60.0 - 69.0	14	6.4
Average age in years	***33.40±13.16***	
Tribe		
Igbo	230	91.3
Hausa	19	7.5
Yoruba	3	1.2
Religion		
Christianity	222	88.1
Islam	26	10.3
Traditionalist	4	1.6
Occupation		
Civil servant	20	7.9
Business Owner	171	67.9
Student	55	21.8
Unemployed	6	2.4
Marital Status		

Single	102	41.7
Married	139	54.0
Divorced/Separated	2	0.8
Widowed	9	3.6
Educational Level attained		
Non-formal	4	1.6
Primary School	23	9.1
Secondary School	142	56.4
Tertiary	83	32.9
Occupation of Husband		
Civil Servant	28	20.1
Business Owner	101	72.7
Student	4	2.9
Unemployed	6	4.3
Educational status of Husband		
Non-formal	3	2.2
Primary School	20	14.4
Secondary school	76	54.7
Tertiary	40	28.8

From table 1 above, there were more respondents between the age ranges of 20-29 years and 30-39 years, with a prevalence of 99(39.3%) and 62(24.6%) respectively; however the average age of the respondents were 33.4±13.2 years. Most of the respondents were Igbo by tribe, 230(91.3%); Christian, 222(88.1%); business owner, 171(67.9%); married, 139(54.0%) and completed secondary school education, 142(56.4%). Among those who were married, most of their husbands were business owners also, 101(72.7%) and had secondary school as their highest educational level attained, 76(54.7%).

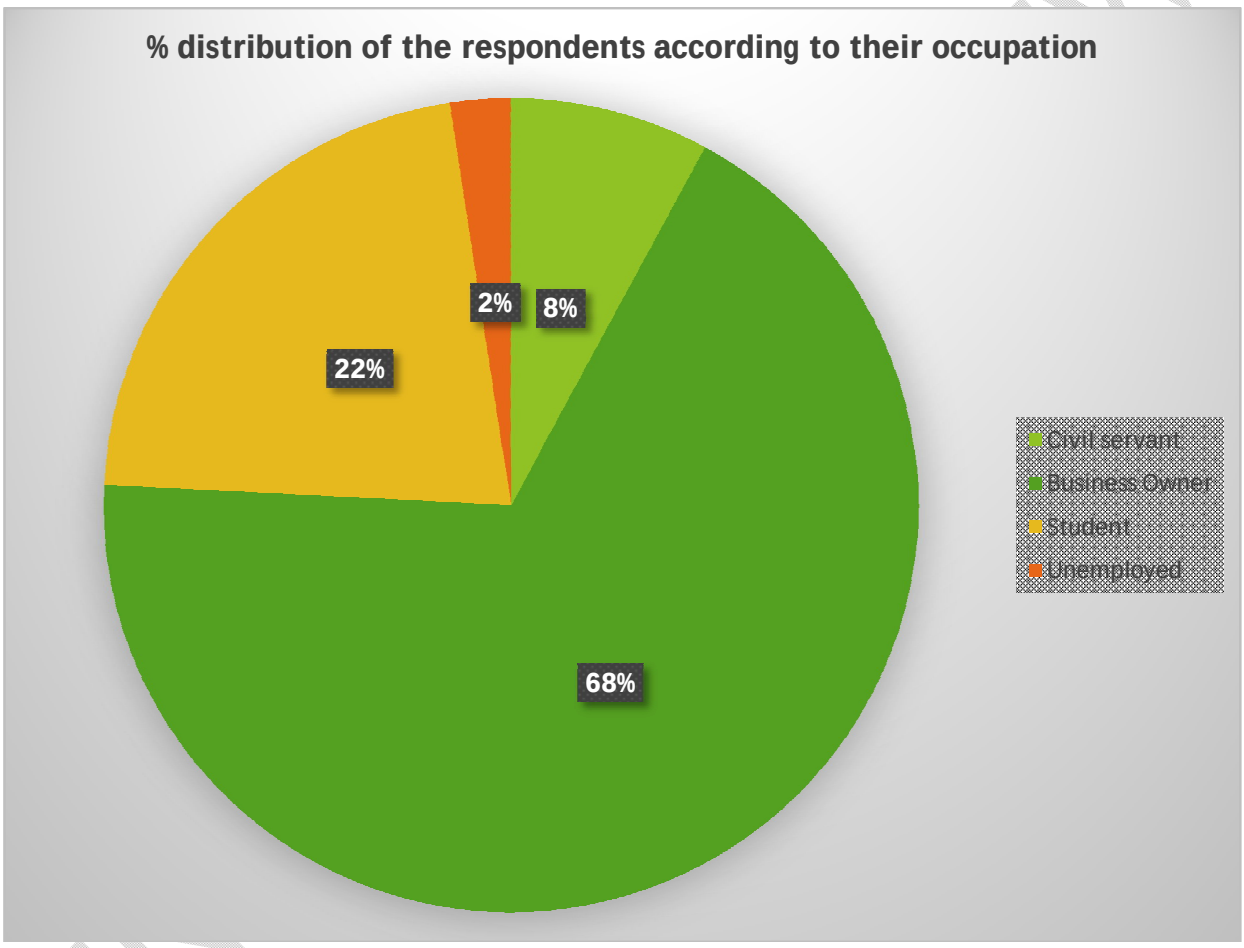

FIGURE 1 SHOWS THE % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR OCCUPATION

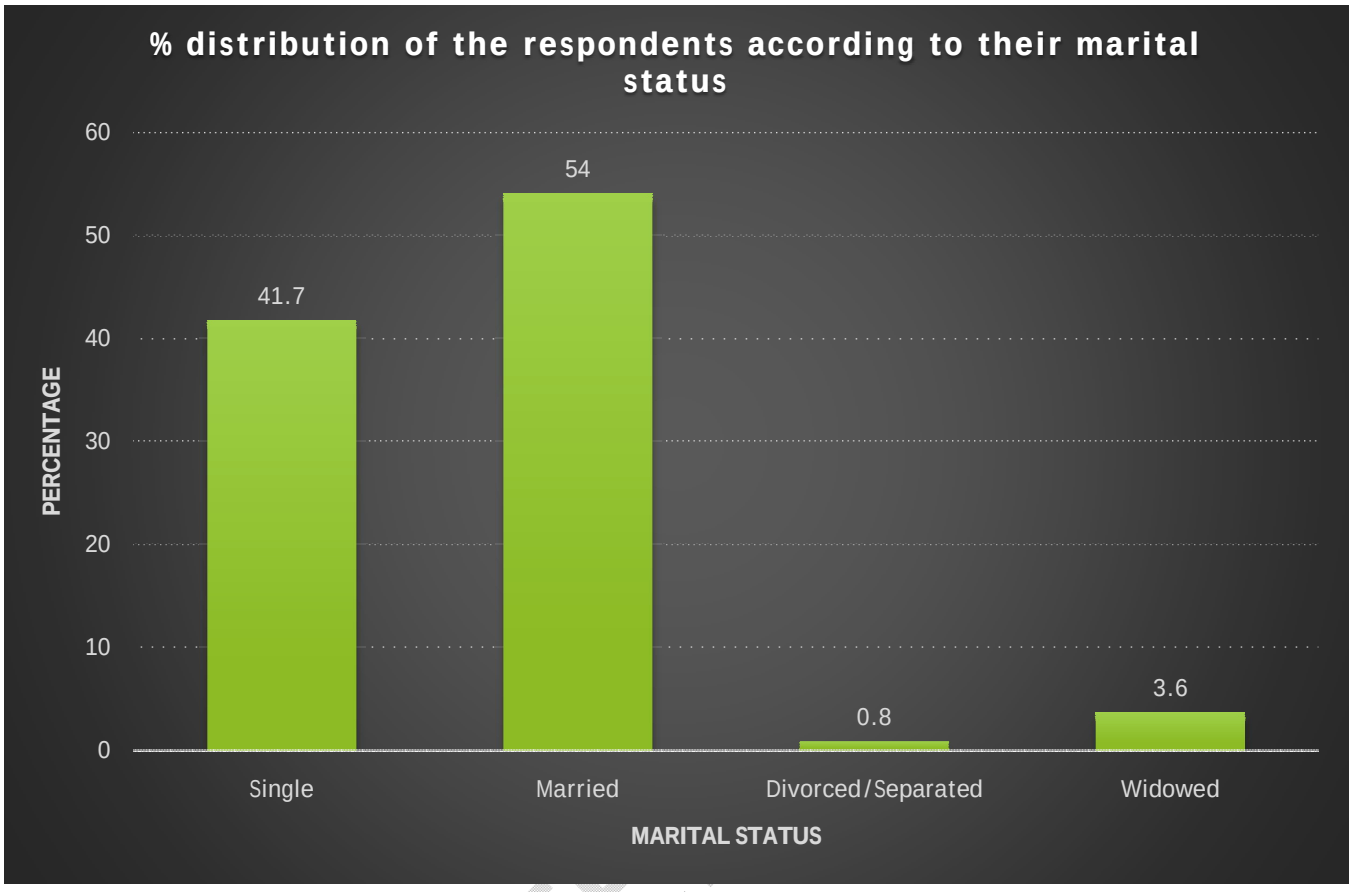

FIGURE 2 SHOWS THE % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR MARITAL STATUS

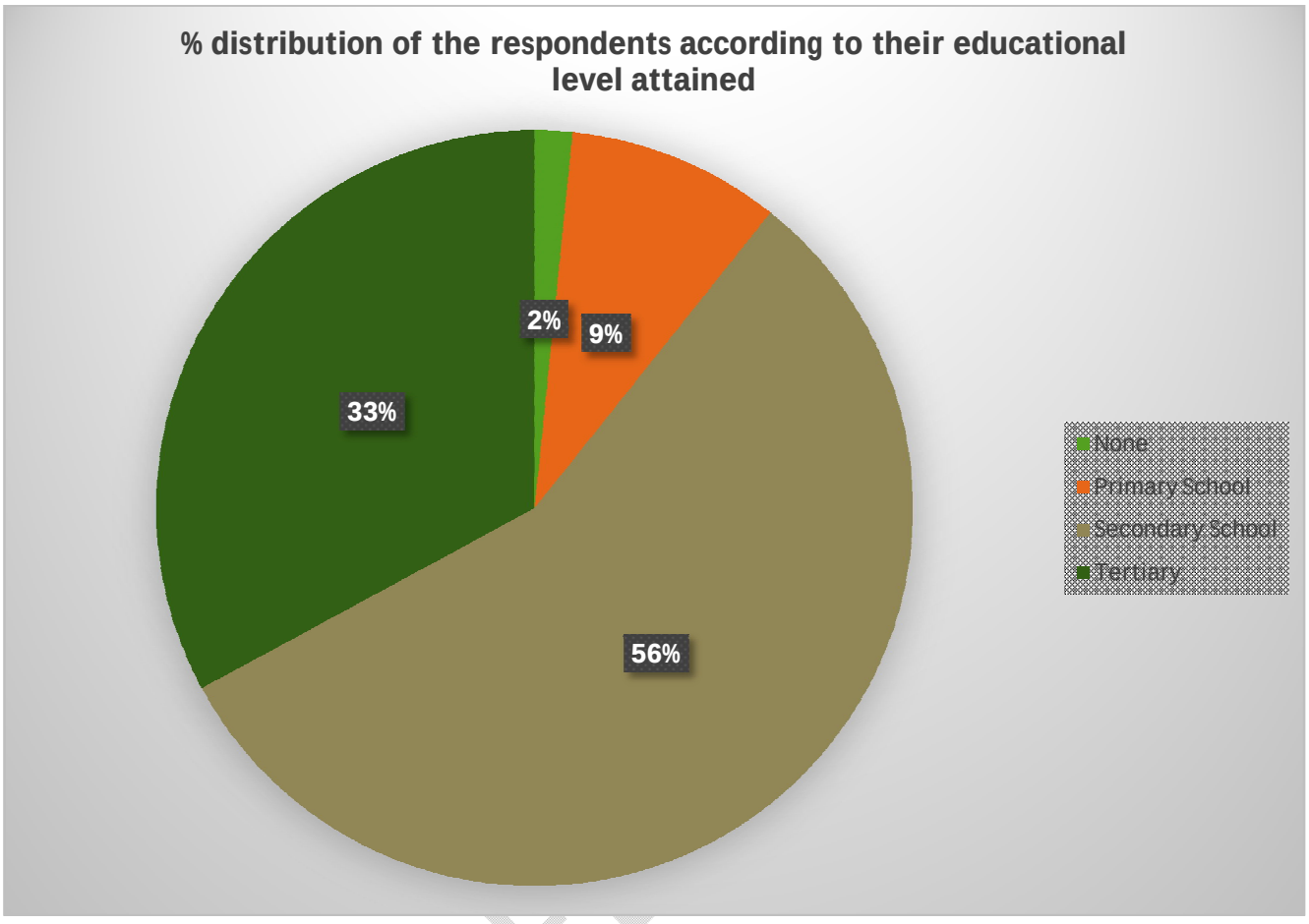

FIGURE 3 SHOWS THE % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR EDUCATIONAL LEVEL ATTAINED

TABLE 2 SHOWS THE RESPONDENTS' KNOWLEDGE OF LASSA FEVER TRANSMISSION

Variable	Frequency	Percentage
Have you heard of Lassa Fever?		
Yes	217	86.1
No	35	13.9
Do you believe Lassa fever exists?		
Yes	176	69.8
No	72	28.6
No response	4	1.6
If yes, What was your source of information?		
Radio/Television	161	63.9
Social Media	70	27.8
Family/Friends	46	18.3
Healthcare worker	54	21.4
School	6	2.4
Church	1	0.4
Lassa fever is caused by?		
Virus	112	44.4
Bacteria	23	9.1
Fungi	2	0.8
I don't know	82	32.5
Lassa fever is transmitted by?		
Rats	214	84.9
Mosquitoes	2	0.8
Flies	1	0.4
I don't know	2	0.8
Can Lassa fever be transmitted from person to person?		
Yes	115	45.6
No	42	16.7
I don't know	60	23.8
Can a person be infected with Lassa fever and still not show any symptoms?		
Yes	99	39.3
No	63	25.0
I don't know	54	21.4
Lassa fever can be transmitted to humans through?		

Contact with blood/secretions of infected rats	129	51.2
Contact with urine/faeces of infected rats	163	64.7
Eating bush meat	61	24.2
Exposure to infectious body fluid	37	14.7
sexual intercourse	36	14.3
Caring for Lassa fever patients	49	19.4
Inhalation of viral particles	15	6.0
Handling of corpses of infected patient	49	19.4
curses and spells	8	3.2
Symptoms of Lassa fever infections include?		
Fever	143	56.8
Nausea/Vomiting	85	33.7
Diarrhoea	52	20.6
Sore Throat	19	7.5
Cough	2	0.8
Headache	9	3.6
Tiredness	4	1.6
Nose Bleed	1	0.4
Rashes	4	1.6
Muscle Pain	1	0.4
Can a door not well fixed lead to invasion of rat from the outside?		
Yes	209	82.9
No	7	2.8
What factors predispose to Lassa fever?		
Poor storage of food items	165	65.5
Poor compliance to standard precautions	55	21.8
Traditional handling of corpses	29	11.5
Contact with persons infected with the disease	63	25.0
Eating of rodent	129	51.2
Insanitary disposal of waste	65	25.8
A drug is available for the treatment of Lassa fever		
Yes	155	61.5
No	61	24.2
All age groups are at risk of Lassa fever		
Yes	199	79.0
No	17	6.7
Lassa fever can be treated at home		
Yes	38	15.1
No	178	70.6

Lassa fever is preventable		
Yes	206	81.7
No	10	4.0
Have heard of people that have survived Lassa fever?		
Yes	111	44.0
No	105	41.7
There is a vaccine currently available for preventing Lassa fever?		
Yes	150	59.5
No	66	26.2
Level of knowledge of Lassa Fever transmission		
Poor knowledge (knowledge score <50.0%)	50	19.8
Good knowledge (knowledge score ≥50.0%)	202	80.2

From table 2 above, more than four-fifth of the respondents have heard of Lassa fever, 217(86.1%) and about two-third believe that Lassa fever virus exist, 176(69.8%). Most of those who have heard about Lassa fever got their information from radio/television and social media, with a prevalence of 161(63.9%) and 70(27.8%) respectively. Less than half of them knew that Lassa fever were caused by a virus, 112(44.4%); however a great majority of them knew it was transmitted by rats, 214(84.9%). Only 115(45.6%) knew that Lassa fever can be transmitted from person to person and also fewer percentage knew that a person can be infected with Lassa fever and still not show any symptoms, 99(39.3%). The routes identified by the respondents through which Lassa fever can be transmitted to humans were contact with urine/faeces of infected rats, 163(64.7%) and contacts with blood/secretions of infected rats, 129(51.2%). The common symptoms of Lassa fever infections identified were fever, 143(56.8%); Nausea/vomiting, 85(33.7%) and diarrhoea, 52(20.6%). A great majority agreed that a door not well fixed can lead to invasion of rat from the outside, 209(82.9%). The factors identified to predispose to Lassa fever include poor storage of food items, 165(65.5%); eating of rodents, 129(51.2%) and insanitary disposal of waste, 65(25.8%). A great majority believe a drug is available for the treatment of Lassa fever, 155(61.5%); that all age groups are at risk of Lassa fever, 199(79.0%); that Lassa fever cannot be treated at home, 178(70.6%); that Lassa fever is preventable, 206(81.7%); and that a vaccine is currently available for preventing Lassa fever, 150(59.5%). However, there were an almost equal distribution between those who have heard of people that survived Lassa fever with a prevalence of 111(44.0%) and 105(41.7%) for those who have heard and those who had not, respectively.

Overall, four-fifth of the respondents had good knowledge of Lassa fever transmission with a prevalence of 202(80.2%).

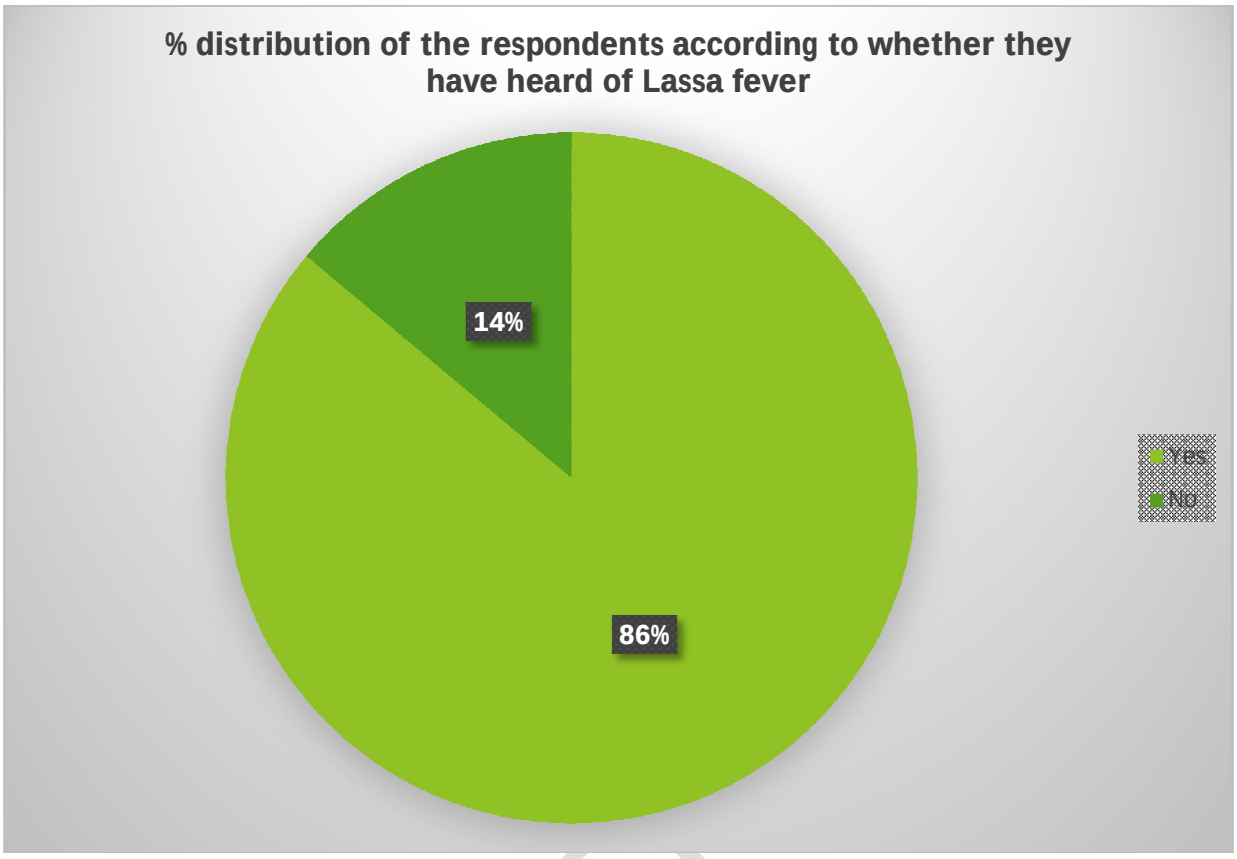

FIGURE 4 SHOWS THE % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO WHETHER THEY HAVE HEARD OF LASSA FEVER

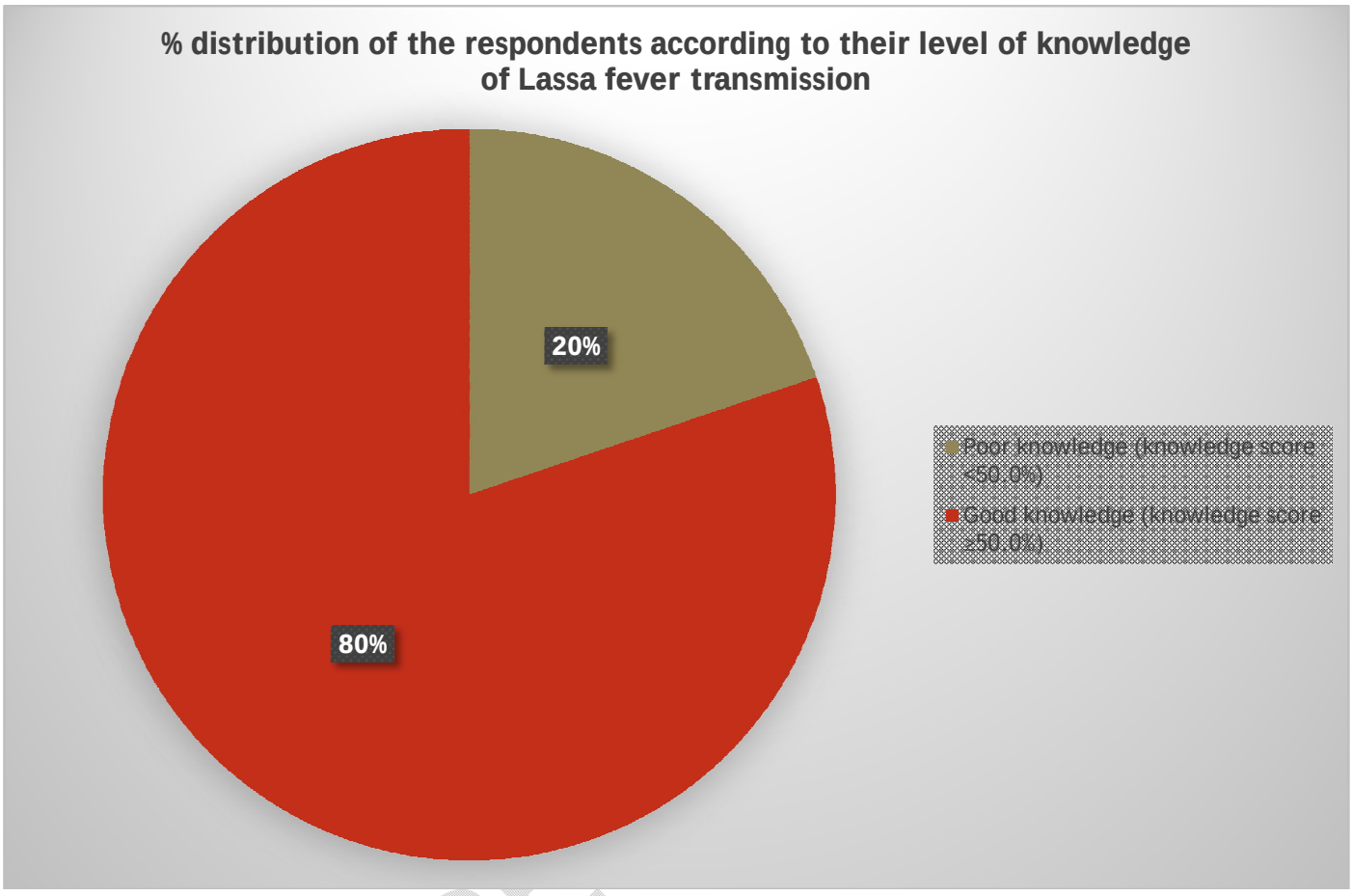

FIGURE 5 SHOWS THE % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR LEVEL OF KNOWLEDGE OF LASSA FEVER TRANSMISSION

TABLE 3 SHOWS THE RESPONDENTS' ATTITUDE TO LASSA FEVER TRANSMISSION

Variable	Frequency	Percentage
Do you think Lassa fever is a serious illness?		
Yes	204	81.0
No	12	4.8
Are there rats or rodents in and around your house?		
Yes	169	67.1
No	47	18.7
Are you concerned about possible infection of Lassa fever from rats around your house?		
Yes	149	59.1
No	67	26.6
Is there any need for you or people around your area to think of measures to avoid Lassa fever infection?		
Yes	198	78.6
No	17	6.7
Attitude to people suspected to be infected with Lassa fever		
Would keep the information secret if a family member contracts it	59	23.4
Would not buy from a shop keeper who had contracted Lassa fever	102	40.5
Would show some discriminatory attitude towards people suspected of having Lassa fever	113	44.8
Contact health care workers	6	2.4
I will not discriminate among them	35	13.9
Attitude towards treatment options of people infected/suspected of having Lassa fever		
Agree that if a person has been diagnosed with Lassa fever, he/she must be admitted in a Lassa fever treatment centre	195	77.4
Agree that people who have direct contact with a person who has been diagnosed with Lassa fever must be quarantined for some weeks	130	51.6
Attitude towards vaccines against Lassa fever		
Accept to take an approved vaccine that could prevent Lassa fever	160	63.5
accept to give an approved vaccine to my children and husband that could prevent Lassa fever	99	39.3
I will not accept to take an approved vaccine because it is against my faith	34	13.5

I will not accept to give an approved vaccine to my children and husband that could prevent Lassa fever	39	15.5
Level of attitude towards Lassa fever transmission		
Poor attitude (Attitude score < 50.0%)	56	22.2
Good attitude (Attitude score ≥50.0%)	196	77.8

From table 3 above, about four-fifth of the respondents think Lassa fever is a serious illness, 204(81.0%). About 67.1% of them alluded to having rats/rodents in and around their house; and about 59.1% were concerned about possible infection of Lassa fever from rats around their house.

Majority believe there's need for them/people around their area to think of measures to avoid Lassa fever infection, 198(78.6%). Close to half of the respondents claimed they will show some discriminatory attitude towards people suspected of having Lassa fever, 113(44.8%); however only a handful claimed they will not discriminate , 35(13.9%).

As regards their attitude towards treatment options of people infected/suspected of having Lassa fever, a great percentage of them agreed that if a person has been diagnosed with Lassa fever, he/she must be admitted in a Lassa fever treatment centre, 195(77.4%) and that people who have direct contact with a person who has been diagnosed with Lassa fever must be quarantined for some weeks, 130(51.6%).

With respect to attitude towards vaccines against Lassa fever, about two-third of the respondents agreed to take an approved vaccine that could prevent Lassa fever, 160(63.5%); however a lower percentage agreed to give an approved vaccine to their children/husbands, 99(39.3%).

Overall, a great majority of the respondents have good attitude towards Lassa fever transmission, with a prevalence of 196(77.8%).

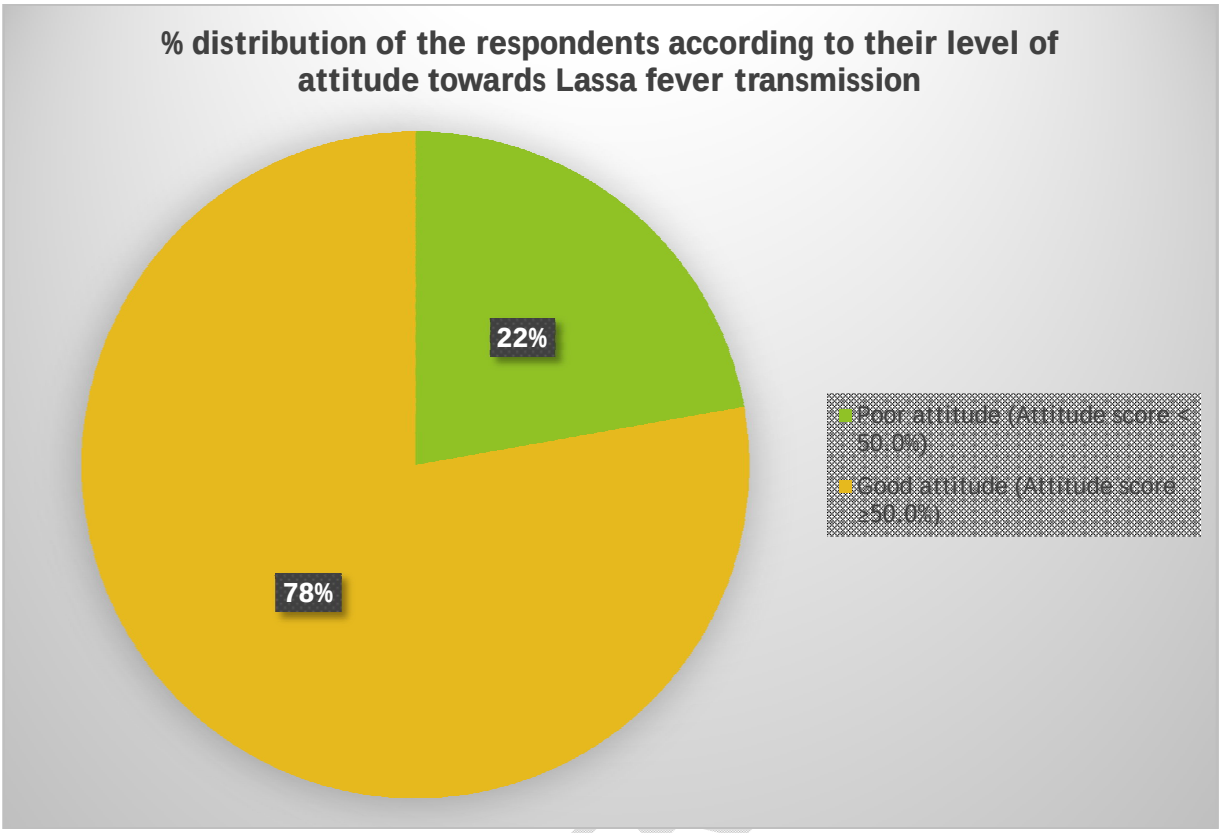

FIGURE 6 SHOWS % DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR LEVEL OF ATTITUDE TOWARDS LASSA FEVER TRANSMISSION

TABLE 4 SHOWS THE RESPONDENTS' PRACTICES TOWARDS PREVENTION OF LASSA FEVER TRANSMISSION

Variable	Frequency	Percentage
Avoiding contact with people infected with Lassa fever is preventable?		
Yes	177	70.2
No	39	15.5
Avoiding food contaminated by rats is preventative		
Yes	212	84.1
No	4	1.6
Regular hand washing can prevent transmission of Lassa fever		
Yes	180	71.4
No	36	14.3
Ensuring good environmental hygiene can prevent the transmission of Lassa fever		
Yes	210	83.3
No	6	2.4
Proper storage of food can prevent the transmission of Lassa fever		
Yes	214	84.9
No	2	0.8
Destroying all rats could prevent the transmission of Lassa fever?		
Yes	196	77.8
No	20	7.9
Clearing of bushes around houses can prevent Lassa fever		
Yes	204	81.0
No	11	4.4
Proper refuse disposal can prevent Lassa fever		
Yes	203	80.6
No	13	5.2
Avoiding rat consumption can prevent Lassa fever		
Yes	199	79.0
No	17	6.7
Avoiding bush burning can prevent Lassa fever		
Yes	70	27.8

No	146	57.9
Avoiding bush-meat consumption can prevent Lassa fever?		
Yes	169	67.1
No	47	18.7
Fixing holes in walls and nets in the house can prevent Lassa fever		
Yes	180	71.4
No	36	14.3
Poor prevention practice(< 50.00)	38	15.1
Good prevention practice(≥50.00)	214	84.9
Average prevention practice	***76.06±33.45***	

From table 4 above, the preventive practices towards Lassa fever transmission identified by majority of the respondents were avoiding contact with people infected with Lassa fever, 177(70.2%); avoiding food contaminated by rats, 212(84.1%); regular hand washing, 180(71.4%); ensuring good environmental hygiene, 210(83.3%); proper storage of food, 214(84.9%); destroying all rats, 196(77.8%); clearing of bushes around houses, 204(81.0%), proper refuse disposal, 203(80.6%); avoiding rat consumption, 199(79.0%) avowing bush-meat consumption, 169(67.1%); and fixing holes in walls and nets in the house, 180(71.4%); however, a great majority do not believe that avoiding bush burning is a preventable measure towards Lassa fever transmission, 146(57.9%). On a general note, a huge percentage of the respondents 84.9% had showed a good preventive practice.

TABLE 5 SHOWS THE RELATIONSHIP BETWEEN SOME OF THE RESPONDENTS' SOCIO-DEMOGRAPHICS AND KNOWLEDGE OF LASSA FEVER TRANSMISSION

		Respondents' knowledge of Lassa Fever Transmission					
		Poor knowledge	**Good knowledge**	**Total**	**Chi-square ($\chi 2$)**	**df**	**p-value (≤0.05)**
Age(Years)	< 20.0	6(30.0%)	14(70.0%)	20	4.27	6	0.64
	20.0 - 29.0	19(19.2%)	80(80.8%)	99			
	30.0 - 39.0	9(14.5%)	53(85.5%)	62			
	40.0 - 49.0	7(19.4%)	29(80.6%)	36			
	50.0 - 59.0	4(21.1%)	15(78.9%)	19			
	60.0 - 69.0	5(31.3%)	11(68.7%)	16			
	Total	**50**	**202**	**252**			
Highest educational Level attained	Non-formal	2(50.0%)	2(50.0%)	4	11.63	3	0.009
	Primary School	8(34.8%)	15(65.2%)	23			
	Secondary School	32(22.5%)	110(77.5%)	142			
	Tertiary	8(9.6%)	75(90.4%)	83			
	Total	**50**	**202**	**252**			
Occupation	Civil servant	1(5.0%)	19(95.0%)	20	6.45	3	0.09
	Business Owner	36(21.1%)	135(78.9%)	171			
	Student	10(18.2%)	45(81.8%)	55			
	Unemployed	3(50.0%)	3(50.0%)	6			
	Total	**50**	**202**	**252**			

With respect to age(years) and occupation in relation to their level of knowledge of Lassa fever transmission, those within the age range of 30-39 years and civil servants had better knowledge; however this was not statistically significant (p-value >0.05). on the other hand, those with tertiary education had better knowledge and the difference in knowledge with respect to highest educational level attained was statistically significant (p-value <0.05).

TABLE 6 SHOWS THE RELATIONSHIP BETWEEN SOME OF THE RESPONDENTS' SOCIO-DEMOGRAPHICS AND ATTITUDE TOWARDS LASSA FEVER TRANSMISSION

		Respondents' Attitude towards Lassa Fever Transmission					
		Poor knowledge	**Good knowledge**	**Total**	**Chi-square (χ2)**	**df**	**p-value (≤0.05)**
Age(Years)	< 20.0	5(25.0%)	15(75.0%)	20	4.10	6	0.66
	20.0 - 29.0	20(20.2%)	79(79.8%)	99			
	30.0 - 39.0	12(19.4%)	50(80.6%)	62			
	40.0 - 49.0	7(19.4%)	29(80.6%)	36			
	50.0 - 59.0	6(31.6%)	13(68.4%)	19			
	60.0 - 69.0	6(37.5%)	10(62.5%)	16			
	Total	**56**	**196**	**252**			
Highest Educational Level attained	Non-formal	3(75.0%)	1(25.0%)	4	16.97	3	0.001
	Primary School	9(39.1%)	14(60.9%)	23			
	Secondary School	35(24.6%)	107(75.4%)	142			
	Tertiary	9(10.8%)	74(89.2%)	83			
	Total	**56**	**195**	**252**			
Occupation	Civil servant	1(5.0%)	19(95.0%)	20	6.17	3	0.10
	Business Owner	44(25.7%)	127(74.3%)	171			
	Student	9(16.4%)	46(83.6%)	55			
	Unemployed	2(33.3%)	4(66.7%)	6			
	Total	**56**	**196**	**252**			

With respect to the relationship between age(years) and occupation with the respondents' attitude towards Lassa fever transmission, those within the age range of 20-29 years and 30-39 years and civil servants had better attitude towards Lassa fever transmission, however this was not statistically significant.(p-value>0.05)

On the hand, those with tertiary education has better knowledge. Moreover, the higher the educational level attained, the better the attitude towards Lassa fever transmission and this was statistically significant (p-value <0.05)

TABLE 7 SHOWS THE RELATIONSHIP BETWEEN SOME OF THE RESPONDENTS' SOCIO-DEMOGRAPHICS AND PREVENTIVE PRACTICES TOWARDS LASSA FEVER TRANSMISSION

		Respondents' prevention practices towards Lassa Fever Transmission					
		Poor prevention practice	**Good prevention practice**	**Total**	**Chi-square ($\chi 2$)**	**df**	**p-value**
Age(Years)	< 20.0	4(20.0%)	16(80.0%)	20(100.0%)	3.32	6	0.77
	20.0 - 29.0	13(13.1%)	86(86.9%)	99(100.0%)			
	30.0 - 39.0	8(12.9%)	54(87.1%)	62(100.0%)			
	40.0 - 49.0	6(16.7%)	30(83.3%)	36(100.0%)			
	50.0 - 59.0	3(15.8%)	16(84.2%)	19(100.0%)			
	60.0 - 69.0	4(25%)	12(75%)	16(100.0%)			
	Total	38(15.1%)	214(84.9%)	252(100.0%)			
Highest Educational Level attained	Non-formal	1(25.0%)	3(75.0%)	4(100.0%)	16.13	3	0.001
	Primary School	9(39.1%)	14(60.9%)	23(100.0%)			
	Secondary School	23(16.3%)	118(83.7%)	141(100.0%)			
	Tertiary	5(6.0%)	78(94.0%)	83(100.0%)			
	Total	38(15.1%)	214(84.9%)	252(100.0%)			
Occupation	Civil servant	1(5.0%)	19(95.0%)	20(100.0%)	4.37	3	0.22
	Business Owner	29(17.0%)	142(83.0%)	171(100.0%)			
	Student	6(10.9%)	49(89.1%)	55(100.0%)			
	Unemployed	2(33.3%)	4(66.7%)	6(100.0%)			
	Total	38(15.1%)	214(84.9%)	252(100.0%)			

With respect to the relationship between age(years) and occupation with the respondents' preventive Practice towards Lassa fever transmission, those within the age range of 20-29 years and 30-39 years and civil servants had better preventive practice towards Lassa fever transmission, however this was not statistically significant.(p-value>0.05)

On the hand, those with tertiary education has better preventive practice. Moreover, the higher the educational level attained, the better the preventive practice towards Lassa fever transmission and this was statistically significant (p-value <0.05).

DISCUSSION

Majority of the respondents which make up more than four-fifth of the respondents have heard of Lassa fever, 217(86.1%), this was expected given the situation of a tertiary health care facility in area and is also in keeping with findings from a similar study carried out in a rural community which recorded a high proportion of its respondent 96.2% [2], 87% [18], 79.4% [14], as having heard of lassa fever.

Most of those who have heard about Lassa fever got their information from radio/television and social media, with a prevalence of 161(63.9%) and 70(27.8%) respectively this is likely due to the ease of access to these mass media tools given both the technological advancements of the current time and some form of financial stability among most of the respondents who identified either as students 22%, business owners 68% or civil servants 8%. This high prevalence for the radio/television as the major source of information is also recorded in similar works carried out in two rural communities in south-east[2,14,] , and North-Central geopolitical zones of Nigeria[25]. Also worthy of note is the finding from this study that health care workers constituted a small percentage of the body of information on Lassa fever by the respondents 54(21.4%), it could be inferred that healthcare workers have not been strategic and fully involved in information dissemination about lassa fever. This finding corroborates that noted in a study carried out in a rural community in Ebonyi State which has stated that only 15.3% of the respondents have heard of Lassa fever from a health care worker.[14] A similarly low percentage was also obtained in a study in North central Nigeria.[25] However, a similar study noted a rather high proportion 57.1% of the respondent alluded to having heard about Lassa fever from health care workers.[2] Hence, it may be of note that for a good understanding of Lassa fever among the population, there is the need for health-care workers to be involved in educating the public on all aspects of the disease while sustaining the current state of public enlightenment using mass media.[2]

The study also noted that less than half of the participants (44.4%) knew that lassa fever is caused by a virus, this may be due to a combination of gap in information dissemination including a possible lack of adequate translation of the word “virus” to the native tongue of the respondents as majority identified as business owners (67.9%). The low proportion of those with knowledge about the aetiology of lassa fever is also in tandem with findings by Reuben et al in Lafia, North central part of Nigeria who observed that only 41.5% of respondents knew the causative organism of lassa fever to be a virus.[18] However, it was noted from this study that a substantially large amount of the respondents (84.9%) knew that lassa fever is transmitted by rats, this is considerably higher than values gotten from similar studies by Awosanya et al with 56.9% and 80% of respondent from affected local community and unaffected university community respectively,[8] a slightly lower value of 74.6% by Nwonwu et al.[14] A higher value was however observed in a similar study by Fatiregun et al which reported 93.1% this maybe attributed to the fact that the study was carried out in six local Government Areas of Ondo State with a larger number of respondents[17]. Meanwhile, majority, constituting 80% of the respondents had good knowledge of Lassa fever transmission, this is attributed to the higher level of education and better access to information among the respondents and this was found to be statistically significant ($p=0.009$), thus the higher the level of education attained by a respondent the broader the knowledge on lassa fever, this is similar to findings from Fatiregun et al[17], Reuben et al[18], Adesoji et al[28]. This Study also found no statistically significant relationship ($p>0.05$) between age, occupation with respondents level of knowledge, this was however not in agreement with findings from a study among residents in Ilorin by Adesoji et al which should a

statistically significance between occupation of respondents and their knowledge of lassa fever, the reason for this dissonance can be attributed to the fact that most of the respondents in his study were civil servants unlike in this study where majority are business owners.

Majority of the respondents constituting 77.8% had an overall positive attitude towards lassa fever transmission and this was due to the educational level of respondents. It was noted that respondents with a higher level of education also had a good attitude towards the disease. This was also found to be statistically significant (p=0.001), this finding corroborates with that of a similar study carried out among Shop Owners in 4 Community Markets in a Military Barrack in Kaduna State, Nigeria by Uduak which showed that positive attitude towards LF improved with level of education of respondents and vice versa.[25] This was however not the case in a study carried out among students of the University of Benin by Ighedosa et al[3] as there was no significant statistical relationship between education level of the respondent this could be due to the fact that majority of the respondents were first year students with only basic education and a poor knowledge of LF as compared to other respondents in higher class, with higher education and good knowledge.

This study also found that majority of the respondents about 84.9% had an overall good preventive practices against Lassa Fever. This is comparable to results obtained in south west by Obe et al[15],south-south by Ighedosa et al,[3] North Central by Uduak.[25] Lower proportions of respondents with good preventive practice were observed in other studies.[4,8] The result also shows that almost the same proportion of respondents had good knowledge of lassa fever transmission and good preventive practices thus it can be inferred that sound knowledge of disease pathology can lead to a positive preventive measure against the disease and this was found to be statistically significant (p=0.001).

The limitation of this study is its low sample size. A larger sample size would increase the power of the study. There is also a tendency of a social desirability bias by respondents to give responses based on what they assess to be a generally accepted view instead of their own perception especially as regards attitude and prevention strategies. A strength of this study is that it is population based and can be generalizable.

CONCLUSION

During the course of this study, it was observed that the level of Lassa Fever knowledge among women in Nnewi North LGA was considerably high and they demonstrated good preventive practice. However, there is a need for a proper understanding of LF as this would further improve the healthy attitude of the populace toward lassa fever and people infected or suspected to be infected with the disease. Health workers have a very important role to play in information dissemination to the populace regarding the disease.

RECOMMENDATIONS

It is recommended that there be continued sensitization of the populace via electronic and print media on LF and the involvement of Healthcare workers in these sensitization campaigns. More emphasis should be placed on attitude towards the disease, and as a means to clear the skepticism of many regarding vaccination, the role of vaccines in prevention of disease in the past could be includes in the campaigns both to ensure the populace get immunized against current vaccine preventable disease and as a pro-active measure in view of the possibility of a vaccine against LF in the near future.

LFV test should be done on patients that present with febrile symptoms, therefore, there is a need for the government to ensure that healthcare institutions have basic resources for the

management of LFV as there are very few hospitals in the country presently equipped to handle LF cases.

ETHICAL CONSIDERATIONS

This research work was done with approval from the Nnamdi Azikiwe University Ethical Committee. Participants were well oriented on the objectives of the study; verbal consent were obtained prior to administration of the questionnaire which will emphasize the right to non-participation. Data confidentiality was preserved according to the
Helsinki declaration of bioethics.

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