

Gender Differentials in the Awareness of Lassa Fever and Preventive Measures among Inhabitants of Enugu North Local Government Area, Enugu State

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Abstract

The study investigated gender differentials in the awareness of Lassa fever and preventive measures of Lassa fever among inhabitants of Enugu North (LGA). The study adopted the descriptive cross-sectional survey research design. The population for the study consisted of all inhabitants of Enugu North LGA which total was 154,808. The sample size for the study was 450 inhabitants of Enugu North LGA using simple sampling technique of balloting without replacement. The instrument for data collection was Gender Differentials Awareness of Preventive Measures of Lassa Fever Questionnaire. The split-half method, through spearman Brown coefficient was used to test for reliability of the instrument. Frequencies and percentages were used to answer the research questions, while Chi-square statistics was used to test hypotheses. Results indicated that male inhabitants possessed high level of awareness of mode of transmission of Lassa fever (73.93%) as well as moderate levels of signs and symptoms (57.79%), and preventive measures (69.93%), while female inhabitants possessed a moderate level of mode of transmission of Lassa fever (55.11%), signs and symptoms (54.84%), and preventive measures (62.02%) of Lassa fever. Also, Chi-square tests indicated no significant difference in the awareness of Lassa fever and its preventive measures based on gender. Based on the findings it was recommended that regular maintenance of personal hygiene and environmental practices should be encouraged in order to sustain the existing awareness of Lassa fever in the community.

Keywords: Awareness, Lassa fever, Preventive measures, Inhabitants, Enugu North Local Government Area

Introduction

Lassa fever is a zoonotic disease caused by Lassa virus, the virus has been known since the 1950s, but the virus was not identified until 1969 when two missionary nurses died from it in the town of Lassa in Nigeria and was subsequently named after a town in the present Borno State of Nigeria where the first case of the disease was recorded. In 2018, there was an epidemic of Lassa fever in Nigeria where cases were reported across 20 states including the Federal Capital Territory, with most within Edo and Ondo state. According to

World Health Organisation (WHO, 2015) stated that about 100,000 to 300,000 infections of Lassa fever occurring annually, with about 5,000 deaths in west Africa (Nigeria inclusive).

Lassa fever is an acute viral haemorrhagic illness caused by Lassa virus in some countries in West African including Guinea, Mali, Ghana, Liberia, Sierra Leone, and parts of Nigeria. The reservoir of Lassa virus is a rodent of the genus *Mastomys* known as 'multimammate rat'. Lassa infected rat does not become ill, but sheds the virus in its urine and droppings. According to Bukoye (2021), humans are infected mainly through food or household items that are contaminated by infected rats' urine and faeces and by handling infected rats. There appears to be a seasonal pattern in the outbreak of Lassa fever in Nigeria, with most cases occurring in the dry season .The virus is a single-stranded RNA virus that belongs to the virus family *Arenaviridae*. Udoh (2020) reported that about 80 per cent of people who become infected with Lassa virus have no symptoms. Lassa fever is a zoonotic disease, meaning that humans become infected from contact with infected animals. Lassa fever present initially with symptoms and signs that is common with other viral and bacterial infections, and indistinguishable from those of febrile illness, such as typhoid, malaria, and other viral hemorrhagic diseases, such as Ebola. World Health Organization (WHO, 2019) opined that Lassa fever incubation period varies from six days through twenty days. Zaharia (2017) observed that the virus is excreted for 3 – 9 weeks in urine and up to 3 months in the semen of an infected person.

Awareness is the ability to perceive, to feel, to be conscious of events, objects, thoughts, and sensory patterns (Adey, 2019). Chukwu (2020) defined awareness as a human or the animal's perception and cognitive reaction to condition or events. Awareness is familiarity with someone or something which can include facts, information, descriptions, or skills acquired through experience or education (Kayode, 2018). According to Shola (2021), awareness helps people to take action to minimize and reduce levels of illnesses or problems. This can help prevent the high prevalence of the disease. Awareness of the modes of transmission of Lassa fever among inhabitants of Enugu North seems to be very important. According to Behrman (2020),. As a result, the virus can spread easily, especially as the rats breed rapidly and can inhabit human homes. Humans become infected from direct contact with the urine and faeces of the rat, which contains the virus, through touching soiled objects, eating contaminated food, or other bodily secretions of Lassa virus may also be spread between humans through direct contact with the blood, urine, faeces, or other bodily secretions of a person infected with Lassa fever. There is no epidemiological evidence supporting airborne spread between humans. Person-to-person transmission occurs in both community and health-care settings, where the virus may be spread by contaminated medical equipment, such as re-used needles.

Lassa fever occurs in all age groups and both sexes. Persons at greatest risk are those living in rural areas where rats are usually found, especially in communities with poor sanitation or crowded living conditions. Winner (2019) revealed that the mode of transmission of Lassa fever to human is commonly by consuming or inhaling rat urine or faeces. The rats live in and around human habitation, come into contact with foodstuffs and sometimes people eat the contaminated food which may have contracted Young, (2019)

stated that humans become infected from contact with the urine and faeces of infected rats. The infection can also occur in the process of hunting and processing rats for consumption. The virus is spread between humans through direct contact with blood, urine, faeces or other secretions from the infected person. The WHO (2015) averred that sharing needles may spread the virus, and there are some reports of sexual transmission. Also, Johnson (2019) asserted that Lassa fever can be passed between patients and health personnel at poorly equipped hospitals, where sterilization and protective clothing is not standard. Winter (2018) opined that if the inhabitants of Enugu North are aware of the mode of transmission of Lassa fever, it would reduce the rate and spread of Lassa fever infection in the community.

Diagnosis of Lassa fever is difficult because diseases, such as ebola, malaria, typhoid fever, and yellow fever all present with similar symptoms. Confirmation is by laboratory testing to detect the Lassa fever virus, antibodies of the virus or the virus itself in cell culture. Bamidele (2020) asserted that Lassa virus has been circulating in Nigeria for over a thousand years and in some other West African countries for hundreds of years. There is no approved vaccine available presently. Prevention requires control of the mastomys rodent out of homes and food supply, having a cat to hunt vermins, storing food in sealed containers as well as maintaining effective personal hygiene. Titus (2016) stated that protective equipment may be used while in contact with an infected person, and all person suspected of Lassa fever infection will be admitted to isolation facilities and their body fluids and excreta will be properly disposed. The disease is severe late in pregnancy, with maternal death and faetal loss occurring in more than 80 per cent of cases during the third trimester of pregnancy.

Treatment of Lassa fever is addressing dehydration and improving symptoms such as fighting hypertension. Ogbu (2018) submitted that antiviral medication and ribavirin may be useful when administered early. The level of reportage of Lassa fever cases in Nigeria has increased in recent times due to better preparedness and consequent better detection. Nigeria has learned from Ebola and has built better capacity to detect emerging outbreaks, including raising awareness of disease threats through. The wider outbreaks seen in West African may be due to increasing urbanization and climatic conditions favoring the rat. Lassa fever relies on promoting good “community hygiene” to discourage rodents from entering homes. Zampieronì’s (2020) effective measures include storing grain and other foodstuffs in rodent-proof containers, disposing of garbage far from the home, maintaining clean households, and keeping cats. Because Mastomys are so abundant in endemic areas, it is not possible to completely eliminate them from the environment. Family members are expected to be careful to avoid contact with blood and body fluids while caring for sick persons.

In health-care settings, workers should always apply standard infection prevention and control precautions when caring for patients, regardless of their presumed diagnosis. Olowokere and Adegbenro (2020) stated that in order to repress the spread of Lassa fever, it is recommended that people should practise the use of rodent-proof containers to store food and keep their homes clean to deter rodents. These practices can help prevent the zoonotic transmission of the virus. Bola (2019) opined that efforts can be taken to prevent human-to-human transmission if individuals become infected with the virus in the hospital settings. These precautions include wearing protective equipment around infected individuals such as

masks, gloves, gowns and goggles and other hygienic techniques, which can prevent people from contracting the infection. Amoran and Onwube (2021) stated that the people of Enugu North communities to learn how to avoid eating any leftover food especially in the environment that rats may be plenty, those rats may have stooped or urinated in that food.

Gender has been suggested as one of the demographic variables that may determine the level of awareness of Lassa fever and preventive measures among inhabitants of Enugu North LGA. Gender refers to the socially constructed roles and opportunities associated with being male or female (Abiola & Adebayo, 2021). Gender is the biological sex of an individual usually male or female which specifies cultural or societal role. Kelejaye (2018) who found that males and females are the Same in the awareness of Lassa fever preventive measures because males appear to listen to radio programmes, while culturally females are responsible for domestic activities. Zainab (2017) found a significant difference in the level of awareness of signs and symptoms of Lassa fever based on gender. A significant difference was also reported by Asogun (2019) among male and female inhabitants of Enugu North.

Inhabitants of Enugu North communities to avoid food and drinks that have been left open and likely contaminated or eat foodstuff that has rat marks on them, this will prevent them not to contract the infection. Ilesanmi (2019) stated that eliminate rats and their habitat around your house and Cutting bushes around your house will prevent rats to enter your house. People may learn how to turn away or cover their mouth when someone is coughing, especially if the person did not cover his mouth. Okokhere and Okogbemi (2016) opined that regular maintenance of high level of hygiene, especially regular and proper hand washing can prevent transmission of the virus. The people of the community need to avoid sharing anybody products and clothing, this is because the virus can be spread through body fluids like sweat, blood, saliva and the likes.

The study was conducted in Enugu North Local Government Area (LGA). Enugu North LGA has a vibrant economy with the area hosting several public and private institutions which include hotels, banks, relaxation spots and restaurants, and a number of markets such as the artisan market. Therefore, enough attention have to been given to the people of Enugu north to create awareness on Lassa fever and its preventive measures in order to promote their wellbeing. This study assessed the level of awareness of Lassa fever and preventive measures among inhabitants of Enugu north LGA, Enugu

Purpose of the Study

The purpose of the study was to investigate gender differentials in the awareness of Lassa fever and preventive measures among inhabitants of Enugu North LGA, Enugu State. Specifically, the study sought to determine the:

1. level of awareness of the mode of transmission of Lassa fever among inhabitants of Enugu North LGA based on gender;
2. level of awareness of the signs and symptoms of Lassa fever among inhabitants of Enugu north LGA based on gender; and

3. level of awareness of preventive measures for Lassa fever adopted by inhabitants of Enugu North LGA based on gender.

Research Questions

The following research questions guided the study

1. What is the level of awareness of the mode of transmission of Lassa fever among inhabitants of Enugu North LGA based on gender?
2. What is the level of awareness of the signs and symptoms of Lassa fever among inhabitants of Enugu North LGA based on gender?
3. What is the level of awareness of preventive measures of Lassa fever adopted among inhabitants of Enugu North LGA based on gender?

Hypotheses

The following null hypotheses were postulated for the study

1. There is no significant difference in the awareness of mode of transmission of Lassa fever among inhabitants of Enugu North LGA based on gender.
2. There is no significant difference in the awareness of signs and symptoms of Lassa fever among inhabitants of Enugu North LGA based on gender.
3. There is no significant difference in the awareness of preventive measures of Lassa fever among inhabitants of Enugu North LGA based on gender.

Methods

Research Design: The study adopted descriptive cross-sectional survey research design. According to Nelson (2000) ,this design is considered most appropriate as it allows the researcher to collect first hand primary information from large population of respondents in their natural settings for the purpose of giving it detailed descriptions.

Area of the Study: The study was conducted in Enugu North LGA of Enugu State. The area was choice due to the large population of the people living in the community and many markets and restaurants which may predispose rats to their environment Thus the researchers deemed the Area appropriate for the study.

Population for the Study: The population of the study consisted of all inhabitants of Enugu North LGA. The estimated number is about 154,808 Inhabitants (Richardson, 2022)

Sample and Sampling Techniques: The sample size for the study was 450 (163 male and 287 female) inhabitants of Enugu North LGA obtained through purposive stratified random sampling technique.

Instrument for Data Collection: The instrument for data collection was a 15-item researchers'- structured questionnaire titled: Gender Differentials Awareness of Lassa Fever and Preventive Measures Questionnaire (GDALFPMQ). The instrument consisted of 13-items grouped into three sections A, B and C. Section A consisted of bio data of the respondents. Section B consisted of eleven items on awareness of Lassa fever while section C consisted of six items on preventive measures of Lassa fever.

Validity of the Instrument: The face validity of the instrument was established through the judgment of three experts in the Department of Human Kinetics and Health Education, Enugu State University of Science and Technology (ESUT) Enugu State.

Reliability of the Study: To determine the reliability index of the questionnaire, 20 copies of the instrument were administered on 20 inhabitants of Nsukka LGA in Enugu State who had the same characteristics with the study population. The internal consistency of GDALFPMQ was established using the split-half method (Spearman-Brown coefficient) and a reliability coefficient of 0.85 was obtained and this was considered good enough for the study. This is in line with the guidelines of Miller (2021) that if a reliability coefficient index of 0.70 and above is obtained the instrument will be considered reliable.

Method of Data Collection: A total of 450 questionnaires were administered on inhabitants of Enugu North, and the administered questionnaires were filled out and collected back on the spot by the researchers, which gave a 100 per cent return rate.

Method of Data Analysis: Data generated were analyzed using frequency and percentage to answer research questions, while Chi-square statistics was used to test the hypotheses at 0.05 level of significance. For decision rule for the analysis; Ashur's (1977) recommendations were applied. By these criteria, the range of scores 1-39% was considered as low level, 40-69% as moderate, while 70% and above was considered as a high level. Results

Results

Table 1: Frequency and Percentage Response Distribution of the Respondents on the Level of Awareness of the mode of transmission of Lassa Fever based on Gender (n=450)

Mode of Transmission Dec of Lassa fever No	male= 163		Dec		Female=287	
	Yes		No		Yes	
	f	%	f	%	f	%
1. Rat to person contact	124 (76.09)	39 (23.93)	HL	179 (62.37)	108 (37.63)	HL
2. Through contaminated food	134 (82.21)	29 (17.79)	HL	158 (55.05)	129 (44.8)	ML
3. The rats live in and around human habitation	98 (60.12)	65 (39.88)	ML	104 (36.24)	183 (63.76)	LL
4. Eating domestic meat transmit the virus	108 (66.26)	55 (33.74)	ML	208 (72.47)	79 (27.53)	HL
5. Through consuming or inhaling rat urine or feces	127 (77.9)	36 (22.9)	HL	104 (36.24)	183 (63.76)	LL
6. Rat faeces	132 (80.98)	31 (19.02)	HL	196 (68.29)	91 (31.71)	ML
Overall percentage	(73.93)	(26.07)	HL	(55.11)	(44.89)	ML

Table 1 shows that male had overall high level of awareness (73.93%) towards the mode of transmission of Lassa fever virus. While female had an overall moderate level of awareness (55.11%) towards the mode of transmission of Lassa fever virus.

Table 2: Frequency and Percentage Response Distribution of the Respondents on the Level of Awareness of the Signs and Symptoms of Lassa Fever based on Gender (n=450)

S/N	Signs & symptoms of Lassa fever Items	Male =163		Dec	Female =287		Dec
		Yes f %	No f %		Yes f %	No f %	
8	High fever	121 (74.23)	42 (25.77)	HL	159 (55.40)	128 (44.60)	ML
9	General muscle pain	64 (39.26)	99 (60.74)	LL	146 (50.87)	141 (49.13)	ML
10	There is chest pain	104 (63.80)	59 (36.20)	ML	169 (58.89)	118 (41.11)	ML
11	There is bleeding in eye , mouth	103 (63.19)	60 (36.81)	ML	174 (60.63)	113 (39.37)	ML
12	There is vomiting	79 (48.47)	84 (51.53)	ML	139 (48.43)	148 (51.57)	ML
	Overall percentage	(57.79)	(42.21)	ML	(54.84)	(45.16)	ML

Table 2 shows that males had an overall moderate level of awareness of signs and symptoms of Lassa fever (57.79%). While females had an overall moderate level of awareness (54.84%) towards the signs and symptoms of Lassa fever virus among the inhabitants of Enugu north Local government area.

Table 3: Frequency and Percentage Response on the Preventive Measures of Lassa Fever Based on Gender (n=450)

S/N	Preventive measures of Lassa fever Items	Male=163		Dec	Female		Dec
		Yes f %	No f %		Yes f %	No f %	
13	Avoid eating food eaten by rats	197 (120.86)	34(20.86)	ML	189 (65.85)	98 (34.151)	ML
14	Wash your hands regularly with soap& running water	95 (58.28)	68 (41.72)	ML	184 (64.11)	103 (35.15)	ML
15	Keeping environment clean always	76 (46.63)	87 (57.37)	ML	204(71.08)	83 (28.92)	HL
16	Store food in covered containers	107 (65.64)	56 (34.36)	ML	179 (62.37)	108 (37.63)	ML
17	Do not dry food in open places	98 (60.12)	65 (39.88)	ML	163 (56.79)	124 (43.21)	ML
18	Avoid of drinking raw garri	111(68.10)	52 (31.90)	ML	149 (51.92)	138 (48.01)	ML
	Overall percentage	(69.93)	(37.01)	ML	(62.02)	(37.97)	ML

Table 3 shows that males had overall moderate level of awareness (69.93%) towards the preventives measures of Lassa fever. While females had an overall moderate level of awareness (62.02%) towards the preventive measures of Lassa fever. Therefore, there is a moderate level of awareness of male and female inhabitants of Enugu north local government area on the preventive measures of Lassa fever.

Table 4: Summary of Chi-square Test of Awareness of Mode of Transmission of Lassa Fever among Inhabitants of Enugu North Local Government based on Gender

Variables	N	Yes 0 (E)	No 0 (E)	Chi-sq	p- value	Df	Sig.	Dec
Male	163	124(78.24)	39(47.45)	3.329	.068	1	0.05	Not Rejected
Female	287	195(203.45)	92(83.55)					

Table 4 shows that there is no significant difference in the awareness of mode of transmission of Lassa fever based on gender ($\chi^2=3.329,df=1,p.value=0.068$) since the p-value is greater than 0.5 level of significance at 1degree of freedom, the hypothesis is therefore not rejected. This implies that both males and females did not differ in awareness of mode of transmission of Lassa fever.

Table 5: Summary of Chi-square Test of Awareness of Signs and Symptoms of Lassa Fever among Inhabitants of Enugu North Local Government Based on Gender

Variables	N	Yes 0(E)	No 0(E)	Chi-sq	p- value	Df	Sig.	Dec
Male	163	98(89.8)	65(73.2)	2.2006	.138	1	0.05	Not Rejected
Female	150	150(158.60)	137(128.83)					

Table 5 shows that there is no significant difference in the awareness of signs and symptoms of Lassa fever based on gender ($\chi^2=2.201,df=1, p.value =.138$) since p value is greater than .05 level of significance at 1 degree of freedom ,the hypothesis is therefore not rejected. This implies that males and females did not differ in the awareness of signs and symptoms of Lassa fever.

Table 6: Summary of Chi-square Test of awareness of preventive measures of Lassa fever among inhabitants of Enugu north local government based on gender.

Variables	N	Yes 0(E)	No 0(E)	Chi-sq	p- value	Df	Sig.	Dec
Male	163	102(94.54)	61(68.46)	2.197	.138	1	0.05	Not Rejected
Female	287	159(116.46)	128(120.54)					

Table 6 showed that there is no significant difference in the awareness of preventive measures of Lassa fever based on gender ($\chi^2= 2.197,df=1,p.value=0.138$) since the p-value is greater than .05 level of significance at 1 degree of freedom, the hypothesis is therefore not rejected. This implies that males and females did not differ in the awareness of preventive measures of Lassa fever.

Discussion

The findings in Table 1 revealed that males inhabitants of Enugu North LGA possessed high level of awareness of mode of transmission of Lassa fever, while females possessed moderate level of awareness of Lassa fever. This means that the level of awareness on the mode of transmission of Lassa fever such as contaminated food, rats faeces, rat to person contact and through consuming or inhaling rat urine or faeces among others is reasonable. The finding is in agreement with Winter (2018) who opined that if the inhabitants of Enugu north are aware of the mode of transmission of Lassa fever it would reduce the rate and spread of Lassa virus infection in the community.

The findings in Table 2 revealed that both males and females possessed moderate level of awareness of signs and symptoms of Lassa fever. This finding is not surprising and expected. This means that level of awareness of signs and symptoms of Lassa fever such as high fever, vomiting , chest pain, muscle pain, bleeding in eyes mouth among others is reasonable. This findings is in agreement with WHO (2019) opined that Lassa fever incubation period varies from (6) days through twenty one days.

The findings in Table 3 revealed that the level of awareness of preventive measures of Lassa fever possessed by male and female inhabitants of Enugu north is moderate. This finding is not surprising and expected since majority of inhabitants are adults that have great level of knowledge of personal hygiene and environment sanitation practices .This indicate that good environmental sanitation practices will reduce the rate of rats to entering their houses. The findings is in agreement with study of Olowokere and Adegbenro (2020) stated that in order to repress the spread of Lassa fever, it is recommended that people should practice the use of rodents proof containers to store food and keeping their home clean to deter rodents. This study is Similar to the findings of Amoran and Onwube (2021) stated that the people of Enugu north communities should learn how to avoid eating any leftover food especially in the environment that rats may be plenty, those rats may have stooled or urinated in that food.

The finding in Table 4 revealed that there was no significant difference in the awareness of mode of transmission of Lassa fever among inhabitants of Enugu north based on gender. This finding is not surprising and therefore expected. This implies that both males and females inhabitants had good awareness of transmission of Lassa fever because majority have been aware of various transmission of communicable diseases. This finding is in agreement with the study conducted by Winner (2019) observed that mode of transmission of Lassa fever to human occurs commonly by consuming or inhaling rat urine or feces.

The finding in Table 5 revealed that there was no significant difference in the awareness of signs and symptoms of Lassa fever among inhabitants of Enugu north based on gender. This implies that awareness of signs and symptoms of Lassa fever among inhabitants of Enugu north was the same for both males and females. This finding is surprising and therefore not expected. This is because gender of an individual plays a vital role in awareness of Lassa fever such as difference experience, exposure and level of knowledge. Therefore, their awareness is expected to be different. This finding disagrees with the study conducted by Zainab (2017) who found a significant difference in the level of awareness of signs and symptoms of Lassa fever based on gender. Zaharia (2017) observed that the virus is excreted for 3 – 9 weeks in urine and up to 3 months in the semen of an infected person.

The finding in table 6 revealed that, there was no significant difference in the awareness of Lassa fever and preventive measures among inhabitants based on gender. This implies that both males and females are the same in the awareness of Lassa fever and its preventive measures. This finding is surprising and not expected. This is because under normal circumstances males who have been listening to programmes on radio and television are expected to be aware of Lassa fever virus and its preventive measures than the females with little chance to be listening to programmes on radios or television because females are known to be engaged in domestic activities. This finding disagrees with Kelejaye (2018) who found that males and females are the same in the awareness of Lassa fever and its preventive measures. Because males appear to listen to radio programmes while culturally females are responsible for domestic activities.

Conclusion

Based on analysis and findings of the study, it was concluded that awareness of Lassa fever and its preventive measures is moderate among inhabitants of Enugu north LGA and there is no significant difference in the awareness of Lassa fever and its preventive measures based on gender.

Recommendations

Based on the findings, discussion and conclusions of the study, the following recommendations were made:

1. Regular maintenance of personal hygiene and environmental sanitation practices should be encouraged in the community.
2. Inhabitants of Enugu north should avoid eating food and drinks that have been left open or contaminated.
3. Enugu State government should employ health inspectors to carry out inspections and sensitization on environmental sanitation in the community.

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