



Received: 06-03-2023
Accepted: 16-04-2023

ISSN: 2583-049X

Socio-Economic Factors Influencing Knowledge and Practice of Lassa Fever Prevention among Residents of Owerri-North L.G.A, Imo State

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Abstract

This study determined the relationship between Socio-economic factors influencing knowledge and practice of Lassa fever prevention among residents of Owerri-North L.G.A Imo State. Five specific objectives with corresponding research questions and five hypotheses guided the study. Descriptive study design and Cross-sectional study design was used for this study. A multi-staged sampling technique, simple random sampling technique and a systematic random sampling technique was used to draw samples of 400 residents where 393 residents of Owerri-North Imo State responded. A structured questionnaire was used for data collection after being validated and its reliability tested. The data collected was analysed using frequencies, percentage the hypotheses were tested using chi-square statistics at ≤ 0.05 level of significance. The result revealed that the 47.1% between 28-37 and 33.3% above 47 years old. Respondent with formal education with majority 68.4% of tertiary education and 24.7 of secondary education have poor knowledge (42.9%) and others have good knowledge (57.1%) of Lassa fever. The study also revealed that good preventive practice among residents in Owerri- North exhibited towards preventing Lassa fever were high among participant that showed poor knowledge of the disease prevention methods (50.5%) and also to those with good knowledge 59.2% ($P = 0.084$, $X =$

2.995). The knowledge of Lassa fever is not significantly associated based on age, gender, marital status and educational status respectively ($p= 0.309$ $x=2.347$) ($p=0.203$ $x=1.618$) ($p=0.944$ $x= 0.760$) ($p= 0.136$ $x=3.990$). Respondents age, gender, and monthly income were significantly associated with the practice of Lassa (p -value = 0.016, 0.031 and 0.045 respectively). Education, marital and occupational status were not significant with the practice of Lassa fever prevention (p -value = 0.211, 0.605 and 0.787 respectively). The study also revealed that there is no significant association between knowledge and the practice of Lassa fever prevention (p -value = 0.084). Based on the findings, the researcher recommended that health communication messages on Lassa fever may help improve behavior of people towards the infection and practice towards prevention thus, There should be a call for educational intervention to improve the knowledge of Lassa fever among community members this will help towards its preventive practices. This is based on the expectation that good knowledge of Lassa fever can reduce the rate and spread of the Infection, food consumed should be properly processed and stored well in tight rat proof containers, and to put in place good preventive practices towards proper disposal of waste to reduce exposure and contact with mastomy rats.

Keywords: Lassa Fever, Owerri-North, Socio-Economic Factors, Prevention Methods Public Health Knowledge, Residents

Introduction

Lassa fever (LF), a public health problem of great importance endemic in West Africa, is an acute and sometimes fatal viral haemorrhagic disease which leads to mortality. Certain factors that influence the prevention of Lassa fever. The distribution of the disease and the vector that transmits the virus is which are influenced by socioeconomic and environmental factors. These factors can affect the burden of infectious disease including high probability of human exposure, a higher chance of humans being susceptible to infections and its effect, degree of virulence and multiplicity of the infectious agents.

Nigeria Centre for Disease Control (NCDC) (2022) stated that as at 2nd of October 2022, a total of 933 confirmed cases and 173 deaths had been reported in 25 states and 102 Local government. Lassa fever is a viral haemorrhagic fever caused by a single stranded RNA virus belonging to the Arenaviridae family, it is a zoonotic disease whose reservoir is the multimammate rat of the genus *Mastomys*. Humans are infected by exposure to food or household items contaminated with excreta or urine of Infected rodents, processing of infected rats for consumption, airborne through the inhalation of tiny particles in the air contaminated with infected rodent excretions or reuse of infected needles (Richmond and Baglolle, 2003) [36].

They are certain factors that influence the prevention of Lassa fever. The distribution of the disease and the vector that transmits the virus is which are influenced by socioeconomic and environmental factors. These factors tend to be influenced by season. Therefore, the focus of this thesis is to report potential socio economic and environmental risk factors that may exacerbate the incidence of Lassa fever and to outline potential sustainable management strategies with a focus on Owerri-North and Nigeria because these factors are prominent in Owerri-North LGA which include indiscriminate disposal of waste, poor food handling and storage, food packaging, weak environmental hygiene, poor housing quality, absence of environmental health laws, hygiene practices etc.

In Nigeria there is a scarcity of consistent data on rodent linked Lassa fever outbreak, weak cultural and socioeconomic, effective prevention and control measures integration, weak or limited community knowledge and awareness to inadequate preparedness capacity and access to affordable case management in Owerri- North. Many studies have been carried out on Lassa fever, few have centred on socio-economic factors affecting knowledge and preventive practice of Lassa fever. Hence, it's on these grounds that the researcher have designed this study with a view to determine the socioeconomic factors influencing knowledge and practice of Lassa fever prevention among residents of Owerri- North LGA, with a view of developing a prevention and health promotion programme to prevent and control the occurrence.

Materials and methods

Descriptive research design and cross-sectional study design was employed in this study, 395 head of households in Owerri-North L.G.A, residents were recruited through the use of multi-stage with simple random sampling technique by balloting without replacement and systematic random sampling technique to select each of the household. A structured questionnaire was used for data collection after being validated and its reliability tested.

A structured self-administered questionnaire containing closed-ended questions was developed and used for data collection. The questionnaire contained relevant information on "socio economic factors influencing knowledge and practice of Lassa fever prevention among residents of Owerri-north LGA, Imo State". The questionnaire was divided into three major sections for ease of administration. The sections deal with the following; demographic data of the respondent, knowledge of Lassa fever prevention and practice on Lassa fever preventions. It was administered after explaining the purpose of the study to the respondent. Specific oral information on the purposes of the study was given to respondent, and their oral and written consents obtained before inclusion in the study. Confidentiality of information was maintained throughout the study. The completed questionnaire was collated and entered into the computer. The data was analyzed using Statistical Package for Social Science (SPSS) version 21.0 computer software and the results were presented in simple frequency and percentages. Pie chart was used to present remarkable information, chi-square test was used to determine the socio-economic factors influencing knowledge and practice of Lassa fever prevention. P-value less than 0.05 were considered statistically significant.

Results

Demographic status of residents of Owerri-North LGA Imo State

Table 1, below showed the demographic variable of residents in Owerri-North LGA Imo state. There were a total of 393 participants that were involved in the study with the majority 185 (47.1%) falling within the age category of 28-37 years, followed by 38-47 years 131 (33.3%). The majority of respondents 244 (62.1%) are women. A higher proportion of respondents completed tertiary school. 281 (71.5 %) are married. Their primary occupations are farming 154(39.2%) and civil/public service 74 (18.8%). The majority of respondents 123 (31.3%) earn between ₦30,000 and ₦59,000 per month, 111 (28.2%) make less than ₦30,000, and only 11(2.8%) earn ₦150,000 or more.

Table 1: Socio-economic Characteristics of the Residents in Owerri North LGA Imo State

Demographic Factors	Frequency (n)	Percent (%)
Age		
18-27	77	19.6
28-37	185	47.1
38-47	131	33.3
Gender		
Female	244	62.1
Male	149	37.9
Education		
Primary	27	6.9
Secondary	97	24.7
Tertiary	269	68.4
Non Formal	0	
Marital Status		
Divorced	6	1.5
Married	281	71.5
Separated	11	2.8
Single	67	17.0
Widowed	28	7.1
Occupation		
Artisan	54	13.7
Business	38	9.7
Civil/public servants	74	18.8
Farmer	154	39.2
Unemployed/applicant	73	18.6
Monthly Income		
Less than ₦30,000	111	28.2
₦30,000 - ₦59,000	123	31.3
₦60,000 - ₦89,000	58	14.8
₦90,000 - ₦119,000	53	13.5
₦120,000 - ₦149,000	37	9.4
₦150,000 & above	11	2.8

Knowledge of Lassa Fever Prevention among Residents of Owerri-North LGA

The knowledge of the studied group on Lassa fever preventive methods is presented on Table Table 2. The knowledge were very high on Lassa fever transmissibility 147(37.4%) are aware that Lassa fever is an infectious virus-borne disease. 42(10.7%) are unaware of the Lassa fever epidemic. The majority of respondents 220 (56.0%) are aware that rats can spread Lassa fever. Saliva 82(20.9%), Urine 63(16.0%), Vomit 101 (25.7%), and Blood 32(8.1%) are the most common ways Lassa fever is transmitted. According to 168 (41.7%) of respondents, Lassa fever can be transferred through contaminated blood and body fluids of sick people, touching rats and urine, or touching the faces

of rats. Lassa fever can be avoided, according to 188(47.8%) of respondents, by not eating food contaminated with rat faces or urine. The majority 235(59.8%) believe Lassa fever takes 7-14 days to exhibit symptoms. According to 158(40.2%) of respondents, the main signs and symptoms of Lassa fever include fever and diarrhoea. According to 126(32.1%) of respondents, Lassa fever can be avoided by preventing rodents from entering our houses, promoting excellent communal hygiene, and storing food in rodent-proof containers. When someone becomes infected with Lassa fever, 277(70.5%) of those polled stated they should go to a health clinic or hospital right away. The overall knowledge of Lassa fever prevention indicates that the knowledge level is moderate 196(49.7%).

Table 2: Distribution of Respondent by Knowledge of Lassa Fever Prevention

Variables	Frequency (n)	Percent (%)
Overall knowledge		
Good	196	49.7
Poor	197	50.3
What is Lassa fever?		
An Infectious disease caused by bacteria	76	19.3
An infectious disease caused by a virus	147	37.4
It is the same as malaria fever	128	32.6
None of the above	42	10.7
Which of the under-listed is capable of spreading Lassa Fever?		
Bird	22	5.6
Fly	55	14.0
Insect	96	24.4
Rodent	220	56.0
A person can get the Lassa fever from an infected person by touching the infected		
Blood	32	8.1
Saliva	82	20.9
Urine	63	16.0
Vomit	101	25.7
None of the above	115	29.3
Lassa fever can be transmitted through		
Contaminated blood and body fluid of infected person	94	23.9
Touching of rats	73	18.6
Urine or faeces of rats	62	15.8
All of the above	164	41.7
How can a person avoid getting infected by Lassa Fever?		
By avoiding mosquito bites	34	8.7
By avoiding shaking hands with people	138	35.1
By not eating food contaminated with rat faeces or urine	188	47.8
By not sleeping under mosquito net	9	2.3
None of the Above	24	6.1
How long will it take for the signs and symptoms of Lassa fever to manifest after being infected?		
1-7days	126	32.1
2-21days	22	5.6
30-36days	10	2.5
7-14days	235	59.8
Which of these are signs and symptoms of Lassa fever		
Abdominal pain and chest pain	41	10.4
Fever and diarrhea	158	40.2
Sore throat and cough	82	20.9
All of the above	112	28.5
Prevention of Lassa fever relies on		
Discouraging rodent from entering our homes	98	24.9
Promoting good community hygiene	104	26.5
Storing food stuff in rodent-proof containers	65	16.5

Variables	Frequency (n)	Percent (%)
All of the above	126	32.1
If someone gets infected with Lassa fever what measure should he/she take immediately		
Get drugs from a chemist shop immediately	62	15.8
Take paracetamol and watch the situation for some time	32	8.1
Visit a herbalist to mix root and Herb	22	5.6
Visit the health clinic or hospital immediately	277	70.5

*Overall knowledge was determined by scoring a higher number to the correct response and less number to the incorrect options. The overall average score was calculated to determine the cut-off point. Each participant average score was also calculated. Scores lower than the cut-off point represents poor knowledge while those above the cut-off point represented higher knowledge.

Lassa Fever Preventive Practices in Owerri-North LGA Imo State

Table 3 is the Lassa fever preventive practices among residents of Owerri-North. The table shows that the overall preventive practices for the disease. 254 (64.6%), 249(63.4%) and 288(58.0%) of the respondents said they sometimes covers food to avoid contamination by rats, Stores snacks, food stuffs, or food items in a place/container and throws away food or snack that rat has nibbled a portion respectively. 370(94.1%) said they have never eaten rats. Majority 332(84.5%) and 220(56.0%) said they cook meal well before eating and washes fruits very well with water before eating. Then 53(13.5%) and 208(52.9%) said they sometimes keep rat in house to eliminate rats and uses rat gums and trap to eliminate rats. 95(24.2%) of the respondents said they stores house-hold refuse in a close container and majority 147 (37.4%) disposes them at the refuse dump site. 116(29.5%) said they clean the inside house more than once a week. Majority 136 (34.6%) said they clean premises once in every week, clean toilet once in every in two week 132 (33.6%). Then 197(50.1%) of the respondents said it takes less than a week for them to fixup broken sewage pipes and pits around the house, 275(70.0%) said they covers pit toilet holes after use always after use. Majority 297(75.6%) always takes precaution not to touch any fluid from the body of the sick person. 177(45.1%) always washes hands immediately after the visiting the sick and 253(64.4%) always washes hand with soap or ash and water. Only 60(15.3%) washes hand up to 20 seconds before rinsing. 243(62.8%) said they manage themselves at home with self-medication when they are sick or unwell.

Table 3: Lassa Fever Preventive Practices in Owerri North LGA Imo State

Variables	Frequency (n)	Percent (%)
Overall Practice		
Good	216	54.8
Poor	178	45.2
Covers food to avoid contamination by rats		
Always (every time)	96	24.4
Never (not at all)	43	10.9
Sometimes (once in a while/occasionally)	254	64.6
Stores snacks, food stuffs, or food items in a place/container		
Always (every time)	104	26.5
Never (not at all)	40	10.2
Sometimes (once in a while/occasionally)	249	63.4
Throws away food or snack that rat has nibbled a portion of		

Always (every time)	26	6.6
Never (not at all)	139	35.4
Sometimes (once in a while/occasionally)	228	58.0
Eats rat		
Always (every time)	4	1.0
Never (not at all)	370	94.1
Sometimes (once in a while/occasionally)	19	4.8
Cooks meals well (fully done)		
Always (every time)	332	84.5
Sometimes (once in a while/occasionally)	61	15.5
Washes fruits very well with water before eating		
Always (every time)	220	56.0
Never (not at all)	4	1.0
Sometimes (once in a while/occasionally)	169	43.0
Keeps cats to eliminate rats from the house		
Always (every time)	13	3.3
Never (not at all)	327	83.2
Sometimes (once in a while/occasionally)	53	13.5
Uses rat gums as rat trap in the house		
Always (every time)	37	9.4
Never (not at all)	148	37.7
Sometimes (once in a while/occasionally)	208	52.9
Stores your house-hold refuse		
In a closed container	95	24.2
In a polythene bag	235	59.8
In an open container	63	16.0
Disposes your house-hold refuse		
At refuse dump site	147	37.4
At the back of your house	20	5.1
At the road side	93	23.7
Burn in open air	42	10.7
Drain or river	21	5.3
Inside the bush	35	8.9
Inside the gutter	35	8.9
Cleans house (inside)?		
More than once in a week	116	29.5
Once a month	18	4.6
Once in a week	106	27.0
Once in three weeks	49	12.5
Once in two weeks	104	26.5
Cleans premises (outside/surroundings of your house)?		
Do not clean at all	2	0.5
More than once in a week	26	6.6
Once a month	21	5.3
Once in a week	136	34.6
Once in more than a month	9	2.3
Once in three weeks	97	24.7
Once in two weeks	102	26.0
Cleans toilet		
More than once in a week	45	11.5
Once a month	25	6.4
Once in a week	102	26.0
Once in more than a month	20	5.1
Once in three weeks	69	17.6
Once in two weeks	132	33.6
Fixes up wall cracks, doors, windows and ceilings holes?		
Less than a week	197	50.1
More than a month	57	14.5
One week - two weeks	36	9.2
Three weeks – four weeks	103	26.2
Fixes up broken sewage pipes and pits around the house		
Less than a week	64	16.3
More than a month	54	13.7

One week - two weeks	145	36.9
Three weeks – four weeks	130	33.1
Covers pit toilet holes after use		
Always	275	70.0
Never	12	3.1
Sometimes	106	27.0
Takes precaution not to touch any fluid from the body of the sick person		
Always	297	75.6
Sometimes	96	24.4
washes hands immediately after the visiting the sick		
Always	177	45.1
Never	43	10.9
Sometimes	173	44.0
Washes hand with soap or ash and water		
Always	140	35.6
Sometimes	253	64.4
Hand washing lasts up to 20 seconds before rinsing		
Always	60	15.3
Never	169	43.0
Sometimes	164	41.7
Where do you seek health care whenever you feel unwell		
Health Centre	103	26.2
Hospital	43	10.9
I manage it at home with self-medication	247	62.8

*Overall practice was determined by scoring a higher number to the correct response and less number to the incorrect options The overall average score was calculated to determine the cut-off point. Each participant average score was also calculated. Scores

Association between socio-demographic variables and the knowledge of Lassa Fever Prevention among Residents of Owerri North LGA Imo State

A cross-tabulation analysis showed that respondent’s knowledge of Lassa fever were not significantly associated with age, gender, education, marital status, occupation and monthly income (p-value = 0.309, 0.203, 0.136, 0.944, 0.493 and 0.903) respectively. The general presentation of the respondents’ social factors and their economic factors has no effect as observed from the statistics on the knowledge of Lassa fever prevention.

Table 4: Association between sociodemographic variables and the knowledge of Lassa Fever Prevention

Variables	Knowledge		Total	X ²	p-value
	Good (%)	Poor (%)			
Age					
18-27	38(49.4)	39(50.6)	77	2.347 ^a	0.309
28-37	86(46.2)	100(53.8)	186		
38-47	72(55.0)	59(45.0)	131		
Gender					
Female	128(52.2)	117(47.8)	245	1.618 ^a	0.203
Male	68(45.6)	81(54.4)	149		
Educational status					
Primary	11(40.7)	16(59.3)	27	3.990 ^a	0.136
Secondary	42(42.9)	56(57.1)	98		
Tertiary	143(53.2)	126(46.8)	269		
Marital Status					
Divorced	4(66.7)	2(33.3)	6	0.760 ^a	0.944
Married	138(49.1)	143(50.9)	281		
Separated	6(50.0)	6(50.0)	12		
Single	34(50.7)	33(49.3)	67		
Widowed	14(50.0)	14(50.0)	28		
Occupation					
Artisan	31(57.4)	23(42.6)	54	3.403 ^a	0.493
Business	22(57.9)	16(42.1)	38		
Civil/public servants	37(50.0)	37(50.0)	74		

Farmer	73(47.4)	81(52.6)	154		
Unemployed/applicant	33(44.6)	41(55.4)	74		
Monthly Income					
Less than ₦30,000	55(49.1)	57(50.9)	112	1.585 ^a	0.903
₦30,000 - ₦59,000	59(48.0)	64(52.0)	123		
₦60,000 - ₦89,000	31(53.4)	27(46.6)	58		
₦90,000 - ₦119,000	27(50.9)	26(49.1)	53		
₦120,000 - ₦149,000	17(45.9)	20(54.1)	37		
₦150,000 & above	7(63.6)	4(36.4)	11		

Association between socio-demographic variables and the practice on Lassa Fever Prevention

Table 5 shows a cross-tabulation analysis between socio-demographic variables and the practice on Lassa fever prevention. Respondents age, gender, and monthly income were significantly associated with the practice of Lassa (p-value = 0.016, 0.031 and 0.095 respectively). Education, marital and occupational status were not significant with the practice of Lassa fever prevention (p-value = 0.211, 0.605 and 0.787 respectively).

Table 5: Association between sociodemographic variables and the practices on Lassa Fever Prevention

Variables	Practice		Total	X ²	p-value
	Good (%)	Poor (%)			
Age					
18-27	40(51.9)	37(48.1)	77	8.225 ^a	0.016
28-37	91(48.9)	95(51.1)	186		
38-47	85(64.9)	46(35.1)	131		
Gender					
Female	124(50.6)	121(49.4)	245	4.636 ^a	0.031
Male	92(61.7)	57(38.3)	149		
Educational status					
Primary	13(48.1)	14(51.9)	27	3.115 ^a	0.211
Secondary	61(62.2)	37(37.8)	98		
Tertiary Non formal	142(52.8)	127(47.2)	269		
Marital status					
Divorced	3(50.0)	3(50.0)	6	2.723 ^a	0.605
Married	159(56.6)	122(43.4)	281		
Separated	8(66.7)	4(33.3)	12		
Single	33(49.3)	34(50.7)	67		
Widowed	13(46.4)	15(53.6)	28		
Occupational status					
Artisan	30(55.6)	24(44.4)	54	1.721 ^a	0.787
Business	24(63.2)	14(36.8)	38		
Civil/public servants	40(54.1)	34(45.9)	74		
Farmer	80(51.9)	74(48.1)	154		
Unemployed/applicant	42(56.8)	32(43.2)	74		
Monthly income					
Less than N30,000	69(61.6)	43(38.4)	112	9.341 ^a	0.096
N30,000 - N59,000	55(44.7)	68(55.3)	123		
N60,000 - N89,000	35(60.3)	23(39.7)	58		
N90,000 - N119,000	27(50.9)	26(49.1)	53		
N120,000 - N149,000	23(62.2)	14(37.8)	37		
N150,000 & above	7(63.6)	4(36.4)	11		

Association between respondents’ knowledge of Lassa fever were and practice of Lassa fever prevention

A cross-tabulation analysis showed that respondent’s knowledge of Lassa fever were not significantly associated the practice of Lassa fever prevention (p-value = 0.084).

Table 6: Association between respondents knowledge of Lassa fever were not significantly associated the practice of Lassa fever prevention

Knowledge	Practice		Total	X ²	p-value
	Good	Poor			
Good	116(59.2)	80(40.8)	196	2.995 ^a	0.084
Poor	100(50.5)	98(49.5)	198		

Conclusion

The study primarily aimed at establishing the socio-economic factors influencing knowledge and practice of Lassa fever prevention among residents of Owerri-North Imo state Nigeria. The aim was successively achieved.

The study clearly showed that the overall knowledge about the disease preventive methods is high scoring 50.3%. This result is consistent with high knowledge in correspondence with Ossai *et al.*, (2020) [33] with the aim to determine the knowledge and preventive measures against Lassa fever among heads of households in Abakaliki metropolis, Southeast Nigeria using descriptive cross-sectional study design. A good knowledge of Lassa fever was determined by the proportion of respondents scoring 50% in 15 variables. It is rather not in line with low knowledge of the preventive methods in Abdulkadir and Mohammed (2019) [1] descriptive survey research design in North-Eastern part of Nigeria with the aim of assessing the knowledge of Lassa fever among residents of North-Eastern States of Nigeria.

Likely reasons for high knowledge in this study could be as a result of high level of education among the study participants and geographical location of the subjects being that most part of the study areas had been exposed to information following their coverage in semi urban areas where information get easily to the residents about prevention. High knowledge were found on the diseases transmissibility from person to person as well as its ability to affect all age groups.

The knowledge of the disease was found to be significantly high among the respondent this is not a surprise as it is possible that many of them leaving in Owerri-North may be experiencing availability of rats in their homes due to the close proximity of buildings to dumpsites and indiscriminate dumping of refuse and that could raise their level of consciousness about any danger from rats, and consequently increases their knowledge and protective practices against Lassa fever. It has been shown such situations are likely to heighten knowledge

However, with the high knowledge of Lassa fever preventive methods observed among the studied group the overall preventive practices seems to be high 216(58.8%) in the studied population. Lassa fever preventive practices were also found to be low (29%) which is not in correspondence with 51% poor practice toward Lassa fever in a descriptive survey research design done by Abdulkadir and Mohammed (2019) [1] in North-Eastern part of Nigeria, but seems to be high 66.4% good preventive practices in Ossai *et al.*(2020) [33] descriptive cross-sectional study design. The differences in these results could be as a result of different available information about Lassa fever in the

areas, their high education level and exposure and also the location (semi-urban) of the study area towards exposure of information about Lassa fever. This study clearly established the association between knowledge and preventive practices of Lassa fever were not significantly associated with preventive practices occurring among the poor knowledge group.

The result showed the possibility of avoiding the occurrence of Lassa Fever, reducing the burden of transmission by increasing measures of prevention method, appropriate preventive training and modification of these socio-economic factors such as proper waste separation and disposal, storing food items in a closed container, regular hand washing, cleaning your environment which include cleaning the toilets, inside and outside the compound, including the drainage system, covering the waste bin, avoiding or disposing rat nibble food and snacks, and setting up houses from rat entrance which can be achieved by using iron doors for all the house entrance or exit to avoid rat penetration.

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