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Assessment of Preparedness and Community Based Intervention Strategies for Prevention and Control of Lassa Fever in Rural Malete, Kwara State

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Abstract

Background: The outbreak of Viral Hemorrhagic Fevers (VHFs) in the West African sub region in recent times had negative consequences on the health systems, international travels, movements and trades. Nigeria is still battling with a significant spread of Lassa Fever (LF) outbreak.

Aims: This study assessed preparedness and community bas ed intervention strategies for prevention and control of Lassa fever in rural Malete, Kwara State.

Methodology: This was a descriptive cross sectional study carried out among. Two hundred fifty nine (259) people in rural Malete. Study respondents were s elected using multistage sampling technique. A well structur ed, paper based, interviewer administered questionnaire w as used for data collection. Data was analyzed using Statistical Package for Social Science (SPSS) version 25.0, software package for windows (IBM SPSS, 2017) descriptive and classical statistics were adopted and the level of significance for the statistical tests was set at ≤ 0.05.

Result: More than half of the respondents 75(64.7%) in the age group (21-30 years) agree they know strategies against Lassa fever prevention and control in Malete, 35(57.6%) in the age group (31-40 years) of the respondents also agree they know strategies against Lassa fever prevention and control in Malete. Majority 39(77.3%) of respondents in the age group (41-50 years) agree they know strategies against Lassa fever prevention and control in Malete. 12(52%) of the respondents in (51 above years) years category agree that they know if the state regulations for protection against radiation is available.

Discussion: Past epidemic control in Nigeria have occurred, leaving little or no traces of existing control structures behind and preparing no ground for future outbreaks and little or no emphasis on preparedness. Adequate training and retraining of health care providers as well as the establishing well equipped infectious disease clinics, laboratories and research centers would help in the prompt containment, diagnosis and treatment of Lassa and would help in averting possible future outbreaks.

Keywords: Lassa fever; Community intervention; Preparedness; Assessment

Introduction

Lassa fever is an acute viral illness that occurs in West Africa. The illness was discovered in 1969 when two missionary nurses died in Nigeria. The virus is named after the town in Nigeria where the first cases occurred. The virus, a member of the virus family Arenaviridae, is a single stranded RNA virus and is zoonotic or animal borne. Lassa fever is endemic in parts of west Africa including Sierra Leone Liberia, Guinea and Nigeria; however, other neighboring countries are also at risk, as the animal vector for Lassa virus, the "multimammate rat" (Mastomysnatalensis) is distributed throughout the region. In 2009, the first case from Mali was reported in a traveler living in Southern Mali; Ghana reported its first cases in late 2011. Isolated cases have also been reported in Côte d'Ivoire and Burkina Faso and there is serologic evidence of Lassa virus infection in Togo and Benin. The number of Lassa virus infections per year in West Africa is estimated at 100,000 to 300,000 with approxim ately 5,000 deaths. Unfortunately, such estimates are crude, because surveillance for cases of the disease is not uniformly performed. In some areas of Sierra Leone and Liberia, it is known that 10%-16% of people admitted to hospitals every year have Lassa fever, which indicates the serious impact of the disease on the population of this region. The incubation period for Lassa fever varies from 6-21 days. It is symptomatic and usually characterized by fever, myalgia, nausea, vomiting, sore throat, abdominal and chest pains. Illness may progress to more serious symptoms including hemorrhaging, neurological problems, hearing loss, tremors and encephalitis. Lassa virus is zoonotic and infected rodents in the Mastomys natalensis species complex are reservoirs capable of excreting the virus through urine, saliva, excreta and other body fluids to man. Secondary human to human spread within a community may occur through inhalation or ingestion. Nosocomial transmission is also not uncommon. Lassa fever is an acute viral illness endemic to several countries in of West Africa [1]. Lassa fever is one of the diseases for which weekly epidemiology reporting to the health authorities is being done in Nigeria.

In 2014, the US Center for Disease Control and Prevention (CDC) reported that four West African countries (Sierra Leone, Guinea, Liberia and Nigeria) are endemic to Lassa.

It has been estimated that 300,000 to 500,000 cases of Lassa fever and 5000 deaths occur yearly across West Africa.

Epidemic prone diseases threaten public health security. These include diseases such as cholera, meningitis and hemorrhagic fevers, especially Lassa fever for which Nigeria reports considerable morbidity and mortality annually.

Interestingly, where emergency epidemic preparedness plans are in place, timely detection of outbreaks is followed by a prompt and appropriate response [2].

Furthermore, due to the nature of spread of Lassa fever in an outbreak setting, there is the need for health-care workers to be familiar with the emerging epidemic management framework that has worked in other settings for effective preparedness and response.

Infectious disease epidemics are a constant threat and while we can strengthen preparedness in advance, inevitably, we will sometimes be caught unaware by novel outbreaks.

Primary transmission of Lassa virus from its host to human can be prevented by;

- Avoid contact mastomys rodents, especially in the geographic regions where outbreaks occur.
- Putting food away in rodent-proof (Rat-proof) containers and always cook all foods thoroughly before eating.
- Food manufacturers and handlers should not spread food where rats can have access to it.
- Keeping the home clean always to discourage rodents (rats) from entering homes.
- Do not eat or stop eating rat. Hutting-expenditure and bush burning should be discouraged.
- Observe good personal hygiene e. g. Regular hand washing with soap and running water.
- Isolate infected or suspected person.
- Contact tracing/Surveillance should be observed and contacts quarantine for at least 21 days.
- Wearing proactive clothing, masks, gloves, gowns and goggles when caring for infected or suspected person.
- Proper and regular sterilization of equipment.
- Health educating people at risk of infection and the general populace advocacy i.e. the general public awareness and enlightenment should be ensured [4].
- Government should develop more rapid diagnostic test and more diagnosing centers for easy access by the general populace.
- Increasing the availability of the only known drug treatment, provision of Ribavirin (Drug) for prompt treatment.
- Efforts should be geared towards provision of effective vaccine.
- Report any cases of symptoms or persistence fever not responding to standard treatment for malaria and typhoid to the nearest authority.

Recommendations for General Community Based Intervention Strategies for Prevention and Control of Lassa fever

Establishment of regional and country epidemic preparedness team: There is a need for every country level institution or committee that would co-ordinate preparedness, detection and timely response to public health emergencies and working with international partners. Nigeria should fix into a regional cooperation and international partnerships, as well as inter country teams for the surveillance program. Though communicable disease epidemiology varies widely within the Africa region, yet similarities often exist between neighboring countries and within countries [5-7]. Standardization of policies, tools or procedures among countries with similar epidemiological profiles can increase response effectiveness.

Strong political will: One of the lessons learnt from EVD containment in Nigeria was the willingness of government towards ending the epidemic. Government provided strong leadership and coordinated control efforts. There should be a budget line available for emergency response, though such funding is yet to enter the 2016 national budgets despite the significance of the disease [8]. The on-going LF epidemic in Nigeria is thus begging for similar political commitment as given to EVD in year 2014.

Enforcement of some health provisions would require strong political will on the part of the government. Nigerians are not used to some public health methodologies such as isolation, limitation of movements and tracking of contact persons.

Establishment of effective disease notification and prompt a ction system: Timely and accurate reporting is an important component of communicable disease control efforts. With the epidemic preparedness task force in place, it is their duty to iden tifyfactors influencing the changing epidemiology of Lassa fever and forecast all possible disease escalating factors towards making country or regional level recommendations including taking actions.

Public enlightenment on personal hygiene: Since the vector of Lassa fever are commonly found in households and which can easily contaminate grains and other food items, it is necessary for stakeholders to organize and sustain public health enlightenment sessions on LF. This was one of the reasons for the successful containment of EVD outbreak with national governments providing leadership towards this course. Creating better awareness would encourage behavioral change that would lead to effective control [9-10]. The media and indeed the social media is a veritable way of spreading health education about VHF most especially the educated community members who also have access to the social medial. Stigma and discrimination appears to be slowing down the effectiveness of public health education as an important component of prevention of Lassa fever.

Strengthening Integrated Disease Surveillance and Response (IDSR): Not just DSN: Lassa fever had been on the list of epidemic prone diseases to be notified in Nigeria. However there are several challenges to the disease notification process

and most efforts were not integrated. Presently, the existing surveillance system is insensitive as it is incapable of detecting early warning signs of outbreaks.

The resultant effect of the poor surveillance system is high mortality, morbidity and disability, with attendant suffering of the poor.

Building a strong health system: There is a need to have a battle ready health workforce that is prepared to respond to (emergency) mobilization towards control of outbreaks of Lassa fever. In Nigeria, awareness of LF among health workers is still low in some areas and high in some.

Universal precaution and use of personal protective equipment (PPE): Health care provider protection: One of the cornerstones of standard precautions while offer a consistent approach to infection control is the appropriate use of Personal Protective Equipment (PPE) whenever contact with blood or body fluids is anticipated compliance with these standard precautions has been shown to reduce the risk of exposure to blood and body fluids.

Community rodent control: Since the vector of LF is found in the community, it is important to eliminate the vectors and prevent human vector contacts as much as possible, putting into cognizance the preventable and controllable environment vector thriving factors such as poor refuse disposal, poor attitude to fumigation activities and poor personal and environmental hygiene.

Methodology

Description of study area

This study was conducted in Malete, Kwara State. Kwara state is a state in Western Nigeria. Her capital is Ilorin. Rural Malete is one of the communities in the Malete district of Moro Local government Area of Kwara State, North Central Nigeria. Its geographical coordinates are 8042'0'' North, 402800'' East at an altitude of 327 m and an elevation of 308 m above the sea level. The town is located at a distance of 24 km to Ilorin, the capital of Kwara state and 276 km from Lagos, South West Nigeria and has a projected population of 102,780 according to 2006 population census at a growth rate of 3%. The main ethnic groups of people in Malete are Yoruba, Hausa, Fulani, while Islam is the predominant religion. The major occupation of the inhabitants is farming while some are traders and civil servants, while the youths are majorly students and artisans. The map of Malete is attached as Appendix 1 [11-13].

Study population

The study population included all Male and female (irrespective of age) residence of safari and Oke Eleja zones, in rural Malete in Moro local government area, Kwara state, Nigeria.

Study design

This study was a descriptive survey design to assess the level of preparedness and community based intervention strategies for prevention and control of Lassa fever in rural Malete, Kwara State.

Research Instrument

Questionnaire

The instrument for data collection was a structured interview er administered 250 questionnaire titled questionnaire on asses sment of preparedness and community based intervention strat egies against prevention and control of Lassa fever in rural Malet e, Moro local government. The questionnaires were developed u sing information obtained from relevant literatures and previous studies. It was used to collect information on social demographi c characteristics, level of awareness, community based strategies and effect of media campaign on Lassa fever prevention and control.

The questionnaire had four (4) sections. A section contained socio de mographic information. B section contained level of awareness of Lassa fever [14]. C section contained level preparedness for pre vention and control. D section contained community based intervention strategies adopted against Lassa fever and E section contained effect of media campaign on Lassa fever prevention and control.

The drafted questionnaires were reviewed by my supervisor and the observations were noted and suggested corrections were effected, thus improving the quality of the questionnaire to meet the content and face validity. The study explained to the respondents and questionnaires were com pletely anonymously [15].

Methods of data management and analysis

Data were collected by the researcher and trained research as sistants using paper based, interviewer administered questionna ire. They were collated by the researcher and research assistants .

The questionnaire were sorted and coded; all complete ones w ere checked for error and completeness. They were entered using Statistical Package for Social Science (SPSS) version 25.0, software package for windows (IBM SPSS, 2017) before analysis. Descriptive and classical statistics were adopted inference to summarize the data characteristics utilizing tables. Pearson's chi-square or the Fisher's exact test was used for qualitative data such as sex, education status, religion, marital status and ethnicity. The level of significance for the statistical test was set at 0.05 [16-18].

Data Presentation

Table 4.1A: Sex of respondents.

Sex	Number of respondent	Percentage	Cumulative percentage
Male	59	24%	24
Female	191	76%	100
Total	250	100	

From Table 1A: It can be seen that there is low percentage of male who participated in the research than female, as they have (59) 24% and (191) 76% respectively.

Table 4.1B: Respondent age.

Age	Number of respondent	Percentage	Cumulative percentage
21 – 30	116	46	46
31 – 40	61	24	70
41 – 50	50	20	90
51 – above	23	10	100
	250	100	

From Table 1B, it can be seen that (116) 46% of the entire respondents were within the age of 21-30 years, (61) 24% were within 31-40 years, (50) 20% were within 41-50 and (23) 10%were 51 years above.

Table 4.1C: Respondent marital status.

Marital Status	Number of respondent	Percentage	Cumulative percentage
Single	99	40	40
Married	106	42	82
Divorced	21	8	90
Widowed	24	10	100
	250	100	

From Table 1C: It can be seen that the level of singles who participated in the study were 99 (40%), married (106) 42%, divorced (21) 8% and widowed (24) 10%

Table 4.1D: Respondent tribe.

Tribe	Number of respondent	Percentage	Cumulative percentage
Yoruba	215	86	86
Hausa	20	8	94
Igbo	10	4	98
Others	5	2	100
	250	100	

From Table 1D, it can be seen that majority of the respondents 215 (86%) were native of Yoruba, 20 (8%), 10 (4%) and 5 (2%) were Hausa, Igbo and Others respectively.

Table 4.1E: Respondent education qualification.

Educational background	Number of respondent	Percentage	Cumulative percentage
Primary school	98	39	39
Secondary school	106	42	81
Tertiary education	21	9	90
No formal education	24	10	100
Total	250	100	

From Table 1E, it can be seen that 98 (39%) of the respondents possess primary school education, 106 (42%), 21 (9%) and 24 (10%) possess secondary school, tertiary education and no formal education.

Table 4.1F: Respondents household size.

Household Size	Number of respondent	Percentage	Cumulative percentage
1-3	21	9	9
4-6	209	83	92
7-9	20	8	100
	250	100	

From Table 1F, it can be seen that 21 (9%) of the total respondents' household size is within 1-3, 209 (83%) and 20 (8%) were within 4-6 and 7-9 respectively.

Research Question 1: What is the level of awareness of Lassa fever among residents of selected rural settlement in Malete, Moro Local Government Area, Kwara State.

Section B: Level of awareness of Lassa fever

Table 4.2A: Have you heard of Lassa fever?

Responses	**Number of respondent**	**Percentage**	**Cumulative percentage**
Yes	75	30	30
No	157	63	93
Don't know	18	7	100
	250	100	

From Table 2A, it can be seen that 75 (30) % of the respondent said that Yes they have heard of Lassa fever, while 157 (63) % and 18 (7%) said No and they don't know respectively.

Table 4.2B: How did you hear about Lassa fever virus?

Responses	Number of respondent	Percentage	Cumulative percentage
Television/Radio	51	20	20
Social Media	35	14	34
Don't know	164	66	100
	250	100	

From Table 2B, it can be seen that 51 (20%) of the respondent said that they heard about Lassa fever through Television/Radio, while 35 (14%) through Social media and 164 (66%) said they don't know.

Table 4.2C: Is there recent Lassa fever outbreak in Nigeria?

Responses	Number of respondent	Percentage	Cumulative percentage
Yes	100	40	40
No	141	56	96
Don't know	9	4	100
	250	100	

From Table 2C it can be seen that 100 (40%) of the respondent said that Yes there have been a recent outbreak of Lassa fever, while 141 (56%) and 9 (4%) said No and they don't know respectively.

Table 4.2D: Lassa fever is found in rats.

Responses	Number of respondent	Percentage	Cumulative percentage
Yes	41	16	16
No	103	41	57
Don't know	106	43	100
	250	100	

From Table 2D it can be seen that 41 (16%) of the respondent said that Yes Lassa fever is found in rats, while 103 (41%) and 106 (43%) said No and they don't know respectively.

Table 4.2E: Lassa fever virus could be spread by contact with food stuffs contaminated with faeces and urine of infected rats.

Responses	Number of respondent	Percentage	Cumulative percentage
Yes	111	44	44
No	93	37	81
Don't know	46	19	100
	250	100	

From Table 2E, it can be seen that 111 (44%) of the respondent said that Yes Lassa fever virus could be spread by contact with food stuffs contaminated with feaces and urine of infected rats, while 93 (37%) and 46 (19%) said No and they don't know respectively.

Table 4.2F: Is Lassa fever curable?

Responses	Number of respondent	Percentage	Cumulative percentage
Yes	211	84	84
No	5	2	86
Don't know	34	14	100
	250	100	

From Table 2F, it can be seen that 211 (84%) of the respondent said that Yes Lassa fever virus could be curable, while 5 (2%) and 34 (14%) said No and they don't know respectively.

Table 4.2G: Ribavirin is used to treat Lassa fever.

Responses	Number of respondent	Percentage	Cumulative percentage
Yes	25	10	10
No	49	20	30
Don't know	176	70	100
	250	100	

From Table 2G it can be seen that 25 (10%) of the respondent said that Yes Ribavirin is used to treat Lassa fever, while 49 (20%) and 176 (70%) said No and they don't know respectively.

Section C: Level of preparedness for prevention and control

Research Question 2: What is the level of preparedness for prevention and control of Lassa fever in Malete environment?

Table 4.3A: Lassa fever made me to be neater.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	61	24	24
Disagree	5	2	26
Strongly agree	83	33	59
Completely disagree	101	41	100
	250	100	

From Table 3A, it can be seen that 61 (24%) of the respondent agreed that Lassa fever made them to be neater, while 5 (2%), 83 (33%) and 101 (41%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3B: Lassa fever made me to be careful of what I eat.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	65	26	26
Disagree	10	4	30
Strongly agree	83	33	63
Completely disagree	92	37	100
	250	100	

From Table 3B, it can be seen that 65 (26%) of the respondent agreed that Lassa fever made them to be careful of what I eat, while 10 (4%), 83 (33%) and 92 (37%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3C: Lassa fever made me to hate rats.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	71	28	28
Disagree	29	12	40
Strongly agree	100	40	80
Completely disagree	50	20	20
	250	100	

From Table 3C it can be seen that 71 (28%) of the respondent agreed that Lassa fever made them to be hate rats, while 29 (12%), 100 (40%) and 50 (20%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3D: Lassa fever changed my eating preferences from eating outside to cooking at home.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	90	36	36
Disagree	55	22	58
Strongly agree	56	22	80
Completely disagree	49	20	100
	250	100	

From Table 3D, it can be seen that 90 (36%) of the respondent agreed that Lassa fever changed their eating preferences from eating outside to cooking at home, while 55 (22%), 56 (22%) and 49 (20%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3E: Lassa fever stopped me from eating rats.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	191	76	76
Disagree	5	2	78
Strongly agree	49	20	98
Completely disagree	5	2	100
	250	100	

From Table 3E, it can be seen that 191 (76%) of the respondent agreed that Lassa fever stopped me from eating rats, while 5 (2%), 49 (20%) and 5 (2%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3F: I want all rats in my house dead.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	191	76	76
Disagree	5	2	78
Strongly agree	49	20	98
Completely disagree	5	2	100
	250	100	

From Table 3F it can be seen that 191 (76%) of the respondents agreed that they want all rats in their house dead, while 5 (2%), 49 (20%) and 5 (2%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.3G: I am now a neater person.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	210	84	84
Disagree	3	1	85
Strongly agree	30	12	97
Completely disagree	7	3	100
	250	100	

From Table 3G, it can be seen that 210 (84%) of the respondents agreed that they are now a neater person, while 3 (1%), 30 (12%) and 7 (3%) disagreed, strongly agreed and completely disagreed respectively.

Research Question 3: What are the communities based strategies put in place or adopted against Lassa fever in Malete, Moro Local Government Area, Kwara state?

Section D: Community based intervention strategies adopted against lassa fever

Table 4.4A: Do not consume foods that have been contaminated with rat's faces or urine.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	80	32	32
Disagree	105	42	74
Strongly agree	50	20	94
Completely disagree	15	6	100
	250	100	

From Table 4A it can be seen that 80 (32%) of the respondents agreed that they do not consume foods that have been contaminated with rats faces or urine, while 105 (42%), 50 (20%) and 15 (6%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4B: Avoid contact with people suspected of Lassa fever.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	211	84	84
Disagree	5	2	86
Strongly agree	20	8	94
Completely disagree	14	6	100
	250	100	

From Table 4B it can be seen that 211 (84%) of the respondents agreed that avoid contact with people suspected of Lassa fever, while 5 (2%), 20 (8%) and 14 (6%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4C: Symptoms like fever, bloody vomiting, bloody diarrhea and deafness should be reported to the hospital.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	110	44	44
Disagree	100	40	84
Strongly agree	30	12	96
Completely disagree	10	4	100
	250	100	

From Table 4C it can be seen that 110 (44%) of the respondents agreed that symptoms like fever, bloody vomiting, bloody diarrhea and deafness should be reported to the hospital, while 100 (40%), 30 (12%) and 10 (4%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4D: Keeping the environment clean always to discourage rodents (rats) from entering homes.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	190	76	76
Disagree	10	4	80
Strongly agree	20	8	88
Completely disagree	30	12	100
	250	100	

From Table 4D it can be seen that 190 (76%) of the respondents agreed that keeping the environment clean always to discourage rodents (rats) from entering homes, while 10 (4%), 20 (8%) and 30 (12%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4E: Spreading of food uncovered on ground is a bad habit.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	30	12	12
Disagree	75	30	42
Strongly agree	45	18	60
Completely disagree	100	40	100
	250	100	

From Table 4E, it can be seen that 30 (12%) of the respondents agreed that spreading of food uncovered on ground is a bad habit, while 75 (30%), 45 (18%) and 100 (40%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4F: Hunting expenditure and bush burning should be discouraged.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	40	16	16
Disagree	195	78	94
Strongly agree	10	4	98
Completely disagree	5	2	100
	250	100	

From Table 4F it can be seen that 40 (16%) of the respondents agreed that hunting expenditure and bush burning should be discouraged, while 195 (78%), 10 (4%) and 5 (2%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.4G: You should stop eating rats.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	140	56	56
Disagree	20	8	64
Strongly agree	75	30	94
Completely disagree	15	6	100
	250	100	

From Table 4G it can be seen that 140 (56%) of the respondents agreed that you should stop eating rats, while 20 (8%), 75 (30%) and 15 (6%) disagreed, strongly agreed and completely disagreed respectively.

Section D: Effect of media campaign on Lassa fever prevention and control

Research Question 4: What is the effect of media campaign on Lassa fever prevention and control in rural Malete, Moro Local Government Area, Kwara state?

Table 5.5A: Media campaign created a reasonable level of awareness of Lassa fever.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	70	28	28
Disagree	100	40	68
Strongly agree	15	6	74
Completely disagree	65	26	100
	250	100	

From Table 5A it can be seen that 70 (28%) of the respondents agreed that media campaign created a reasonable level of awareness of Lassa fever, while 100 (40%), 15 (6%) and 65 (26%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5B: Medical check-up and other Lassa fever preventive clinical therapy is important.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	40	16	16
Disagree	150	60	76
Strongly agree	35	14	90
Completely disagree	25	10	100
	250	100	

From Table 5B it can be seen that 40 (16%) of the respondents agreed that medical check-up and other Lassa fever preventive clinical therapy is important, while 150 (60%), 35 (14%) and 25 (10%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5C: There is enough media coverage in the community.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	35	14	14
Disagree	155	62	76
Strongly agree	20	8	84
Completely disagree	40	16	100
	250	100	

From Table 5C, it can be seen that 35 (14%) of the respondents agreed that there are enough media coverage in the community, while 155 (62%), 20 (8%) and 40 (16%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5D: Government should introduce a health policy of playing jingles in every news hour in both public and private owned media.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	100	40	40
Disagree	40	16	56
Strongly agree	75	30	86
Completely disagree	35	14	100
	250	100	

From Table 5D, it can be seen that 100 (40%) of the respondents agreed that Government should introduce a health policy of playing jingles in every news hour in both public and private owned media, while 40 (16%), 75 (30%) and 35 (14%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5E: Health behavior is needed to prevent Lassa fever.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	100	40	40
Disagree	60	24	64
Strongly agree	75	30	94
Completely disagree	15	6	100
	250	100	

From Table 5E, it can be seen that 100 (40%) of the respondents agreed that Health behavior is needed to prevent Lassa fever, while 60 (24%), 75 (30%) and 15 (6%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5F: Radio is the main source of awareness in the rural area.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	80	32	32
Disagree	10	4	36
Strongly agree	160	64	100
	250	100	

From Table 5F, it can be seen that 80 (32%) of the respondents agreed that Radio is the main source of awareness in the rural area, while 10 (4%) and 160 (64%) disagreed and strongly agreed respectively.

Table 5.5G: Regular hand washing is one of the ways to prevent Lassa fever.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	45	18	18
Disagree	110	44	62
Strongly agree	35	14	76
Completely disagree	60	24	100
	250	100	

From Table 5G, it can be seen that 45 (18%) of the respondents agreed that Regular hand washing is one of the way to prevent Lassa fever, while 110 (44%), 35 (14%) and 60 (24%) disagreed, strongly agreed and completely disagreed respectively.

Table 5.5H: Lassa fever can lead to deafness.

Responses	Number of respondent	Percentage	Cumulative percentage
Agree	20	8	8
Disagree	160	64	72
Strongly agree	50	6	78
Completely disagree	30	12	100
	250	100	

From Table 5H, it can be seen that 20 (8%) of the respondents agreed that Lassa fever can lead to deafness, while 160 (64%), 50 (6%) and 30 (12%) disagreed, strongly agreed and completely disagreed respectively.

Table 4.6: Observation check list.

Parameters to assess	PR	WK	AV	GD	EX
Food materials exposed around premises	42 (16.8%)	24 (9.6%)	50 (20%)	96 (38.4%)	38(15.2%)
The use of rodent or rat proof container	10 (4%)	60 (24%)	70 (28%)	84 (33.6%)	26 (10.4%)
Availability or use of waste bin	54 (21.6%)	26(10.4%)	120 (48%)	42 (16.8%)	8 (3.2%)
General environmental cleanness of the surrounding	34 (13.6%)	30 (12%)	99 (39.6%)	70 (28%)	17 (6.8%)
Presence of bush around houses	16 (6.4%)	80 (33.6%)	94 (37.6%)	42 (16.8%)	18 (7.2%)
Roof leaked and window broken	32 (12.8%)	84 (33.6%)	42 (16.8%)	50 (20%)	42 (16.8%)

Note: The interpretations o f t he keys are EXCELLENT (EX), GOOD (GD), AVERAGE (AV), WEAK (WK) and POOR (PR).

From Table 4.6, above it was observed that 42(16.8%) of the respondents believed that food materials exposed around premises are poor, 24(9.6%) weak, 50(20%) average, 96(38.4%) good and 38(15.2%) believed they are excellent. 10(4%) of the respondents believed that the use of rodent or rat proof container are poor, 60(24%) weak, 70(28%) average, 84(33.6%) ood and 26(10.4%) believed they are excellent. 54(21.6%) of the respondents believed that the availability or use of waste bin are poor, 26(10.4%) weak, 120(48%) average, 42(16.8%) good and 8(3.2%) believed they are excellent. 34(13.6%) of the respondents believed that general environmental cleanness of the surroundings are poor, 30(12%) weak, 99(39.6%) average, g 70(28%) good and 17(6.8%) believed they are excellent. 16(6.4%) of the respondents believed that presence of bush around houses are poor, 80(33.6%) weak, 94(37.6%) average, 42(16.8%) good and 18(7.2%) believed they are excellent. Finally, 32(12.8%) of the respondents believed that roof leaked and window broken are poor, 84(33.6%) weak, 42(16.8%) average, 50(20%) good and 42(16.8%) believed they are excellent [19-21].

Test of hypothesis

H0: There is no significant association between socio-demographic factors and community based strategies against Lassa fever prevention and control.H1: There is

significant association between socio-demographic factors and community based strategies against Lassa fever prevention and control.

Table 4.7: Association between socio-demographic factors and community based strategies against Lassa fever prevention and control.

Community based strategies put in place or adopted against Lassa fever			
Socio-demographic data	**Yes/Agreed**	**No/Disagreed**	**Total**
Gender			
Male	31(58.5%)	28(41.5%)	X2=2.629 df=1 P-value=0.105
Female	130(68.1%)	61(31.9%)	
Age			
21-30	75(64.7%)	41(35.3%)	X^2=7.000 df=3 P-value =0.072
31-40	35(57.6%)	26(42.4%)	
41-50	39(77.3%)	11(22.7%)	
51- above	12(52.2%)	11(49.8%)	
Marital status			
Single	64(64.5%)	35(35.5%)	X^2=0.991 df=3 P-value=0.804
Married	68(63.7%)	38(36.3%)	
Divorced	15(71.4%)	6(28.6%)	
Widowed	18(75.0%)	6(25.0%)	
Tribe			
Yoruba	123(57.1%)	92(42.9%)	X^2=13.788 df=3 P-value =0.003
Hausa	17(72.7%)	3(27.3%)	
Igbo	8(83.3%)	2(16.7%)	
Others	4(80.0%)	1(20.0%)	
Levels			
Tertiary	23(66.2%)	11(33.8%)	X^2=3.999 df=3 P-value=0.262
Secondary	29(57.1%)	22(42.9%)	
Primary	62(63.2%)	38(36.8%)	
No formal education	43(75.0%)	14(25.0%)	
Household			
1 – 3	13(61.9)	8(38.1)	X^2=7.054 df=2 p-value=0.029
4 – 6	156(75.5%)	53(24.5%)	
7 – 9	12(60.7%)	8(39.3%)	

Using Chi-Square set at level of significance p<0.05, df=degree of freedom, there is no significant relationship between socio-demographic factors and community based strategies against Lassa fever prevention and control in Malete, Moro local government Area, Kwara state. The null hypothesis is accepted while the alternative is rejected [22].

Discussion

This study assessed preparedness and community based intervention strategies for prevention and control of Lassa fever in rural Malete, Kwara State.

More than half 31(58.5%) of the respondents that are male agree that they know the level of awareness of Lassa fever.

While 130(68.1%) of the respondent are female agree that they know about strategies against Lassa fever prevention and control in Malete. P-value=0.105<0.05.

There is no significant relationship between Gender and strategies against Lassa fever prevention and control in Malete, Kwara State. The null hypothesis is accepted.

More than half of the respondents 75(64.7%) of the respondents in the age group (21-30 years) Agree they know strategies against Lassa fever prevention and control in Malete, 35(57.6%) in the age group (31-40 years) of the respondents also agree they know strategies against Lassa fever prevention and control in Malete.

Majority 39(77.3%) of respondents in the age group (41-50 years) agree they know strategies against Lassa fever prevention and control in Malete.

12(52%) of the respondents in (51above years) years category agree that they know if the state regulations for protection against radiation is available. P=0.072>0.05.

There is no significant relationship between Age and strategies against Lassa fever prevention and control in Malete, Moro LGA, Kwara State. The null hypothesis is accepted.

Majority of the respondents that are single 64(64.5%), Married 68(63.7%), divorced 15(71.4%) and widowed 18(75.0%) agree that they do not know about strategies against Lassa fever prevention and control in Malete.

P-value=0.804>0.05 [21]. There is no significant relationship between marital status and about strategies against Lassa fever prevention and control in Malete, Moro Local Government, Kwara state. The null hypothesis is accepted.

More than half of the respondents that are Yoruba 123(57.1%) agree that they know about strategies against Lassa fever prevention and control in Malete, 17(72.7%) of respondents that are Hausa Agree they know if the state regulations for protection against radiation is available, 8(83.3%) of the respondents Igbo Agreed they know about strategies against Lassa fever prevention and control in Malete. P=0.003<0.05.

There is significant relationship between Tribe and about strategies against Lassa fever prevention and control in Malete, Moro Local Government Area, Kwara State. The null hypothesis is rejected, and alternative is accepted [23].

Majority 43(75.0%) of the respondents in No formal education agree that they know about strategies against Lassa fever prevention and control in Malete, respondents in Primary level 62(63.2%), respondents in secondary 29(57.1%), Tertiary level 23(66.2%).

P value=0.262>0.05. There is no significant relationship between educational levels and knowledge about strategies against Lassa fever prevention and control in Malete. The null hypothesis is accepted.

Majority of the respondents from th e household of 1-3 13(75.5%)agree that they know about strategies against Lassa fever prevention and control in Malete, while the respondents that are from the household of 4-6 156 (75.5%) and household 7-9 12 (60.7%) agreed that they know about strategies against Lassa fever prevention and control in Malete. P-value=0.029<0.05.

There is significant relationship between household and about strategies against Lassa fever prevention and control in Malete, Moro LGA, Kwara State [24-25]. The null hypothesis is rejected while the alternative is accepted.

Conclusion

Past epidemic control in Nigeria have occurred, leaving little or no traces of existing control structures behind and preparing no ground for future outbreaks and little or no emphasis on preparedness. There should be a change in the past strategies employed by the health authorities.

There is a need to establish a multi sectoral team to assess the extent of local resources available to respond and manage epidemic alert and response as well as evaluating prevention and control measures.

There is a need to encourage more local applied research on Lassa fever and EVD outside the usual knowledge, attitude and practice platforms.

Recommendations

It was observed that past epidemic control measures in Nigeria were not sustained, with little or no emphasis on preparedness. There should be a change in the past strategies employed by the health authorities. There is a need to establish a multi sectoral epidemic preparedness team to create an

enabling environment for managing epidemic alert and response as well as evaluating prevention and control, measures. Recommendations for the roles and responsibilities and modes of operation of such preparedness team were also made. Furthermore, all hospitals and healthcare centers in the endemic areas especially those in rural communities should be provided with Ribavirin. Legislation should be in place to prevent bush burning and unhygienic preparation and preservation of staple foods such as the well consumed 'garri'.

Animal husbandry and fisheries should be encouraged in order to provide alternative sources of first class proteins for rat eaters. Regrettably, most rural communities in Nigeria don't believe they could contract Lassa from consuming infectious rodents. Thus, they incessantly and adamantly consume rats as delicacies, putting them at high risk for Lassa. Health care providers and close associates of the patient should wear protective clothing, masks and gloves. Excrements from affected persons should be adequately disposed.

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