**Original Research Article**

**Knowledge, Attitudes, and Practices Regarding Lassa Fever in Edo State: Insights from Community and Healthcare Workers**

### Abstract

Lassa fever, an acute viral hemorrhagic illness endemic in West Africa, poses significant public health challenges in Nigeria, with Edo State as one of the epicenters. Despite the recurrent outbreaks, limited data exist on the knowledge, attitudes, and practices (KAP) of residents and healthcare personnel in affected areas, creating a critical research gap. This study aimed to assess these dimensions in Edo State to inform targeted interventions. Using cross-sectional data from 1,192 residents and 180 Primary Healthcare (PHC) personnel, the study highlights substantial gaps in awareness and preventive behaviors.

Among residents, 80.1% recognized Lassa fever as a severe illness, yet only 6.9% had participated in awareness campaigns. Preventive measures such as storing food in rodent-proof containers (12.1%) and frequent environmental sanitation (25.4%) were underutilized. Misconceptions about transmission persisted, with only 3% aware of the 1–21 day incubation period and 0.3% acknowledging sexual transmission. Socioeconomic disparities significantly influenced practices, as higher-income households reported better compliance with sanitation measures (p < 0.001). Practices like using traps (14.5%) and participating in sanitation campaigns (6.8%) varied significantly by residence type (p < 0.001).

PHC personnel demonstrated strong knowledge of Lassa fever, with a high Relative Importance Index (RII = 0.960) for facts such as its classification as a viral hemorrhagic illness and the role of rats as primary reservoirs. However, only 84% identified alternative reservoirs like bats and mosquitoes. PPE adherence was notably poor, particularly for facemasks and eye protection (RII = 0.217). The study's findings underscore the necessity for targeted education, strengthened training for healthcare personnel, and equitable resource distribution to bridge the identified gaps. Addressing these issues is crucial to reducing the burden of Lassa fever in Edo State and beyond.

**Introduction**

Lassa fever is a viral hemorrhagic illness endemic to West Africa, caused by the Lassa virus, with rodents, especially the multimammate rat (*Mastomys natalensis*), acting as the primary reservoir (World Health Organization [WHO], 2024). The disease is transmitted to humans through contact with urine, feces, or saliva of infected rodents, or via person-to-person transmission, particularly in healthcare settings (Centers for Disease Control and Prevention [CDC], 2024). Symptoms of Lassa fever include fever, weakness, sore throat, and gastrointestinal issues, which can escalate to severe hemorrhagic manifestations and organ failure, often resulting in death (Tewogbola & Aung, 2020). Recent outbreaks in Nigeria, particularly in the southern and central regions, have raised concerns regarding control, prevention, and treatment strategies (WHO, 2024).

Despite extensive public health campaigns, knowledge gaps persist about Lassa fever and misconceptions about its transmission and prevention remain widespread (CDC, 2024). In Edo State, a region severely affected by Lassa fever outbreaks, understanding the knowledge, attitudes, and practices (KAP) of both community members and healthcare workers is crucial for improving disease prevention and management strategies (Tewogbola & Aung, 2020). Lassa fever continues to pose a significant public health threat in Nigeria; while interventions have been implemented to control the disease, evidence regarding their effectiveness in altering the population's KAP is limited (WHO, 2024).

Misconceptions about the disease persist alongside a lack of awareness about preventive measures such as rodent control and proper personal protective equipment (PPE) use among healthcare workers (Tewogbola & Aung, 2020). Healthcare workers play a vital role in controlling Lassa fever; however, their adherence to standard infection prevention protocols is often inconsistent (WHO, 2024). Educational programs targeting both the general population and healthcare workers have not been thoroughly evaluated, leaving a gap in understanding how knowledge and practices can be improved in high-risk areas like Edo State (CDC, 2024).

There is a notable lack of comprehensive studies assessing KAP regarding Lassa fever among community members and healthcare workers in Edo State. Previous studies have focused on either community or healthcare workers individually, failing to provide a holistic view of how these groups perceive and respond to Lassa fever (Tewogbola & Aung, 2020). Additionally, while awareness rates are documented as high, there is limited exploration of misconceptions that hinder preventive measure adoption. The impact of residence type—urban versus rural—on knowledge and practices related to Lassa fever remains underexplored (WHO, 2024).

The findings from this study will provide critical insights into awareness levels concerning Lassa fever among community members and healthcare workers in Edo State. By identifying knowledge gaps and misconceptions, the study aims to inform targeted educational interventions that can enhance preventive practices and reduce transmission risks (Tewogbola & Aung, 2020). Understanding factors such as residence type and healthcare worker practices is essential for tailoring public health campaigns effectively. Ultimately, this research aims to contribute to reducing Lassa fever transmission in Edo State and may serve as a model for similar studies in other endemic regions of Nigeria and West Africa.

**Materials and Methods**

**Edo State**

Edo state was formed in 1991 from the northern portion of Bendel state, the southern portion becoming [Delta](https://www.britannica.com/dictionary/Delta) state. Prior to this, in 1963, the citizens of the territory had voted to separate from what was then the Western region, and the Mid-West region was created. This became Mid-Western state following the federal reorganization in 1967; from a second reorganization in 1976 until its division in 1991, it was first named Bendel State and now Edo State, southern [Nigeria](https://www.britannica.com/place/Nigeria). Edo State lies roughly between longitudes 05° 04'E and latitudes 05°44'N and 07°34'N. It is bounded by the states of [Kogi](https://www.britannica.com/place/Kogi) to the northeast and east, [Anambra](https://www.britannica.com/place/Anambra) to the east, [Delta](https://www.britannica.com/place/Delta-state-Nigeria) to the southeast and south, and [Ondo](https://www.britannica.com/place/Ondo-state-Nigeria) to the west and northwest; the [Niger River](https://www.britannica.com/place/Niger-River) flows along the state’s eastern boundary. Edo State consists of eighteen (18) Local Government Areas. [Benin City](https://www.britannica.com/place/Benin-City) is the state capital and largest urban centre. Edo state lies at elevations between 500 feet (150 m) in the south and more than 1,800 feet (550 m) in the north. Tropical [rain forest](https://www.britannica.com/science/rainforest) covers most of the area. The state is inhabited largely by the Edo (Bini) people, who are linked to the historic kingdom of Benin.

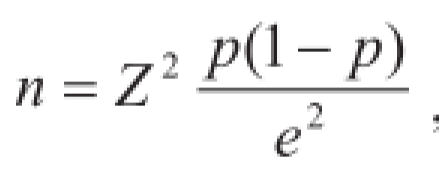
Agriculture is the mainstay of the economy. Yams, cassava (manioc), [oil palm](https://www.britannica.com/plant/oil-palm) produce, rice, and corn (maize) are the major subsistence crops, while rubber, timber, and palm oil and kernels are cash crops. Mineral resources include limestone and lignite. Industries produce pharmaceuticals, rubber, plywood, beer, sawn wood, and furniture. A network of trunk roads in the state and an airport at Benin City [facilitate](https://www.merriam-webster.com/dictionary/facilitate) transportation. The Nigerian Institute of Oil Palm Research, the Rubber Research Institute of Nigeria, and the University of Benin (founded 1970) are located at Benin City, while a state university (founded 1981) is at Ekpoma. Pop. (2006) 3,218,332. The research was carried out in three (3) local government areas of Edo state which are Esan west, Esan north east and Etsako West.



**Figure 1: Map Edo state with indication of the study area**

**Sample Size and Sampling Technique**

Based on the study areas as stated above, the study sampling technique adopted for this study is stratified random technique and based on the population of each LGA using the 2006 Census data i.e Ifelodun (276,700), Baruten (279.000). Ilorin West (493,000), Esan West (167,300), Estako West (260,700), Esan North East (183,634), Owo (218,886), Ose (144,901) and Akure North (131,587). The sample size for this study was determined using the Cochran formula for calculating sample size for cross sectional studies when proportion is the parameter of study (Cochran, 1963).



Where, *n* = sample size *Z* = 1.96 for 95% level of confidence for at power of 80%

*P* = prevalence of the event of interest. In this case, *P* is the prevalence of Lassa fever in the study area, and it is unknown. Therefore, a national sero-prevalence of 21.3% was used in this study (Tambo *et al.,* 2018). *e* = margin of error or precision of 5%. Therefore, *n* = [(1.96)2 (0.213x0.787)]/(0.05)2 *n* = 257.5

A response rate of 90% was assumed. After calculation for each LGA,

Sample Size of Esan West = 399

Sample Size of Estako West = 399

Sample Size of Esan North East = 399

Total = 3,589

Also, convenience sampling technique was used to sample the numbers of PHCs where sixty (60) PHC’s was used in each state under study given a total of one hundred and eighty (180) and one hundred and eighty (180) PHCs personnel were sampled from each state giving a total five hundred and forty (540) in the three states under study.

**3.4.1 Inclusion criteria**

Individuals within the selected communities within the LGAs and States who are residents for at least 6 months and above were the respondents interviewed and households’ heads as well as members of the households conversant with everything about the household was interviewed in order to get the accurate and reliable information for the purpose of achieving the set objectives of this research.

**3.4.2 Exclusion criteria**

All individuals not residing in the study areas were excluded including non-members of an households and those members of the households not conversant with the households’ activities.

**Method of Data Collection**

Data was collected using a well-structured questionnaire tailored to answer the research objectives in assessing relative importance index and the knowledge, attitude and practice regarding Lassa fever within some selected LGAs in Nigeria particularly focusing on the two leading epicenters of Lassa fever in Nigeria (Ondo and Edo States) as well as Kwara state that serves a center between the Northern and Southern region of Nigeria which also has boundaries with different states and a country with a potential risks of bringing about a trans-boundary disease transmission.

The questionnaire was programmed and a Survey CTO software was used in the collection of the data due to the large sample size and for efficiency as well as to maintain the reliability of the data set. Thus, the use of Computer Assisted Personal Interview (CAPI) was used for the collection of the data. This helped in efficiently getting the required information needed in achieving the set-out objectives.

The questionnaire was programmed and divided into three (3) questionnaires for the purpose of achieving the set-out objectives.

**Data Analysis**

After the collection of data using CAPI-based questionnaire with the aid of Survey CTO software, the completed data was downloaded in Excel sheet and was analyzed using the SPSS version 20, the spatial coordinates gotten with the aid of GPS was displayed on the map with the aid of Arc View GIS software. **Relative Important Index (RII)** was used to evaluate the sub-constructs of knowledge, attitude, and preventive practices regarding Lassa Fever as adopted by Vali *et al*., (2018) in their study which analyses the socioeconomic inequalities in health domain in Tehran; a population-based cross-sectional study. Also, this model helps to determine the exact sub-constructs to focus on in the enlightenment programmes in the future as well as to forecast the epidemiology of LF in the study areas as attitudinal change is a way to go in order to lessen to the barest minimum the endemic pattern of LF in Nigeria.

**3.6.1. Relative Importance Index (RII)**

In the realm of research and decision-making, understanding the relative importance of various factors or variables is often the key to making informed choices. The Relative Importance Index (RII) is a valuable statistical tool employed in various research domains to gauge the relative importance or significance of different factors or variables within a study. As researchers delve into complex data analysis and decision-making processes, RII provides a structured method to prioritize factors, aiding in more informed and data-driven conclusions (Azman *et al*., 2019). The Relative Importance Index (RII) emerges as an indispensable statistical tool designed to unravel the intricacies of this prioritization process. In the course of any research study, be it in business, environmental science, or social sciences, the determination of what factors matter most can be a critical juncture. RII stands as a guiding beacon in this scenario, offering a structured method for evaluating and ranking factors, thereby providing clarity amid complexity (Davey *et al*., 2002).

**RESULTS AND DISCUSSION**

The findings presented across the various tables provide a comprehensive overview of demographic, occupational, and health-related factors among respondents from Edo State. Table 1a reveals the gender distribution of participants, with males making up 52.2% (637 respondents) and females 47.8% (555 respondents). This relatively balanced participation across genders is consistent across the local government areas (LGAs), with Esan West, Esan North East, and Estako West showing similar gender distributions, underscoring equitable gender representation in the survey.

Age distribution, as highlighted in Table 1b, shows a predominance of individuals in the 31–45 age group, comprising 43.1% of the respondents (784 males and 759 females), followed by the 15–30 age group at 27.7% (540 males and 452 females). This indicates that middle-aged individuals are the most active demographic, with a notable proportion of both younger and older individuals also participating, highlighting broad generational involvement in the study.

Regarding occupation, Table 1b shows that government employees constitute the largest group (34.1%), followed by self-employed individuals (30.5%) and those in the private sector (23.5%). These figures reflect a diverse occupational landscape among the respondents, with significant participation from individuals across various employment sectors.

Table 1b also provides insights into marital status, revealing that 55.7% of respondents are married, with a notable proportion of singles (27.7%) and divorced individuals (14.8%). This suggests that marriage remains the predominant status, though the presence of unmarried and divorced individuals highlights important social dynamics in the community.

Religious affiliations (Table 1c) show Christianity as the most prevalent faith (54.7%), followed by Islam (36.5%) and traditional religions (8.9%). This highlights the diverse religious landscape in Edo State, with Christianity holding a dominant position, but with significant representation from Islam and traditional beliefs.

Tribal composition (Table 1c) indicates that the Yoruba tribe is the most represented, constituting 62.5% of respondents, followed by the Esan (16.9%) and Igbo (10.4%) tribes. This points to the ethnic diversity within the population, with the Yoruba group being the largest, but with notable contributions from other tribes.

In terms of educational attainment, Table 1c reveals that primary education is the most common level (41.9%), followed by tertiary education (26.5%) and vocational training (21.2%). This distribution suggests that while a significant proportion of respondents have access to foundational education, there is also a notable percentage with higher education, particularly in vocational and tertiary training, indicating diverse educational backgrounds.

Tables 2a, 2b, and 2c focus on professional designations and working experience. Table 2b highlights that community health workers make up the largest professional group, with 33.7% of respondents (44 males and 138 females). This is followed by nurses and midwives (21.9%) and medical doctors (13.3%), showing a strong representation of healthcare professionals among the respondents. Table 2c further reveals that the majority (52.8%) of respondents have 1–10 years of experience, suggesting that a substantial proportion of the workforce is relatively young and active in the field.

Tables 3a and 3b shed light on Infection Prevention and Control (IPC) measures, revealing that while basic facilities like isolation wards (53.3%) and changing rooms (56.1%) are widely available, critical components such as soap for handwashing (38.9%) and wash hand basins (37.8%) are less common. Similarly, the availability of personal protective equipment (PPE) is skewed, with gloves being the most available (73.3%), but items like face shields (2.8%) and boots (25.6%) are notably lacking. These findings suggest gaps in IPC infrastructure that could impact the effectiveness of infection control efforts.

Tables 4 and 4.1–4.4 explore healthcare workers' attitudes and knowledge of Lassa fever. While most healthcare workers agree that Lassa fever is a deadly disease, misconceptions about its transmission, such as sexual intercourse or consumption of rodent bushmeat, persist. Educational qualifications correlate with knowledge, as those with tertiary education display a better understanding of Lassa fever's symptoms and epidemiology, highlighting the importance of targeted training and sensitization efforts (Table 4.2).

In terms of preventive practices, Table 4.3 and 4.4b reveal minimal adherence to measures like avoiding bushmeat or practicing personal hygiene related to rodent-proofing food. However, there is some evidence of proactive behavior in terms of food storage and engagement in environmental sanitation, particularly among those with tertiary or vocational training.

Table 5a highlights that higher-income respondents are more aware of the Lassa fever outbreak, yet significant knowledge gaps remain, particularly regarding the incubation period and modes of transmission. Table 5.1a indicates that preventive practices, such as using rodent-proof containers and engaging in frequent sanitation, are more prevalent among wealthier households, demonstrating an income-related disparity in preventive behavior.

Table 6a and 6b further emphasize the importance of residence type and income in influencing awareness and preventive practices. Residents in bungalows and semi-detached houses demonstrate higher awareness of the outbreak, but knowledge gaps about Lassa fever's incubation period and transmission modes persist across residence types. However, recognition of Lassa fever as a severe illness is highest among semi-detached residents, suggesting that residential factors may influence awareness levels.

**Table 6b: Knowledge and Lassa Fever Characteristics**

While most respondents recognize Lassa fever as a severe viral illness (80.1%), misconceptions about its similarity to other viral symptoms persist, with only 0.1% of respondents acknowledging this. The p-value of 0.916 suggests no significant association between this knowledge and residence type. However, the widespread acknowledgment of Lassa fever as a severe illness indicates partial awareness, which may provide a basis for targeted education.

The cross-tabulation analysis of respondents in Edo State reveals notable attitudes and misconceptions about Lassa fever, varying by type of residence. Belief in the existence of Lassa fever is low, with only 1.2% of respondents affirming its presence, showing no significant association with residence type (p=0.284). However, the perception of Lassa fever as a life-threatening illness is significantly associated with residence type (p<0.001), although it is acknowledged by only 2.4% of respondents. Preventive measures, such as hygiene practices and advocacy for environmental sanitation, are poorly adopted, with no significant variations across residence types (p>0.05). Similarly, most respondents (99.5%) believe strong, healthy individuals can still contract Lassa fever, irrespective of their residence type. Despite these associations, the majority of respondents exhibit misconceptions, with only 3.6% believing Lassa fever can be cured (p<0.001).

The cross-tabulation analysis of Table 7 highlights the influence of residence type on Lassa fever-related practices among respondents in Edo State. Practices like eating rodents, consuming rodent-contaminated food, and spreading food near the roadside are generally rare, with negligible associations to residence type (p>0.05). However, significant differences emerge in more proactive measures such as food storage in rodent-proof containers (p<0.001) and frequent engagement in environmental sanitation (p<0.001), where semi-detached residents demonstrate higher compliance. The use of traps is also significantly associated with residence type (p=0.013), with bungalow residents showing greater usage. Participation in Lassa fever campaigns is notably low across all residence types but significantly varies (p<0.001), indicating a disparity in awareness initiatives. Sharing personal items like towels or clothing is rare and not significantly related to residence type (p=0.335). Similarly, only 1.3% of respondents reported experiencing Lassa fever symptoms, with significant differences across residence types (p<0.001).

The analysis of Table 8a demonstrates that PHC personnel in Edo State exhibit a strong knowledge of Lassa fever, as evidenced by a high Relative Importance Index (RII = 0.960) for key facts such as its classification as a deadly viral hemorrhagic illness, its causative agent (Lassa virus), and the primary reservoir (rats). However, there is less consensus (RII = 0.840) regarding other potential reservoirs, such as bats, monkeys, mosquitoes, and flies, highlighting a need for clarification in training programs.

Table 8b reveals a concerning gap in adherence to personal protective equipment (PPE) usage among Edo State personnel. Practices like using gowns, boots, and gloves during procedures with potential exposure are moderately ranked (RII = 0.400), while critical measures such as using facemasks and eye protection rank lowest (RII = 0.217). Similarly, practices like sharp disposal and handwashing after procedures are underutilized (RII = 0.367). These findings suggest the need for improved training and stricter enforcement of PPE protocols to enhance safety and infection control practices.

Overall, the findings underscore the complex interplay of demographic, occupational, and socioeconomic factors in shaping knowledge, attitudes, and practices related to Lassa fever in Edo State. These results suggest that while there is some level of awareness and proactive behavior, significant gaps remain, particularly in transmission knowledge and preventive practices, especially among lower-income and less-educated individuals. Targeted interventions, including education campaigns tailored to specific demographic groups, are crucial for improving understanding and mitigating the risks associated with Lassa fever.

**Table 1a: Demographic Information of Respondents (Modified)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Male (%)** | **Female (%)** | **Total (%)** | **Total Count** |
| **State** |  |  |  |  |
| Edo | 637 (17.8) | 555 (15.5) | 1192 (33.3) | 1192 |
| **Total** | 637 (52.2) | 555 (47.8) | 1192 (100.0) | 1192 |
| **LGA** |  |  |  |  |
| Esan West | 241 (6.7) | 157 (4.4) | 398 (11.1) | 398 |
| Esan North East | 169 (4.7) | 230 (6.4) | 399 (11.1) | 399 |
| Estako West | 227 (6.4) | 168 (4.7) | 395 (11.1) | 395 |

**Table 1b: Demographic Information of Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AGE | 15-30 |  | 540 | 452 | 992 |
|  | (15.1) | (12.6) | (27.7) |
| 31-45 |  | 784 | 759 | 1543 |
|  | (21.9) | (21.2) | (43.1) |
| 46 and above |  | 545 | 499 | 1044 |
|  | (15.2) | (13.9) | (29.2) |
| Total | |  | 1869 | 1710 | 3579 |
|  | (52.2) | 47.8% | (100.0) |
| Occupation | Private sector |  | 414 | 427 | 841 |
|  | (11.6) | (11.9) | (23.5) |
| Government |  | 619 | 603 | 1222 |
|  | (17.3) | (16.8) | (34.1) |
| Self Employed |  | 567 | 524 | 1091 |
|  | (15.8) | (14.6) | (30.5) |
| Unemployed |  | 95 | 71 | 166 |
|  | (2.6) | (2.0) | (4.6) |
| Retired |  | 69 | 10 | 79 |
|  | (1.9) | (0.3) | (2.2) |
| Student |  | 105 | 25 | 130 |
|  | (2.9) | (0.7) | (3.6) |
| Housewives |  | 0 | 50 | 50 |
|  | (0.0) | (1.4) | (1.4) |
| Total | |  | 1869 | 1710 | 3579 |
|  | (52.2) | (47.8) | (100.0) |
| Marital Status | Single |  | 500 | 490 | 990 |
|  | (14.0) | (13.7) | (27.7) |
| Married |  | 1115 | 878 | 1993 |
|  | (31.2) | (24.5) | (55.7) |
| Divorced |  | 224 | 306 | 530 |
|  | (6.3) | (8.5) | (14.8) |
| Separated |  | 23 | 8 | 31 |
|  | (0.6) | (0.3) | (0.9) |
| Widowed |  | 7 | 28 | 35 |
|  | (0.2) | (0.8) | (1.0) |
| Total | |  | 1869 | 1710 | 3579 |
|  | (52.2) | (47.8) | (100.0) |

**Field Survey, 2023**

**Table 1c: Demographic Information of Respondents**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | |  |  |  |  |
| Religion | Christianity |  | 859 | 1097 | 1956 |
|  | (24.0) | (30.7) | (54.7) |
| Islam |  | 807 | 502 | 1309 |
|  | (22.5) | (14.0) | (36.5) |
|  | Traditional |  | 203  (5.7) | 111  (3.1) | 314  (8.9) |
| Total | |  | 1869 | 1710 | 3579 |
|  | (52.2) | (47.8) | (100.0) |
|  | |  |  |  |  |
| Tribe | Yoruba |  | 1111 | 1129 | 2240 |
|  | (31.0) | (31.5) | (62.5) |
| Hausa |  | 58 | 63 | 121 |
|  | (1.6) | (1.8) | (3.4) |
| Igbo |  | 159 | 210 | 369 |
|  | (4.5) | (5.9) | (10.4) |
| Fulani |  | 10 | 9 | 19 |
|  | (0.3) | (0.2) | (.5) |
| Baruba |  | 152 | 55 | 207 |
|  | (4.8) | (0.9) | (5.8) |
| Nupe |  | 9 | 11 | 20 |
|  | (0.2) | (0.4) | (0.6) |
|  | Esan |  | 419  (11.7) | 184  (5.2) | 603  (16.9) |
|  |  |  |  |  |  |
| Total | |  | 1869 | 1710 | 3579 |
|  | (53.5) | (46.5) | (100.0) |
| Education | No formal Education |  | 114 | 114 | 228 |
|  | (3.2) | (3.2) | (6.4) |
| Primary |  | 632 | 868 | 1500 |
|  | (17.7) | (24.3) | (41.9) |
| Secondary |  | 81 | 63 | 144 |
|  | (2.3) | (1.8) | (4.0) |
| Tertiary |  | 506 | 444 | 950 |
|  | (14.1) | (12.4) | (26.5) |
| Vocational Training |  | 524 | 233 | 757 |
|  | (14.6) | (6.6) | (21.2) |
| Total | |  | 1869 | 1710 | 3579 |
|  | (51.9) | (48.1) | (100.0) |

**Field Survey, 2023**

**Table 2a: Demographic Information of Respondents in Primary Health Care (PHC)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Male (%)** | **Female (%)** | **Total (%)** | **Total Count** |
| **State** |  |  |  |  |
| Edo | 90 (16.7) | 90 (16.7) | 180 (33.4) | 180 |
| **Total** | 90 (50.0) | 90 (50.0) | 180 (100.0) | 180 |
| **LGA** |  |  |  |  |
| Estako West | 29 (16.1) | 31 (17.2) | 60 (33.3) | 60 |
| Esan West | 28 (15.6) | 32 (17.8) | 60 (33.3) | 60 |
| Esan North | 33 (18.3) | 27 (15.0) | 60 (33.3) | 60 |

**Table 2b: Demographic Information of Respondents in Primary Health Care (PHC)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DESIGNATION | Medical doctor | |  | 46 | 26 | 72 |
|  | (8.5) | (4.8) | (13.3) |
| Nurse/Midwife | |  | 35 | 83 | 118 |
|  | (6.5) | (15.4) | (21.9) |
| Environmental Health officers | |  | 19 | 30 | 49 |
|  | (3.5) | (5.6) | (9.1) |
| Health Information Officers | |  | 20 | 47 | 67 |
|  | (3.7) | (8.7) | (12.4) |
| Laboratory scientist/laboratory technician | |  | 23 | 29 | 52 |
|  | (4.3) | (5.4) | (9.7) |
| Community health worker | |  | 44 | 138 | 182 |
|  | (8.1) | (25.6) | (33.7) |
| Total | | |  | 187 | 353 | 540 |
|  | (34.7) | (65.3) | (100.0) |
| Marital status | | Single |  | 62 | 48 | 110 |
|  | (12.4) | (9.0) | (21.4) |
| Married |  | 113 | 269 | 382 |
|  | (22.7) | (49.4) | (72.1) |
| Divorced |  | 10 | 14 | 24 |
|  | (.8) | (2.8) | (3.6) |
| Separated |  | 0 | 7 | 7 |
|  | (0.0) | (.6) | (.6) |
| Widowed |  | 2 | 15 | 17 |
|  | (.4) | (1.8) | (2.2) |
| Total | | |  | 187 | 353 | 540 |

**Table 2c: Demographic Information of Respondents in Primary Health Care (PHC)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Working experience | 1-10 |  | 115 | 170 | 285 |
|  | (21.3) | (31.5) | (52.8) |
| 11-20 |  | 70 | 149 | 219 |
|  | (12.9) | (27.6) | (40.5) |
| 21-30 |  | 2 | 28 | 30 |
|  | (.4) | (5.2) | (5.6) |
| >31 |  | 0 | 6 | 6 |
|  | (0.0) | (1.1) | (1.1) |
|  |  |  |  |  |
| Total | |  | 187 | 353 | 540 |

**Table 3a: Observational Checklist of Presence and Practice of Infectious and Prevention Control (IPC) measures**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | |  | |  |
|  |  |
| Is an isolation ward or room available | Yes |  | 96 |  |  |
|  | (53.3) |  |  |
| No |  | 84 |  |  |
|  | (46.7) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Does the facility has a changing room | Yes |  | 101 |  |  |
|  | (56.1) |  |  |
| No |  | 79 |  |  |
|  | (43.9) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Does the facility has restricted access room | Yes |  | 59 |  |  |
|  | (32.8) |  |  |
| No |  | 121 |  |  |
|  | (62.2) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Does the facility has soap for hand washing | Yes |  | 70 |  |  |
|  | (38.9) |  |  |
| No |  | 110 |  |  |
|  | (61.1) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Is wash hand basin available in the facility | Yes |  | 68 |  |  |
|  | (37.8) |  |  |
| No |  | 112 |  |  |
|  | (62.2) |  |  |
| Total | |  | 180 |  |  |
|  | 100.0) |  |  |

**Table 3b: Observational Checklist of Presence and Practice of Infectious and Prevention Control (IPC) measures**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Are gloves available in the facility | Yes |  | 132 |  |  |
|  | (73.3) |  |  |
| No |  | 48 |  |  |
|  | (26.7) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Is face shield or goggles available | Yes |  | 5 |  |  |
|  | (2.8) |  |  |
| No |  | 175 |  |  |
|  | (97.2) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Is apron available in the facility | Yes |  | 64 |  |  |
|  | (35.6) |  |  |
| No |  | 116 |  |  |
|  | (64.4) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Is there full body PPE in the facility | Yes |  | 54 |  |  |
|  | (30.0) |  |  |
| No |  | 126 |  |  |
|  | (70.0) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| .Are boots available in the facility | Yes |  | 46 |  |  |
|  | (25.6) |  |  |
| No |  | 134 |  |  |
|  | (74.4) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |
| Is there red color coded waste bin in the facility | Yes |  | 7 |  |  |
|  | (3.9) |  |  |
| No |  | 173 |  |  |
|  | (96.1) |  |  |
| Total | |  | 180 |  |  |
|  | (100.0) |  |  |

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**Table 4: Attitude toward usage of PPE while treating for Lassa fever patient in Edo State**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | **Have you attended training or sensitization workshop on** | | **Total** |
| Yes | No |
| I use gown and boot during procedure likely to generate splashes | Rarely |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| I dispose all sharps in sharps bin | Never |  | 10 | 20 | 30 |
|  | 5.6% | 11.1% | 16.7% |
| Rarely |  | 48 | 102 | 150 |
|  | 26.7% | 56.7% | 83.3% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| I use nose masks and eye protection during procedures | Never |  | 54 | 111 | 165 |
|  | 30.0% | 61.7% | 91.7% |
| Rarely |  | 4 | 11 | 15 |
|  | 2.2% | 6.1% | 8.3% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| I wash hands before and after a procedure | Never |  | 9 | 21 | 30 |
|  | 5.0% | 11.7% | 16.7% |
| Rarely |  | 49 | 101 | 150 |
|  | 27.2% | 56.1% | 83.3% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| I use gloves when handling body secretions and contaminated items | Rarely |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |

**Table 4.1: Knowledge of PHC personnel on Lassa Fever and Epidemiological features of Lassa Fever in EDO STATE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | Have you attended training or sensitization workshop on | | Total |  |
| Yes | No | p-value |
| Lassa fever is a common deadly disease | Agree |  | 58 | 122 | 180 | 0.000 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |
|  | 32.2% | 67.8% | 100.0% |
| It is an acute viral hemorrhagic illness | Agree |  | 58 | 122 | 180 | 0.000 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |  |
|  | 32.2% | 67.8% | 100.0% |  |
| The reservoir of the causative agent of Lassa fever is rat | Agree |  | 58 | 122 | 180 | 0.000 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |  |
|  | 32.2% | 67.8% | 100.0% |  |
| The reservoir of the causative agent of Lassa fever is rat | Agree |  | 58 | 122 | 180 | 0.000 |
|  | 32.2% | 67.8% | 100.0% |
| Total | |  | 58 | 122 | 180 |  |
|  | 32.2% | 67.8% | 100.0% |  |
| Bat monkey mosquito and fry are also reservoirs | Agree |  | 39 | 81 | 120 | 0.981 |
|  | 21.7% | 45.0% | 66.7% |
| Neutral |  | 14 | 31 | 45 |
|  | 7.8% | 17.2% | 25.0% |
| Disagree |  | 5 | 10 | 15 |
|  | 2.8% | 5.6% | 8.3% |  |
| Total | |  | 58 | 122 | 180 |  |
|  | 32.2% | 67.8% | 100.0% |  |

**Table 4.2: Cross-tabulation of Edo State Respondents on Knowledge and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Education | | | | Total |  |
| Primary | Secondary | Tertiary | Vocational Training | P-values |
| Do you know that there is an outbreak of Lassa fever | Yes |  | 22 | 14 | 64 | 134 | 234 | 0.000 |
|  | 1.8% | 1.2% | 5.4% | 11.2% | 19.6% |
| No |  | 402 | 38 | 196 | 322 | 958 |
|  | 33.7% | 3.3% | 16.4% | 27.0% | 80.4% |
| Total | |  | 424 | 52 | 260 | 456 | 1192 |  |
|  | 35.5% | 4.4% | 21.8% | 38.3% | 100.0% | 0.072 |
| Can contact with infected persons lead to Lassa fever | Yes |  | 1 | 1 | 2 | 2 | 6 |
|  | .1% | .1% | .2% | .2% | .5% |
| No |  | 423 | 51 | 384 | 328 | 1186 |
|  | 35.4% | 4.3% | 32.2% | 27.5% | 99.5% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you know the incubation period of Lassa fever is between 6\_21 days | Yes |  | 1 | 1 | 6 | 27 | 35 | 0.012 |
|  | .1% | .1% | .5% | 2.3% | 2.9% |
| No |  | 423 | 51 | 380 | 303 | 1157 |
|  | 35.4% | 4.3% | 31.9% | 25.4% | 97.1% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Can Lassa fever be transmitted during sexual intercourse | Yes |  | 0 | 1 | 1 | 1 | 3 | 0.047 |
|  | 0.0% | .1% | .1% | .1% | .3% |
| No |  | 424 | 51 | 385 | 329 | 1189 |
|  | 35.5% | 4.4% | 32.3% | 27.6% | 99.7% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you know consumption of rodent bush meats increase the chances | Yes |  | 1 | 0 | 1 | 0 | 2 | 0.095 |
|  | .1% | 0.0% | .1% | 0.0% | .2% |
| No |  | 423 | 52 | 385 | 330 | 1190 |
|  | 35.4% | 4.4% | 32.3% | 27.7% | 98% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |

**Table 4.2b: Cross-tabulation of Edo State Respondents on Knowledge and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Do you know that the symptoms of Lassa fever resemble other viral | Yes |  | 0 | 0 | 1 | 0 | 1 | 0.148 |
|  | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 424 | 52 | 385 | 330 | 1190 |
|  | 35.5% | 4.4% | 32.3% | 27.7% | 99.9% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% | 0.000 |
| Lassa fever is severe viral and fever like | Yes |  | 404 | 23 | 345 | 183 | 955 |
|  | 33.9% | 1.9% | 28.9% | 15.4% | 80.1% |
| No |  | 100 | 4 | 23 | 110 | 237 |
|  | 8.4% | .3% | 1.9% | 9.2% | 19.9% |
| Total | |  | 504 | 27 | 368 | 293 | 1192 |  |
|  | 42.3% | 2.3% | 30.8% | 24.6% | 100.0% |  |

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**Table 4.3: Cross-tabulation of Edo State Respondents on Attitude and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Education | | | | Total |  |
| Primary | Secondary | Tertiary | Vocational Training | P-values |
| Do you believe Lassa fever exists | Yes |  | 0 | 0 | 3 | 2 | 5 | 0.004 |
|  | 0.0% | 0.0% | .3% | .2% | .4% |
| No |  | 424 | 52 | 383 | 328 | 1187 |
|  | 35.5% | 4.4% | 32.1% | 27.5% | 99.6% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Lassa fever is life threatening illness | Yes |  | 2 | 0 | 7 | 19 | 28 | 0.008 |
|  | ..2% | 0.0% | .6% | 1.6% | 2.3% |
| No |  | 422 | 52 | 379 | 311 | 1164 |
|  | 35.3% | 4.4% | 31.8% | 26.1% | 97.7% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Lassa fever can be cured | Yes |  | 0 | 3 | 7 | 21 | 31 | 0.000 |
|  | 0.0% | .3% | .6% | 1.8% | 2.6% |
| No |  | 424 | 49 | 379 | 309 | 1161 |
|  | 35.5% | 4.1% | 31.8% | 25.9% | 97.4% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Advocacy proper environmental sanitation | Yes |  | 1 | 1 | 4 | 8 | 14 | 0.018 |
|  | .1% | .1% | .3% | .7% | 1.2% |
| No |  | 423 | 51 | 382 | 322 | 1178 |
|  | 35.4% | 4.3% | 32.0% | 27.0% | 98.8% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Environmental sanitation personal hygiene putting food in a rodent proof | Yes |  | 1 | 0 | 4 | 4 | 9 |  |
|  | .1% | 0.0% | .3% | .3% | .8% | 0.425 |
| No |  | 423 | 52 | 382 | 326 | 1183 |
|  | 35.4% | 4.4% | 32.0% | 27.3% | 99.2% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |

**Table 4.3b: Cross-tabulation of Edo State Respondents on Attitude and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Not eating bush meats and spreading of foods on the roadsides | Yes |  | 1 | 0 | 1 | 4 | 6 | 0.176 |
|  | .1% | 0.0% | .1% | .3% | .5% |
| No |  | 423 | 52 | 385 | 326 | 1186 |
|  | 35.4% | 4.4% | 32.3% | 27.3% | 99.5% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| A strong and healthy person can be infected with Lassa fever | Yes |  | 424 | 52 | 385 | 325 | 1186 | 0.000 |
|  | 35.5% | 4.4% | 32.3% | 27.2% | 99.5% |
| No |  | 0 | 0 | 1 | 5 | 6 |
|  | 0.0% | 0.0% | .1% | .4% | .5% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |

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**Table 4.4a: Cross-tabulation of Edo State Respondents on Practice and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Education | | | | Total |  |
| Primary | Secondary | Tertiary | Vocational Training | P-values |
| Do you eat rodents | Yes |  | 0 | 0 | 1 | 0 | 1 | 0.681 |
|  | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 424 | 52 | 385 | 330 | 1191 |
|  | 35.5% | 4.4% | 32.3% | 27.7% | 99.9% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you feed on rodents contaminated foods | Yes |  | 0 | 0 | 1 | 1 | 2 | 0.816 |
|  | 0.0% | 0.0% | .1% | .1% | .2% |
| No |  | 424 | 52 | 385 | 329 | 1190 |
|  | 35.5% | 4.4% | 32.3% | 27.6% | 99.8% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you spread foods on the road sides and your house surroundings | Yes |  | 0 | 0 | 1 | 1 | 2 | 0.000 |
|  | 0.0% | 0.0% | .1% | .1% | .2% |
| No |  | 424 | 52 | 385 | 329 | 1190 |
|  | 35.5% | 4.4% | 32.3% | 27.6% | 99.8% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you store your food in rodent proof containers | Yes |  | 20 | 1 | 53 | 68 | 142 | 0.000 |
|  | 1.7% | .1% | 4.4% | 5.7% | 11.9% |
| No |  | 404 | 52 | 333 | 262 | 1050 |
|  | 33.9% | 4.4% | 27.9% | 21.9% | 88.1% |
| Total | |  | 424 | 53 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you frequently engage in environmental sanitation | Yes |  | 34 | 34 | 89 | 167 | 324 | 0.012 |
|  | 2.9% | 2.9% | 7.5% | 14.0% | 25.8% |
| No |  | 390 | 18 | 297 | 163 | 868 |
|  | 32.7% | 1.5% | 24.9% | 13.7% | 74.2% |  |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |

**Table 4.4b: Cross-tabulation of Edo State Respondents on Practice and Educational qualifications**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Do you use traps in and around your house | Yes |  | 25 | 6 | 40 | 102 | 173 | 0.001 |
|  | 2.1% | .5% | 3.4% | 8.6% | 14.5% |
| No |  | 399 | 46 | 346 | 228 | 1019 |
|  | 33.5% | 3.8% | 29.0% | 19.1% | 85.5% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Have you participated in any Lassa fever campaign | Yes |  | 6 | 2 | 19 | 54 | 81 | 0.000 |
|  | .5% | .2% | 1.6% | 4.5% | 6.8% |
| No |  | 418 | 50 | 367 | 276 | 1111 |
|  | 35.1% | 4.2% | 30.8% | 23.2% | 93.2% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| Do you share towels clothes and other personal belongings with family | Yes |  | 1 | 0 | 2 | 3 | 6 | 0.424 |
|  | .1% | 0.0% | .2% | .3% | .5% |
| No |  | 423 | 52 | 384 | 327 | 1186 |
|  | 35.4% | 4.4% | 32.2% | 27.4% | 99.5% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |
| If you experience any signs and symptoms of Lassa fever | Yes |  | 0 | 1 | 3 | 11 | 15 | 0.000 |
|  | 0.0% | .1% | .3% | .9% | 1.3% |
| No |  | 424 | 51 | 383 | 319 | 1177 |
|  | 35.4% | 4.3% | 32.1% | 26.8% | 98.7% |
| Total | |  | 424 | 52 | 386 | 330 | 1192 |  |
|  | 35.5% | 4.4% | 32.4% | 27.7% | 100.0% |  |

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**Table 5a: Cross-tabulation of Edo State Respondents on Knowledge and Total Monthly Income**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Total Monthly Household Income | | | | | Total |  |
| #11000-20000 | #21000-30000 | #31000-40000 | #41000-50000 | #51000 and above | P-values |
| Do you know that there is an outbreak of Lassa fever | Yes |  | 26 | 12 | 34 | 77 | 85 | 234 | 0.000 |
|  | 2.2% | 1.0% | 2.9% | 6.5% | 7.1% | 19.6% |
| No |  | 626 | 28 | 21 | 127 | 156 | 958 |
|  | 53.5% | 2.3% | 1.8% | 10.7% | 13.0% | 80.4% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Can contact with infected persons lead to Lassa fever | Yes |  | 0 | 0 | 0 | 4 | 2 | 6 | 0.000 |
|  | 0.0% | 0.0% | 0.0% | .3% | .2% | .5% |
| No |  | 652 | 40 | 55 | 200 | 239 | 1186 |
|  | 54.7% | 3.4% | 4.6% | 16.8% | 20.0% | 99.5% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you know the incubation period of Lassa fever is between 1\_21days | Yes |  | 1 | 0 | 1 | 9 | 24 | 35 | 0.000 |
|  | .1% | 0.0% | .1% | .8% | 2.1% | 2.9% |
| No |  | 651 | 40 | 54 | 195 | 217 | 1157 |
|  | 54.6% | 3.4% | 4.5% | 16.4% | 18.2% | 97.1% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Can Lassa fever be transmitted during sexual intercourse | Yes |  | 0 | 1 | 0 | 1 | 1 | 3 | 0.000 |
|  | 0.0% | .1% | 0.0% | .1% | .1% | .3% |
| No |  | 652 | 39 | 55 | 203 | 240 | 1189 |
|  | 54.7% | 3.3% | 4.6% | 17.0% | 20.1% | 99.7% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 55.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |

**Table 5b: Cross-tabulation of Edo State Respondents on Knowledge and Total Monthly Income**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Do you know consumption of rodent bush meats increase the chances | Yes |  | 0 | 0 | 0 | 2 | 0 | 2 | 0.082 |
|  | 0.0% | 0.0% | 0.0% | .2% | 0.0% | .2% |
| No |  | 652 | 40 | 55 | 202 | 241 | 1190 |
|  | 54.7% | 3.4% | 4.6% | 16.9% | 20.2% | 99.8% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you know that the symptoms of Lassa fever resemble other viral | Yes |  | 0 | 0 | 0 | 1 | 0 | 1 | 0.165 |
|  | 0.0% | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 652 | 40 | 55 | 203 | 241 | 1191 |
|  | 54.7% | 3.4% | 4.6% | 16.9% | 20.2% | 99.9% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% | 0.000 |
| Lassa fever is severe viral and fever like | Yes |  | 647 | 34 | 38 | 201 | 127 | 1047 |
|  | 54.3% | 2.8% | 3.2% | 16.8% | 10.7% | 87.8% |
| No |  | 5 | 2 | 9 | 53 | 76 | 145 |
|  | .5% | .2% | .8% | 4.4% | 6.4% | 12.2% |
| Total | |  | 652 | 36 | 47 | 254 | 203 | 1192 |  |
|  | 54.7% | 3.0% | 3.9% | 21.3% | 17.0% | 100.0% |  |

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**Table 5.1a: Cross-tabulation of Edo State Respondents on Practice and Total Monthly Income**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Total\_Monthly\_Household\_income | | | | | Total |  |
| #11000-20000 | #21000-30000 | #31000-40000 | #41000-50000 | #51000 and above | P-values |
| Do you eat rodents | Yes |  | 0 | 0 | 0 | 1 | 0 | 1 | 0.416 |
|  | 0.0% | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 652 | 40 | 55 | 203 | 241 | 1191 |
|  | 54.7% | 3.4% | 4.6% | 17.0% | 20.2% | 99.9% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you feed on rodents contaminated foods | Yes |  | 0 | 0 | 0 | 1 | 1 | 2 | 0.832 |
|  | 0.0% | 0.0% | 0.0% | .1% | .1% | .2% |
| No |  | 652 | 40 | 55 | 203 | 240 | 1190 |
|  | 54.7% | 3.4% | 4.6% | 17.0% | 20.1% | 99.8% |  |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you store your food in rodent proof containers | Yes |  | 1 | 4 | 18 | 54 | 65 | 142 | 0.000 |
|  | .1% | .3% | 1.5% | 4.6% | 5.6% | 12.1% |
| No |  | 651 | 36 | 37 | 150 | 176 | 1050 |
|  | 54.6% | 3.0% | 3.1% | 12.6% | 14.8% | 88.1% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you frequently engage in environmental sanitation | Yes |  | 27 | 54 | 29 | 118 | 115 | 302 | 0.001 |
|  | 2.3% | 1.1% | 2.5% | 10.1% | 9.8% | 25.3% |
| No |  | 625 | 5 | 48 | 86 | 126 | 890 |
|  | 52.4% | .4% | 4.0% | 7.2% | 10.6% | 74.7% |
| Total | |  | 652 | 59 | 77 | 204 | 241 | 1192 |  |
|  | 54.7% | 4.9% | 6.5% | 17.1% | 20.2% | 100.0% |  |
| Do you use traps in and around your house | Yes |  | 3 | 8 | 13 | 49 | 100 | 173 | 0.005 |
|  | .3% | .7% | 1.1% | 4.2% | 8.5% | 14.5% |
| No |  | 649 | 32 | 42 | 155 | 141 | 1019 |
|  | 54.4% | 2.7% | 3.5% | 13.0% | 11.8% | 85.5% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.6% | 3.4% | 4.7% | 17.4% | 20.2% | 100.0% |  |

**Table 5.1b: Cross-tabulation of Edo State Respondents on Practice and Total Monthly Income**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Have you participated in any Lassa fever campaign | Yes |  | 1 | 2 | 7 | 28 | 43 | 81 | 0.000 |
|  | .1% | .2% | .6% | 2.4% | 3.7% | 6.9% |
| No |  | 651 | 38 | 48 | 176 | 198 | 1111 |
|  | 54.6% | 3.2% | 4.0% | 14.8% | 16.6% | 93.1% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |
| Do you share towels clothes and other personal belongings with family | Yes |  | 0 | 0 | 1 | 3 | 2 | 6 |  |
|  | 0.0% | 0.0% | .1% | .3% | .2% | .5% | 0.062 |
| No |  | 652 | 40 | 54 | 201 | 239 | 1186 |
|  | 54.7% | 3.4% | 4.6% | 16.9% | 20.1% | 99.5% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |  |
|  | 54.7% | 3.4% | 4.7% | 17.1% | 20.2% | 100.0% |  |
| If you experience any signs and symptoms of Lassa fever | Yes |  | 1 | 0 | 0 | 6 | 8 | 15 | 0.001 |
|  | .1% | 0.0% | 0.0% | .5% | .7% | 1.3% |
| No |  | 651 | 40 | 55 | 198 | 233 | 1177 |
|  | 54.6% | 3.4% | 4.6% | 16.6% | 19.5% | 98.7% |
| Total | |  | 652 | 40 | 55 | 204 | 241 | 1192 |
|  | 54.7% | 3.4% | 4.6% | 17.1% | 20.2% | 100.0% |  |

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**Table 6a: Cross-tabulation of Edo State Respondents on Knowledge and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Type of residence | | | | Total |  |
| Bungalow | face-me-i-face-you | Semi-detached | Others | P-values |
| Do you know that there is an outbreak of Lassa fever | Yes |  | 76 | 27 | 93 | 38 | 234 | 0.000 |
|  | 6.5% | 2.3% | 7.9% | 3.2% | 20.0% |
| No |  | 121 | 57 | 680 | 100 | 958 |
|  | 10.2% | 4.8% | 57.0% | 8.4% | 80.4% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |
| Can contact with infected persons lead to Lassa fever | Yes |  | 1 | 1 | 3 | 1 | 6 | 0.690 |
|  | .1% | .1% | .3% | .1% | .5% |
| No |  | 196 | 83 | 770 | 137 | 1186 |
|  | 16.4% | 6.9% | 64.6% | 11.5% | 99.5% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |
| Do you know the incubation period of Lassa fever is between 1\_21days | Yes |  | 19 | 1 | 8 | 7 | 35 | 0.000 |
|  | 1.6% | .1% | .7% | .6% | 3.0% |
| No |  | 178 | 83 | 765 | 131 | 1157 |
|  | 14.9% | 6.9% | 64.2% | 11.0% | 97.0% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |
| Can Lassa fever be transmitted during sexual intercourse | Yes |  | 1 | 0 | 1 | 1 | 3 | 0.590 |
|  | .1% | 0.0% | .1% | .1% | .3% |
| No |  | 196 | 84 | 772 | 137 | 1189 |
|  | 16.4% | 7.0% | 64.7% | 11.5% | 99.7% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |
| Do you know consumption of rodent bush meats increase the chances | Yes |  | 0 | 0 | 2 | 0 | 2 | 0.794 |
|  | 0.0% | 0.0% | .2% | 0.0% | .2% |
| No |  | 197 | 84 | 771 | 138 | 1190 |
|  | 16.5% | 7.0% | 64.7% | 11.6% | 99.8% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |

**Table 6b: Cross-tabulation of Edo State Respondents on Knowledge and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Do you know that the symptoms of Lassa fever resemble other viral | Yes |  | 0 | 0 | 1 | 0 | 1 | 0.916 |
|  | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 197 | 84 | 772 | 138 | 1191 |
|  | 16.5% | 7.0% | 64.7% | 11.6% | 99.9% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.0% | 64.8% | 11.6% | 100.0% |  |
| Lassa fever is severe viral and fever like | Yes |  | 119 | 40 | 683 | 113 | 955 | 0.000 |
|  | 10.0% | 3.4% | 57.3% | 9.5% | 80.1% |
| No |  | 57 | 27 | 63 | 90 | 237 |
|  | 4.8% | 2.3% | 5.3% | 7.5% | 19.9% |
| Total | |  | 176 | 67 | 746 | 246 | 1192 |
|  | 14.8% | 5.6% | 62.6% | 20.6% | 100.0% |  |

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**Table 6.1a: Cross-tabulation of Edo State Respondents on Attitude and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Type of residence | | | | Total |  |
| Bungalow | face-me-i-face-you | Semi-detached | Others | P-values |
| Do you believe Lassa fever exists | Yes |  | 2 | 10 | 2 | 0 | 14 | 0.284 |
|  | 0.2% | 0.8% | 0.2% | 0.0% | 1.2% |
| No |  | 203 | 66 | 771 | 138 | 1165 |
|  | 17% | 5.5% | 64.7% | 11.6% | 98.8% |
| Total | |  | 204 | 76 | 773 | 138 | 1192 |  |
|  | 16.9% | 6.3% | 64.8% | 11.6% | 100.0% |  |
| Lassa fever is life threatening illness | Yes |  | 12 | 1 | 14 | 1 | 28 | 0.000 |
|  | 1.0% | .1% | 1.2% | .1% | 2.4% |
| No |  | 189 | 69 | 769 | 137 | 1164 |
|  | 15.9% | 5.8% | 64.5% | 11.5% | 97.6% |
| Total | |  | 197 | 70 | 787 | 138 | 1192 |  |
|  | 16.8% | 5.3% | 66.1% | 11.8% | 100.0% |  |
| Lassa fever can be prevented | Yes |  | 0 | 1 | 2 | 0 | 3 | 0.231 |
|  | 0.0% | .1% | .2% | 0.0% | .3% |
| No |  | 197 | 61 | 771 | 138 | 116 |
|  | 16.8% | 5.2% | 65.9% | 11.8% | 99.7% |
| Total | |  | 197 | 62 | 773 | 138 | 1192 |
|  | 16.8% | 5.3% | 66.1% | 11.8% | 100.0% |  |
| Lassa fever can be cured | Yes |  | 17 | 15 | 10 | 1 | 43 | 0.000 |
|  | 1.4% | 1.3% | .8% | .1% | 3.6% |
| No |  | 180 | 67 | 765 | 137 | 1149 |
|  | 15.1% | 5.6% | 64.2% | 11.5% | 96.4% |
| Total | |  | 197 | 82 | 775 | 138 | 1192 |  |
|  | 16.8% | 5.3% | 66.1% | 11.8% | 100.0% |  |
| Advocacy proper environmental sanitation | Yes |  | 5 | 12 | 7 | 2 | 26 | 0.463 |
|  | .4% | 1% | .6% | .2% | 2.2% |
| No |  | 199 | 65 | 766 | 136 | 1166 |
|  | 16.7% | 5.5% | 64.2% | 11.4% | 97.8% |
| Total | |  | 204 | 77 | 773 | 138 | 1192 |  |
|  | 17.1% | 6.5% | 64.8% | 11.6% | 100.0% |  |

**Table 6.1b: Cross-tabulation of Edo State Respondents on Attitude and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Environmental sanitation personal hygiene putting food in a rodent proof | Yes |  | 12 | 4 | 4 | 1 | 21 | 0.114 |
|  | 1% | 0.3% | .3% | .1% | 1.8% |
| No |  | 195 | 70 | 769 | 137 | 1171 |
|  | 16.4% | 5.8% | 64.6% | 11.5% | 98.2% |
| Total | |  | 209 | 74 | 773 | 138 | 1192 |  |
|  | 17.4% | 6.2% | 64.8% | 11.6% | 100.0% |  |
| Not eating bush meats and spreading of foods on the roadsides | Yes |  | 1 | 1 | 3 | 1 | 6 | 0.921 |
|  | .1% | .1% | .3% | .1% | .5% |
| No |  | 196 | 83 | 770 | 137 | 1186 |
|  | 16.4% | 7.0% | 64.6% | 11.5% | 99.5% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| A strong and healthy person can be infected with Lassa fever | Yes |  | 194 | 83 | 771 | 138 | 1186 | 0.072 |
|  | 16.3% | 7.0% | 64.7% | 11.6% | 99.5% |
| No |  | 3 | 1 | 2 | 0 | 6 |
|  | .3% | .1% | .2% | 0.0% | .5% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |

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**Table 7a: Cross-tabulation of Edo State Respondents on Practice and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | Type of residence | | | | Total |  |
| Bungalow | face-me-i-face-you | Semi-detached | Others | P-values |
| Do you eat rodents | Yes |  | 0 | 0 | 1 | 0 | 1 | 0.622 |
|  | 0.0% | 0.0% | .1% | 0.0% | .1% |
| No |  | 197 | 84 | 772 | 138 | 1191 |
|  | 16.5% | 7.1% | 64.7% | 11.6% | 99.9% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Do you feed on rodents contaminated foods | Yes |  | 0 | 0 | 1 | 1 | 2 | 0.341 |
|  | 0.0% | 0.0% | .1% | .1% | .2% |
| No |  | 197 | 84 | 772 | 137 | 1190 |
|  | 16.5% | 7.1% | 64.7% | 11.5% | 99.8% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Do you spread foods on the road sides and your house surroundings | Yes |  | 0 | 1 | 1 | 0 | 2 | 0.011 |
|  | 0.0% | .1% | .1% | 0.0% | .2% |
| No |  | 197 | 83 | 772 | 138 | 1190 |
|  | 16.5% | 7.0% | 64.7% | 11.6% | 99.8% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Do you store your food in rodent proof containers | Yes |  | 61 | 23 | 53 | 5 | 142 | 0.000 |
|  | 5.1% | 2.0% | 4.5% | .4% | 12.1% |
| No |  | 136 | 61 | 720 | 133 | 1050 |
|  | 11.4% | 5.1% | 60.4% | 11.2% | 87.9% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Do you frequently engage in environmental sanitation | Yes |  | 112 | 25 | 126 | 39 | 302 | 0.000 |
|  | 9.4% | 1.8% | 10.6% | 3.3% | 25.4% |
| No |  | 85 | 59 | 647 | 99 | 890 |
|  | 7.1% | 4.9% | 54.3% | 8.3% | 74.6% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |

**Table 7b: Cross-tabulation of Edo State Respondents on Practice and Type of Residence**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Do you use traps in and around your house | Yes |  | 79 | 26 | 55 | 13 | 173 | 0.013 |
|  | 6.8% | 2.2% | 4.6% | 1.1% | 14.5% |
| No |  | 118 | 58 | 718 | 125 | 1019 |
|  | 10.0% | 4.9% | 60.2% | 10.5% | 85.5% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Have you participated in any Lassa fever campaign | Yes |  | 44 | 7 | 27 | 3 | 81 | 0.000 |
|  | 3.8% | .6% | 2.3% | .3% | 6.8% |
| No |  | 153 | 77 | 746 | 135 | 1111 |
|  | 12.8% | 6.5% | 62.6% | 11.3% | 93.2% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| Do you share towels clothes and other personal belongings with family | Yes |  | 2 | 1 | 3 | 0 | 6 | 0.335 |
|  | .2% | .1% | .3% | 0.0% | .5% |
| No |  | 195 | 83 | 770 | 138 | 1186 |
|  | 16.4% | 7.1% | 64.5% | 11.6% | 99.5% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.5% | 7.1% | 64.8% | 11.6% | 100.0% |  |
| If you experience any signs and symptoms of Lassa fever | Yes |  | 10 | 1 | 3 | 1 | 15 | 0.000 |
|  | .9% | .1% | .3% | .1% | 1.3% |
| No |  | 187 | 83 | 770 | 137 | 1177 |
|  | 16.0% | 7.1% | 64.6% | 11.5% | 98.7% |
| Total | |  | 197 | 84 | 773 | 138 | 1192 |  |
|  | 16.8% | 7.1% | 64.8% | 11.6% | 100.0% |  |

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**Table 8a: Edo State Knowledge of PHC personnel on Lassa fever**

|  |  |  |  |
| --- | --- | --- | --- |
| **Responses** | **Sum** | **RII** | **Rank** |
| Lassa Fever is a common deadly disease | 48 | 0.960 | 2.5 |
| Viral Hemorrhagic illness | 48 | 0.960 | 2.5 |
| Causative agent of Lassa Fever is Lassa Virus | 48 | 0.960 | 2.5 |
| The reservoir of the causative agent of Lassa Fever is rat | 48 | 0.960 | 2.5 |
| Bat, Monkey, Mosquito and Fly are also reservoirs of the causative agent of Lassa Fever | 42 | 0.840 | 5 |

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**Table 8b: Edo Attitude toward usage of PPE**

|  |  |  |  |
| --- | --- | --- | --- |
| **Responses** | **Sum** | **RII** | **Rank** |
| I use gown and boot during procedure likely to generate splashes | 24 | 0.400 | 1.5 |
| I use facemask and eye protection during procedure likely to generate splashes | 13 | 0.217 | 5 |
| I dispose all sharps in sharps bin | 22 | 0.367 | 3.5 |
| I wash hands before and after a procedure | 22 | 0.367 | 3.5 |
| I use gloves when handling body secretions and contaminated items | 24 | 0.400 | 1.5 |

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**Recommendations:**

1. Implement campaigns to correct misconceptions about Lassa fever, especially for lower-income and less-educated groups.
2. Enhance training on PPE use and infection prevention in healthcare settings.
3. Tailor training for community health workers, nurses, and medical professionals to improve Lassa fever knowledge and infection control.
4. Address gaps in infection prevention facilities, particularly in rural areas.
5. Promote preventive practices like food storage and sanitation across different socioeconomic groups.
6. Design interventions based on factors like income and residence type to maximize impact.
7. Increase funding for healthcare infrastructure and enforce stricter infection control guidelines.
8. Continuously assess knowledge, attitudes, and practices to improve interventions and identify new gaps.

**Conclusion**

The study reveals significant gaps in knowledge, attitudes, and practices related to Lassa fever among residents and PHC personnel in Edo State. Socioeconomic disparities further compound these gaps, necessitating targeted education, resource allocation, and healthcare system strengthening to reduce the burden of Lassa fever in endemic regions. Future interventions should prioritize addressing misconceptions, promoting preventive behaviors, and improving healthcare worker compliance with standard protocols.

**Declarations:**Clinical trial number: not applicable.Clinical trial number: not applicable- Ethics approval and consent to participate: The ethical approval for the study was given by Kwara State University ethical committee and all the community head and head of units of health facilities gave approval for the study to be carried while inform consent form was issued to all participants where their confidentiality was assured and that the results of the study shall be used only for educational purposes (research).- Consent for publication: All authors gave permission for publication, have reviewed and approved the final manuscript which was why aside the leading author, other authors names were included.- Availability of data and material: All data and material used has been included in the manuscript.- Competing interests: The authors declare that there are no any competing interests.

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