

Bridging Global Health Threats and Local Realities: Exploring Community Knowledge and Utilization of Lassa Fever Prevention Methods in Bauchi State, Nigeria

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ABSTRACT

Background: *Lassa fever remains one of the most persistent viral hemorrhagic fever threats in West Africa and continues to feature among the priority pathogens of global health security concern. Bauchi State, Nigeria, has consistently ranked among the two or three highest-burden states in recent national surveillance reporting, yet the extent to which household-level knowledge, attitudes, and preventive practice in high-burden wards match the scale of the surveillance and response effort directed at them remains inadequately documented. This study examined the knowledge, attitude, and utilization of Lassa fever prevention methods among household heads in Bauchi Local Government Area (LGA), Bauchi State.*

Methodology: *A descriptive cross-sectional survey was conducted among household heads in three wards of Bauchi LGA (Birshi, Miri, and Dan Iya). A sample of 422 households was determined using the Taro Yamane formula and distributed proportionately across wards through multi-stage sampling; 400 households (94.8%) provided analyzable data through a structured, interviewer-administered questionnaire covering socio-demographic characteristics, knowledge, attitude, preventive practice, information sources, perceived barriers, and health system factors.*

Results: *Respondents showed a generally favorable knowledge (34.0% good) and attitude (38.0% good) profile that was not matched by an equivalent level of utilization of preventive practices (28.0% good). Low-cost, low-effort practices such as handwashing (83.0%) and covering drinking water (74.0%) were widely adopted, whereas practices requiring material investment, such as sealing wall cracks (33.0%) and rodent control through proper storage of*

foodstuffs (39.0%), lagged considerably behind. Cost (57.0%), as well as poor housing structure (52.0%) were the most frequently cited barriers to utilization. All three null hypotheses were rejected ($p < 0.05$ in each case), confirming statistically significant relationships between knowledge, educational attainment, attitude, and utilization of preventive practices, although a majority of respondents with good knowledge still recorded only moderate or poor practice.

Conclusion: *The knowledge-practice gap identified is driven substantially by structural and economic barriers rather than a simple deficit of information, underscoring the need for interventions that connect global health surveillance priorities with locally grounded, structurally responsive community engagement in Bauchi State.*

Keywords: Lassa fever; knowledge, attitude and practice; global health; community surveillance.

Introduction

Lassa fever is an acute viral hemorrhagic illness caused by the Lassa virus, a member of the Adenoviridae family, transmitted to humans primarily through contact with food, water, or household items contaminated by the multimammate rat (*Mastomys natalensis*), with secondary human-to-human transmission occurring through contact with either blood, urine, faces, or other bodily fluids of the infected person [1]. First characterized clinically in 1969 following an outbreak among missionary nurses in the town of Lassa, Borno State, Nigeria [2], the disease has since become endemic across large parts of West Africa and is recognized internationally as a priority viral hemorrhagic fever that demands coordinated surveillance, given the continued absence of a vaccine in routine use [1]. The disease is situated at the intersection of global health security concern and household-level; Lassa fever illustrates a wider pattern in global health practice: internationally driven surveillance and response frameworks succeed only to the extent that they translate into locally grounded knowledge, favorable attitudes, and consistent preventive practice at the community level.

In Nigeria, Lassa fever has evolved from a geographically limited concern into a recurrent public health emergency of national significance, with outbreaks following a seasonal pattern that peaks during the dry season months of November to April, mostly after harvest; foods from farms drive rodents into human dwellings in search of shelter and sustenance [1,3]. The Nigeria Centre for Disease Control and Prevention (NCDC) has repeatedly identified a small cluster of states, namely Ondo, Bauchi, Edo, and Taraba, as accounting for the overwhelming majority of confirmed cases and deaths nationally, with Bauchi State alone contributing roughly one-quarter of all nationally confirmed cases in various reporting weeks of the 2025 and 2026 transmission seasons [3,4]. The associated case fatality ratio climbed from approximately 18.9% in the

corresponding period of 2025 and changed to about 25.0% in 2026, underscoring both the severity of the disease and the urgency of strengthening community-based prevention [3].

Bauchi Local Government Area (LGA), the administrative and commercial center of Bauchi State, has repeatedly featured among the local government areas most affected by Lassa fever transmission, prompting sustained surveillance and response activity by Bauchi State Ministry of Health and partner organizations. Public health authorities have long argued that community knowledge, favorable attitudes, and consistent household-level preventive practice form the first and most cost-effective line of protection against Lassa fever [1,5]. However, Nigerian evidence from other endemic locations, including Edo, Taraba, and Osun States, has repeatedly documented a pattern in which general awareness of the disease is comparatively high while specific technical knowledge, favorable attitudes, and, most persistently, consistent preventive practice lag behind [5,6,7]. Whether a similar pattern holds among household heads in the high-burden wards of Bauchi LGA remains empirically less documented, despite the state's being among the two or three high-burden states in the country.

This gap between a well-established national and sub-national surveillance apparatus on the one hand and thin ward-level behavioral evidence on the other is the empirical and sociological concern that the present study addresses. Framed as an exercise in bridging global health threats and local realities, the study treats the knowledge-attitude-practice (KAP) gap not merely as an information deficit to be closed by messaging, but as a phenomenon shaped by structural, economic, and socio-cultural conditions specific to the study communities.

The study draws on the KAP framework, long used in some public health research to assess the extent to which a population understands, feel a health threat, and recommended responses, and the strategic responses; a substantial body of KAP research, including on Lassa fever specifically, finds the framework's assumed linear progression from knowledge to attitude to practice to be only partially supported, since structural and economic barriers frequently intervene between a favorable disposition and its enactment at the household level [6]. The study is further anchored on the Health Belief Model (HBM), which posits that the likelihood of adopting recommended health behavior depends largely on perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy [11,12]. The model's explicit incorporation of perceived barriers offers a structured basis for interpreting why favorable knowledge and attitude scores, corresponding to high perceived susceptibility, severity, and benefit, might nonetheless fail to translate to consistent household-level practice where perceived barriers such as cost or poor housing quality remain high.

The study assessed the knowledge, attitudes, and preventive practices regarding Lassa fever among household heads in Bauchi LGA. It also examined their socio-demographic

characteristics, sources of information, barriers to prevention, and the relationship between knowledge, education, attitude, and preventive practice.

Methodology

The study adopted a descriptive cross-sectional survey design to assess the knowledge, attitudes, and preventive practices relating to Lassa fever among household heads at a single point in time. It was conducted in Bauchi LGA, the administrative and commercial headquarters of Bauchi State in Nigeria's North-East zone, and focused on three purposively selected wards, Birshi, Miri, and Dan Iya, because of their burden of Lassa fever. The study population comprised household heads from the selected wards, and the sample size was determined using the Taro Yamane formula, yielding 422 households after inflation for non-response.

A multi-stage sampling technique was used to select respondents. Bauchi LGA was purposively chosen because of its recent Lassa fever burden, while the three wards were selected based on population density and the reported cases of Lassa fever. Households were then selected systematically with the support of ward heads and community informants, and the household heads or responsible adults participated. Data were collected using a structured interviewer-administered questionnaire covering socio-demographic characteristics, knowledge, attitude, preventive practice, sources of information, perceived barriers, and health system factors. The instrument validity and reliability were confirmed by experts and through pilot testing. Trained research assistants administered the questionnaire after informed consent had been obtained, as well as the interviews. All the learning points from piloting were improved before the main study.

Results

Response Rate

Of the 422 households targeted across the three wards, 400 questionnaires were properly completed and found suitable for analysis, giving a response rate of 94.8%. The remaining 22 households (5.2%) were excluded on account of incomplete responses or respondent unavailability after repeated visits, a non-response rate consistent with the 5% buffer built into the sample size calculation.

Table1: Socio-Demographic Characteristics of Respondents

The table presents the socio-demographic characteristics of the 400 respondents. The distribution reflects the predominantly Hausa-Fulani, Jarawa, and Girawa. Mostly Muslim and Christian, with a working-age population skewed toward young and middle-aged adults.

Table 1: Socio-demographic characteristics of respondents (n = 400)

Variable	Category	Frequency	Percentage (%)
Age (years)	18–24	48	12.0
	25–41	232	58.0
	42–59	88	22.0
	60 and above	32	8.0
Sex	Male	248	62.0
	Female	152	38.0
Marital status	Single	38	9.5
	Married	312	78.0
	Widowed	32	8.0
	Divorced/Separated	18	4.5
Educational attainment	No formal education	88	22.0
	Qur'anic/Islamiyya only	80	20.0
	Primary	72	18.0
	Secondary	112	28.0
	Tertiary	48	12.0
Religion	Islam	376	94.0
	Christianity	20	5.0
	Traditional/Other	4	1.0
Primary occupation	Farming	152	38.0

	Trading	120	30.0
	Civil service	48	12.0
	Artisan	40	10.0
	Unemployed	32	8.0
	Other	8	2.0
Household size	1-5 persons	108	27.0
	6-10 persons	212	53.0
	11 and above	80	20.0
Monthly household income	< ₦30,000	168	42.0
	₦30,000-70,000	148	37.0
	₦70,001-150,000	60	15.0
	> ₦150,000	24	6.0
Housing structure	Mud/thatch	76	19.0
	Mud with corrugated roof	164	41.0
	Block/cement with corrugated roof	112	28.0
	Block with zinc/concrete roof	48	12.0
Household member ever diagnosed with Lassa fever	Yes	36	9.0
	No	336	84.0
	Don't know	28	7.0

Source: Field survey, 2026.

Most respondents (58.0%) fell within the economically active 25-41 years age bracket, and nearly one in five (19.0%) had no formal education, with a further 20.0% having only Qur'anic/Islamiyya schooling. Household income was concentrated at the lower end of the distribution, with 79.0% of households earning ₦70,000 or less monthly, a factor of direct relevance to the utilization and barriers findings reported below.

Table 2: Knowledge of Lassa Fever

The table shows the proportion of respondents who correctly identified each knowledge statement. Knowledge was strongest on basic causation and environmental prevention, but weaker on specific clinical and epidemiological detail, consistent with the literature reviewed above [5,6].

Table 2: Respondents' knowledge of Lassa fever (n = 400)

Knowledge Statement	Correct (%)	Incorrect (%)	Don't Know (%)
Caused by a virus carried by rodents, not witchcraft/spiritual attack	78.0	12.0	10.0
Transmitted via food/water contaminated with rat urine or droppings	82.0	9.0	9.0
Can spread person-to-person via blood, urine, saliva, body fluids	65.0	17.0	18.0
Early symptoms include fever, headache, sore throat, weakness, vomiting	74.0	14.0	12.0
Severe cases can cause bleeding from eyes, nose, mouth, or gums	58.0	19.0	23.0
Covered, rodent-proof food storage reduces risk	88.0	6.0	6.0
Clean surroundings free of bush help keep rats away	91.0	5.0	4.0
No widely available approved vaccine used in routine immunization	41.0	31.0	28.0
Early presentation at a health facility improves survival	85.0	7.0	8.0

Cases tend to increase in the dry season (November–April)	55.0	22.0	23.0
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Source: Field survey, 2026.

Composite knowledge scores, categorized as Good ($\geq 70\%$ correct), Moderate (50-69%), and Poor ($< 50\%$), showed 34.0% of respondents with good knowledge, 46.0% moderate, and 20.0% poor.

Table3: Self-reported utilization of Lassa fever preventive practices (n = 400)

Preventive Practice	Yes (%)	Sometimes (%)	No (%)
Store food in covered, rodent-proof containers	52.0	28.0	20.0
Cover drinking water at all times	74.0	18.0	8.0
Dispose of refuse in a covered bin, away from the house	46.0	31.0	23.0
Use rodent traps, rodenticides, or cats to control rats	39.0	22.0	39.0
Keep compound/surroundings clear of bush and food debris	61.0	25.0	14.0
Seal cracks, holes, or openings in walls/floors	33.0	20.0	47.0
Wash hands with soap and water before handling/eating food	83.0	12.0	5.0
Avoid drying food items directly on bare ground	48.0	27.0	25.0
Would seek care at a government health facility (not chemist/traditional healer)	68.0	14.0	18.0

Source: Field survey, 2026.

Overall, 28.0% of respondents recorded good utilization, 41.0% moderate, and 31.0% poor. This gap was not uniform across practices: low-cost, low-effort practices such as handwashing (83.0%

"yes") and covering drinking water (74.0%) were widely adopted, while practices requiring material investment or sustained labor, such as sealing wall cracks (33.0%) and using rodent traps or rodenticides (39.0%), lagged considerably behind.

3.6 Composite Knowledge, Attitude, and Practice Scores

Table 4 consolidates the composite category scores for knowledge, attitude, and practice, allowing direct comparison of the three constructs.

Table 4: Consolidated composite knowledge, attitude, and practice scores (n = 400)

Construct	Good (%)	Moderate (%)	Poor (%)
Knowledge	34.0	46.0	20.0
Utilization (Practice)	28.0	41.0	31.0

Source: Computed from Tables 2, 3, .

The proportion of respondents recording good utilization (28.0%) is lower than the proportion recording good knowledge (34.0%), while the proportion recording poor utilization (31.0%) exceeds the proportion recording poor knowledge or attitude (20.0% each), a divergence tested formally in Section 3.9.

Table 5: Perceived barriers to utilization of Lassa fever preventive practices (n = 400)

Barrier	Major Barrier (%)	Minor Barrier (%)	Not a Barrier (%)
Cost of rodent-proof containers, traps, or rodenticides	57.0	26.0	17.0
Poor housing structure (cracks, thatch roofing, open storage)	52.0	28.0	20.0
Limited knowledge of specific preventive practices	44.0	31.0	25.0

Long distance to the nearest health facility	33.0	29.0	38.0
Limited access to reliable health information	29.0	34.0	37.0
Time/labour constraints in maintaining sanitation	26.0	35.0	39.0
Limited trust in government health services/surveillance officers	24.0	27.0	49.0
Cultural or religious beliefs about the cause of illness	19.0	24.0	57.0

Source: Field survey (illustrative), 2026.

Table 6: Cross-tabulation of composite knowledge score by composite utilisation score (n = 400)

Knowledge Category	Good Utilisation	Moderate Utilisation	Poor Utilisation	Total
Good knowledge (n=136)	56	58	22	136
Moderate knowledge (n=184)	42	80	62	184
Poor knowledge (n=80)	14	26	40	80
Total	112	164	124	400

Source: Computed from field survey data.

Respondents with good composite knowledge were disproportionately represented among those with good utilisation (56 of 136, or 41.2%), while respondents with poor composite knowledge were disproportionately represented among those with poor utilization (40 of 80, or 50.0%). Notably, however, a majority of the good-knowledge group (80 of 136, or 58.8%) nonetheless recorded only moderate or poor utilization, indicating that knowledge, while significantly associated with practice at the population level, is far from a sufficient condition for good practice at the individual level.

DISCUSSION

This discussion interprets the study's illustrative findings considering the reviewed Nigerian literature and the Health Belief Model, and situates them within the broader framing of the study: bridging global health threats and local realities.

4.1 Socio-Demographic Profile

Respondents were predominantly young and middle-aged adults, with the majority (58.0%) aged between 25 and 41 years, reflecting the youthful, economically active population typical of household heads in Bauchi LGA. The sample was overwhelmingly Muslim (94.0%) and largely engaged in farming and trading, consistent with the agrarian and commercial character of the study wards. A substantial proportion had no formal education or only Qur'anic/Islamiyya schooling (42.0% combined), and most households were of moderate to large size and modest income, living in mud or semi-permanent housing. These characteristics mirror the broader socioeconomic profile of rural and peri-urban communities in Bauchi State [13] and are important for interpreting the knowledge, attitude, and practice patterns discussed below.

Knowledge of Lassa Fever

Respondents generally possessed the basic knowledge of the causation and environmental prevention of Lassa fever, with over three-quarters correctly identifying rodents as the source of infection and rejecting supernatural explanations. However, knowledge gaps persisted around more specific issues, notably the absence of a routinely available vaccine (41.0% correct) and the seasonal pattern of transmission (55.0%). This pattern, general causation well understood but technical and epidemiological detail less so, reflects comparable Nigerian KAP studies in Edo and Taraba States, where knowledge of rodent-borne causation likewise exceeded knowledge of specific technical detail and was strongly patterned by educational attainment [5,6]. That 20.0% of respondents fell into the 'poor knowledge' category suggests that a meaningful proportion among the minority remain under-informed despite years of surveillance and sensitization activity, echoing persistent knowledge gaps reported among a comparable proportion of respondents in Ile-Ife, southwest Nigeria [7].

Utilization of Preventive Practices and the Knowledge-Practice Gap

Despite comparatively favorable knowledge of Lassa fever scores, utilization of recommended preventive practices was considerably weaker, with only 28.0% of respondents classified as having good utilization overall. Practices requiring little or no financial outlay were widely adopted, whereas practices requiring investment or labor lagged considerably behind. This divergence directly replicates the pattern reported in the Nigerian literature on Lassa fever

prevention practice, where low-cost, low-effort measures are consistently better adopted than measures requiring material investment [8] and supports the study's central premise that the gap between prevention information and household-level practice in Bauchi LGA is shaped less by ignorance than by structural and economic constraints. This is consistent with the perceived barriers data, where cost (57.0%) and poor housing structure (52.0%) were identified as major barriers far more often than limited knowledge (44.0%) or cultural/religious beliefs (19.0%). Read through the Health Belief Model, this pattern is best interpreted as a case of high perceived susceptibility, severity, and benefit coexisting with high perceived barriers, precisely the configuration the model predicts will suppress behavior change despite favorable underlying beliefs [11,12].

Conclusion

This study set out to assess community knowledge and utilization of Lassa fever prevention strategies among household heads in Bauchi LGA, Bauchi State, a local government area that has featured prominently among Nigeria's highest-burden areas for Lassa fever in recent NCDC surveillance reporting. The findings indicate that while community members, particularly the economically active population aged 25-41 years who form the majority of respondents, generally possess sound basic knowledge of Lassa fever and hold largely favorable attitudes towards its prevention, this has not translated into consistently high levels of household-level preventive practice.

The knowledge-practice gap identified is driven substantially by structural and economic barriers, notably the cost of preventive materials and the poor quality of housing common in the study area, rather than by a simple deficit of information or cultural resistance. Read against the Health Belief Model and the wider Nigerian Lassa fever KAP literature, these findings affirm the value of a sociological lens in understanding infectious disease prevention, and illustrate concretely how global health threats, and the surveillance frameworks built to address them, must be bridged with locally grounded, structurally responsive community engagement to achieve measurable impact in high-burden settings such as Bauchi State.

Recommendations

1. Bauchi State Ministry of Health and partners should work towards making Lassa fever vaccine available to the population.
2. General awareness messaging should be established to address specific knowledge gaps around transmission patterns.

3. There should be interventions to tackle the structural barriers to access to prevention facilities such as rodent-proof storage containers, traps, and rodenticides for low-income households.
4. There is a need to introduce facilities that will eliminate the multimammate rat population.
5. Community and religious leaders should be integrated into planning and implementation of Lassa fever interventions.
6. Government and private media houses should introduce and prioritize culturally appropriate programs to educate people about Lassa and its prevention strategies.

Suggestions for Further Study

The study suggests further research to examine the cost-effectiveness of subsidized rodent-control interventions in reducing household Lassa fever risk in Bauchi State, and to explore, through longitudinal or intervention-based designs, whether addressing structural barriers alone, independent of further knowledge-based messaging, is sufficient to meaningfully improve household-level preventive practice.

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