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Knowledge, Risk Perception, and Socio-Behavioral Factors Associated with mpox in Western Area, Sierra Leone

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ABSTRACT

Background: Mpox, a re-emerging zoonotic viral disease driven by the Monkeypox virus (MPXV), shares a close genetic lineage with the smallpox virus. In January 2025, Sierra Leone recorded its first confirmed case, which triggered a swift surge in infections across the Western Area, particularly within the densely populated capital of Freetown. This sudden outbreak quickly revealed critical vulnerabilities in community awareness, risk perception, and preventative behaviors. Containment efforts have been further hindered by deeply embedded socio-cultural traditions, widespread misinformation, social stigma, and restricted access to reliable clinical insights. To design impactful public health interventions and reinforce national emergency readiness, it is vital to map how local knowledge, risk attitudes, and socio-behavioral dynamics interact.

Methods: This study utilized a mixed-methods, cross-sectional design to investigate community dynamics within the Waterloo neighborhood of Sierra Leone's Western Rural District. A structured sampling strategy was used to enroll 150 community participants. Quantitative data were gathered via questionnaires that evaluated participant familiarity with mpox symptoms, transmission vectors, prevention protocols, personal risk appraisal, and lifestyle practices. To capture underlying cultural views, community attitudes, and behavioral drivers, qualitative data were collected through open-ended responses and targeted interviews.

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Quantitative variables were assessed using descriptive statistics and chi-square tests, while qualitative narratives were evaluated using thematic analysis.

Results: The baseline data showed that while most participants could readily identify prominent symptoms like fever and physical rashes, along with direct physical contact and unsafe sexual practices as primary transmission routes, significant misconceptions persisted regarding animal-to-human transmission and the safety of consuming wild game. A stark mismatch was observed between systemic and personal risk awareness: although 85.4% of respondents viewed mpox as a severe public health issue, a mere 23.3% believed they were personally vulnerable to contracting it. Strong statistical correlations emerged pairing baseline knowledge with community risk perception (x^2= 14.72, $p < 0.05$), as well as knowledge with the execution of preventative behaviors ($x^2 = 10.88$, $p < 0.05$). Nevertheless, actual prevention practices remained highly inconsistent; many participants reported poor hand hygiene or expressed a strong preference for traditional healers. The qualitative narratives emphasized that entrenched cultural traditions, financial reliance on the bushmeat trade, and spiritual interpretations of disease origins serve as powerful drivers behind these community behaviors.

Conclusion: The findings indicate that despite a broad awareness of mpox across Sierra Leone's Western Area, major gaps remain regarding personal vulnerability and the routine practice of protective measures. Local public health responses continue to be shaped by complex socio-cultural traditions and economic realities. Effectively managing and controlling future outbreaks will depend on rolling out culturally adapted health education campaigns, refining risk communication, involving local religious and community leaders, and addressing barriers to formal healthcare. Ultimately, embedding behavioral science and community-centric strategies into national preparedness frameworks will significantly strengthen Sierra Leone's resilience against emerging zoonotic threats.

Key words: Mpox; Risk Perception; Socio-Behavioural Factors; Zoonotic Disease; Public Health Engagement; Sierra Leone.

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INTRODUCTION

mpox, historically known as monkeypox, is a reemerging zoonotic viral disease triggered by the Monkeypox virus (MPXV), an Orthopoxvirus belonging to the Poxviridae family. Genetically and clinically related to the variola virus, which is the causative agent of smallpox, mpox typically manifests with systemic clinical features including fever, intense headache, lymphadenopathy, muscle aches, profound fatigue, and a distinctive vesiculopustular rash (CDC, 2022). While epidemiologists historically classified mpox as a rare, geographically restricted disease endemic primarily to the tropical rainforests of Central and West Africa, recent outbreaks have demonstrated its substantial epidemic potential and escalating global public health footprint (Bunge et al., 2022). A shifting transmission paradigm marked by sustained human to human transmission and rapid international dissemination beyond traditional ecological niches has firmly established mpox as a critical global health priority (WHO, 2022).

The historical timeline of mpox began in 1958 when the virus was first isolated from laboratory primates in Denmark, while the index human case was identified in 1970 within the Democratic Republic of Congo during intensified active surveillance for smallpox eradication (Breman et al., 1980). Over the subsequent decades, sporadic outbreaks occurred throughout sub Saharan Africa, typically concentrated in rural communities with frequent interactions between humans and suspected wildlife reservoirs, such as wild rodents and nonhuman primates (Bunge et al., 2022). However, this localized epidemiological pattern shifted dramatically during the 2022 multi-country outbreak, which rapidly rippled through more than 100 nonendemic countries across Europe, the Americas, Asia, and Africa (WHO, 2022). This unprecedented trajectory of rapid global expansion prompted the World Health Organization to officially designate mpox a Public Health Emergency of International Concern in July 2022 (WHO, 2022).

Phylogenetic analyses distinguish two genetically discrete viral lineages: Clade I (formerly the Congo Basin clade) and Clade II (formerly the West African clade) (Likos et al., 2005). Clade I is historically characterized by higher virulence, transmissibility, and case fatality rates, whereas Clade II generally manifests as a milder clinical infection (Likos et al., 2005; WHO, 2022). Recent outbreaks in the West

African subregion, including Sierra Leone, have been predominantly driven by Clade II variants, specifically the Clade IIb lineage, which was central to the 2022 global epidemic (Isidro et al., 2022). The introduction and continuous transmission of these variants have raised serious institutional anxieties regarding disease surveillance, outbreak preparedness, and baseline community awareness in countries operating with fragile or overburdened healthcare infrastructures (WHO Africa, 2024).

Sierra Leone reached a critical public health turning point in January 2025 with the verification of its first confirmed case of mpox (AP News, 2025). Following this index case, infections escalated rapidly, heavily clustering within the Western Area Urban and Western Area Rural districts, including the dense hubs of Freetown and Waterloo (MoH, 2025). This sudden outbreak imposed severe strain on a national health apparatus still recovering from successive, catastrophic health crises, most notably the 2014 to 2016 Ebola Virus Disease epidemic and the COVID19 pandemic (Ridde et al., 2021). The region's profound urban overcrowding, high population density, intense cross district mobility, sanitation challenges, and overlapping periurban wildlife interfaces collectively created highly favorable environments for sustained viral transmission (Bonwitt et al., 2024). These structural vulnerabilities were further aggravated by restricted laboratory diagnostic capacities, low community literacy regarding the virus, and the rapid spread of misinformation, which collectively manifested as delayed clinical reporting and poor compliance with basic preventive protocols (Kamara et al., 2024).

The level of public understanding regarding an infectious pathogen dictates the trajectory of outbreak control, as baseline knowledge directly shapes how individuals recognize early clinical signs, interpret risk communication, and adopt health protective behaviors (Adebisi et al., 2023). In resource constrained settings like Sierra Leone, structural gaps in public education often leave room for deeply entrenched misconceptions regarding disease origins and transmission paths. For instance, the early pleomorphic lesions of mpox are frequently confused with other endemic dermatological or febrile conditions, such as chickenpox or measles, causing significant delays in formal healthcare seeking

behaviors and subsequent underreporting to surveillance teams (Jalloh et al., 2020). Compounding this diagnostic confusion is a parallel infodemic; social narratives frequently attribute mpox to supernatural causes, including witchcraft, ancestral curses, or spiritual retribution, which severely compromises the efficacy of orthodox public health messaging (Leach and Hewlett, 2010).

Parallel to knowledge, risk perception functions as a primary psychological determinant of behavioral compliance during epidemiological crises. According to established behavioral models, individuals who internalize a high degree of personal susceptibility are substantially more likely to adhere to demanding nonpharmaceutical interventions, including voluntary self isolation, rigorous hand hygiene, avoidance of intimate physical contact, and timely medical consultation (Slovic, 1987). However, risk appraisal is never purely objective; it is deeply mediated by localized social experiences, cultural frameworks, institutional trust, and historical trauma from previous epidemics (Wilkinson and Leach, 2015). In Sierra Leone, the collective memories of the devastating Ebola epidemic heavily color contemporary public responses to emerging viral threats. While certain segments of the population exhibit high sensitivity to early warning systems, others display deep seated skepticism toward institutional interventions and state sponsored health messaging due to residual traumas of enforcement led quarantines, social stigma, and profound communal disruption (Fairhead, 2016).

Socio-behavioral and economic realities further drive the transmission dynamics of mpox at the community level. Traditional hunting, handling, and consumption of bushmeat remain prominent risk factors for zoonotic spillover events from infected wildlife reservoirs to human populations (Bonwitt et al., 2024). Because wild game represents both a primary protein source and a vital economic livelihood for many rural and periurban families, executing sustainable behavioral change in this domain remains extraordinarily difficult. Furthermore, everyday cultural practices, such as communal caregiving, highly dense living quarters, shared domestic hygiene facilities, and an initial reliance on traditional healers, frequently bridge individual cases into wider human to human transmission clusters (Leach and Fairhead, 2007). Additionally, the visible and stigmatizing nature of acute

skin lesions, combined with widespread misconceptions that link the disease exclusively to marginalized social groups, often drives infected individuals into hiding, thereby accelerating silent community transmission (WHO, 2023).

Despite the accelerating public health challenges introduced by mpox, empirical research examining the precise intersection of community knowledge, risk perception, and sociobehavioral determinants in Sierra Leone remains sparse. The vast majority of existing literature prioritizes molecular epidemiology, clinical manifestation profiles, and laboratory diagnostic protocols, often omitting the critical sociobehavioral dynamics that ultimately dictate the success of field operations (Reynolds et al., 2019). Characterizing these human dimensions is an absolute prerequisite for engineering culturally sensitive health communication, tailoring community engagement campaigns, and building lasting institutional trust during health emergencies.

To address this knowledge gap, this study systematically assesses the baseline knowledge, risk perception profiles, and sociobehavioral factors associated with mpox among residents within the Western Area of Sierra Leone. By unpacking how community members conceptualize the virus, navigate personal vulnerability, and behaviorally respond to outbreak realities, this research provides empirical evidence necessary to guide targeted public health policies, optimize risk communication, and strengthen national outbreak preparedness and response frameworks.

METHODS

Study Design

This research utilized a mixed methods cross sectional study design that merged quantitative and qualitative strategies to investigate baseline knowledge, risk perception, and sociobehavioral determinants linked to mpox transmission among residents in the Western Area of Sierra Leone.

Study Area

The fieldwork was centered in Waterloo and its immediate surrounding neighborhoods, located within the Western Area Rural District of Sierra Leone. This specific administrative district was designated for investigation because it served as the critical epicenter of the national mpox outbreak, documenting the highest volume of laboratory confirmed human cases during the primary research window. Waterloo

functions as a highly dense periurban settlement characterized by rapid demographic expansion, domestic overcrowding, infrastructure constraints in public sanitation, and close everyday contact between human populations and local wildlife. These overlapping environmental factors significantly amplify the vulnerability of local residents to emerging infectious threats, particularly zoonotic pathogens like mpox.

Study Population

The target population for this study comprised adult residents who maintained active residency within the selected clusters of the Western Area Rural District. The final sample included a diverse group of general public stakeholders, traditional community leaders, local marketplace traders, students, frontline healthcare professionals, and individuals operating in occupations with elevated risks for zoonotic exposure, such as the handling and selling of wild game or bushmeat. To establish eligibility, participants were required to be adults and to have resided continuously within the study zone for a minimum period of six months prior to the launch of active data collection.

Sample Size Determination

The sample size required for the quantitative arm of the study was established using Cochrans statistical formula for descriptive cross sectional investigations. This formula incorporates the standard normal deviation corresponding to a ninety five percent confidence interval, the estimated baseline prevalence of adequate mpox knowledge within the target population, and an acceptable margin of error set at five percent. Following the baseline calculation and adjusting for potential field nonresponse or incomplete survey submissions, a final operational sample size was secured and successfully integrated into the study.

Sampling Technique

A comprehensive multistage sampling methodology was deployed to recruit the study cohort. In the first stage, Waterloo and its immediate surrounding localities were purposively targeted based on recorded historical case data and high population density. In the second stage, specific households within these designated communities were selected using systematic random sampling along established geographic paths. In the third stage, individual eligible participants within each selected household were chosen using a simple random sampling technique to eliminate selection bias. For the parallel

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qualitative component, purposive sampling was used to intentionally recruit key informants and interviewees whose professional roles or unique personal experiences with mpox directly aligned with the core objectives of the study.

Data Collection Methods

Quantitative Data Collection

Structured interviewer administered questionnaires were used to collect the quantitative data. The design of this survey instrument was informed by validated instruments from historical epidemiological literature and formal World Health Organization guidelines on mpox surveillance. The structured survey was divided into four core analytical dimensions:

Socio-demographic profiles of the study participants,

Detailed knowledge parameters covering mpox symptoms, transmission pathways, and prevention methods,

Personal risk perception and vulnerability scales regarding potential infection,

Everyday sociobehavioral choices and hygiene practices linked to prevention or transmission.

The final questionnaire combined distinct closed ended metrics and multipoint Likert scale indicators. Field execution was managed by trained research assistants who briefed each participant on the goals of the study and verified informed consent prior to administering the survey.

Qualitative Data Collection

Qualitative insights were generated through semi-structured key informant interviews and open ended narrative discussions with selected community leaders, local healthcare providers, and neighborhood residents. These interactive sessions focused on exploring community descriptions of the virus, cultural or spiritual interpretations of disease causation, institutional trust in formal health systems, social stigma, traditional healing options, and community behavioral shifts during the peak of the outbreak. The sessions were conducted in English or local dialects, such as Krio, depending entirely on the comfort level and preference of the participant. Detailed field notes were maintained alongside audio recordings to preserve nonverbal behaviors, contextual dynamics, and unique community observations.

Study Variables

Dependent Variables

The primary outcome measures for this study consisted of three dependent variables:

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- Measured baseline knowledge regarding mpox,
- Subjective risk perception metrics concerning personal vulnerability to the infection,
- The consistency of preventive and sociobehavioral practices deployed against transmission.

Independent Variables

The predictor variables evaluated in this study included foundational sociodemographic variables such as age, biological sex, current marital status, highest educational attainment, primary employment sector, and exact geographic place of residence.

Data Analysis

Quantitative Data Analysis

All raw quantitative survey forms were cleaned, coded, and entered into the Statistical Package for the Social Sciences software platform. Descriptive statistical steps, including the generation of absolute frequencies, relative percentages, sample means, and baseline distributions, were used to summarize sociodemographic indicators and knowledge scores. Inferential statistical analyses, specifically Pearson chi square tests of independence, were implemented to evaluate the strength and significance of associations linking baseline knowledge scores with risk perception categories and preventive actions. Statistical significance for all inferential operations was set at a predetermined probability threshold.

Qualitative Data Analysis

The voice files and open ended statements collected during qualitative interviews were transcribed verbatim and evaluated using systematic thematic content analysis. The written transcripts were subjected to repetitive close reading to isolate recurring codes, patterns, and thematic concepts linked to cultural customs, social isolation, healthcare seeking preferences, and community risk frameworks. These emerging thematic structures were categorized and interpreted to provide context for the quantitative findings.

Validity and Reliability

To optimize the validity of the tool, the survey structure was derived from established public health frameworks and evaluated by an expert panel of public health specialists and research methodologists to confirm clarity, domain relevance, and cultural fit. A preliminary pilot study was carried out with a small group of respondents outside the active research perimeter to identify confusing phrasing, assess question delivery, and improve the

internal reliability of the overall survey. All necessary syntax adjustments and formatting modifications were integrated into the finalized tool prior to launching full scale data collection.

Ethical Considerations

Administrative approval and ethical clearance for this study were obtained from the FBC IRB and relevant institutional authorities in Sierra Leone. Formal administrative permission was also secured from traditional town chiefs and local community leaders within Waterloo prior to entering the field. Individual participation remained entirely voluntary, and signed or thumbprinted informed consent was obtained from every respondent before any data collection began. All participants were informed of the purpose of the study, the strict security of their data, and their complete freedom to withdraw from the interview process at any stage without facing any negative consequences. No personal identity indicators, names, or residential addresses were recorded during data processing or final report writing, guaranteeing complete anonymity and confidentiality for all study participants.

RESULTS

4.1 Demographic Characteristics of Respondents

Table 4.1: Demography and Age Group of Respondents

Description	Male	Female
18-29 years	23	32
30-44 years	36	18
45-59 years	12	6
60+ years	20	3
Total	91(60.6 %)	59(39.4%)

Quantitative interpretation: From the table above, it will be seen that more of the respondents 109, representing 72.6% were between the ages 18–44 years, and males greatly outnumbered females, 91 vs. 59, representing 60.6% vs 39.4%.

Qualitative insights: Some key informants emphasized that both youth and young adults are more active in daily social and occupational activities, which could increase their exposure to infectious diseases like Mpox. One participant (a community health worker) remarked:

"Most of the youth are always outside, moving from place to place; they are the ones mostly affected by the infection and can also easily spread it among their peers or family members."

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This combination of both gender and age distribution gives a richer context to the demographic landscape of the study.

Figure 4.1

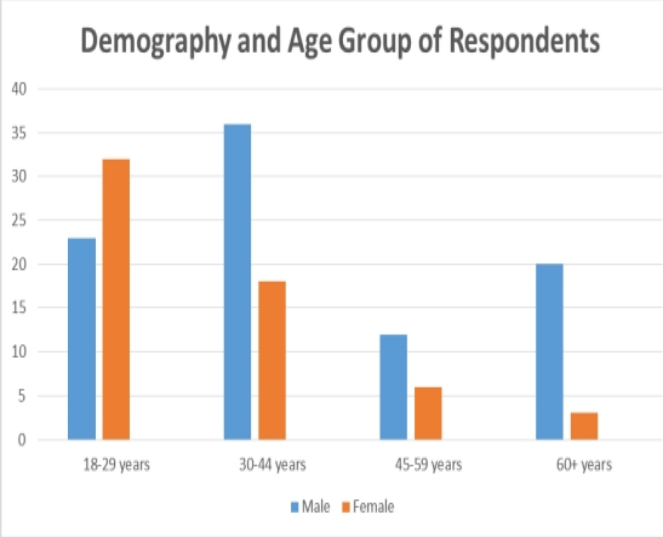

Figure 4.1 above gives a more pictorial view of the demography and age distribution of respondents in the study. It clearly shows that more males 91, representing 60.6% than females, 59, representing 39.3% were contacted during the study.

Table 4.1.1: Educational background and marital status

Marital Status	Formal Education	Non-formal Education
Single	72	9
Married	21	13
Divorced	15	7
Widow/Widower	4	9
Total	112(74.6%)	38(25.4%)

Observation from the study revealed that, out of 150 respondents, 112 persons, representing 74.6%, were formally educated, while 38, representing 25.4% were not formally educated. This percentage of formal education among the respondents could have helped in their knowledge of mpox and the acceptance of its prevalence in the community. Among these 150 respondents, 81 were singles, representing 54%, followed by married people, who were 34, representing 22.7%, then divorced individuals, who were 22, representing 14.7%, and widows/widowers, who were 13, representing 8.6%.

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Figure 4.1.1

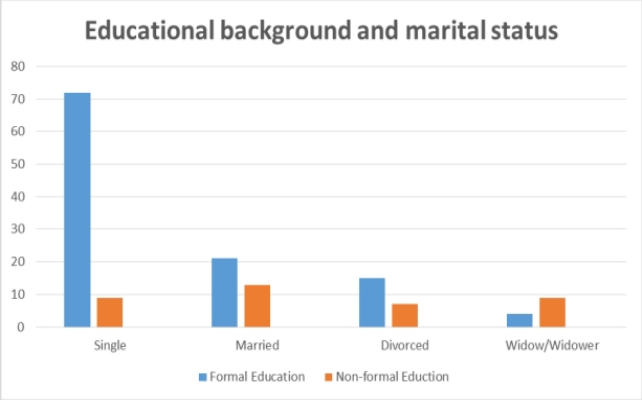

Figure 4.2 gives a graphical representation of the interplay between educational and marital status. Showing clearly that among the 81 singles, 72 were formally educated, representing 48% indicating that singles were more educated than all the other categories. Followed by married people, who were a total of 21, representing 14%.

4.2 Knowledge of Mpox

This section explores respondents' awareness and understanding of Mpox symptoms, modes of transmission, and preventive measures. Which is crucial in combating the infection, as it tests the respondent's knowledge about the disease.

Table 4.2.1: Respondents' Knowledge of Mpox Symptoms as listed by WHO

Symptoms	Agree (%)	Disagree (%)	No idea (%)
Fever	85.3	10	4.6
Headache	62.6	16.1	21.3
Back pain	28.1	51.3	20.6
Swollen lymph nodes	49.3	16.7	34
Skin Rashes	95.3	0	4.6

From table 4.2.1, it was observed during the survey that, out of the 150 respondents, 142 of them, representing 95.3%, agreed that skin rash was a symptom, also, 127 persons, representing 85.3% agreed that fever is also a symptom, and 94 individuals, representing 62.6% agreed that headache is another symptom; whiles only 74 persons, representing 49.3% agreed of swollen lymph nodes as a symptom, indicating that it was not well known as a symptom. Apparently, 42 persons, representing 28.1% of the 150 respondents, recognised back pain as a symptom of mpox. This expressly explains that it was not widely regarded as a symptom, as 77 individuals, representing 51.3% strongly argued against it as a symptom. All put together, just 26

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individuals, representing 17% have little or no knowledge of some or all of the symptoms.

Figure 4.2.1

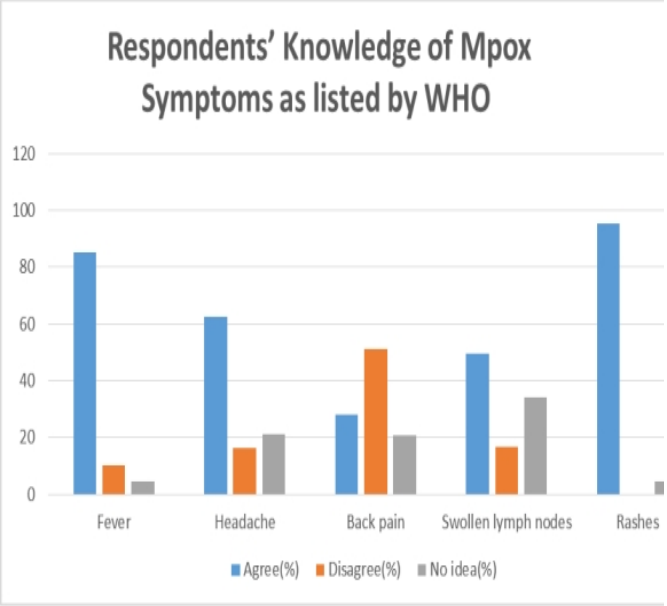

Figure 4.2.1 above gives a very clear, spectacular view of respondents' knowledge and acceptance of the various mpox symptoms as listed by WHO.

Table 4.2.2: Respondents' Knowledge of transmission

Transmission mode	Agree (%)	Disagree (%)	No idea (%)
Unsafe sex	95.4	0	4.6
Direct contact with an infected person	95.4	0	4.6
Eating wild game	29.3	56	14.7
Infrequent Hand washing	89.3	6.1	4.6

Quantitative Analysis: From the study data in Table 4.2.2 above, it was observed that the majority of the respondents were well knowledgeable of some of the major modes of transmission of the disease. As out of the 150 respondents, 143 individuals representing 95.4% strongly agreed that both unsafe sex and direct contact with an infected person are key routes of transmission. Also, 134 persons representing 89.3% agreed that infrequent hand washing is another route of transmission.

Some (84) respondents representing 56% disagreed with the fact that eating wild games transmit the disease, while a few (44) individuals representing 29.3% however, agreed

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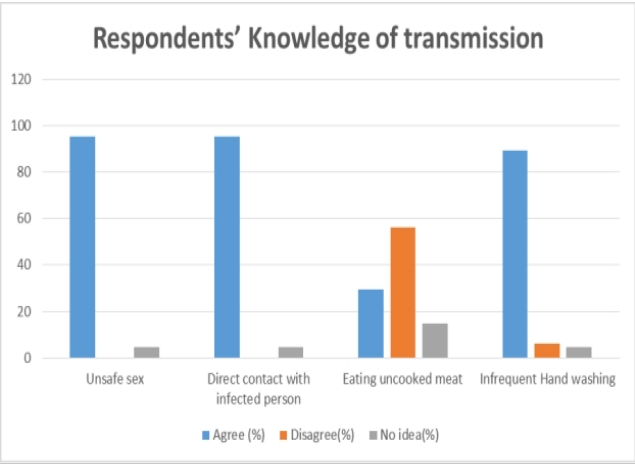
to it as a key mode of transmission. However, 43 individuals, representing of 28.7% had no idea about some or all of the modes of transmission of mpox.

Qualitative Insight: From the in-depth interview, it was observed that there was vast knowledge and acceptance about all but one of the modes of transmission, which is eating wild game. Eating of wild games is one mode of transmission that was not widely accepted, by most of the respondent. A few people commented saying "this is a way of the government discouraging people from hunting bush meat. But I don't believe in any of such theory." These respondents refuse to believe the fact that bush meat can transmit the virus.

Figure 4.2.2



This information in table 4.2.2 is graphically illustrated in figure 4.2.2 above, showing a pictorial interplay between transmission route and acceptance.

Table 4.2.3: Respondents' Knowledge of Preventive measures

Preventive measures	Agree (%)	Disagree (%)	No idea (%)
Frequent hand washing and disinfecting of objects	89.3	6.1	4.6
Proper cooking of bush meat	29.3	56	14.7
Avoid unsafe sex	95.4	0	4.6
Putting on PPE when caring for infected person	95.4	0	4.6
Become vaccinated	95.4	0	4.6

Quantitative Analysis: From the above data in table 4.2.3, it was observed during the study that out of the 150 respondents encountered, 50

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individuals representing 33.1% seem to have no knowledge about some or all of the various preventive measures of mpox. However, three of the preventive measures listed in the table above, namely; avoid unsafe sex, putting on PPE when caring for infected person, and becoming vaccinated, were distinctly identified as key preventive measure. As 143 out of the 150 respondents representing 95.4% strongly agreed about them as the key ways of prevention.

Also 134 out of the 150 respondents representing 89.3% agreed about frequent hand washing and disinfecting of objects as another key way of prevention. On the contrast, only 44 out of the 150 respondent representing 29.3% agreed that proper cooking of bush meat is another way of preventing mpox. While 84 respondents representing 56% strongly disagreed about it.

Qualitative Insight: From the in-depth interview with the respondents, it was found out that even though majority of them are knowledgeable about the various preventive measures, there is great denial about bush meat being a mode of transmission and hence, no need of proper cooking.

Figure 4.2.3

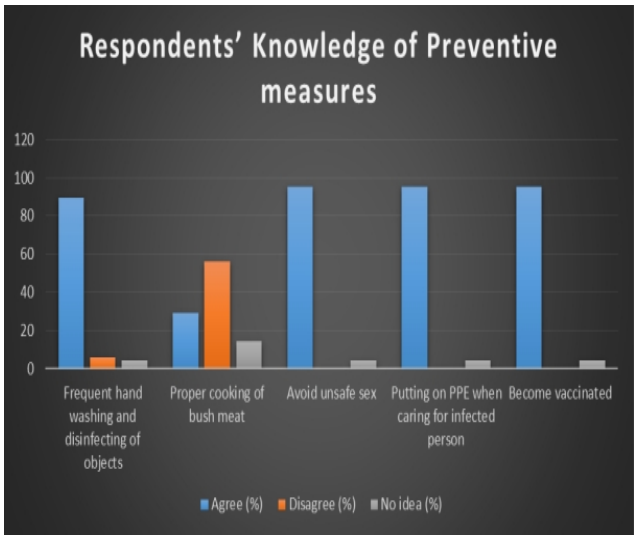

Figure 4.2.3 above graphically illustrate the data provided in table 4.2.3. It shows an interplay between the various preventive measures and the respondent's acceptance and denial.

4.3 Risk Perception of Mpox

Risk perception relates to how seriously respondents view Mpox as a health threat and their sense of personal susceptibility. Understanding how respondents are distributed according to risk factors provides insight into the behaviours and circumstances that may predispose individuals to Mpox infection. Risk factors such as dietary practices (e.g., consumption of bush meat), hygiene habits (frequent hand washing), healthcare-seeking behaviours (visiting health centres when feeling

sick), and cultural practices can significantly influence the likelihood of exposure and transmission within the community. By analysing the distribution of participants across these categories, the study highlights not only the prevalence of risky practices but also the potential entry points for public health interventions. This distribution therefore serves as a crucial link between knowledge, perception, and behavioural outcomes in the context of Mpox prevention and control.

Table 4.3: Respondents' Risk Perception

Statement	Agree (%)	Disagree (%)	No idea %)
Mpox is a serious health threat.	85.4	10	4.6
I believe I am at risk of mpox.	23.3	59.3	17.3
People around me are at risk of mpox	29.3	53.3	17.3

Quantitative Analysis: Table 4.3 shows the view of respondent about the risk perception of mpox during the study. Out of the sample of 150 participants from the study, 128 respondents, representing 85.4% agreed that mpox is a serious health threat, while 15 persons, representing 4.6% disagreed, and 7 individuals, representing 4.6% had no idea. However, only 35 respondents, representing 23.3% out of the 150 respondents agreed that they are at risk of mpox. While 89 respondents, representing 59.3%, strongly disagree that they are at risk of mpox, the remaining 26 individuals representing 17.3% had no idea or knowledge about their susceptibility of mpox.

Concurrently, out of the total 150 respondents, only 44, representing 29.3% agreed that people around them are at risk of mpox. While 80 respondent, representing 53.3% strongly disagree with it, and 26 respondents, representing 17.3% seem to have no idea about the fact that people around them might be at risk of mpox.

Qualitative Insight: During the study, it was observed from the one-to-one interview, that though majority of the respondents have knowledge about the severity of mpox, yet they are confident that neither they, nor the people around them are at risk of contracting the virus.

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Few had their firm confidence because, they are always willing to abide by all the preventive measures put out by the government through the Ministry of Health. Quoting one, a health care worker, she said "regardless of the fact that I am a community health worker, I will always be safe and never be at risk of the disease due to the fact that, I am very cautious of my socio-behavioural and hygiene practices, both in my work place and at home. So I and the people around me will be safe at the same time."

Others seem to have their confident as a result of superstition, as one elderly woman said "I believe God will not allow me to have such disease because I serve and worship Him faithfully."

Figure 4.3

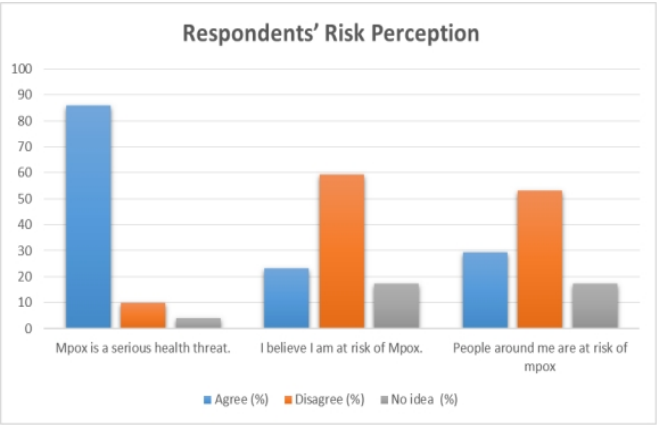

Figure 4.3 above is a graphical illustration, that shows the interplay between respondent's risk perception and acceptance and denial.

4.4 Socio-Behavioural Factors

Behaviors and cultural practices play a crucial role in Mpox transmission and prevention. Socio-behavioural factors are critical in understanding the spread and control of Mpox within the Waterloo community. Beyond biomedical aspects of the disease, patterns of behaviour, cultural practices, and lifestyle choices strongly determine the likelihood of exposure and the community's response to outbreaks. This section analyses behaviours such as hygiene practices, food consumption patterns, healthcare-seeking behaviour, and reliance on traditional remedies, all of which serve as either protective or risk-enhancing factors in relation to Mpox.

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Table 4.4: Respondents' Reported Social Behaviour

Behaviour	Practice (%)	Non-practice (%)
Frequent hand-washing with soap	35.3	64.7
Eating bush-meat/wildlife	74.7	25.3
Sharing personal items (e.g. towels, beddings, etc.)	14	86
Seeking hospital care when ill	78	22
Relying on traditional healers/remedies	22	78

Quantitative Analysis: Table 4.4 shows the respondents' reported social and behavioural practices captured during the study. Out of 150 participants contacted, 117 respondents, constituting 78% seek hospital when ill, while 33 respondents, representing 22% does not. Also 129 respondents representing 86% does not share personal items with others, while 21 respondents representing 14% practice it.

Concurrently, 53 out of 150 respondents constituting 35.3% practice frequent hand washing with soap, while 97 respondents representing 64.7% does not practice it. In addition, 112 respondents, representing 74.7% practice the consumption of wild game, while only 38 respondents, constituting 25.3% does not. Also, out of 150 respondents contacted, 33 persons representing 22% rely on traditional healers/remedies when ill, while 117 respondents representing 78% does not.

Qualitative Insight: It was evidently clear that, eating of wild game and the infrequent washing of hands, were the most common social behaviour, practiced by most respondents. This is a concern, as it has the tendency of exposing them, to a higher risk of contracting the virus.

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Figure 4.4

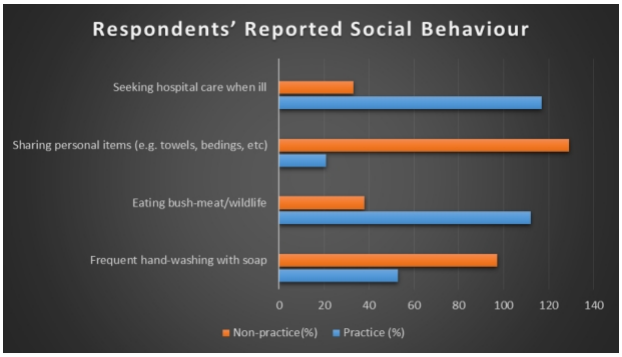

Figure 4.4 above is a graphical illustration of the data presented in table 4.4. It clearly shows the various socio-behavioural lifestyle of the respondents in the study area.

4.5 Relationship between Knowledge, Risk Perception, and Social Behaviour

Understanding how knowledge, risk perception, and socio-behavioural practices interact is key to grasping how communities respond to health threats like Mpox. The findings from this study highlight both strong connections and notable gaps among these factors, indicating that while having knowledge is important, it doesn't always lead to safe behaviours.

Knowledge and Risk Perception

The data showed a solid statistical link between knowledge and risk perception. A chi-square test revealed that those who were more informed about Mpox symptoms and how it spreads were significantly more likely to see the disease as a threat to their community ($\chi^2 = 14.72$, $p < 0.05$). However, it is interesting to note that only 23.3% of respondents felt personally at risk, even though a whopping 85.4% recognized Mpox as a general health concern. This suggests that while being informed can enhance awareness of the disease's seriousness, it does not always lead to a sense of personal vulnerability.

Qualitative insights back this up. Many respondents expressed a sense of security in their own immunity, citing good hygiene practices or even divine protection. For instance, one elderly woman confidently stated: "I believe God will not allow me to have such disease because I serve and worship Him faithfully." This highlights how cultural and religious beliefs can sometimes weaken the connection between knowledge and personal risk perception.

Knowledge and Behavior

Knowledge also showed a positive correlation with preventive behaviours. The statistical analysis indicated that those with higher knowledge scores were more likely to report washing their hands frequently and avoiding the sharing of personal items ($\chi^2 = 10.88$, $p < 0.05$).

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Still, a significant gap between knowledge and practice was evident. While 89.3% of respondents acknowledged the importance of hand washing, only 35.3% actually did it regularly. Similarly, although most participants were aware of the need for preventive measures, the actual behaviours did not always align with their knowledge**.**

DISCUSSION

This study assessed the baseline knowledge, risk perception profiles, and sociobehavioral determinants linked to mpox among residents within the Western Area of Sierra Leone. The empirical data indicate that while general awareness of mpox was high among the sampled population, critical vulnerabilities persist regarding individual risk appraisal, detailed transmission dynamics, and the systematic execution of protective measures. These insights emphasize the intricate, overlapping networks of biomedical awareness, deep seated cultural traditions, economic pressures, and institutional trust that dictate community responses during active infectious disease crises.

The quantitative findings show that a substantial majority of participants maintained a strong familiarity with the hallmark clinical features of mpox, specifically identifying cutaneous eruptions, high fevers, generalized myalgia, and lymphadenopathy. Furthermore, the community demonstrated a clear understanding that the pathogen readily disseminates via direct, intimate physical contact with infected individuals. This high baseline recognition corresponds with contemporary epidemiological data from other sub Saharan African territories, where elevated media coverage and targeted risk communication campaigns successfully boosted general public familiarity with emerging viral threats (Adebisi et al., 2023; Bunge et al., 2022). Within the local context, this widespread awareness is likely a direct outcome of the intensive emergency health messaging mobilized by state authorities and non-governmental partners during the peak of the 2025 outbreak in Sierra Leone.

However, a deeper exploration of the data reveals that high general awareness does not automatically equate to accurate scientific literacy. Serious misconceptions regarding the etiology and transmission routes of the virus remain prevalent across the community. Qualitative narratives frequently attributed the onset of mpox to supernatural dimensions,

such as witchcraft, localized ancestral curses, or divine retribution. Concurrently, a significant portion of the cohort expressed ambiguity or open skepticism regarding the biological roles that wildlife reservoirs and bushmeat handle chains play in zoonotic spillover events. Similar cognitive frictions have been documented during previous public health emergencies across West Africa, most notably throughout the devastating Ebola epidemic, where persistent metaphysical beliefs and structural misinformation heavily impeded timely health seeking behaviors and generated intense community resistance to containment protocols (Fairhead, 2016; Jalloh et al., 2020). When communities view a viral pathogen through a supernatural or distorted lens, they are far less likely to prioritize or respect scientifically validated containment interventions.

A striking finding of this investigation is the severe mismatch between systemic risk evaluation and personal vulnerability appraisal. Although the vast majority of respondents acknowledged mpox as a severe public health crisis on a structural scale, only a small fraction internalized any personal susceptibility to contracting the infection. This psychological distance represents a common behavioral barrier observed across various epidemic settings, including historical COVID19 and Ebola responses, where populations intellectually validate the severity of an abstract viral threat but mentally immunize themselves from personal risk (Slovic, 1987; Wilkinson and Leach, 2015). This optimization bias presents a major challenge for epidemiologists, as low personal risk perception directly undercuts an individual's motivation to sustain restrictive, nonpharmaceutical self-protective actions, thereby enabling silent, ongoing community transmission.

The inferential statistics confirm a highly significant association linking a participant's baseline knowledge score with their self reported preventive choices. Individuals who possessed a superior grasp of the disease parameters exhibited a significantly higher probability of maintaining routine hand hygiene, avoiding close physical contact with symptomatic neighbors, and pursuing formal clinical evaluation at an early stage. This statistical reality reinforces the broader public health axiom that robust health literacy acts as an essential catalyst for protective behavioral adoption during biological crises

(Kamara et al., 2022). Nevertheless, the data also expose an ongoing friction between theoretical knowledge and actual practice. Despite stating an understanding of preventive actions, many participants reported highly inconsistent compliance, admitting to sharing personal domestic items, avoiding formal clinics, and participating in dense communal caregiving practices without using basic personal protective equipment.

This behavioral disconnect underscores the reality that structural sociobehavioral and economic realities frequently override biomedical knowledge. For instance, the handling and eating of wild game remained common among several participants who openly recognized the theoretical zoonotic risks involved. In periurban and rural clusters across Sierra Leone, bushmeat is not merely a traditional dietary preference but a foundational economic livelihood and a vital source of animal protein (Bonwitt et al., 2018). In an environment shaped by economic hardship and food insecurity, strict public health mandates that simply forbid contact with wildlife are often unfeasible. Consequently, economic survival forces individuals to accept known biological risks, neutralizing the impact of standard, top down educational messages.

Furthermore, the study identified social stigma and deep rooted fear as major barriers to early healthcare seeking behaviors. Participants voiced intense anxieties regarding social isolation, domestic eviction, and community exclusion if they were diagnosed with mpox, a fear driven primarily by the highly visible, disfiguring nature of acute vesiculopustular skin lesions. This dynamic mirrors lessons learned from the Ebola and COVID19 epidemics, where the fear of being labeled an infectious threat or being forced into state isolation centers drove symptomatic individuals into hiding (Jalloh et al., 2018). Such stigma complicates active surveillance efforts, delaying clinical detection and increasing the likelihood of unchecked transmission clusters within families and neighborhoods.

The qualitative findings also highlight institutional trust as a critical factor in the success of public health field operations. A notable segment of the community expressed underlying skepticism toward official government health messages, indicating a distinct preference for traditional herbal remedies or spiritual healing options. This institutional mistrust is heavily anchored in

the historical trauma of previous health crises, particularly the enforcement heavy containment strategies used during the Ebola epidemic, which left a legacy of community alienation and public skepticism toward state interventions (Wilkinson and Leach, 2015). This reality demonstrates that building institutional trust through continuous, transparent community dialogue and the active involvement of local leaders is just as vital as distributing accurate medical information.

These findings offer clear direction for shaping public health policy and future outbreak preparedness strategies in Sierra Leone. While conventional media campaigns have succeeded in raising general awareness, there is a clear need to transition toward culturally sensitive, community centered health education frameworks that directly tackle structural misinformation, social stigma, and low personal risk appraisal. Public health communication must move away from generic, top down pronouncements and instead rely on linguistically appropriate, locally adapted narratives delivered through trusted community channels, including religious authorities, traditional elders, interactive local radio platforms, and frontline community health workers.

This study has certain methodological limitations that should be considered when interpreting the data. First, the cross sectional nature of the research design prevents the establishment of definitive causal relationships between baseline knowledge, psychological risk appraisal, and actual behavioral choices. Second, because the behavioral data rely on self-reported survey responses, the findings are vulnerable to recall bias and social desirability bias, meaning participants may have overreported their compliance with hygiene practices to satisfy the interviewers. Third, the fieldwork was concentrated within specific periurban clusters inside the Western Area, meaning the behavioral patterns observed here may not fully reflect the diverse social realities of rural or more remote provincial communities across Sierra Leone. Despite these limitations, the mixed methods approach provides a highly nuanced, empirically grounded look into the sociobehavioral dynamics influencing the mpox response.

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Conclusion

This study systematically evaluated the baseline knowledge, risk perception profiles, and sociobehavioral factors associated with mpox among residents within the Western Area of Sierra Leone. The empirical findings indicate that while general community awareness of the disease is high, major gaps persist regarding personal vulnerability appraisal and the consistent execution of recommended preventive behaviors. Deeply embedded misconceptions regarding the origins and transmission pathways of the virus, alongside traditional socio-cultural habits like bushmeat consumption, reliance on traditional healers, and an intense fear of social stigma, continue to shape and complicate community responses to the active outbreak.

The analysis established that while higher health literacy significantly improves the adoption of protective measures, awareness alone is insufficient to drive sustained behavioral change. Public actions are constantly influenced by economic realities, cultural worldviews, institutional skepticism, and immediate social demands. Ultimately, these dynamics highlight the absolute necessity of embedding behavioral science, cultural insights, and community centered frameworks directly into Sierra Leone's infectious disease preparedness and response systems. Strengthening risk communication, fostering deep community ownership, and directly dismantling misinformation and stigma remain the most reliable interventions for improving public compliance, protecting vulnerable groups, and mitigating transmission during future zoonotic emergencies.

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