

RESEARCH PAPER**OPEN ACCESS****Influence of wildlife hunting, human encroachment and wildlife disease spread on public health among rural foresters in Imo State, Nigeria**

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ABSTRACT

The research explored how wildlife hunting, human encroachment, and the spread of wildlife diseases affect public health for rural foresters in Imo State, Nigeria. Concerns grew that as humans increasingly interacted with wildlife in these forest communities, the risks of zoonotic disease transmission and various health issues were on the rise. To examine this, a descriptive survey research design was utilized, gathering data from 150 rural foresters in selected communities within Imo State. Structured questionnaires were distributed to capture insights on wildlife hunting trends, the extent of human encroachment into forest ecosystems, and the perceived prevalence of wildlife-related diseases impacting public health. The data were then analyzed using descriptive statistics, including frequencies, percentages, and mean scores. The results indicated a rise in wildlife hunting activities, which heightened exposure to zoonotic pathogens through practices like handling, butchering, and consuming bushmeat. Additionally, human encroachment into the forests was found to disrupt natural habitats, leading to increased interactions between humans and wildlife and raising the risk of disease transmission. The spread of wildlife diseases was significantly linked to infectious outbreaks among rural foresters and their nearby communities. The study concluded that the exploitation of wildlife and environmental disruptions pose serious public health concerns in rural forestry regions. It recommended reinforcing environmental regulations, enhancing public health education, and developing better surveillance systems to mitigate the risks of zoonotic diseases and support sustainable forest management in Imo State.

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INTRODUCTION

In many developing countries, particularly across sub-Saharan Africa, the growing interaction between people, wildlife, and forest ecosystems has become a pressing issue for both environmental management and public health. In Nigeria, rural populations rely heavily on forests for their livelihoods—engaging in hunting, logging, farming, and gathering fuelwood.

These practices often bring people into closer contact with wild animals and their environments, increasing exposure to zoonotic diseases and other health risks (World Health Organization [WHO], 2023). Factors such as poverty, population growth, joblessness, and rising demand for bushmeat and forest-based products have intensified hunting and the expansion of human activity into forested areas.

In Imo State, communities like Ohaji/Egbema, Oguta, Oru East, and Orsu depend on forests for food, medicinal plants, timber, and general economic sustenance. However, expanding settlements, agricultural land use, and unauthorized logging have led to habitat loss and fragmentation. These changes in natural landscapes raise the chances of disease spillover from animals to humans. As reported by the United Nations Environment Programme (UNEP, 2022), around three-quarters of newly emerging infectious diseases worldwide originate in animals, particularly those living in disrupted or degraded habitats. Hunting remains a widespread practice in rural parts of Imo State, with bushmeat serving as both a key source of protein and a contributor to household income. Yet handling wild animals during capture, preparation, and consumption puts hunters and forest residents at risk of contracting pathogens such as Ebola, Lassa fever, monkeypox, and other zoonoses (Centers for Disease Control and Prevention [CDC], 2023). Repeated exposure to infected animals, combined with limited hygiene infrastructure, heightens the likelihood of disease outbreaks.

Encroachment into protected forest zones—through illegal farming, logging, road building, and settlement growth—has also accelerated environmental decline

and biodiversity loss. These activities disturb ecological systems, pushing wildlife species to move nearer to human habitation. As a result, disease-carrying animals like rodents, bats, and insects come into more frequent contact with people, posing ongoing threats to public health and ecosystem stability (Food and Agriculture Organization [FAO], 2021). Public health issues linked to wildlife-borne diseases include respiratory illnesses, infections spread by vectors, skin conditions, and contaminated food. Rural forest communities often face shortages in medical services, disease tracking mechanisms, and knowledge about preventing zoonotic infections. These gaps disproportionately affect vulnerable groups such as women, children, farmers, and hunters living near forested regions. Weak enforcement of environmental laws and conservation policies further compounds these challenges.

Although global awareness of zoonotic diseases and ecosystem health is increasing, few studies have directly explored how wildlife hunting, habitat encroachment, and disease transmission jointly impact public health among rural forest-dependent populations in Imo State, Nigeria. This study therefore aims to examine how these interconnected human and environmental factors influence health outcomes and ecological sustainability in rural forestry communities. The rising levels of wildlife hunting, unlawful exploitation of forests, and human intrusion into forest ecosystems in Imo State threaten both biodiversity and public health. Rural dwellers frequently encounter wild animals during hunting, logging, and farming, increasing the potential for zoonotic disease transmission. Poor sanitation, insufficient healthcare access, and low awareness of environmental health risks continue to leave communities vulnerable to illness.

Moreover, deforestation and the conversion of land for agriculture disrupt ecological dynamics, leading to greater overlap between humans and wildlife that carry diseases. While research on environmental degradation and species loss in Nigeria exists, less focus has been placed on how wildlife use affects

health in rural forest communities within Imo State. The lack of effective disease surveillance, weak implementation of wildlife protection measures, and limited environmental education programs have deepened the problem. There is therefore a clear need to assess how wildlife hunting, human encroachment, and the spread of animal-borne diseases affect public health among rural forest populations in Imo State, Nigeria. This study held importance by adding to current understanding in the areas of environmental health, wildlife conservation, and rural public health within Nigeria. Its findings offered valuable insights for policymakers, environmental agencies, healthcare providers, and conservation groups, enhancing their awareness of the health risks tied to wildlife exploitation and the expansion of human activity into forested areas.

It also supported the Imo State government and environmental regulatory bodies in developing more effective policies for wildlife protection and strategies to prevent disease outbreaks. In addition, the research aimed to educate rural forest communities about the hazards linked to hunting wildlife and engaging in environmentally harmful practices. From an academic standpoint, the study provided a useful resource for future scholars exploring topics such as environmental sustainability, zoonotic diseases, forest management, and public health, both in Nigeria and internationally. The broad objective of this study is to examine the influence of wildlife hunting, human encroachment, and wildlife disease spread on public health among rural foresters in Nigeria. The specific objectives are to: a). examine the influence of wildlife hunting on public health among rural foresters in Nigeria; b). assess the effects of human encroachment into forest ecosystems on public health; c). determine the extent to which wildlife disease spread affects rural foresters and surrounding communities; d). identify common zoonotic diseases associated with wildlife-human interactions in rural areas; e). examine preventive measures for reducing wildlife-related disease transmission and promoting public health.

MATERIALS AND METHODS

The research was conducted in Imo State, situated in the southeastern part of Nigeria. This state encompasses numerous rural forestry communities where residents participate in activities such as hunting, agriculture, and harvesting forest resources. The chosen communities exhibited a significant interaction between humans and wildlife, making them ideal for investigating public health concerns related to wildlife. The study employed a descriptive survey research design, which was deemed suitable as it facilitated the collection of pertinent information regarding the impact of wildlife hunting, human encroachment, and the spread of wildlife diseases on public health among rural foresters in Imo State, Nigeria. The study's population included rural foresters, hunters, farmers, and other individuals reliant on forest resources from specific communities within Imo State. The target demographic was estimated to encompass all individuals engaged in forest-related activities, thereby exposing them to the wildlife and forest ecosystem. A sample size of 150 respondents was selected to ensure a representative overview of rural foresters and other forest users in the region. Data were gathered through a structured questionnaire crafted by the researcher. This questionnaire featured sections that addressed demographic details and variables concerning wildlife hunting, human encroachment, the spread of wildlife diseases, and their implications for public health. The survey was directly administered to respondents with the help of trained research assistants. The data collected underwent analysis using descriptive statistical techniques. Frequency counts, percentages, and mean scores were employed to summarize respondents' perceptions regarding the examined variables. Moreover, inferential statistics, including correlation analysis, were applied to explore the relationships between wildlife-related activities and public health outcomes among rural foresters.

RESULTS AND DISCUSSION

Influence of wildlife hunting on public health among rural foresters in the study area

The study assessed how rural foresters in Nigeria perceive the impact of wildlife hunting on public health,

based on data from 150 participants. All listed statements received mean scores exceeding the threshold of 2.50, reflecting a general consensus that hunting wildlife significantly affects public health. Respondents particularly agreed that such activities expose them to zoonotic diseases (mean = 3.23), and that contact with animal blood and bodily fluids during hunts presents serious health dangers (mean = 3.29) (Table 1). They also acknowledged that consuming bushmeat can facilitate the spread of infectious diseases (mean = 3.21) and that improper handling of hunted animals contributes to public health risks (mean = 3.23). Additionally, participants believed that wildlife hunting aids in spreading viral diseases (mean = 3.15) and

emerging infections (mean = 3.18) within rural areas. A lack of protective gear among hunters was widely recognized (mean = 3.24), increasing vulnerability to pathogens. The findings also indicated limited awareness in rural communities about health risks linked to hunting (mean = 3.25). Respondents expressed strong support for stronger government oversight, viewing it as an effective way to mitigate health threats (mean = 3.31), the highest score recorded. The overall mean of 3.23 suggests a strong collective perception that wildlife hunting poses significant public health concerns. With an average standard deviation of 0.87, responses showed a relatively consistent pattern across participants.

Table 1. Perceived influence of wildlife hunting on public health among rural foresters in Nigeria

Sl	Statements	Mean	SD	Decision
1	Wildlife hunting exposes rural foresters to zoonotic diseases.	3.23	0.89	Accepted
2	Consumption of bushmeat increases the risk of infectious disease transmission.	3.21	0.86	Accepted
3	Poor handling of hunted wildlife contributes to public health hazards.	3.23	0.84	Accepted
4	Wildlife hunting encourages the spread of viral infections in rural areas.	3.15	0.88	Accepted
5	Hunters rarely use protective equipment during hunting activities.	3.24	0.91	Accepted
6	Contact with animal blood and body fluids poses health risks to hunters.	3.29	0.89	Accepted
7	Illegal wildlife hunting weakens environmental sanitation and community health.	3.13	0.87	Accepted
8	Wildlife hunting contributes to outbreaks of emerging diseases.	3.18	0.88	Accepted
9	Rural communities lack adequate awareness of diseases linked to wildlife hunting.	3.25	0.85	Accepted
10	Wildlife hunting increases human exposure to dangerous pathogens.	3.27	0.88	Accepted
11	Continuous hunting of wild animals threatens public health sustainability.	3.21	0.84	Accepted
12	Government regulation of wildlife hunting can reduce public health risks.	3.31	0.87	Accepted

Wildlife hunting poses notable public health challenges for rural foresters, especially in communities across Nigeria that rely heavily on forest resources. These individuals often hunt wild animals for sustenance, economic gain, and cultural traditions. However, the processes of hunting, preparing, and eating wild game frequently bring them into contact with pathogens carried by species such as bats, rodents, monkeys, and antelopes. This close interaction heightens the likelihood of zoonotic disease transmission—illnesses that jump from animals to humans (World Health Organization [WHO], 2023). The lack of protective equipment when handling infected animals has played a role in outbreaks of diseases like Ebola, monkeypox, Lassa fever, and other viral infections in rural areas (Centers for Disease Control and Prevention [CDC], 2023). In many of these communities, inadequate sanitation and limited access to medical care amplify the health risks linked

to hunting. Injuries sustained during hunts—often exposing open wounds to animal blood and bodily fluids—further increase vulnerability to infection.

Eating undercooked bushmeat also presents serious health dangers for rural families. Nwankwo and Okereke (2021) note that relying heavily on bushmeat for protein leads to repeated exposure to wildlife that may carry diseases. Moreover, overhunting disrupts ecosystems by diminishing biodiversity and pushing certain animal populations nearer to human settlements, thereby increasing opportunities for disease spread between animals and people. Additionally, smoke produced during the smoking and processing of bushmeat contributes to respiratory issues among foresters and their households. The broader environmental damage caused by unsustainable hunting practices also impacts water quality and sanitation in rural regions. As a result, wildlife hunting not only undermines efforts to conserve

biodiversity but also adversely affects public health and environmental well-being among rural forestry communities in Imo State and beyond.

Effects of human encroachment into forest ecosystems on public health

The study evaluated how human intrusion into forest ecosystems affects public health among rural foresters in Nigeria, based on responses from 150 participants. All survey items received average scores exceeding the 2.50 threshold, showing general agreement that forest encroachment poses significant public health risks. Respondents acknowledged that such encroachment heightens exposure to diseases from wildlife (mean = 3.28) and facilitates the transmission of zoonotic diseases due to greater human activity in forested areas (mean = 3.26).

They also recognized that deforestation and expanding settlements lead to deteriorating environmental health (mean = 3.25). Agricultural

expansion, logging, and similar activities were seen as increasing the likelihood of disease outbreaks (mean = 3.23). Habitat destruction from encroachment was viewed as a key factor driving more frequent human encounters with disease-carrying vectors (mean = 3.29). The results further indicated that forest intrusion contributes to water contamination, inadequate sanitation, and health issues linked to climate change in rural regions. Participants agreed that settling within forests creates favorable conditions for mosquito breeding and the spread of vector-borne illnesses like malaria (mean = 3.29). The highest mean score was given to the belief that strong forest conservation policies can help mitigate public health problems (mean = 3.32), reflecting broad support for regulatory measures and sustainable management practices. Overall, the combined mean of 3.25 shows that respondents viewed forest encroachment as a serious threat to community health. An average standard deviation of 0.86 suggests a consistent pattern in their responses.

Table 2. Effects of human encroachment into forest ecosystems on public health among rural foresters in Nigeria

Sl	Statements	Mean	SD	Decision
1	Human encroachment into forests increases human exposure to wildlife diseases.	3.28	0.85	Accepted
2	Deforestation and settlement expansion contribute to poor environmental health conditions.	3.25	0.87	Accepted
3	Increased human activities in forests promote the spread of zoonotic diseases.	3.26	0.86	Accepted
4	Encroachment into forest ecosystems reduces biodiversity and affects public health negatively.	3.23	0.84	Accepted
5	Farming and logging activities in forests increase the risk of disease outbreaks.	3.23	0.87	Accepted
6	Human encroachment destroys natural habitats and increases contact with disease vectors.	3.29	0.88	Accepted
7	Forest encroachment contributes to water pollution and sanitation problems in rural areas.	3.21	0.84	Accepted
8	Overcrowding around forest communities encourages the spread of infectious diseases.	3.23	0.86	Accepted
9	Encroachment into forests contributes to climate-related health problems.	3.19	0.86	Accepted
10	Human settlement in forest areas increases mosquito breeding and vector-borne diseases.	3.29	0.90	Accepted
11	Continuous exploitation of forest ecosystems threatens community health sustainability.	3.25	0.85	Accepted
12	Effective forest protection policies can reduce public health challenges.	3.32	0.88	Accepted

Expanding human activity into forested areas has raised significant public health challenges in both rural and urban regions. Practices like deforestation, illegal logging, farming expansion, mining, and the growth of settlements have damaged natural habitats and intensified contact between people and wildlife that may host infectious agents. This closer interaction has played a role in outbreaks of zoonotic diseases, including Ebola, Lassa fever, monkeypox, and other emerging illnesses (World Health Organization [WHO], 2023). In Nigeria's forest-

dependent communities, the loss of biodiversity has further destabilized ecosystems, facilitating easier transmission of diseases from animals to humans.

These encroachments also degrade air and water quality, with direct consequences for health. Clearing forests and burning vegetation release harmful pollutants and greenhouse gases, contributing to respiratory conditions such as asthma and bronchitis (United Nations Environment Programme [UNEP], 2022). At the same time, the breakdown of forest

cover often leads to soil erosion and improper waste runoff, contaminating water sources and increasing cases of waterborne illnesses like cholera and typhoid in rural areas. Another consequence is the growing risk of food insecurity and malnutrition. Forests supply vital resources—including medicinal plants, wild fruits, and bush meat—that support the diets and livelihoods of many local populations. As these ecosystems deteriorate, access to such resources diminishes, deepening poverty and lowering nutritional intake (Food and Agriculture Organization [FAO], 2022). This can weaken immune function and heighten susceptibility to illness.

In addition, forest encroachment exacerbates climate change, which in turn impacts health through more frequent extreme weather, flooding, heatwaves, and the spread of diseases like malaria carried by vectors (Intergovernmental Panel on Climate Change [IPCC], 2023). Local communities and forest-dependent populations are especially vulnerable due to limited access to medical care and inadequate environmental governance.

Extent to which wildlife disease spread affects rural foresters and surrounding communities

The study investigated the impact of wildlife disease spread on rural foresters and nearby communities in Nigeria, utilizing feedback from 150 participants. The results indicated that all the statements had mean scores exceeding the threshold of 2.50, signifying that the respondents acknowledged significant effects of wildlife disease spread on both rural foresters and the surrounding communities. They expressed strong agreement that wildlife diseases elevate health risks for rural foresters ($\bar{x} = 3.29$) and that transmission of diseases from wildlife adversely impacts the wellbeing of neighboring communities ($\bar{x} = 3.27$) (Table 3). Additionally, respondents concurred that regular interactions with wild animals expose rural dwellers to infectious diseases ($\bar{x} = 3.29$), emphasizing that close human-wildlife interactions remain a critical public health issue. Moreover, respondents believed that

outbreaks of wildlife diseases diminish the productivity of rural foresters ($\bar{x} = 3.23$) and lead to increased healthcare costs in rural areas ($\bar{x} = 3.25$). The analysis also pointed out that ineffective disease surveillance in rural regions contributes to the ongoing spread of wildlife-related illnesses ($\bar{x} = 3.25$). There was strong consensus that zoonotic diseases emerging from wildlife could trigger public health crises ($\bar{x} = 3.31$). Respondents recognized that a lack of awareness regarding wildlife diseases heightens community vulnerability ($\bar{x} = 3.27$) and noted that contaminated bushmeat poses risks to food safety and public health ($\bar{x} = 3.27$). Furthermore, they agreed that the rise in wildlife-human interactions facilitates the transmission of vector-borne diseases such as malaria and other infectious ailments ($\bar{x} = 3.30$). Perceptions also highlighted that wildlife disease outbreaks disrupt social and economic activities within rural communities ($\bar{x} = 3.24$). The statement that garnered the highest mean score was that enhancing public health education could mitigate the spread of wildlife-related diseases ($\bar{x} = 3.33$), showing strong support for initiatives aimed at raising awareness and implementing health education programs as preventive strategies. In summary, the overall mean score of 3.28 reflects that respondents viewed the spread of wildlife diseases as having a substantial and significant impact on rural foresters and adjacent communities in Nigeria. The average standard deviation of 0.85 indicates that the participants' views were fairly cohesive and consistent across the various statements.

The rise of wildlife diseases has significantly impacted rural foresters and the communities around them, especially in regions where human and wildlife interactions are common. Those engaged in hunting, logging, farming, and gathering forest resources frequently come into contact with infected wildlife, tainted water supplies, and insects that carry disease. This vulnerability has heightened the risk of zoonotic diseases, such as Ebola virus disease, monkeypox, Lassa fever, and rabies, which can transfer from animals to

humans (World Health Organization [WHO], 2023). In numerous rural areas of Nigeria, the situation is exacerbated by insufficient healthcare facilities and weak disease surveillance systems, further complicating the challenges these communities face. The economic stability of rural communities has also been compromised by the spread of wildlife diseases. Illnesses

tied to wildlife pathogens can diminish the productivity of rural foresters, as affected individuals may find themselves too ill to work or may need to deplete their finances on medical care. This leads to increased poverty, food insecurity, and fewer livelihood opportunities for families dependent on forest resources (Food and Agriculture Organization [FAO], 2022).

Table 3. Extent to which wildlife disease spread affects rural foresters and surrounding communities in Nigeria

Sl Statements	Mean	SD	Decision
1 Wildlife diseases increase the health risks faced by rural foresters.	3.29	0.85	Accepted
2 Disease transmission from wildlife affects the wellbeing of surrounding communities.	3.27	0.84	Accepted
3 Frequent interaction with wild animals exposes rural residents to infectious diseases.	3.29	0.84	Accepted
4 Wildlife disease outbreaks reduce the productivity of rural foresters.	3.23	0.85	Accepted
5 Poor disease surveillance in rural areas increases the spread of wildlife-related diseases.	3.25	0.84	Accepted
6 Wildlife disease spread contributes to increased healthcare expenses in rural communities.	3.25	0.85	Accepted
7 Zoonotic diseases from wildlife can lead to public health emergencies.	3.31	0.86	Accepted
8 Lack of awareness about wildlife diseases increases community vulnerability.	3.27	0.83	Accepted
9 Wildlife disease spread negatively affects food safety through contaminated bushmeat.	3.27	0.85	Accepted
10 Increased wildlife-human contact contributes to the spread of vector-borne diseases.	3.30	0.85	Accepted
11 Wildlife disease outbreaks can disrupt social and economic activities in rural communities.	3.24	0.84	Accepted
12 Improved public health education can reduce the spread of wildlife-related diseases.	3.33	0.88	Accepted

Additionally, outbreaks of diseases linked to wildlife can deter tourism and activities centered around forests, which in turn stifles community development. The psychological and social repercussions are equally severe. The fear of disease outbreaks can induce panic, foster social isolation, and breed distrust among residents. In extreme cases, communities might face loss of life, displacement, and disruptions in education and social interactions. Moreover, environmental degradation resulting from human encroachment into wildlife habitats has heightened the occurrence of disease transmission, as animals are driven closer to human settlements (United Nations Environment Programme [UNEP], 2022). Moreover, the spread of wildlife diseases exerts pressure on public health systems, particularly in rural areas where medical resources are scarce. Governments and health organizations often find themselves needing to allocate substantial resources towards disease control initiatives, vaccination campaigns, public awareness efforts, and urgent healthcare responses. Consequently, the challenge posed by wildlife disease transmission remains a significant environmental and public health issue that jeopardizes the welfare of rural foresters and the communities they inhabit.

Common zoonotic diseases associated with wildlife-human interactions in rural areas

The table detailed the zoonotic diseases commonly found in rural areas, resulting from wildlife and human interactions, as reported by 150 individuals. Since respondents could provide multiple answers, the frequency counts surpassed the number of participants. The data indicated that rabies topped the list of identified zoonotic diseases, with 128 individuals—representing 85.3%—noting it as a significant disease linked to wildlife-human encounters. This implies a strong awareness among respondents regarding the threats posed by bites and contact with both wild and domestic animals that may be infected. Equally notable was Lassa fever, recognized by 124 respondents (82.7%) as another prevalent zoonotic disease in rural zones. This recognition may stem from regular encounters with rodents and subpar sanitary conditions in these communities. Additionally, monkeypox was acknowledged by 119 respondents (79.3%), underscoring an increasing awareness of viral illnesses transmitted through contact with wildlife (Table 4).

The Ebola Virus Disease was mentioned by 116 respondents, making up 77.3%, which reflects the

perception of wildlife interactions, particularly with sick animals, as a concerning public health issue. Yellow fever and bovine tuberculosis also received acknowledgment, with 104 (69.3%) and 102 respondents (68.0%) respectively identifying these diseases, which signals a heightened concern regarding illnesses that can be passed from infected animals to livestock.

Avian influenza was recognized by 98 respondents (65.3%), while anthrax was noted by 95 respondents (63.3%), indicating a moderate level of awareness among rural forest dwellers and community members regarding these zoonotic threats. Moreover, 91 respondents (60.7%) acknowledged zoonotic infections related to COVID-19, underscoring the respondents'

understanding of disease transmission routes linked to wildlife. The diseases that received the least recognition included trypanosomiasis, identified by 84 respondents (56.0%), and leptospirosis, noted by 79 respondents (52.7%). While these figures were lower than those for other diseases, over half of the participants still classified them as zoonotic illnesses connected to wildlife-human interactions. Overall, the results suggest that rural foresters and their communities possess a substantial awareness of various zoonotic diseases related to wildlife-human interactions, particularly relating to rabies, Lassa fever, monkeypox, and Ebola virus disease. This awareness points to a critical need for enhanced disease monitoring, public health education, and improved wildlife management strategies in rural Nigeria.

Table 4. Common zoonotic diseases associated with wildlife–human interactions in rural areas

Sl	Zoonotic diseases identified	Frequency	Percentage
1	Rabies	128	85.3
2	Monkeypox	119	79.3
3	Lassa Fever	124	82.7
4	Ebola Virus Disease	116	77.3
5	Tuberculosis (Bovine TB)	102	68.0
6	Anthrax	95	63.3
7	Avian Influenza (Bird Flu)	98	65.3
8	Salmonellosis	87	58.0
9	Yellow Fever	104	69.3
10	COVID-19–related zoonotic infections	91	60.7
11	Trypanosomiasis	84	56.0
12	Leptospirosis	79	52.7

Preventive measures for reducing wildlife-related disease transmission and promoting public health

The table outlines various strategies aimed at minimizing the transmission of wildlife-related diseases and enhancing public health among rural foresters and their communities, based on input from 150 participants. As respondents were permitted to provide multiple answers, the total count of responses exceeds the number of individuals surveyed. The data highlights that public health education and awareness initiatives emerged as the foremost preventive strategy, acknowledged by 132 participants (88.0%). This indicates a strong consensus among respondents regarding the belief that raising awareness is critical to mitigating wildlife-related disease transmission in rural settings. Additionally, 125 participants (83.3%)

emphasized the significance of wearing protective clothing during hunting and woodland activities, reflecting an understanding of the need to limit direct exposure to potential disease sources while engaged in forest activities. Furthermore, the importance of properly cooking bushmeat prior to consumption was recognized by 121 respondents (80.7%), demonstrating an awareness of food safety measures essential for preventing the spread of zoonotic diseases. Strengthening disease surveillance in rural regions was identified by 118 participants (78.7%), showing a collective recognition of the necessity for early detection and monitoring of disease occurrences. Improved sanitation and hygiene practices were pointed out by 115 respondents (76.7%), and 113 (75.3%) acknowledged environmental conservation and deforestation reduction as critical preventive

approaches. Vaccination of domestic animals and susceptible populations garnered the support of 112 respondents (74.7%), while 110 participants (73.3%) favored regulations and restrictions on wildlife hunting, reflecting backing for both medical and policy-oriented interventions. Avoiding direct contact

with wild animals was highlighted by 108 participants (72.0%), and a call for early reporting of unusual animal die-offs or disease outbreaks was voiced by 105 respondents (70.0%), underscoring the necessity of community involvement in disease prevention strategies (Table 5).

Table 5. Preventive measures for reducing wildlife-related disease transmission and promoting public health

Sl	Preventive measures	Frequency	Percentage
1	Public health education and awareness campaigns	132	88.0
2	Use of protective clothing during hunting and forest activities	125	83.3
3	Proper cooking of bushmeat before consumption	121	80.7
4	Strengthening disease surveillance in rural areas	118	78.7
5	Vaccination of domestic animals and at-risk populations	112	74.7
6	Regulation and restriction of wildlife hunting	110	73.3
7	Improved sanitation and hygiene practices in rural communities	115	76.7
8	Avoiding direct contact with wild animals	108	72.0
9	Early reporting of unusual animal deaths or disease outbreaks	105	70.0
10	Environmental conservation and reduction of deforestation	113	75.3
11	Community-based health monitoring systems	97	64.7
12	Provision of rural healthcare facilities and outreach services	101	67.3

Community-based health monitoring frameworks were recognized by 97 participants (64.7%), and the need for rural healthcare facilities and outreach services was noted by 101 respondents (67.3%), revealing that while these strategies are perceived as slightly less critical than others, they are still deemed vital for improving public health outcomes. Overall, the findings indicate strong support among respondents for a multifaceted approach incorporating educational, behavioral, environmental, and institutional strategies to mitigate wildlife-related disease transmission. Key measures identified for protecting public health in rural Nigeria include public awareness, safe handling of wildlife products, enhanced surveillance, and environmental management.

Preventive actions to curb the spread of wildlife-related diseases are crucial for safeguarding public health and ensuring environmental sustainability. A key strategy in this regard is the conservation and safeguarding of forest ecosystems. It's vital for governments and environmental organizations to uphold strict laws against illegal logging, deforestation, and wildlife poaching. Such measures can significantly diminish instances of human interaction with wild animals that may harbor infectious diseases (United Nations Environment Programme [UNEP], 2022).

Effective land-use planning coupled with sustainable forest management is also essential in preserving biodiversity and upholding ecological integrity. Education and raising community awareness play a pivotal role in minimizing wildlife-related disease transmission. Those in rural areas, including foresters, hunters, and communities reliant on forests, should be informed about the risks associated with consuming contaminated bush meat, handling carcasses, and venturing into high-risk wildlife areas without proper protection. Campaigns aimed at increasing awareness can promote safer practices, including good hygiene, appropriate use of protective gear, and early detection and reporting of unusual health issues (World Health Organization [WHO], 2023). Enhancing disease surveillance and healthcare infrastructure is another critical preventive approach. Continuous monitoring of wildlife populations alongside early identification of zoonotic diseases can help intercept outbreaks before they escalate. Health authorities must focus on upgrading rural healthcare facilities, providing necessary vaccinations, and equipping healthcare workers with skills to manage emerging infectious diseases (Centers for Disease Control and Prevention [CDC], 2023). It's also essential for environmental agencies, veterinary specialists, and public health professionals to collaborate effectively for comprehensive disease management. Improvement in

sanitation and environmental stewardship can further mitigate disease transmission. Communities are encouraged to ensure proper waste management, access to clean water, and minimize environmental pollution that may lure disease vectors, such as rodents and insects. Additionally, fostering alternative livelihood opportunities for rural populations can lessen reliance on wildlife hunting and forest degradation, thereby reducing human exposure to wildlife pathogens (Food and Agriculture Organization [FAO], 2022). Lastly, promoting research and developing policies are crucial for sustained disease prevention.

Governments should facilitate scientific investigations into zoonotic diseases and implement frameworks that marry environmental protection with public health initiatives. Global cooperation is equally imperative in confronting the international health challenges posed by wildlife diseases and environmental decline.

CONCLUSION

Research shows that wildlife hunting, human encroachment on forest ecosystems, and the rise of wildlife-related diseases significantly affect public health in rural Imo State, Nigeria. The study reveals that the frequent interactions between humans and wildlife—due to hunting and resource extraction—increase the risk of zoonotic diseases, injuries, and other health issues. Rural foresters, who depend on forest resources for their income, are particularly vulnerable due to inadequate healthcare, poor sanitation, and limited disease prevention knowledge. Furthermore, human intrusion into forest habitats disrupts ecological balance, contributes to habitat degradation, and increases contact with wildlife. This interaction fosters conditions that facilitate the transmission of infectious diseases from animals to humans, jeopardizing the health of rural communities. The unsustainable harvesting of forest resources also hampers biodiversity conservation efforts and compromises essential ecological functions that support both environmental and human health. Additionally, the spread of wildlife diseases negatively impacts rural foresters'

socioeconomic status by reducing productivity, raising medical costs, and increasing community susceptibility to health threats. The situation is exacerbated by inadequate monitoring of wildlife activities, illegal hunting, and weak enforcement of environmental regulations. To improve public health in these communities, the study recommends integrated strategies focused on environmental conservation, sustainable forest management, public health education, and stricter wildlife protection enforcement. Collaboration among government bodies, NGOs, and local populations is critical for awareness campaigns, disease monitoring, afforestation efforts, and alternative livelihood programs, aiming to reduce reliance on wildlife hunting and promote a healthier, more sustainable future in Imo State and Nigeria.

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