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Research Article

Knowledge, Attitudes, and Practices Regarding Zoonotic Diseases Among Livestock Keepers in Rural Communities of Owerri West LGA, IMO State, Nigeria

Ibhafidon A[1*], Ibhafidon OD[2], Fidelis MN[3], Omoniyi OO[4], Ogbenna V[5], Amaku HO[6], Chigozie-Mere[7], ON Ezeani JO[8], Ejelonu NC[9], Ibe BN[10]

[1,3]Department of Health Education], Alvan Ikoku Federal University of Education, Owerri, Imo State, Nigeria.

[2]Department of Agricultural Education, Alvan Ikoku Federal University of Education, Owerri, Imo State, Nigeria.

[5, 6, 7, 8, 9 10] Department of Public Health, Alvan Ikoku Federal University of Education, Owerri, Imo State, Nigeria.

[4]Osun State Ministry of Agriculture and Food Security, Osun State, Nigeria.

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Corresponding author: Ibhafidon A, Department of Health Education], Alvan Ikoku Federal University of Education, Owerri, Imo State, Nigeria.

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Abstract:

Background: Zoonotic diseases remain a major public health concern in livestock-keeping communities where close human–animal interaction is common. This study assessed the knowledge, attitudes, and practices (KAP) regarding zoonotic diseases among livestock keepers in rural communities of Owerri West Local Government Area, Imo State, Nigeria. A descriptive cross-sectional survey design was adopted. Data were collected using a structured interviewer-administered questionnaire from 365 livestock keepers selected through a multistage sampling technique. Data were analyzed using descriptive statistics and Chi-square tests at a 5% level of significance.The response rate was 86.5%. Most respondents were male (62.5%), aged 31–40 years (30.7%), and had secondary education (36.7%). Poultry was the most commonly kept livestock (36.7%), while 59.5% had no access to veterinary extension services. Knowledge of zoonotic diseases was low-to-moderate, with only 29.6% demonstrating good knowledge and a mean score of 7.20 out of 15. Negative attitudes predominated among respondents (46.8%), with a mean attitude score of 25.46 out of 50. Preventive practices were suboptimal, with 41.9% classified as having poor practices, although the mean practice score was 35.36 out of 60. Educational level and access to veterinary extension services were significantly associated with knowledge, attitudes, and practices. Livestock keepers in Owerri West LGA had inadequate knowledge, negative attitudes, and suboptimal preventive practices regarding zoonotic diseases. Strengthened veterinary extension, targeted health education, and community-based One Health interventions are recommended.

Keywords: zoonotic diseases; livestock keepers; knowledge; attitudes; practices; One Health; Nigeria.

Introduction

Zoonotic diseases remain a major public health concern globally, particularly in settings where humans, livestock, companion animals, wildlife, and the environment interact closely. Zoonoses are infectious diseases that can spread between animals and people through direct contact, contaminated environments, vectors, food, or water. These infections may pass between animals and humans through several pathways, including direct animal contact, contaminated food or water, infected vectors, and exposure to contaminated environments. Recent literature continues to emphasise the importance of animal-origin infections in emerging infectious disease threats; Haider et al. (2020) described spillover and emerging infectious diseases of probable animal origin as key public health challenge,

while Dharmarajan et al. (2022) highlighted that approximately three-quarters of emerging infectious diseases are of animal origin. The World Organisation for Animal Health [WOAH] (2024) further reports that over 60% of existing and 75% of emerging and re-emerging human diseases are zoonotic (World Organisation for Animal Health [WOAH], 2024). Recent One Health guidance also stresses that preventing zoonotic spillover requires moving beyond reactive outbreak response toward reducing risks at source through coordinated human, animal, and environmental health action (Food and Agriculture Organization of the United Nations et al., 2022; Markotter et al., 2023). In Nigeria, the national One Health Strategic Plan identifies zoonotic diseases as a major public health threat and links their increasing burden to rapid population growth, urbanisation, closer human–animal contact, human encroachment into ecosystems, and growing demand for animal-source foods (Federal Republic of Nigeria, 2019).

Livestock production is an important component of Nigeria's livelihood and food systems, contributing to nutrition, household income, employment opportunities, asset ownership, and resilience against economic shocks. The World Bank (2022) noted that the livestock subsector is central to Nigeria's socio-economic development because many households own animals and a substantial number of people depend on livestock production and related value-chain activities for their livelihoods. Despite this importance, livestock farming in Nigeria is largely practiced at smallholder and subsistence levels, often under conditions of inadequate veterinary support, poor biosecurity, and close contact between people and animals. These circumstances may encourage the circulation of zoonotic pathogens at the human–animal–environment interface and increase the risk of infection among livestock keepers and their families (Ihekweazu et al., 2021).

Through a One Health framework, Nigeria has identified several zoonotic diseases that are of major public health importance. A national zoonotic disease prioritisation exercise ranked rabies, avian influenza, Ebola virus disease, swine influenza, and anthrax as the five leading priority zoonoses in the country. Other diseases, including bovine tuberculosis, Lassa fever, brucellosis, salmonellosis, Rift Valley fever, and cysticercosis/taeniasis, were also recognised as important zoonotic threats (Ihekweazu et al., 2021). Brucellosis continues to be a neglected zoonotic infection in Nigeria, with challenges such as weak surveillance, underdiagnosis, and possible transmission through contact with infected animal tissues or consumption of unpasteurised dairy products (Ducrotoy et al., 2014). In the same way, zoonotic tuberculosis caused by *Mycobacterium bovis* remains a concern for occupationally exposed groups, including herdsmen, abattoir workers, and other livestock handlers (Adesokan et al., 2018).

In South-Eastern Nigeria, including Imo State, animal keeping is a common activity in rural and peri-urban communities. In their study on urban livestock farming in South-East Nigeria, Asadu et al. (2021) found that households commonly reared animals such as poultry, goats, sheep, and pigs. They also reported that livestock keeping in such settings may pose health hazards, including environmental contamination from animal dung, poor waste disposal, and possible exposure to infectious agents. Although some farmers were aware of the risks associated with livestock keeping, this awareness did not always result in safe practices, suggesting the need for continuous technical support and public health education (Asadu et al., 2021).

Studies conducted in Nigeria show that livestock keepers and animal handlers often adopt behaviours that may increase the risk of zoonotic disease transmission. Umar and Nura (2008) found low levels of adequate knowledge, favourable preventive attitudes, and consistent protective practices among farmers and animal handlers in Sokoto metropolis. Similarly, Adesokan et al. (2018) identified major knowledge and practice gaps in the prevention of zoonotic tuberculosis among herdsmen and abattoir workers, including poor awareness of aerosol transmission and limited use of protective clothing. Cadmus et al. (2021) also reported poor knowledge, risk perception, and practices concerning brucellosis and Q fever among pastoralists in Sokoto State. In South-East Nigeria, Njoga et al. (2023) observed unsafe slaughter and meat-handling practices among slaughterhouse workers, including inadequate use of personal protective equipment and unhygienic carcass processing.

Despite the increasing evidence on zoonotic disease risks among livestock-related populations in Nigeria, there is still a shortage of empirical data specifically focused on the knowledge, attitudes, and practices of livestock keepers in Owerri West Local Government Area of Imo State. This represents a significant research gap, as studies conducted in other regions or across the wider South-East may not adequately reflect the local socio-cultural context, educational background, occupational practices, and level of access to veterinary services in Owerri West. In the absence of such community-specific information, public health officials, veterinary personnel, and policymakers may face difficulties in developing interventions that are both effective and culturally suitable for livestock-keeping communities in the area.

Therefore, this study assessed the knowledge, attitudes, and practices regarding zoonotic diseases among livestock keepers in rural communities of Owerri West LGA, Imo State. The study also examined sources of zoonotic disease information and the association between selected demographic characteristics and KAP outcomes. The findings are expected to support targeted health education, veterinary extension programming, and community-based One Health interventions aimed at reducing zoonotic disease risks at the human–animal–environment interface.

Specific Objectives

1. Assess the level of knowledge of zoonotic diseases among livestock keepers in rural communities of Owerri West LGA, Imo State.
2. Examine the attitudes of livestock keepers toward zoonotic disease prevention and control measures in Owerri West LGA.
3. Determine the preventive and management practices adopted by livestock keepers regarding zoonotic diseases in Owerri West LGA.
4. Examine the association between selected demographic characteristics and the knowledge, attitudes, and practices of livestock keepers regarding zoonotic diseases in Owerri West LGA.

Methodology

This study adopted a descriptive cross-sectional survey design to assess the knowledge, attitudes, and practices regarding zoonotic diseases among livestock keepers in rural communities of Owerri West LGA, Imo State, Nigeria. A cross-sectional design was considered appropriate because it enables the collection of data from a defined population at a single point in time and provides a snapshot of prevailing characteristics, exposures, and outcomes

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within the study population (Celentano & Szklo, 2019). The study was conducted in Owerri West LGA, one of the 27 local government areas in Imo State, South-Eastern Nigeria. Owerri West has its headquarters at Umuguma and forms part of the Owerri metropolitan area. Available population data indicate that the LGA had a population of 101,754 at the 2006 national census, with a projected population of 141,400 in 2022 (City Population, n.d.). The selected communities were Obibiezena, Umuguma, Eziobodo, Naze, Orji, and Ihiagwa. The target population comprised livestock keepers in rural communities of Owerri West LGA who were actively engaged in livestock production at the time of the study. Livestock keepers were defined as individuals who kept one or more livestock species, including goats, pigs, poultry, sheep, or cattle, either for subsistence or commercial purposes.

Participants were included if they were resident in rural communities of Owerri West LGA, had been actively engaged in livestock production for at least one year, were aged 18 years and above, and gave informed consent to participate. Livestock keepers were excluded if they were not resident in the study area, had less than one year of livestock-keeping experience, were below 18 years, or were unable or unwilling to give informed consent. The sample size was determined using the Cochran formula for estimating sample size in large populations (Cochran, 1977): $n = Z^2pq/d^2$. Using $Z = 1.96$, $p = 0.50$, $q = 0.50$, and $d = 0.05$, the minimum sample size was calculated as 384. After adjusting for a 10% non-response rate, the final target sample size was 422 livestock keepers.

A multistage sampling technique was employed. In the first stage, six communities in Owerri West LGA were purposively selected based on the predominance of livestock-keeping activities. In the second stage, the sample size was proportionately allocated to the selected communities based on the estimated number of livestock keepers. In the third stage, systematic random sampling was used to select respondents from each community. Data were collected using a structured, interviewer-administered questionnaire developed after reviewing relevant literature on zoonotic diseases and KAP studies among livestock keepers and animal handlers in Nigeria (Adesokan et al., 2018; Awosanya & Akande, 2015; Cadmus et al., 2021; Obi, 2016; Umar & Nura, 2008). The questionnaire was prepared in simple English and translated into Igbo to enhance comprehension. It contained sections on socio-demographic characteristics, knowledge of zoonotic diseases, attitudes toward prevention and control, preventive practices, and sources of information.

For the knowledge section, each correct response was awarded one mark, while incorrect or "do not know" responses were awarded zero. Total knowledge score was computed out of 15 marks and classified as good knowledge (≥11), moderate knowledge (8–10), and poor knowledge (<8). Attitude and practice scores were summed and converted to percentages of total obtainable scores. Attitudes were classified as positive (≥75%), neutral (50–74%), and negative (<50%), while practices were classified as good (≥75%), fair (50–74%), and poor (<50%). Face and content validity were established through expert review by three academic professionals in public health, veterinary medicine, and epidemiology. Reliability was assessed through a pilot study among 42 livestock keepers in a neighbouring LGA with similar characteristics. The internal consistency of the instrument was assessed using Cronbach's alpha coefficient, with a value of 0.78 obtained, indicating acceptable reliability (Nunnally & Bernstein, 1994).

Data collection was carried out over eight weeks by four trained research assistants fluent in English and Igbo. Each selected livestock keeper was approached at their farm or household, the purpose of the study was explained, and informed consent was obtained before questionnaire administration. Each interview lasted approximately 20 to 30 minutes. Completed questionnaires were checked daily for completeness and consistency.

Data were coded, entered, cleaned, and analyzed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., 2019). Descriptive statistics of frequencies, percentages, means, and standard deviations, were used to summarize respondents' socio-demographic characteristics and KAP scores. The Chi-square test was used to assess associations between categorical demographic variables and classified KAP levels. Statistical significance was set at $p < 0.05$.

Ethical approval was obtained from the Imo State Ministry of Health Research Ethics Committee before data collection. Written informed consent was obtained from all participants. Participation was voluntary, and respondents were assured of confidentiality and anonymity.

Results

A total of 422 questionnaires were distributed to livestock keepers in rural communities of Owerri West LGA, Imo State. Of these, 365 were returned fully completed, giving a response rate of 86.5%.

Table 1: Socio-demographic characteristics of livestock keepers in Owerri West LGA (n = 365)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	18–30	72	19.7
	31–40	112	30.7
	41–50	106	29.0
	51–60	52	14.2
	Above 60	23	6.3
	Total	365	100.0
Sex	Male	228	62.5
	Female	137	37.5
	Total	365	100.0
Educational Level	No formal education	58	15.9

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	Primary education	89	24.4
	Secondary education	134	36.7
	Tertiary education	84	23.0
	Total	365	100.0
Years of Farming Experience	Less than 5 years	68	18.6
	5–10 years	124	34.0
	11–20 years	108	29.6
	Above 20 years	65	17.8
	Total	365	100.0
Type of Livestock Kept	Poultry	134	36.7
	Goats	92	25.2
	Pigs	78	21.4
	Sheep	38	10.4
	Cattle	23	6.3
	Total	365	100.0
Access to Veterinary Extension Services	Yes	148	40.5
	No	217	59.5
	Total	365	100.0

Table 1 shows that most respondents were aged 31–40 years (30.7%), male (62.5%), and had secondary education (36.7%). Poultry keeping was the most common livestock activity (36.7%), and 59.5% reported no access to veterinary extension services.

Table 2. Knowledge of livestock keepers regarding zoonotic diseases (n = 365)

Knowledge item	Correct response n (%)	Incorrect response n (%)
Awareness of the term "zoonotic disease"	109 (29.9)	256 (70.1)
Knowledge that animals can transmit diseases to humans	278 (76.2)	87 (23.8)
Correct identification of Brucellosis as a zoonosis	164 (44.9)	201 (55.1)
Correct identification of Bovine Tuberculosis as a zoonosis	152 (41.6)	213 (58.4)
Correct identification of Rabies as a zoonosis	102 (27.9)	263 (72.1)
Correct identification of Lassa Fever as a zoonosis	236 (64.7)	129 (35.3)
Knowledge of direct contact as a transmission route	248 (67.9)	117 (32.1)
Knowledge of consumption of animal products as a transmission route	206 (56.4)	159 (43.6)
Knowledge of airborne transmission of zoonoses	124 (34.0)	241 (66.0)
Knowledge of clinical signs of zoonotic disease in animals	138 (37.8)	227 (62.2)
Knowledge of PPE use as a preventive measure	174 (47.7)	191 (52.3)
Knowledge of animal vaccination as a preventive measure	198 (54.2)	167 (45.8)
Knowledge of pasteurization as a preventive measure	158 (43.3)	207 (56.7)
Knowledge of proper carcass disposal as a preventive measure	178 (48.8)	187 (51.2)
Knowledge of veterinary reporting of sick animals	162 (44.4)	203 (55.6)

Table 3. Classification of respondents by knowledge level (n = 365)

Knowledge Level	Score Range	Frequency (n)	Percentage (%)
Good Knowledge	≥11 (≥75%)	108	29.6
Moderate Knowledge	8–10 (50–74%)	152	41.6
Poor Knowledge	<8 (<50%)	105	28.8
Total		365	100.0
Mean Knowledge Score		7.20 out of 15	

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Only 29.9% of respondents were aware of the term "zoonotic disease," although 76.2% knew that animals can transmit diseases to humans. Overall, 29.6% had good knowledge, 41.6% had moderate knowledge, and 28.8% had poor knowledge. The mean knowledge score was 7.20 out of 15.

Table 4. Attitudes of livestock keepers toward zoonotic disease prevention and control (n = 365)

Attitude item	SA n(%)	A n(%)	U n(%)	D n(%)	SD n(%)
Zoonotic diseases are a serious public health concern	54 (14.8)	62 (17.0)	38 (10.4)	112 (30.7)	99 (27.1)
I believe animals can transmit diseases to humans	48 (13.2)	56 (15.3)	42 (11.5)	124 (34.0)	95 (26.0)
I am willing to use PPE when handling animals	32 (8.8)	44 (12.1)	62 (17.0)	128 (35.1)	99 (27.1)
Regular vaccination of animals prevents zoonoses	58 (15.9)	64 (17.5)	56 (15.3)	102 (27.9)	85 (23.3)
I am willing to report sick animals to a veterinarian	38 (10.4)	42 (11.5)	64 (17.5)	118 (32.3)	103 (28.2)
Consuming raw animal products poses a health risk	42 (11.5)	52 (14.2)	58 (15.9)	116 (31.8)	97 (26.6)
Proper disposal of animal carcasses is important	56 (15.3)	68 (18.6)	44 (12.1)	108 (29.6)	89 (24.4)
Zoonotic disease education is necessary for farmers	62 (17.0)	74 (20.3)	34 (9.3)	106 (29.0)	89 (24.4)
I believe traditional remedies can cure zoonoses	128 (35.1)	115 (31.5)	48 (13.2)	42 (11.5)	32 (8.8)
Biosecurity measures are unnecessary on my farm	106 (29.0)	118 (32.3)	56 (15.3)	48 (13.2)	37 (10.1)

SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree.

Table 5. Classification of respondents by attitude level (n = 365)

Attitude Level	Score Range	Frequency (n)	Percentage (%)
Positive Attitude	≥75%	76	20.8
Neutral Attitude	50–74%	118	32.3
Negative Attitude	<50%	171	46.8
Total		365	100.0
Mean Attitude Score		25.46 out of 50	

Negative attitudes predominated among respondents, with 46.8% classified as having negative attitudes. The mean attitude score was 25.46 out of 50.

Table 6. Practices of livestock keepers regarding zoonotic disease prevention and management (n = 365)

Practice item	Always n (%)	Often n (%)	Sometimes n (%)	Rarely n (%)	Never n (%)
Use of gloves when handling animals	28 (7.7)	42 (11.5)	58 (15.9)	112 (30.7)	125 (34.2)
Use of face masks during animal handling	22 (6.0)	34 (9.3)	48 (13.2)	108 (29.6)	153 (41.9)
Washing hands after animal contact	178 (48.8)	128 (35.1)	38 (10.4)	14 (3.8)	7 (1.9)
Pasteurization of milk before consumption	52 (14.2)	64 (17.5)	68 (18.6)	98 (26.8)	83 (22.7)
Routine vaccination of animals	62 (17.0)	74 (20.3)	82 (22.5)	94 (25.8)	53 (14.5)

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Proper disposal of animal carcasses	58 (15.9)	72 (19.7)	78 (21.4)	96 (26.3)	61 (16.7)
Regular deworming of animals	72 (19.7)	86 (23.6)	84 (23.0)	78 (21.4)	45 (12.3)
Seeking veterinary advice for sick animals	48 (13.2)	62 (17.0)	72 (19.7)	106 (29.0)	77 (21.1)
Keeping animals separate from living quarters	44 (12.1)	56 (15.3)	62 (17.0)	112 (30.7)	91 (24.9)
Proper cooking of animal products before consumption	192 (52.6)	124 (34.0)	34 (9.3)	10 (2.7)	5 (1.4)
Regular cleaning and disinfection of animal housing	52 (14.2)	68 (18.6)	88 (24.1)	96 (26.3)	61 (16.7)
Reporting of suspected zoonotic disease outbreaks	34 (9.3)	48 (13.2)	62 (17.0)	112 (30.7)	109 (29.9)

Table 7. Classification of respondents by practice level (n = 365)

Practice Level	Score Range	Frequency (n)	Percentage (%)
Good Practice	≥75%	78	21.4
Fair Practice	50–74%	134	36.7
Poor Practice	<50%	153	41.9
Total		**365**	**100.0**
Mean Practice Score		**35.36 out of 60**	

Poor practice was the largest category (41.9%), although the mean practice score was 35.36 out of 60, indicating an overall fair practice level. Handwashing and proper cooking of animal products were the most frequently practiced preventive behaviours, while PPE use and outbreak reporting were poor.

Table 9: Association between demographic variables and knowledge of zoonotic diseases (n = 365)

Variable	Category	Good n (%)	Moderate n (%)	Poor n (%)	χ^2	df	p-value
Sex	Male	76 (33.3)	96 (42.1)	56 (24.6)	6.644	2	0.036*
	Female	32 (23.4)	56 (40.9)	49 (35.8)			
Educational Level	No formal education	6 (10.3)	16 (27.6)	36 (62.1)	60.916	6	<0.001*
	Primary education	16 (18.0)	38 (42.7)	35 (39.3)			
	Secondary education	52 (38.8)	60 (44.8)	22 (16.4)			
	Tertiary education	34 (40.5)	38 (45.2)	12 (14.3)			
Age Group (years)	18–30	24 (33.3)	32 (44.4)	16 (22.2)	9.300	8	0.318
	31–40	36 (32.1)	48 (42.9)	28 (25.0)			
	41–50	32 (30.2)	44 (41.5)	30 (28.3)			
	51–60	12 (23.1)	20 (38.5)	20 (38.5)			
	Above 60	4 (17.4)	8 (34.8)	11 (47.8)			
Years of Experience	Less than 5 years	24 (35.3)	30 (44.1)	14 (20.6)	13.016	6	0.043*
	5–10 years	42 (33.9)	52 (41.9)	30 (24.2)			
	11–20 years	30 (27.8)	46 (42.6)	32 (29.6)			
	Above 20 years	12 (18.5)	24 (36.9)	29 (44.6)			
Access to Vet. Extension	Yes	64 (43.2)	56 (37.8)	28 (18.9)	24.944	2	<0.001*
	No	44 (20.3)	96 (44.2)	77 (35.5)			

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Table 10. Association between demographic variables and attitudes toward zoonotic disease prevention (n = 365)

Variable	Category	Positive n (%)	Neutral n (%)	Negative n (%)	χ^2	df	p-value
Sex	Male	46 (20.2)	74 (32.5)	108 (47.4)	0.160	2	0.923
	Female	30 (21.9)	44 (32.1)	63 (46.0)			
Educational Level	No formal education	4 (6.9)	12 (20.7)	42 (72.4)	34.194	6	<0.001*
	Primary education	12 (13.5)	28 (31.5)	49 (55.1)			
	Secondary education	32 (23.9)	46 (34.3)	56 (41.8)			
	Tertiary education	28 (33.3)	32 (38.1)	24 (28.6)			
Age Group (years)	18–30	18 (25.0)	24 (33.3)	30 (41.7)	3.051	8	0.931
	31–40	24 (21.4)	36 (32.1)	52 (46.4)			
	41–50	18 (17.0)	34 (32.1)	54 (50.9)			
	51–60	10 (19.2)	16 (30.8)	26 (50.0)			
	Above 60	6 (26.1)	8 (34.8)	9 (39.1)			
Years of Experience	Less than 5 years	18 (26.5)	24 (35.3)	26 (38.2)	5.526	6	0.478
	5–10 years	28 (22.6)	42 (33.9)	54 (43.5)			
	11–20 years	18 (16.7)	32 (29.6)	58 (53.7)			
	Above 20 years	12 (18.5)	20 (30.8)	33 (50.8)			
Access to Vet. Extension	Yes	42 (28.4)	52 (35.1)	54 (36.5)	13.139	2	0.001*
	No	34 (15.7)	66 (30.4)	117 (53.9)			

Table 11. Association between demographic variables and practices regarding zoonotic disease prevention (n = 365)

Variable	Category	Good n (%)	Fair n (%)	Poor n (%)	χ^2	df	p-value
Sex	Male	52 (22.8)	84 (36.8)	92 (40.4)	0.946	2	0.623
	Female	26 (19.0)	50 (36.5)	61 (44.5)			
Educational Level	No formal education	2 (3.4)	14 (24.1)	42 (72.4)	47.472	6	<0.001*
	Primary education	12 (13.5)	30 (33.7)	47 (52.8)			
	Secondary education	36 (26.9)	54 (40.3)	44 (32.8)			
	Tertiary education	28 (33.3)	36 (42.9)	20 (23.8)			
Age Group (years)	18–30	18 (25.0)	28 (38.9)	26 (36.1)	3.269	8	0.916
	31–40	24 (21.4)	42 (37.5)	46 (41.1)			
	41–50	18 (17.0)	38 (35.8)	50 (47.2)			
	51–60	12 (23.1)	18 (34.6)	22 (42.3)			
	Above 60	6 (26.1)	8 (34.8)	9 (39.1)			
Years of Experience	Less than 5 years	20 (29.4)	26 (38.2)	22 (32.4)	12.460	6	0.052
	5–10 years	32 (25.8)	48 (38.7)	44 (35.5)			
	11–20 years	16 (14.8)	38 (35.2)	54 (50.0)			
	Above 20 years	10 (15.4)	22 (33.8)	33 (50.8)			
Access to Vet. Extension	Yes	46 (31.1)	58 (39.2)	44 (29.7)	20.224	2	<0.001*
	No	32 (14.7)	76 (35.0)	109 (50.2)			

*p < 0.05 = statistically significant.

Educational level and access to veterinary extension services were

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significantly associated with knowledge, attitude, and practice levels. Sex and years of experience were significantly associated with knowledge only. Age group was not significantly associated with any KAP domain.

Discussion

Socio-Demographic Characteristics of Respondents

The socio-demographic results indicate that livestock keeping in Owerri West LGA was mainly carried out by males, particularly those within the 31–40-year age group, and many respondents had attained secondary education. This male predominance reflects patterns reported in livestock and abattoir-based studies in Nigeria, where men are commonly involved in animal handling, slaughtering, meat processing, and other livestock-related activities (Aworh et al., 2013; Ayoola et al., 2017; Odetokun et al., 2022). This may be linked to gender roles in livestock ownership, animal management, and farm-level decision-making. Poultry was the most frequently kept livestock among respondents. This finding aligns with Asadu et al. (2021), who observed that households in South-Eastern Nigeria commonly keep poultry, goats, pigs, and small ruminants. The popularity of poultry production may be due to its relatively low start-up cost, minimal land requirement, and shorter production cycle compared with larger livestock species. A notable finding was that most respondents lacked access to veterinary extension services. This is important because limited interaction with veterinary personnel can reduce farmers' exposure to accurate information on zoonotic disease prevention. Similar observations have been made in other African settings, where poor access to animal health professionals was linked to weak preventive practices among livestock keepers (Bissong et al., 2022; Ngoshe et al., 2023). This underscores the need to improve veterinary extension coverage in Owerri West LGA.

Knowledge of Zoonotic Diseases Among Livestock Keepers

Respondents' knowledge of zoonotic diseases was generally low-to-moderate and insufficient. Although many knew that animals can transmit diseases to humans, fewer respondents understood the term "zoonotic disease," could identify specific zoonoses, or knew important transmission routes. This suggests a gap between general awareness of animal-related illness and detailed understanding of zoonotic disease transmission. Similar knowledge gaps were reported by Obi (2016) among livestock farmers in South-Eastern Nigeria and by Umar and Nura (2008) among farmers and animal handlers in Sokoto metropolis. The limited knowledge observed in this study also agrees with disease-specific studies in Nigeria. Adesokan et al. (2018) reported poor understanding of aerosol transmission of zoonotic tuberculosis among herdsmen and abattoir workers, while Odetokun et al. (2022) found that only a minority of abattoir workers in North-Central Nigeria knew that bovine tuberculosis could be transmitted to humans. Studies from Cameroon, Ghana, and South Africa have reported similar patterns, where livestock and poultry farmers had some awareness of animal diseases but limited knowledge of their zoonotic implications (Ayim-Akonor et al., 2020; Bissong et al., 2022; Ngoshe et al., 2023).

The higher recognition of Lassa fever may be due to public health campaigns and media attention in Nigeria. However, the poor recognition of rabies as a zoonosis is concerning, especially since rabies was ranked as Nigeria's highest priority zoonotic disease in the national One Health prioritisation exercise (Ihekweazu et al., 2021). Educational level and access to veterinary extension services were significantly associated with knowledge, suggesting that formal education and regular contact with animal health professionals can improve understanding of zoonotic disease risks.

Attitudes of Livestock Keepers Toward Zoonotic Disease Prevention

The attitude of respondents toward zoonotic disease prevention was largely negative. Many did not consider zoonotic diseases to be serious public health threats, showed low willingness to use personal protective equipment, and believed that traditional remedies could cure zoonotic diseases. These findings suggest that cultural beliefs and low risk perception may influence preventive behaviour among livestock keepers. This pattern is similar to the findings of Bissong et al. (2022), who reported low zoonotic disease risk perception among poultry farmers in Cameroon. In Nigeria, Adesokan et al. (2018) also found that some livestock workers relied on herbs, prayer, or traditional medicine for tuberculosis-related illness. Such beliefs may delay professional veterinary care and reduce compliance with evidence-based prevention measures. Education and access to veterinary extension services were significantly associated with attitudes. This indicates that improving farmers' perceptions of zoonotic disease risks may require continuous education through trusted and locally acceptable channels. Ngoshe et al. (2023) also emphasized the role of animal health workers, community meetings, and radio in improving livestock disease awareness.

Practices of Livestock Keepers Regarding Zoonotic Disease Prevention

Preventive practices among respondents were generally suboptimal. Although handwashing and proper cooking of animal products were commonly reported, other important practices such as PPE use, disease reporting, veterinary consultation, safe carcass disposal, and separation of animals from living quarters were poorly practiced. This suggests that awareness alone may not be sufficient to produce safe behaviour. The low use of PPE observed in this study is comparable to findings from Nigerian abattoir studies. Ayoola et al. (2017) reported poor use of standard protective clothing among abattoir workers in Ibadan, while Adesokan et al. (2018) found that only 37.8% of livestock workers used protective clothing. Odetokun et al. (2022) also documented poor PPE use among abattoir workers in North-Central Nigeria. Similar evidence from Ghana and Cameroon showed that poultry farmers rarely used gloves, face masks, or other protective equipment (Ayim-Akonor et al., 2020; Bissong et al., 2022). Poor reporting of suspected zoonotic disease outbreaks is also a major concern because it can weaken surveillance and delay response. Nigeria's One Health Strategic Plan emphasizes coordinated reporting and surveillance across human, animal, and environmental health sectors (Federal Republic of Nigeria, 2019). The findings of this study suggest that community-level reporting systems remain inadequate. The relatively high rates of handwashing and proper cooking of animal products suggest that some hygiene behaviours are easier for farmers to adopt than practices requiring additional resources, such as PPE use, animal vaccination, veterinary consultation, and separate animal housing. Therefore, interventions should combine health education with practical support, including affordable PPE and accessible veterinary services.

Educational level and access to veterinary extension services were significantly associated with preventive practices, indicating that

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better-informed farmers are more likely to adopt safer behaviours. However, years of farming experience was not significantly associated with practice, suggesting that experience alone does not necessarily lead to safer livestock management.

Overall, the findings indicate that livestock keepers in Owerri West LGA had limited knowledge, negative attitudes, and inadequate preventive practices regarding zoonotic diseases. These results are consistent with studies from Nigeria, Ghana, Cameroon, and South Africa that reported gaps in zoonotic disease knowledge, PPE use, veterinary consultation, and disease reporting (Adesokan et al., 2018; Ayim-Akonor et al., 2020; Bissong et al., 2022; Njoga et al., 2023; Odetokun et al., 2022). Interventions should therefore focus on farmer education, veterinary outreach, peer-led communication, and mass media campaigns within a One Health framework.

Conclusion

This study assessed the knowledge, attitudes, and practices regarding zoonotic diseases among livestock keepers in rural communities of Owerri West LGA, Imo State, Nigeria. The findings revealed important public health concerns across all three KAP domains. Knowledge of zoonotic diseases was low-to-moderate and inadequate, with only 29.6% of respondents demonstrating good knowledge. Attitudes toward zoonotic disease prevention were predominantly negative, with widespread belief in traditional remedies and dismissive perceptions of biosecurity measures. Preventive practices were suboptimal, with poor practice constituting the largest category of respondents. Particularly low rates of PPE use, inadequate carcass disposal, infrequent veterinary consultation, poor separation of animals from living quarters, and limited outbreak reporting were observed.

Educational level and access to veterinary extension services emerged as the most consistent factors associated with knowledge, attitudes, and practices. Informal peer networks, especially fellow farmers, remained the most common source of zoonotic disease information. Collectively, these findings indicate that livestock keepers in Owerri West LGA remain vulnerable to zoonotic disease transmission and require targeted, culturally appropriate, and evidence-based public health interventions guided by the One Health approach.

Recommendations

1. Public health and veterinary authorities should design and implement targeted zoonotic disease education programmes for livestock keepers in Owerri West LGA, focusing on recognition of zoonotic diseases, transmission routes, clinical signs in animals, PPE use, safe carcass disposal, vaccination, pasteurization, and early reporting of sick animals.
2. The Imo State Government should strengthen and decentralize veterinary extension services to rural communities through increased deployment of veterinary extension officers, periodic farm visits, mobile veterinary clinics, and community-based animal health worker programmes.
3. Government agencies, NGOs, and agricultural development partners should promote consistent use of personal protective equipment during animal handling, slaughtering, cleaning of animal housing, and carcass disposal, while exploring subsidized PPE kits for smallholder farmers.
4. Public health interventions should engage community leaders, traditional rulers, religious leaders, and farmer representatives to challenge harmful misconceptions, particularly the belief that traditional remedies alone can cure zoonotic diseases.
5. Veterinary and public health authorities should establish simple community-based reporting systems for suspected zoonotic diseases using community animal health workers, farmer leaders, local veterinary focal persons, phone lines, and WhatsApp groups.
6. Local radio, television, and social media platforms should be used to disseminate accurate zoonotic disease prevention messages in English and Igbo.
7. The Imo State Government should develop and implement a state-level One Health action plan involving the Ministries of Health, Agriculture, Environment, local government authorities, veterinary services, public health departments, and community stakeholders.

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