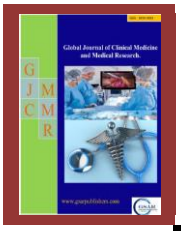

Global Journal of Clinical Medicine and Medical Research [GJCMMR]
ISSN: 2583-987X (Online)
Abbreviated key title: Glob.J.Clinic.Medici.Medica.Res.
Frequency: Monthly
Published By GSAR Publishers
Journal Homepage Link- https://gsarpublishers.com/journal-gjcmmr-home/

SAFETY AND HYGIENE IN ABATTOIRS: A COMPARATIVE ANALYSIS OF PUBLIC AND PRIVATE SLAUGHTERHOUSES IN OREDO LOCAL GOVERNMENT AREA IN EDO STATE

By

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Article History

Received: 05/01/2026
Accepted: 13/01/2026
Published: 15/01/2026

Vol – 4 Issue – 1

PP: -04-09

Abstract

This study examined hygiene practices and operational conditions of public and private abattoirs in Oredo Local Government Area, Edo State, Nigeria. Abattoirs are vital to public health, yet concerns remain about waste management, environmental safety, and meat handlers' hygiene. A descriptive survey design was adopted, and data were collected from 90 randomly selected respondents using structured questionnaires covering hygiene behaviour, sanitation practices, facility conditions, and factors influencing hygiene standards. Findings indicated that most workers had good awareness of personal hygiene, with many reporting regular handwashing and basic sanitation habits. Nevertheless, important gaps were identified, including low levels of post-mortem inspection and inconsistent use of protective equipment. Environmental hygiene practices were uneven; respondents acknowledged the need for adequate drainage, reliable water supply, and regular fumigation, but actual compliance was inconsistent. Major constraints included weak enforcement of hygiene regulations, poor waste disposal systems, and limited knowledge of proper meat processing among butchers. Clear differences existed between public and private abattoirs. Private abattoirs generally maintained higher hygiene standards, attributed to better management, closer supervision, and improved facilities, whereas public abattoirs were characterized by infrastructural deficiencies and regulatory neglect. Overall, while individual hygiene practices were relatively satisfactory, systemic challenges continue to undermine abattoir hygiene.

Keywords: *Abattoir hygiene; Public abattoirs; Private abattoirs; Meat safety; Waste management; Environmental sanitation; Regulatory enforcement; Edo State*

INTRODUCTION

Hygiene practices are crucial in organizations, especially concerning health and the environment. One vital place where these practices are necessary is the abattoir or slaughterhouse. The terms abattoir and slaughterhouse can be used interchangeably, so both will be referenced in this study. Recent global and local public health issues have highlighted hygiene practices in the media at various levels. Abattoir hygiene is a part of this focus because it impacts human health and environmental safety (Ekpunobi et al., 2024; Ovuru et al., 2024).

Key aspects of abattoir hygiene include the facilities, management systems, workers, and surrounding environment. The health of animals and their freedom from disease are also important. Understanding what an abattoir is and how it should be managed is essential. An abattoir refers to a place approved and registered by the appropriate regulatory authority, designed for the hygienic slaughter and inspection of animals and the effective processing, preservation, and storage of meat products meant for human consumption (Njoga et al., 2023; Ovuru et al., 2024). Animals typically slaughtered for food include cattle, sheep, goats, pigs, and

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poultry. However, in Edo State and Oredo Local Government Area, the focus is mainly on cattle, goats, sheep, and pigs, while poultry is handled separately (Edo-Taiwo & Ikpoboyuwa, 2021).

In Nigeria, public health officers, veterinary meat hygiene experts, and environmental health personnel play vital roles in maintaining abattoir hygiene and ensuring animal health for safe human consumption. Public health services work to prevent the sale of infected animals or contaminated meat, reduce meat adulteration, minimize contamination during processing, and manage infectious diseases through effective trace-back systems (Ekpunobi et al., 2024; Okoli et al., 2025). Environmental health personnel also have an essential role. They are responsible for regularly inspecting and assessing abattoir hygiene conditions to guarantee meat safety and protect the environment (Bodinga & Malami, 2025).

Poor waste management in abattoirs can pose serious risks to human health and the environment. This includes the contamination of water and soil and the spread of harmful microorganisms (Owhonka et al., 2024; Nandomah & Tetteh, 2023). Therefore, environmental health personnel enforce sanitation standards and ensure proper waste disposal. Abattoirs can be owned by government authorities or private individuals. Public abattoirs are government-owned and operated, while private abattoirs are owned and managed by individuals. However, government agencies oversee regulations and operations in both types (Ekpunobi et al., 2024; Adeniyi et al., 2025).

Hygiene is a critical requirement for both public and private abattoirs. Poor government oversight, inappropriate location of abattoirs, insufficient water supply, improper waste management, limited manpower, and inadequate knowledge on waste disposal often contribute to unhygienic conditions in some facilities (Ovuru et al., 2024; Ahsan et al., 2020). Many abattoirs in Nigeria reportedly operate under poor sanitary conditions, creating significant health risks from careless handling of meat and ineffective management of animal waste (Gufe et al., 2021; Odetokun et al., 2021). Despite these issues, it is still unclear if public and private abattoirs have significant differences in hygiene standards and safety practices or if one type is more hygienic than the other. This creates a need for a comparative assessment in Oredo Local Government Area of Edo State.

MATERIALS AND METHODS

A descriptive survey design was used to capture the state of the hygienic level of public and private slaughter. The study was conducted in Oredo Local Government Area of Edo State. Using a random sampling technique of about 90 respondents from public and private abattoir. Data were collected using structured questionnaires covering demographics, water sources, treatment practices, and health outcomes. Validity was ensured via expert review; reliability was confirmed through a pilot study, yielding a satisfactory reliability coefficient.

RESULTS

The following are statistical data results from the abattoir respondents in Oredo community:

Table 1: Personal Hygiene Practice in Abattoir

S/N	Items	Responses	
		Yes	No
1	Do you wash your hands with soap and water regularly?	89 (89%)	11 (11%)
2	Do you sweep your environment regularly?	57 (57%)	43 (43%)
3	Do you store animal's blood in a container?	23 (23%)	77 (77%)
4	Do sanitary inspectors carry out post mortem inspection of slaughtered meat?	16 (16%)	84 (84%)
5	Washing hands properly reduces risk of contamination	64 (64%)	36 (36%)
6	Wearing of hand gloves is a part of personal hygiene	49 (49%)	51 (51%)
7	Washing hands with only water is not clean enough	53 (53%)	47 (47%)
8	Wearing apron is a part of personal hygiene in the Abattoir?	51 (51%)	49 (49%)

The majority of abattoir workers respond favourably to personal hygiene practices, as indicated in table above I. Table I showed that 89%, 57%, 64%, 53%, and 51% of respondents agree with routine hand washing with soap, sweeping the area, wearing an apron for personal hygiene, and washing hands with water alone is insufficient and lowers the risk of contamination. However, the majority disagree or say "No" to sanitation inspectors' post-morterm inspection and storing animal blood in a container, with 84% and 77%, respectively. This suggests that while sanitary inspectors are not performing their duties, the majority of abattoir workers observed personal hygiene.

Table 2: Abattoir Hygiene Practice

S/N	Items	Responses			
		Always	Sometimes	Occasional	Never
9	I wash my hands with soap and water regularly	48 (48%)	16 (16%)	12 (12%)	24 (24%)

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10	I sweep my environment every time	39 (39%)	28 (28%)	4 (4%)	29 (29%)
11	I wash my environment with soap and water once a day	22 (22%)	16 (16%)	41 (41%)	21 (21%)
12	I fumigate my environment	86 (86%)	19 (19%)	52 (52%)	21 (21%)
13	It is necessary to wear booths in abattoir	44 (44%)	31 (31%)	13 (13%)	12 (12%)
14	Abattoir's operators are to adhere to sanitary rules and regulation	59 (59%)	33 (33%)	3 (3%)	5 (5%)
15	Abattoir should have more access to clean and portable water and other basic amenities	61 (61%)	22 (22%)	8 (8%)	9 (95)
16	There should be adequate drainage system for liquid waste	71 (71%)	11 (11%)	17 (17%)	1 (1%)

Results from Table 2 revealed that 48% of workers regularly wash their hands with soap and water in the abattoir, 44% wear safety booths there, 52% occasionally fumigate the abattoir environment, and 41% occasionally wash their hands with soap and water once a day. There should always be a sufficient drainage system for liquid waste, and 59%, 61%, and 71% of abattoirs always follow the sanitation rules and regulations. Abattoirs also have greater access to portable, clean water. Nonetheless, 12%, 14%, 13%, 3%, and 8% occasionally wash their hands with soap, sweep their surroundings, wear safety booths, abattoir operators follow rules and regulations, and have access to clean water. This implies that more abattoir workers adhere to sanitary rules and regulations and more conscious of abattoir hygiene in Oredo Local government council in Edo State.

Table 3: Factors that Influence Abattoir

S/N	Items	Responses			
		Always	**Sometimes**	**Occasional**	**Never**
17	Non implementation of abattoir rules and regulations	47 (47%)	19 (19%)	28 (28%)	6 (6%)
18	Bribery and corruption	11 (11%)	12 (12%)	62 (62%)	8 (8%)
19	Lack of proper waste disposal system	56 (56%)	30 (30%)	9 (9%)	5 (5%)
20	Lack of adequate drainage facility	6 (6%)	9 (9%)	70 (70%)	15 (15%)
21	Poor knowledge of meat processing by butchers	61 (61%)	23 (23%)	6 (6%)	10 (10%
22	Enforcing available rules will enhance hygiene practice in abattoir	91 (91%)	4 (4%)	4 (4%)	1 (1%)
23	Constant training and re-training of butchers with respect to hygiene practice will enhance hygiene practice in abattoir	49 (49%)	38 (38%)	7 (7%)	6 (6%)
24	Efficacy and effectiveness of sanitary officers may influence hygiene practice in	65 (65%)	25 (25%)	3 (3%)	7 (7%)

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	abattoir				

Table 3 demonstrated the various factors that affect abattoir hygiene, including a lack of adherence to rules and regulations, inadequate understanding of meat processing, and more. As a result, 47%, 56%, 61%, 91%, 49%, and 65% strongly concur that there is a lack of proper waste disposal systems, inadequate understanding of that processing, and no application of abattoir rules and regulations. Regarding implementations, a small percentage of respondents—66%, 86%, 10%, and 1%—strongly disagree. The results also revealed that 70% and 62% of respondents disagreed that the Oredo local government area's abattoir hygiene is impacted by bribery, corruption, and inadequate drainage systems.

DISCUSSION

The findings on slaughterhouse workers' practices, basic operational needs, and environmental conditions highlight the importance of good sanitation and hygiene, as well as standard operating procedures, for producing safe and healthy meat. This is supported by reports showing that poor hygiene among abattoir workers greatly raises the risk of meat contamination and foodborne illnesses (Njoga et al., 2023; Bello et al., 2023). Personal hygiene is crucial for preventing contamination of meat and surfaces that contact meat, especially handwashing among food handlers (Oluchi & Elochukwu, 2023; Okoli et al., 2025).

The findings also agree with studies that recommend slaughterhouse workers wash their hands before and after breaks and thoroughly clean and sanitize knives, aprons, gloves, and other protective gear to reduce contamination (Jakubowska-Gawlik et al., 2022; Gizaw et al., 2020). Training meat handlers before they start work is vital, as a lack of knowledge leads to unsafe meat handling (Bello et al., 2023; Okoli et al., 2025).

Regarding hygiene in abattoirs, most respondents strongly agreed on the need for proper drainage systems and strict enforcement of sanitation rules. This finding matches studies reporting that good drainage, waste management, and functioning facilities are essential for keeping abattoirs hygienic (Ovuru et al., 2024; Bodinga & Malami, 2025). However, the occasional fumigation of abattoir environments in this study suggests mixed adherence to recommended sanitation practices. While fumigation might reduce pathogens, studies indicate that regular environmental cleaning, rather than infrequent fumigation alone, is more effective in preventing disease spread (Ahsan et al., 2020; Odetokun et al., 2021).

The study also identified issues such as insufficient water supply, poor sewage systems, and inadequate refrigeration, which are commonly reported in Nigerian and other developing-country abattoirs (Ekpunobi et al., 2024; Adeniyi et al., 2025). Access to clean water is essential for washing equipment, slaughter floors, and carcasses. Without it, meat safety is at risk (Owhonka et al., 2024; Nandomah & Tetteh, 2023). The finding that disinfection procedures are not always followed contrasts with guidelines recommending regular surface and environmental disinfection to control microbial contamination in slaughterhouses (Odetokun et al., 2021; Gufe et al., 2021).

Unhygienic behaviors like spitting, coughing, and mishandling carcasses were also noted as threats to meat safety. These behaviors highlight the need for enforcing sanitary rules and ongoing supervision of workers, as shown in studies on food safety compliance and health risks among abattoir workers (Jerie & Matunhira, 2022; Ndukwu & Chinedu-Madu, 2024).

Several factors affect abattoir hygiene, including weak enforcement of hygiene regulations and limited application of systematic food safety methods. While good hygiene practices are suggested to lower contamination risks, this study found significant non-compliance with abattoir rules and regulations in Oredo Local Government Area (Ekpunobi et al., 2024; Ovuru et al., 2024).

The effectiveness of sanitary and regulatory staff was found to positively impact abattoir hygiene. This aligns with studies highlighting the role of regulatory oversight in ensuring meat safety and protecting public health (Aalabbody, 2021; Okoli et al., 2025). Inadequate supervision and enforcement of current rules have been reported as major factors leading to unhygienic practices and meat contamination (Ekpunobi et al., 2024; Adeniyi et al., 2025). Poor carcass handling and inadequate protective clothing among butchers further raise contamination risks, as studies link bad safety practices to compromised meat quality (Oluchi & Elochukwu, 2023; Jerie & Matunhira, 2022).

A lack of knowledge about meat processing among butchers was identified as a major reason for contamination, especially during bleeding and evisceration, which can produce high levels of microbes (Njoga et al., 2023; Gana et al., 2024). This underscores the need for ongoing education on personal hygiene, sanitation, and safe meat handling.

Differences were found between public and private abattoirs in terms of hygiene standards. This supports evidence that slaughterhouses aim to create controlled environments for livestock slaughter and waste management, but their effectiveness mainly relies on management structure and efficiency (Aalabbody, 2021; Jakubowska-Gawlik et al., 2022). Observations from this study suggest that private abattoirs in Oredo Local Government Area are cleaner than public ones, likely due to better management practices and accountability.

CONCLUSION

According to this study, some aspects of personal hygiene are practiced by abattoir workers in Oredo Local Government Area; however, adherence to standard hygiene and sanitation regulations is still uneven. Additionally, the results indicate that there are more private than public slaughterhouses in the research region. Additionally, in Edo State's Oredo Local Government Area, private slaughterhouses were found to be more hygienic than public ones. Finally, the study comes to

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the conclusion that meat safety, environmental health, and public health outcomes are being jeopardised by the local and state governments' inadequate implementation or enforcement of current abattoir rules and regulations.

RECOMMENDATIONS

In other to halt this situation on time and savage the health of the Community people and as well prevent the likely outbreak of zoonotic diseases, the following recommendations are put forward.

i. There should be lay down rules and regulations by the government that are strictly implemented by abattoir in each community in the local government
ii. Local/state government should embark on public enlightenment on need for personal hygiene by the abattoir workers/butchers
iii. The abattoir workers/butcher, abattoir owner in all the communities should be educated on the importance of abattoir and environmental hygiene and the health implications.

Butcher should be trained on the right method to process meat.

ACKNOWLEDGEMENTS

The researcher wishes to acknowledge the contributions and impacts of key individuals such as Esohe Janny Aituariagbo - Oredo local government Council, Dr. Mrs Joy Olohigbe Otoikhila - National Open University of Nigeria, Benin study center, and Osawe Emmanuel Osagiade - Thusnelda Nigeria limited for their support.

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