

EVALUATING THE CURRENT STATUS OF FACILITIES IN SLAUGHTER HOUSES IN PORT HARCOURT: FOOD SAFETY AND PUBLIC HEALTH IMPLICATIONS

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ABSTRACT

Food safety is an issue of increasing interest and concern worldwide. Slaughterhouses are critical point where animals are inspected before and after slaughter for fitness for human consumption and they should be monitored regularly. A cross sectional study was conducted to evaluate the three main slaughterhouses present in Port Harcourt, rivers state and their fitness in producing meat destined for human consumption. These slaughter houses were selected based on their daily output. Observations were made of the presence and functionality of facilities in the different slaughterhouses. Seventeen facilities were outlined for investigation in the 3 slaughter houses visited and it was observed that 9(53%) out of the 17 facilities required for hygienic slaughter and processing of food animals were absent while 8(47%) were present in each of the slaughter houses. Out of the 8 facilities that were present in Trans-Amadi SH, only 2(25%) were in good working condition while For Igwurata and Umuchukwu slaughter slabs, only 1(12.5%) of the facility was in good working condition. It was also observed that bleeding section, flaying section, carcass splitting room, electricity, cold rooms, isolation blocks and laboratories were all absent in the three slaughterhouses. Most of the slaughter houses did not have the basic facilities and equipment required for the hygienic slaughter and processing of food animals and if they are allowed to continue processing of food animals could lead to health hazards among the receiving population.

Keywords: Port Harcourt, public health, slaughter house facilities, slaughterhouse

INTRODUCTION

In recent times, it has been observed that the production, handling, sales and consumption of poorly processed products from food animals is not safe and is of a serious public health concern (Okoli *et al.*, 2006). In Nigeria, processing of meat from food animals in most slaughter houses are carried out under extremely unhygienic environmental conditions and by poorly trained or untrained personnel or butchers who are mostly unaware of the sanitary principles required for production of safe meat from food animals (Olanike, 2002). To curtail or prevent this hazard, spread of diseases and ensure food safety and security, slaughter houses must be closely monitored (Olawuyi *et al.*, 2022; Siluma *et al.*, 2023) to ensure that they are well equip to handle processing of meat meant for human

consumption in developing countries like Nigeria (Kalu *et al.*, 2024).

Strict hygienic practices in every stage of production and in every section of the slaughterhouse are required to ensure that the quality of meat produced is safe for human consumption because the quality of meat produced from the slaughter house is directly proportional to the state or the standard of the abattoir (Laban *et al.*, 2021, Kalu *et al.*, 2024). Also poor personal hygiene, poor environmental hygiene, weak safety laws and regulatory practices in slaughter houses in developing countries in sub Saharan African have been implicated in the occurrence and spread of food borne diseases (Haileselassie *et al.*, 2013, Lee *et al.*, 2017, Ovuru *et al.*, 2023).

Bacteria species that have been reported from slaughter houses in Nigeria include *Staphylococcus aureus*, *Escherichia coli*, *Salmonella* spp., *Clostridium* spp., *Bacillus* spp., *Pseudomonas aeruginosa*, *Klebsiella pneumonia* and *Vibrio* spp. (Azuonwu et al., 2019, Temidayo et al., 2021, Uzoigwe et al., 2021).

The aim of this study is to investigate the presence and functionality of the facilities in the major slaughter houses in River State, to ascertain their ability to perform standard daily processing activities in other to produce safe meat for human consumption.

METHODOLOGY

A cross-sectional observational study was conducted in Port Harcourt, Rivers State, Nigeria.

STUDY POPULATION

Port Harcourt has 3 senatorial zones. The Port Harcourt metropolitan zone is made up of 8 local government areas (LGAs). Three (3) LGAs were selected for this study based on their population size. The selected LGAs were Port Harcourt, Ikwere and Etche. One slaughter slab was from each of the LGAs. This selection was based on the size and daily output of the slaughter houses in the local government areas. The three slaughter houses purposively selected were; Umuchukwu slaughter Chockochoko, Igwurata slaughter and Trans-Amadi slaughter houses in Etche, Ikwere and Port-Harcourt LGAs respectively. All facilities in the slaughterhouses were investigated.

STATISTICAL ANALYSIS

Microsoft excel was used to enter the data and to calculate the frequency and percentages of the facilities present.

ASSESSMENT OF SLAUGHTERHOUSE EQUIPMENT

A cross-sectional survey was used to assess the condition and functionality of equipment in slaughter houses in Port Harcourt. Seventeen facilities including lairage, slaughter slab, bleeding section, evisceration section, trippery and guttery, stunning section, administrative block, flaying section, carcass splitting section, cold room, isolation block, laboratory, electricity, bore hole, singeing section, detained and condemned meat room were investigated for and were recorded as either present or absent. Careful observations and evaluations were made and the photographs were also taken where necessary.

The available physical facilities in each slaughterhouse were noted and their functional status was graded as good, satisfactory or poor. It was graded as been ‘good’ (when facilities are present, functioning properly and in conformity

with standard conventional requirements), ‘satisfactory’ (present but not in good condition thereby not fully functional), or ‘poor’ (present but dilapidated and subsequently not functional) (Lawal et al., 2013).

RESULTS

PRESENCE AND FUNCTIONALITY OF THE SECTIONS OF THE SLAUGHTERHOUSES AND THEIR FACILITIES

The outcome from assessing the presence and functionality of facilities in the slaughterhouses is represented in table I. Nine (9) out of the 17 facilities inspected were absent in each of the slaughterhouses visited (Table I). Those facilities that were absent include the bleeding section, flaying section, carcass splitting section, cold room, isolation block, laboratory, electricity, detained and condemned meat room.

TABLE I: PRESENCE AND FUNCTIONALITY OF SECTIONS OF SLAUGHTERHOUSES IN PORT HARCOURT

SECTIONS OF ABATTOIR	OF TRANS-AMADI	IGWURATA	UMUCHUKWU
Lairage	Good	Poor	Satisfactory
Slaughter slab	Poor	Poor	Poor
Bleeding section	Absent	Absent	Absent
Flaying section	Absent	Absent	Absent
Splitting section	Absent	Absent	Absent
Evisceration section	Poor	Poor	Poor
Trippery & guttery	Poor	Poor	Poor
Cold room	Absent	Absent	Absent
Stunning section	Poor	Poor	Poor
Isolation block	Absent	Absent	Absent
Laboratory	Absent	Absent	Absent
Administrative block	Satisfactory	Poor	Poor
Electricity	Absent	Absent	Absent
Bore hole	Good	Good	Good
Detained meat room	Absent	Absent	Absent
Condemned meat room	Absent	Absent	Absent
Singeing section	Satisfactory	Satisfactory	Satisfactory

FREQUENCIES AND PERCENTAGES OF FACILITIES PRESENT AND THEIR FUNCTIONALITY IN THE SLAUGHTERHOUSES IN PORT HARCOURT

Seventeen facilities were outlined for investigation in the 3 slaughter houses visited and it was observed that 9(53%) out of the 17 facilities were absent while 8(47%) were present in each of the facilities.

Table II shows the functionality of the 8 facilities that were present in each of the slaughterhouses.

TABLE II: FREQUENCIES AND PERCENTAGES OF FACILITIES PRESENT AND THEIR FUNCTIONALITY

SLAUGHTER HOUSES (SH)	FREQUENCY (PERCENTAGE)		
	GOOD	SATISFACTORY	POOR
Trans-Amadi	2 (25.0)	2 (25.0)	4(50.0)
Igwurata	1(12.5)	1(12.5)	6(75.0)
Umuchukwu	1(12.5)	2 (25.0)	5(62.5)

There were 8 facilities observed to be present in Trans-Amadi SH out of which 2(25%) were in good conditions, 2(25%) were in satisfactory conditions and 4(50%) were in good conditions. The SH in Igwurata had the highest number 6(75.0%) of facilities that were in poor condition while 1(12.5%) facility each were in good and satisfactory conditions respectively while Umuchukwu SH, 2(25.0%), 1(12.5%), 5(62.5%) were in satisfactory and good and poor conditions respectively.

DISCUSSION

PRESENCE AND FUNCTIONALITY OF SECTIONS OF 3 SLAUGHTER HOUSES IN PORTHARCOURT

The observations made during visits to the slaughterhouses revealed that the basic equipment and facilities necessary for production of wholesome meat fit for human consumption were mostly absent and those present were mostly not in good conditions. Out of the 17 facilities investigated, 9(53%) of them were absent in each of the three slaughter houses visited and these slaughter slabs are still operational. If these slaughter houses continue to operate in their current state, the quality of meat produced from them may constitute serious public health hazard (Gracey, *et al.*, 1999; Dandaga *et al.*, 2009) because inadequate abattoir facilities affect daily operations leading to the production of unsafe and unwholesome meat and meat products for human consumption (Murshed, *et al.*, 2016).

According to Alhaji & Bawa (2015), slaughter operations such as slaughtering, bleeding, evisceration, post-mortem inspection are important in the production and supply of wholesome meat for human consumption therefore the poor condition of slaughter slabs, evisceration section, gut and tripe section, in all the three slaughter houses visited put the safety of the meat from these slaughterhouses to question as the absence or lack of good sanitation provides breeding ground for disease causing microbes (Dandaga *et al.*, 2009). The absence of a proper bleeding section with hoists means that there was improper draining of blood from the animal which also affects the quality of the carcass as observed by (Igwe, 2005).

The batch slaughter system practiced in these slaughter slabs in contrast to the modern and hygienic line slaughter system exposes the meat to contamination as evisceration is manually done on the floor. Meats produced from such animals are often contaminated with faecal material and/or blood and often deteriorate quickly due to bacterial contamination and they may be a source of contamination to humans if consumed (Nwanta *et al.*, 2008).

The poor drainage systems in the slaughter slabs for both sewage and sullage may result to an increase in the risk of communicable diseases. Poor drainages often pollute both surface and ground water and water pollution in the slaughter slab or houses could be a source of a possible epidemic (Nafada *et al.*, 2012).

The absence of electricity, cold room, isolation block and laboratory coupled with the poor status and unhygienic conditions of these slaughter slabs may pose a health risk to the public receiving and consuming such meat produced from the operations of these slaughter slabs (Adeyemo, 2002; Akinro *et al.*, 2009).

The absence of cold rooms in the three slaughterhouses is of particular concern, as meat is a high-risk food that should not remain outside cold storage for extended periods (Sofos, 2007).

CONCLUSION

Assessment of the three slaughterhouses revealed a deplorable state of slaughter slabs characterized by unsanitary conditions and the absence of basic equipment and facilities required for hygienic operations.

The findings suggest that meat and meat products from these facilities may not be wholesome for human consumption and represent a potential public health hazard.

RECOMMENDATIONS

Relevant regulatory bodies should enforce scheduled inspections of slaughterhouses to ensure compliance with applicable sanitation regulations, referencing established national and international standards (e.g., Nigerian Agricultural Quarantine Service guidelines, FAO/WHO Codex Alimentarius).

Inspection outcomes should be documented and remediation timelines enforced to ensure facilities and equipment are maintained to the required standard. Samples of meat and meat products from the slaughterhouses should be tested periodically to check their microbial quality to make sure they are fit for human consumptions.

PICTURE GALLERY



Figure I: An inadequate lairage



Figure IV: An improvised isolation block in a SH



Figure II: An unhygienic meat sellers table



Figure V: Improved Trippery and gutter



Figure III: Improper disposal of bones



Figure VI: An unhygienic slaughter slab

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