

CATTLE SLAUGHTERING AND POSTMORTEM HANDLING PRACTICES IN SELECTED NIGERIAN CITIES.

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ABSTRACT

Cattle slaughtering and postmortem handling practices in Nigerian abattoirs and markets were investigated. The study revealed poor pre- and post slaughter handling of cattle and carcass. The abattoirs were inadequately equipped and maintained. The abattoirs were characterized by lack of running tap water and proper waste disposal facilities. A critical assessment of the slaughtering process in the abattoirs when compared with the standard method showed a total absence of stunning (necessary for humane slaughtering) and aging or ripening (which enhances tenderness and juiciness of meat) unit operations. The beef marketing chain was also found to be poorly organized and managed with associated poor preservation and storage facilities. Suggestions for improvement were also discussed.

Key words: Cattle slaughtering, postmortem handling, abattoir, beef quality.

INTRODUCTION

The prerequisite for obtaining good quality lean meat from animals include the following: (i) the animal must be certified to be free from any disease by meat inspectors, (ii) humane slaughtering which involves proper stunning (captive bolt pistol, free bullet pistol, CO₂ gas anaesthesia or electrical stunning method), (iii) avoidance of any form of stress in the animal and (iv) standard slaughtering process (sticking, bleeding, dressing, opening, eviscerating, slitting, weighing, inspection and chilling) must be followed (Oluwole, 1984).

A visit to an abattoir in Ilorin revealed

deviations from the standard unit operation components of a standard slaughtering process and postmortem practices. Beyond the situation in Ilorin there is the need to undertake a general assessment of the situation in Nigerian abattoirs and evaluate the postmortem handling practices. This study was therefore designed to assess the practices in selected Nigerian cities in the south west and middle belt of Nigeria, with a view to recommending appropriate improvement strategies.

MATERIALS AND METHODS

Unit operation components of a standard slaughtering process and postmortem practices were identified (Table 1 and Figure 1). The identified unit operations and postmortem practices were then built into a well structured questionnaire. The questionnaires were administered to six butchers and six beef vendors (retailers) (12 questionnaires) randomly selected in each of the towns selected for the study. Nine major towns (Minna, Makurdi, Lokoja, Ilorin, Ibadan, Akure, Osogbo, Abeokuta and Lagos) in the two zones (south west/middle belt) were covered. A total of 108 questionnaires (12 per town, representing about 10% of butchers and retailers, 9 towns) were administered. As a confirmatory test, on the spot assessments of the usual practices were also undertaken in the major abattoir and market of each town. This study was carried out between September, 1996 and February, 1997.

Any practice or attribute not confirmed by at least 6 respondents (butchers or vendors) in a town and on the spot assessment was rated as negative (-) (Table 1).

RESULTS AND DISCUSSION

The key unit operations and attributes of a standard abattoir and slaughtering process are highlighted in Table 1. Thirty unit operations and common practices were identified and examined in the nine towns. The result revealed the same situation in all the towns. Out of the 30 tests, all the abattoirs and markets tested negative in 16 of the tests, therefore the condition at the abattoirs could be said to be below average.

Nigerian abattoirs were associated with dearth of necessary facilities, no running tap water, lack of proper waste disposal facilities and practice, and lack of storage facilities (cold room or freezer) for the unsold carcasses or aging process. Interestingly, the butchers or abattoir operators charges slaughtering fees which are never matched with the services rendered. Cows were slaughtered at about 6.00 a.m. in all the abattoirs. The unsanitary conditions at the abattoirs exposes the meat to all kinds of infestations, thereby exposing Nigerian consumers to some diseases if the meat is not subsequently properly cooked.

Lairage practices were also found to be below standard, for example, the animals were not fasted and washed before slaughtering meaning that the meat from such animals were susceptible to contamination by contaminants internal or external to the body of the animals. The animals scheduled for slaughter were forced, dragged and beaten to the slaughter slab. The practice expose the animals to stress which have implication for the initial and final glycogen content, pH and quality of the carcass. This is because stress in any form had been reported to affect the changes in meat quality which are mainly associated with the level of glycogen, lactic acid and temperature of the carcass (Lawrie, 1985).

A critical assessment of the slaughtering process in the abattoirs when compared with the standard method (Figure 1) revealed a total absence of stunning, weighing and chilling operations. The animals were not stunned before slaughtering, rather, the animals were

felled with force, the legs tied and the throat cut in the presence of other animals waiting to be slaughtered. In the process the animals were stressed, resulting in the production of low quality carcass.

The aspects of cattle slaughtering process such as chilling and aging or ripening of carcass which are designed to enhance the production of tender and juicy meat (Forrest, et al. 1975) were absent in all the observations, instead meats were distributed to the market channels immediately after processing.

Beef marketing chain in this study revealed a situation in which beef were transported in bulk or distributed from the abattoirs to the wholesalers who may sell to retailers or vendors (that hawk around residential buildings or sell in neighbourhood markets) or directly to the consumers who patronize meat main markets. Cases of unkept urchins assisting the butchers to carry the meat on their bare heads to selling points and use of greasy, rickety vehicles to convey beef to the markets were observed. Lack of cold storage facilities was common to all butchers, wholesalers and retailers. Cold storage facilities were available only in the few meat shops in the towns.

FIG 1. FLOW-CHART OF UNIT OPERATIONS OF A STANDARD ABATTOIR.



(Adapted from Oluwole, 1984)

Table 1

CATTLE SLAUGHTERING AND POSTMORTEM PRACTICES IN THE NINE TOWNS STUDIED

Parameters/Unit Operations		Location of Abattoirs and Observation								
A SITUATIONS AT ABBATOIR		Ninna	Makurdi	Lokoja	Ilorin	Ibadan	Akure	Osogbo	Abeokuta	Lagos
1	Modern with necessary facilities	-	-	-	-	-	-	-	-	-
2	Slaughtering fee is charged	+	+	+	+	+	+	+	+	+
3	Time of slaughtering	6.00am	6.00am	6.00am	6.00am	6.00am	6.00am	6.00am	6.00am	6.00am
4	Availability of running tap water	-	-	-	-	-	-	-	-	-
5	Proper waste disposal is practiced	-	-	-	-	-	-	-	-	-
6	Availability of storage facilities for carcass	-	-	-	-	-	-	-	-	-
B LAIRAGE										
7	Animal rested for at least a day	+	+	+	+	+	+	+	+	+
8	Fasting of animal before slaughtering	-	-	-	-	-	-	-	-	-
9	Animal is washed clean before slaughtering	-	-	-	-	-	-	-	-	-
10	Animal is carefully driven to the killing floor	-	-	-	-	-	-	-	-	-
C STUNNING										
11	Animal is rendered unconscious before sticking	-	-	-	-	-	-	-	-	-
12	Animal is felled, the legs tied and the throat is cut	+	+	+	+	+	+	+	+	+
D STICKING										
13	Common carotid artery and jugular vein are severed with knife	+	+	+	+	+	+	+	+	+
14	Animal is slaughtered in the sight of another	+	+	+	+	+	+	+	+	+
E BLEEDING										
15	The carcass is hung head down to bleed	-	-	-	-	-	-	-	-	-
16	Enough time allowed for bleeding (5 - 10min)	+	+	+	+	+	+	+	+	+
17	Blood collected for further processing	+	+	+	+	+	+	+	+	+

Parameters/Unit Operation	Location of Abattoirs and Observation									
	Minna	Makurdi	Idahor	Ikpaka	Osogbo	Akure	Abokuta	Lagos		
F SKINNING										
18 The skin is removed with a sharp knife or razor	+	+	+	+	+	+	+	+	+	+
19 Skinning is aided by pumped air	-	-	-	-	-	-	-	-	-	-
G OPENING										
20 Matcheting of the animal from the abdomen	-	-	-	-	-	-	-	-	-	-
H EVISCERATING										
21 Removal of abdominal and chest organs - offals	+	+	+	+	+	+	+	+	+	+
22 Offals processed for sale	+	+	+	+	+	+	+	+	+	+
I SPLITTING										
23 Cutting done with regards to anatomical locations of cuts	+	+	+	+	+	+	+	+	+	+
24 The carass is simply splitted into known traditional component cuts	+	+	+	+	+	+	+	+	+	+
J WEIGHING										
25 The cuts are weighed with balance	-	-	-	-	-	-	-	-	-	-
26 Beef grading, is done	-	-	-	-	-	-	-	-	-	-
K CHILLING										
27 Carcasses are held in chill at temp. of 4°C for 12 - 24 hrs before cutting	-	-	-	-	-	-	-	-	-	-
L AGING OR RIPENING										
28 The carcasses are held under refrigeration (32°F to 38°F) for 10-14 days	-	-	-	-	-	-	-	-	-	-
M MARKETING CHAIN										
29 From abattoir to meat shop	-	-	-	-	-	-	-	-	-	-
30 Meats are distributed to the market immediately after processing	-	-	-	-	-	-	-	-	-	-
+	Positive (usual practice)									
-	Negative (not common)									

In conclusion, it appears that the animal protein crisis in Nigerian food baskets (Omotesho, et al, 1995) is not only in terms of the quantity of animal products available to the consumers but also in the quality. This is because from this study, the beef available in most Nigerian markets were not subjected to the required hygienic slaughtering process, passed through sources that dispose them to all kinds of infections, suspect in terms of quality attributes such as flavour, juiciness, tenderness and even in appearance in some cases.

There is therefore the need to pay an urgent attention to the state of Nigerian abattoirs. Standard facilities for stunning of animals, waste disposal, weighing, chilling, aging or ripening and storage of carcass should be provided in all registered abattoirs. All abattoirs should be provided with running tap water. The existing abattoirs could be upgraded to the standard recommended above.

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