

Awareness and Utilization of Abattoir Safety Measures in Katsina South and Central Senatorial Districts, Nigeria

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Abstract

The study assessed utilization of abattoir safety measures in Katsina South and Central senatorial districts, Nigeria. Information was obtained from a total of 80 abattoir workers in each district, while frequency counts, percentages and independent sample t-test were used to analyze data. The majority, in the respective districts, were married (70.0% and 68.8%), Muslims (98.8% and 97.5%), certified butchers (83.8% and 77.5%), with 32.5% and 35.0% having quranic education. Level of awareness of abattoir safety measures was high among majority (85.0% and 91.3%). However, the overall level of utilization of these practices was low among majority (57.5% and 56.3%) in the respective districts. The independent sample t-test result showed no significant difference between the two districts in their levels of awareness ($t = 0.805$, $p = 0.422$) and utilization ($t = 1.390$; $p = 0.166$) of abattoir safety measures. The study concludes that high awareness of abattoir safety measures could not translate to high utilization among abattoir workers, Government agencies in charge of enforcement of abattoir safety measures should ensure that violators of these regulations are not spared from facing the full wrath of the law so as to serve as deterrent to others.

Key words: Abattoir, safety measures, meat, butchers.

Introduction

Abattoir is an approved and registered premise by the controlling authority in which animals are slaughtered and dressed for human consumption (Codex, 1993). Thus; the rationale for quality abattoir is to ensure humane handling of animals and using hygienic slaughtering and dressing procedures. Meat is an animal flesh and the most perishable of all staple foods (Oluwafemi, Edugbo, Solanke and Akinyeye (2013). Its delicate and perishable nature is factored as a possible threat that can cause food poisoning. Therefore, good abattoirs should enhance proper meat inspection and safety, waste management system as well as guard against potential danger or meat-borne infectious agents reaching the public or contaminating the environment.

Safety measures as defined by Charles (2011) and quoted by Oluwafemi, *et al* (2013) are activities and precautions taken to improve safety, i.e. reduce risk related to human health. The essence is to ensure product quality through compliance with standard regulations. To ensure public safety in abattoir utilization therefore, certain environmental and operating measures are considered prerequisites. In their recognition, however, the Federal Ministry of

Environment (FME) (2005) made available laudable policy guidelines in establishing and utilizing abattoir. The policy framework in effect seeks among others to promote and protect the health of all Nigerians by keeping to sanitation standards in and around abattoirs in the country. The policy content covers among others, the choice of a suitable site for abattoir construction, potable water and electricity, sewage, contiguity with uncongested road and rail system, proximity to transport and supply of varied labour. It also includes operating an abattoir site free of pollutants such as odours, dust, smoke and ash. Other emphases the source maintained are provision of an abattoir lairage, slaughter hall, gut and tripe room, detained meat room, offal room, condemned meat room, hide and skin room, cutting room, refrigeration room, supply of hot and cold water under pressure and veterinary inspection room. Disinfection facilities, personnel welfare room, veterinary office, and facilities for condemned meat offal or carcass disposal; incinerator, chemical treatment and disposal facilities should also be available and in good working condition.

Despite this laudable policy framework, the safety situation of animal food products in Nigeria has not improved significantly. Okoli, Okoli, Okorundu and Opara (2006) confirmed that production, handling and sales of animal food products constitute serious public health problems in Nigeria. WHO (2003) had also earlier revealed poor food handling and sanitation practices, inadequate food safety laws, weak regulatory systems, lack of financial resources to invest in safer equipment and lack of education of food-handlers as reasons often adduced for most food borne diseases that commonly occur in developing countries particularly in Africa. It has also been discovered that of the foods intended for humans, those of fish and animal origins tend to be most hazardous in respect of their pathogen contents, natural toxins and other possible contaminants and adulterants (Yousuf, Ahmed, Yeasmin, Ahsan, Rahman & Islam 2008).

Butchers' non- utilization of the safety measures contributes to carcass contamination. Bello, Lawan, Kwaga & Raji (2011) and Lawan, Bello, Kwaga and Raji (2013) observed increase in *E. coli* counts and isolation of *E. coli* O157H7 from beef carcasses in some Nigerian abattoirs. The situation may not be different in Katsina State that is particularly and steadily experiencing rapid population and economic growth and where the number of abattoir/commercial butchery houses is visibly increasing. It is also obvious that the source of meat for all the commercial food establishments, schools and households are supposedly from the abattoir/slaughter houses. It is assumed however, that available number of abattoir/butchery houses is below standard as stipulated in the policy guidelines of the Federal Ministry of Environment. In the same vein, abattoir users may not be aware of the safety measures. While activities of regulatory and enforcement agencies is expected to cut across the state, it is a common scenario that activities of these agencies are better felt within state capitals where the central offices are often located. The case may not be any different in Katsina state as awareness or otherwise of these safety measures as well as their utilization may be influenced by proximity of agencies in charge. Absence of information on these could limit, if not impair governments' efforts to accurately apply measures in checking the incidences of diseases outbreak from abattoirs in the state. The study therefore was designed to comparatively assess the awareness of abattoir/ butchery houses safety measures and utilization among abattoir users in Katsina South and Central senatorial districts, Nigeria.

Objectives of the study

The general objective was to investigate the awareness and utilization of abattoir safety measures in Katsina South and Central senatorial districts, Nigeria

The specific objectives were to:

1. identify respondents' level of awareness of abattoir safety measures in the two senatorial districts
2. examine respondents' level of utilization of abattoir safety measures in the two senatorial districts

Hypotheses

1. There is no significant difference in respondents' level of awareness of abattoir safety measures in the two senatorial districts.
2. There is no significant difference in respondents' level of utilization of abattoir safety measures in the two senatorial districts.

Methodology

The study was carried out in Katsina state. Katsina State is located in the North-western region of Nigeria. The state, covers an area of 23,938 sq. km and is located between latitudes 11°08'N and 13°22'N and longitudes 6°52'E and 9°20'E. The state is bounded by Niger Republic to the north, by Jigawa and Kano States to the east, by Kaduna State to the south and by Zamfara State to the west. Katsina State has rich cultural values with annual rainfall ranging from 800mm to 1000mm. The study population was abattoir workers in the selected senatorial districts in Katsina state. A well-structured interview schedule was used to collect information from respondents.

Multistage sampling procedure was used in selecting respondents. Abattoirs in the two senatorial districts were identified from which purposive sampling technique was used to select 8 and 6 functional abattoirs in Katsina central and south senatorial districts respectively. A list of abattoir workers in the selected abattoirs was obtained from which representative samples were drawn. In all, in the respective districts, a total of 101 and 95 samples were selected using simple random sampling. However, only 80 of the instruments were usable for data analysis in each of the two districts. In all, a total of 160 respondents provided the needed information for the study.

Variables measured in this study were socio-economic characteristics, awareness and utilization of food safety measures among respondents in the study area. Respondents' awareness of abattoir safety measures was measured by asking them to respond to a list of awareness statements freely. Respondents who responded yes were awarded score of 1 and no answers were scored 0. A total score was obtained for awareness based on the scale. Respondents who scored below the mean value had low level of awareness, while those whose awareness score equals or greater than the mean had a high level of awareness. Utilization of abattoir safety measure was operationalized in terms of extent to which abattoir workers utilized the safety measures. Respondents reacted by indicating frequency of utilization of such measures always, occasionally, hardly or never with scores of 3, 2, 1 and 0 assigned respectively. The weighted mean score of each measure was determined, and used to infer an average frequency for the sample. In all, frequency counts, percentages and weighted means were the descriptive statistics used, while independent Sample t-test was used to test the hypotheses of the study.

Results and Discussion

Socio-economic Characteristics of Respondents

About 40.0% of respondents in Katsina South and 35% in Katsina central were aged 21-30 years, while 26.3 and 28.8% were aged 31-34 years (Table 1). This implies that the majority of the respondents were young and are in their active ages. This suggests that at this age, abattoir workers are expected to have access to information on abattoir safety practices and therefore should be aware of these practices. This is because at this age, the workers are expected to have one form of education, at least to the primary school level based on the Universal Basic Education (UBE) policy of the Federal Government of Nigeria. The mean age of 34 and 37 years further attest to this. The study further reveals that majority (70.0% and 68.8%) of the respondents were married in the respective districts of the state. Distribution of respondents by their levels of education reveals that a combined 6.1% and 57.6% had one form of education or the other. This suggests that formal education is fast gaining ground in Katsina state as against Quranic education which used to be the major form of education among the people. This is expected to have positive influence on their awareness of safety practices positively. The fact that majority were Muslims further confirms various other studies in the past which revealed Islam as the most prevalent religion in the state. The study reveals that majority of the respondents (51.3% and 45.0%) in the respective states, had 11-20 years of experience in abattoir related activities. The average years of experience in both districts also were 20 and 22 years respectively, and it implies that majority of the respondents started abattoir business early in their lives. However, although the use of formal sources of information may appear secondary, they are expected to build on the informal sources while also correcting some of the errors that may be inherent.

An appreciable number of the respondents were members of association (82.5% and 87.5%), and were also certified (83.3% and 77.5%). Association membership in most enterprises and vocations often serve as sources of information on not only how to improve performance, but also on the standard practices that are expected within such enterprise. Certification is also a means of ensuring conformity to standard practices among the people.

Table 1: Distribution of respondents by their socio-economic characteristics

Variables	Katsina South (n=80)	KatsinaCentral %
≤ 20	7.5	3.8
21-30	40.0	35.0
31-40	26.3	28.8
41-50	16.3	17.5
51-60	8.8	12.5
61-70	1.3	2.5
Mean	34.35±11.77	36.79±12.02
Marital status		
Married	70.0	68.8
Single	30.0	30.0
Divorced		1.3
Level of education		
No formal educational	2.5	7.5
Quranic education	32.5	35.0
Primary	23.8	18.8
Secondary	31.3	32.5
Tertiary	10.0	6.3
Religion		
Christianity	1.3	2.5
Islam	98.8	97.5
Years of experience		
less or equal 10	15.0	17.5
11-20	51.3	45.0
21-30	21.3	21.3
31-40	10.0	8.8
41-50	2.5	6.3
>50	0.0	1.3
Mean	20.16±28.57	21.99±11.93
Members of association	82.5	70
Certified	83.8	87.5

Awareness of Abattoire Safty Practices

Table 2 shows that large proportion of respondents were aware of most of the abattoir safety practices. In Katsina South, the three practices which respondents were aware of include that animals should be kept free from contamination or access by birds and animals (95.0%), operators should have welltrimmed nails (95.0%) and suitable and sufficient space for hanging meat (92.5%). In Katsina Central, the study also reveals well-trimmed nails (96.3%), sufficient ventilation, as well as suitable and sufficient space for hanging meat (95.0%) as the safety measures which the people were mostly aware of.

The safety practices of which respondents have least awareness as meat certification (20.0%), possession of functional digesters for waste minimization (20.0) and covering of hair (23.0%) disposal. This has implication on the environment and overall health of the people. This is because conformity to a particular practice expected from the people can be ensured only when key players are well informed. This is often the starting point for ensuring compliance; after which enforcement and provision of enabling environment will be expected to make people conform. It is therefore expected that a high level of awareness is translated into a high level of utilization. The result suggests that the measures were not too ambiguous in

interpretation as to be easily understood by the abattoir workers. This partially contradicts the report of Osemeobo (1992) that past policy summersault witnessed in Nigeria was responsible for the poor policy understanding and awareness between the policy formulators and the intended beneficiaries. However, the low awareness revealed in some of the safety practices in the abattoir is an indication of a weak enforcement system of the regulation guiding abattoir safety practices in the state. For example, a low level of awareness of the fact that meat should be certified before selling to the public, and that a post mortem is a necessary step in abattoir practices is not in the interest of a healthy population. It indicates a compromise on the parts of the regulatory institutions.

Table 2: Awareness of abattoir safety practices in Katsina South and Central Senatorial Districts

Awareness	Katsina South (n=80)	Katsina Central (n=80)
Well-trimmed nails	95.0	96.3
Avoid chewing sticks while slaughtering	36.3	42.5
Covering hairs	23..8	52.5
Sufficient ventilation	92.5	95.0
free from contamination or access by birds and animals	95.0	87.5
Avoiding slaughtering with hand injury	46.3	41.3
Adequate lairage with sufficient space	92.5	82.5
Suitable and sufficient space for slaughtering	93.8	90.0
Suitable and sufficient space for hanging meat	95.0	95.0
Space for emptying and cleaning of stomachs and intestines of animals	93.8	82.5
Pre inspection of animal	90.0	75.0
Retention room for meat rejected as being unfit for consumption	65.0	57.5
Suitable cloak and wash rooms for butchers and allied staff	90.0	83.8
Adequate space and facilities for efficient meat inspection	85.0	75.0
Painting all surfaces white	30.0	27.5
Well-distributed light	88.8	87.5
Condensation, mould, flaking and dirt lodgement free ceiling and roofs	87.5	72.5
Impervious, non-slip and clean floors	86.3	82.5
Drainages with traps for solids and oil/fat	83.8	87.5
Avoidance of deposits or seepage to adjacent premises	92.5	93.8
Adequate and regular supply of clean water	90.0	90.0
Adequate toilets with flushing appliances for both sexes	88.8	71.3
Adequate facilities for washing hands (soap, water)	85.0	85.0
Adequate bathroom for sexes	81.3	71.3
Facilities for sterilizing clothes, knives, other equipment	26.3	40.0
Sufficient receptacles for garbage and filth collection	90.0	92.5
Suitable manure bay with impervious walls and floor	80.0	78.8
Digesters for waste minimization and disposal and on-site treatment	20.0	32.5
bandages, waterproof dressings, antiseptic for first aid	37.5	38.8
Post moterm inspection	28.8	28.8
Meat certification (official stamping of fit for consumption)	20.0	28.8

Utilization of Abattoire Safety Measures

Table 3 reveals the weighted mean distribution of respondents' utilization of each of the abattoir safety measures. On the average, the result shows that none of these measures was always practiced. The result further establishes differences across the different safety measures, on the basis of importance. The result presents sufficient ventilation (mean =2.51)

well-trimmed nails (mean = 2.38), avoidance of chewing sticks while slaughtering (mean = 2.14) as the most frequently used safety measures in that order in Katsina South. The study further identifies well-trimmed nails, sufficient ventilation and free from contamination or access by birds and animals in Katsina Central of the state. On the other hand, the study reveals that digesters for waste minimization and disposal and on-site treatment, (Mean = 0.44 and 0.10) were on the average never observed by the respondents. This is in partial agreement with WHO (2003) which observes that in Nigeria, many abattoirs dispose their effluents directly into streams and rivers without any form of treatment and the slaughtered meat is washed by the same water as a result of lack of good waste disposal. Retention room for meat rejected as being unfit for consumption (0.95, 0.79), suitable cloak and wash rooms for butchers and allied staff (0.91, 0.78), adequate space and facilities for efficient meat inspection, (0.83, 0.60), painting all surfaces white (0.70, 0.60), adequate toilets with flushing appliances for both sexes (0.80, 0.56), and bandages, waterproof dressings antiseptic for first aids (0.66, 0.18), were also on the average not used at all in the study area.

The study establishes that awareness of the various abattoir safety measures did not fully translate to utilization of such measures. Perhaps, the gap that has been identified could be lack of commitment of the workers to consciously ensure compliance with these practices. This finding is in consonance with the argument of Idachaba (2006) that good intentions are not enough. This means that it may not be enough to roll out measures on abattoir safety measures, it is equally important that adherence to and compliance with such measures are enforced by relevant regulatory agencies. It also disagrees with Edeogbon *et al* (2008) who establish direct relationship between use of sustainable practices and awareness of such practices. This implies that as important as awareness is to compliance with measures proffered by regulated authorities, efforts should transcend beyond awareness by ensuring a well-coordinated enforcement measures in order to facilitate compliance and hence utilization of the safety measures in the study area.

There are loop holes in enforcing compliance to abattoir safety measures among operators in the two districts of the study area. This further implies that the meat market is characterized by unhealthy meat of undesirable health implications on meat consumers.

Table 3: Utilization of abattoir safety practices in Katsina South and Central Senatorial Districts

SN	Awareness	South Mean	Central Mean
1	Well-trimmed nails	2.38	2.49
2	Avoid chewing sticks while slaughtering	2.14	2.39
3	Covering hairs	1.81	2.27
4	Sufficient ventilation	2.51	2.76
5	free from contamination or access by birds and animals	2.05	2.28
6	Avoiding slaughtering with hand injury	1.55	2.10
7	Adequate lairage with sufficient space	1.65	1.45
8	Suitable and sufficient space for slaughtering	1.51	1.53
9	Suitable and sufficient space for hanging meat	1.41	1.44
10	Space for emptying and cleaning of stomachs and intestines of animals	1.35	1.41
11	Pre inspection of animal	1.33	1.06
12	Retention room for meat rejected as being unfit for consumption	0.95	0.79
13	Suitable cloak and wash rooms for butchers and allied staff	0.91	0.78
14	Adequate space and facilities for efficient meat inspection	0.83	0.60
15	Painting all surfaces white	0.70	0.60
16	Well-distributed light	1.43	1.03
17	Condensation, mould, flaking and dirt lodgment free ceiling and roofs	0.84	0.64
18	Impervious, non-slip and clean floors	0.99	0.67
19	Drainages with traps for solids and oil/fat	1.05	0.84
20	Avoidance of deposits or seepage to adjacent premises	1.21	1.08
21	Adequate and regular supply of clean water	1.09	1.02
22	Adequate toilets with flushing appliances for both sexes	0.84	0.58
23	Adequate facilities for washing hands (soap, water)	1.04	0.65
24	Adequate bathroom for sexes	0.74	0.39
25	Facilities for sterilizing clothes, knives, other equipment	0.56	0.25
26	Sufficient receptacles for garbage and filth collection	0.96	0.44
27	Suitable manure bay with impervious walls and floor	0.75	0.26
28	Digesters for waste minimization and disposal and on-site treatment	0.44	0.10
29	bandages, waterproof dressings, antiseptic for first aid	0.66	0.18
30	Post-mortem inspection	0.63	0.21
31	Meat certification (official stamping of fit for consumption)	0.59	0.25

Difference in Awareness and Utilization

The result of the independent samples t-test reveals in Table 4 that there is no significant difference ($t = 1.390$, $p = 0.166$) in the levels of awareness of abattoir safety measures observed in the two senatorial districts of the study area. The study further reveals that use of

these measures also did not differ significantly ($t = 0.805$; $p = 0.422$) across the two districts in the study area. This is an indication that proximity to agencies and departments which characterized abattoirs in Katsina central did not influence awareness and neither did it influence people's utilization of these measures in the study area.

Table 4: Difference between Katsina South and Central in awareness and utilization of safety abattoir practices

Senatorial District	N	Mean	SD	T	Df	P
Awareness						
Katsina South	80	36.85	22.55	1.390	158	0.166
Katsina central	80	32.51	16.43			
Utilization						
Katsina South	80	22.10	4.13	0.805	158	0.422
Katsina central	80	21.61	3.51			

Conclusion and Recommendations

The study concludes that awareness of the various safety measures involved in abattoir practices was not all encompassing. While abattoir workers were well aware of some measures, awareness was low for some equally important safety measures among abattoir workers in the two senatorial districts. The study concludes that although level of awareness of abattoir safety measures was generally high, low level of utilization of these practices was predominant, establishing that awareness could not fully translate into utilization. Finally, the study concludes that both awareness and utilization of abattoir safety measures in the two districts of Katsina states were not significantly different.

Awareness creation of abattoir safety measures should be ensured and should cut across all the various components of the safety measures, such that efforts are all-encompassing. This will ensure a more effective information delivery of abattoir safety measures to stakeholders.

Regulatory agencies in charge of enforcing adherence to safety measures of abattoirs should make sure stiff penalties are meted on non-compliance to these measures as this will serve as deterrent to others and thereby help in improving compliance;

Departments and agencies involved in enforcing compliance to safety measures in the abattoirs should ensure a monitoring system whereby the activities of the enforcement agents are well tracked so as to reduce cases of sharp practices which are capable of compromising compliance.

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