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Management and Challenges of Slaughter Slab in Mubi Metropolis, Adamawa State, Nigeria

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ABSTRACT

Study on the Management and Challenges of Slaughter Slab in Mubi Metropolis was carried out to determine the major challenges of slaughter slab in Mubi, Adamawa State, Nigeria. The data for the study was survey method. The instrument for data collection comprises of structured questionnaire. The questionnaire consisted of two sections. Section A dealt with bio-data such variable as age, sex, religion, educational qualification, while section B will be constructed to provide information for objectives of the research. Data were analyzed using descriptive statistics. The study disclosed that lack of sanitary operational environment in Mubi slaughter slab affect health of staff/workers, users/customers, residents and host communities living within and around the slaughter slab are at risk of outbreak of water borne diseases. The result of the study on waste management have shown that annually a total of 11,072 tons of blood, 17,280 tons of gut contents and 13,824 tons of waste tissues are discharged directly into the environment. The result also reveal that odour emissions from slaughter slab could cause eye, nose and throat irritation, nausea, cough, bronchitis, shortness of breath, stress, drowsiness and alterations of mood, residences are infested by flies and mosquitoes with varying degrees as per distance. The researchers therefore recommend that the existing slaughter slab should be upgraded with modern slaughter slab infrastructures and facilities for hygienic slaughtering, handling, storage and selling of meat to consumers to forestall infestation of meat by flies and other vectors that affect human health.

KEYWORDS: Management, Challenges, Slaughter slab, Mubi Metropolis, Adamawa State.

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INTRODUCTION

An abattoir or slaughter house is a place where animals are slaughtered or killed for human consumption (Lawan *et al.*, 2013). Adequate and proper abattoir slaughter slab operations such as ante- mortem inspection, slaughtering, bleeding, evisceration, post-mortem inspection, and waste disposal are important in the production and supply of wholesome meat for human consumption (Alhaji and Bawa, 2015; Richard *et al.*, 2015). Lack of standard facilities coupled with non-adherence to good manufacturing practices, good hygienic practices and sanitary practices in abattoirs and slaughterhouses in developing countries, especially in Nigeria, were attributed to meat contamination and poor waste disposal with resultant effects on the environmental and human health in general (Alhaji and Bawa, 2015; Richard *et al.*, 2015). In most abattoirs slaughter slab, operating facilities are absent; there are also lack of sewage and waste disposal systems, no provision of potable water, no cold storage system and toiletry facilities for staff and workers (Lawan *et al.*, 2013; Akpabio *et al.*, (2015). Abattoir slaughter slab operations result in the generation of numerous waste and microbial organisms that pollutes the environment and pose serious threat to human health and quality of life. The numerous wastes produced by abattoir operation not only pose a significant challenge to effective environmental management but also are associated with decreased air quality of the environment, potential transferable antimicrobial resistance patterns, and several infectious agents that can be pathogenic to human (Fearon *et al.*, 2014). So many studies exist in the literature which have documented a variety of contaminants, microbial agents and health effects in those occupationally or accidentally exposed to improperly managed abattoir waste (Adelegan, 2012; Adeyemo, 2012). Wrongful discharge of blood and animal

faeces into streams may cause oxygen-depletion as well as nutrient over enrichment of the river system which could cause increased rate of toxin accumulation (Nwachukwu *et al.*, 2011). Sangodoyin *et al.*, (2012) reports that the ground water quality in vicinity of the abattoirs were adversely affected by seepage of abattoir effluents as well as water quality of receiving stream that was located away from the abattoirs affect the health of the dwellers. UNEP (2016) also reports that waste that is not properly managed especially excreta and other liquid and solid waste from abattoirs and communities are of serious health hazard and lead to the spread of infectious diseases.

Waste generation at Mubi slaughter houses poses a serious threat to the environment because of poor handling practices which result into adverse impact on land, air and water. In a typical Mubi slaughter slab, the surrounding land is often marshy due to improper channeling of wastewater arising from the dressing of the slaughtered animals and washings at the lairage.

METHODOLOGY

Study Area: This study covered Mubi Metropolis which is made up of Mubi North and Mubi South Local Government Areas of Adamawa state. The metropolis is located between latitude 10^{o} 05' and 10^{o} 30' of the equator and longitude 13^{o} 12'and 13^{o} 19'E of the Greenwich meridian. Mubi is one of the urban areas in Nigeria that existed since the colonial era. Mubi metropolis is the second of the most populated area in Adamawa State, after the state capital, with a population of 260,009 from the 2006 population census, however population projection of the metropolis stand at 372,305 in 2019 (Adebayo *et al*., 2020).

Study population: The target population for the study comprised of Environmental Health officers, workers at the abattoir and customers. The sample size of 100 Respondents were chosen from the three groups' base on random sampling.

Research Design: This study employed the multistage and random sampling techniques for the purpose of data collection. Questionnaires were used to collect data information on study.

Research Instrument: A self-constructed questionnaire titled "management and challenges of slaughter slab" and an interview guide was use for the study following the method of Okereke *et al.*, (2019). The questionnaire consisted of two sections. Section A dealt with bio-data such variable as age, sex, religion, educational qualification, while section B was constructed to provide information for objectives of the research topic. The researcher visited the abattoir to observe and administer the questionnaire personally.

Method of Data Analysis: Data were analyzed using descriptive and inferential statistics.

RESULTS

The analysis and presentation of data is derived from the information (data) gathered by the researcher in the course of the physical survey and questionnaires administered from the study site.

Socio-demographic data (Table 1)

Table 1 shows that 52% of the respondents were male and 48% were female; 44% were between the ages of 21-30, followed by 33% which were between the age of 31-40, while the least aged group were between 10-20 years (3 %). Marital status of the respondents shows that 41% were married, while 7% were divorce; 40% were singles.; 12% were widow/widowers; 46% were graduate from different tertiary institutions, 32% were SSCE holders, 17% were FSLC holders and remaining 5% did not respond. Occupation, 20% were civil servant, 20% were traders, 18% were students, 17% were farmers, 11% were drivers, 8% were apprentice and remaining 6% were artisan.

Sanitary condition of the slaughter slab (Table 2)

Table 2 shows that, 53% strongly agreed that the environment around the slaughter slabs is characterized by highly pungent odor while 6% stongly disagreed. More so, 57% strongly agreed that slaughter slab lairage is insufficient and not hygienically maintained, while 5% strongly disagreed; and 54% strongly agreed that daily sanitary and animal inspection are not adequately carried out in the slaughter slab and 8% strongly disagreed.

Waste generation and management (Table 3)

From the data gathered, table 3 shows that the animals slaughtered in the slab ranges between 50 - 55 cows and 125-130 goats/sheep daily which lead to the generation of about 0.7 ton of blood, 0.5 ton of gut contents, 0.4 ton of waste tissues and 0.7 tons of bone. These translate into annual total of 11,072 tons of blood, 17,280 tons of gut contents and 13,824 tons of waste tissues discharged directly into the environment. A greater portion of the 25,488 tons of bone that would otherwise have been part of the annual waste generation was often sold together with the meat and crushed for bone meal while waste disposal method was by draining into the environment, heap within the premises and burning.

Odor emission from the slaughter slab of the study area (Table 4)

Table 4 shows that 54% of the respondents strongly agreed that odor emission from slaughter slab could cause eye, nose, throat irritation, nausea, cough, bronchitis, shortness of breath, stress, drowsiness and alterations of mood while 9% strongly disagreed. More so, 54% strongly agreed that Slaughter slab operations could be associated with incessant infection of residents with typhoid, malaria and diarrhea and 8% strongly disagreed; 84% of the respondent go to dispensary/ hospital when affected by one of these diseases, while 10% just buy drugs from medicine store; and 37% visit hospital more than three times a year due to odor emission while 31% three times a year while 15% visit once a year.

Table 1: Socio- Demographic characteristics of respondents

VARIABLES	FREQUENCY	PERCENTAGE
Sex		
Male	52	52%
Female	48	48%
Total	**100**	**100%**
Age		
10-20 years	3	3%
21-30 years	44	44%
31-40 years	33	33%
41-50 years	8	8%
51-60 years	12	12%
Total	**100**	**100%**
Marital status		
Single	40	40%
Married	41	41%
Devoice	7	7%
Widow/widower	12	12%
Total	**100**	100%
Qualification		
Primary	5	**5%**
Secondary	32	32%
Tertiary	46	46%
Formal	17	17%
Total	100	100%
Occupation		
civil servant	20	20%
farming	17	17%
trading	20	20%
artisan	6	6%
apprentice	8	8%
student	18	18%
driving	11	11%
Total	100	100%

Source: Field data, 2021

Table 2: Sanitary conditions of the Slaughter Slab in the study area.

VARIABLES	RESPONSE	PERCENTAGES (%)
Environment around the slaughter slab is characterized by highly pungent odor; no waste is treated before discharge into the environment.	Agree	33
	Strongly agree	53
	Disagree	8
	Strongly disagree.	6
	Total	100
The slaughter slab's Lairage is insufficient and not hygienically maintained.	Agree	28
	Strongly agree	57
	Disagree	10
	Strongly disagree.	5
	Total	100

Daily sanitary and animal inspections are not adequately carried out in the slaughter slab.	Agree Strongly agree Disagree Strongly disagree. Total	24 54 11 8 100

Source: Field data, 2021

Table 3. Waste generation and management in the study area.

S/No	Type of waste	Cattle/day	Sheep and Goat/day	Total/day (tons)	Total/Year (tons)	Method of waste disposals
1	Blood	756	166.7	922.7	11,072	Drained into surrounding areas and collected for blood meal and animals feed.
2	Intestinal contents	480	960	1,440	17,280	Heaped within premises, composting and washed in surrounding area.
3	Bones	708	1,416	2,124	25,488	Burning/crushing for animal feed preparation.
4	Waste tissues	384	768	1,152	13,824	Burning and disposal into depression within premises.

Source: Field data, 2021

Table 4: Challenges of odor emission from slaughter slab operations and its health effects.

VARIABLES	RESPONDENTS	PERCENTAGE (%)
Odor emission from slaughter slab could cause eye, nose, throat irritation, nausea, and cough, and bronchitis, shortness of breath, drowsiness and alteration of mood.	Agree Strongly agree Disagree Strongly disagree. Total	30 54 7 9 100
Slaughter operations could be associated with incessant infection of residents with typhoid, malaria and diarrhea.	Agree Strongly agree Disagree Strongly disagree. Total	25 54 13 8 100
What kind of health assistance do you look for when affected by one of these diseases above?	Go to dispensary/hospital Buy drugs in medicine shop. None of the above Total.	84 10 6 100
How many times do you or any of your family members of your household visit the hospital in the last one year?		

Once a year	15
Twice a year	17
Three times a year	31
More than three times a year.	37
Total	100%

Source: Field data, 2021

DISCUSSION

Table 1 revealed that 33% of the operators were between the ages of 31-40 years. This result is in disagreement with the general (non-documented) belief that abattoir operators and meat sellers are majorly elderly people. Also 52% were males while 48% were females. This was in contrast with the report of Ajanaku *et al*. (2018) who reported 96.62% abattoir workers to be male but in consonance with the report of Ogunseye *et al.* (2021) who recorded 57% males and 43% females in Operators' perceptions of abattoir waste management: evidence from a semi-urban Nigerian city. This result shows that slaughter slab operations is dominated by both males and females, this might not be unconnected with the economic situation of Nigeria and especially Mubi where youth are scouting for jobs and the females go to the slaughter houses to buy meat for pepper soup and for restaurant. The result of this study also reveal that 46% are graduate of tertiary institution which is a little higher with the report of Ekpo (2019) who recorded 41.20%.

In terms of the sanitary conditions of the slaughter slab of the study area, it was discovered that the environment around the slaughter slab is characterized by highly pungent odor; no waste is treated before discharge into the environment and the slaughter slab's Lairage is insufficient and not hygienically maintained. It disclose that 61% strongly agreed that lack of sanitary operational environment in Mubi slaughter slab, affect health of staffs/workers, users/ customers, residents, and host communities living within and around the slaughter slab are at risk of outbreak of water borne disease, this report is in line with the findings of Oruonye (2015) who study on challenges of abattoir waste management in Jalingo metropolis, Nigeria. These findings also agreed with that of Ekpo (2019) which disclosed that lack of sanitary operational environment in Gwagwalada abattoir, health of staff/workers, users/customers, residents and host community are at risk of water borne diseases.

The study also recorded the volume of waste generated (solid and liquid) in the study area. The animals slaughtered in the slaughter slab ranges between 50 - 55 cows and 125-130 goats/sheep daily which lead to the generation of about 0.7 ton of blood, 0.5 ton of gut contents, 0.4 ton of waste tissues and 0.7 tons of bone. These translate into annual total of 11,072 tons of blood, 17,280 tons of gut contents and 13,824 tons of waste tissues discharged directly into the environment. This is in line with the report of Fearon *et al*., (2014) who recorded 50-58 cows and 120-130 goats/sheep are slaughtered in their study area daily and recorded 0.7tons of blood, 0.5 ton of gut contents, 0.4ton of waste tissues and 0.7ton of bone. A greater portion of the 25,488 tons of bone that would otherwise have been part of the annual waste generation was often sold together with the meat and crushed for bone meal. These findings equally corroborate the findings of Ezeoha and Ugwuishiwu (2011) on status of Abattoir waste research in Nigeria. The result also reveal that blood is drained into the environment and nearby streams and internal contents are being heap in the premises while bones are burnt and some littered within the premises this is in consonance with the report of Ajanaku *et al*. (2018).

The result of this study also reveal that odour emission from the slaughter slab causes eye, nose, throat irritation, nausea, cough, bronchitis, shortness of breath, stress, drowsiness and alterations of mood which is in line with the report of Fearon *et al*., (2014) on abattoir operations, waste generation and management.

CONCLUSION AND RECOMMENDATION

In conclusion the operations of slaughter slab in Mubi Metropolis are not ecologically friendly, and pose serious health and ecological challenges to the residents. The findings from this study shows that despite the inherent dangers associated with abattoir waste in the study area, the increasing volume of such waste in recent times present numerous economic opportunities for providing employment opportunity, increasing agricultural production and reduction of harmful wastes discharged into the environment. Following the result of the findings, the researchers recommend that:

1. The existing slaughter slab should be upgraded with modern slaughter slab infrastructures and facilities for hygienic slaughtering, handling, storage and selling of meat to consumers to forestall infestation of meat by flies and other vectors that affect human health.
2. Pollution of air should be controlled by ensuring that used tyres are not burnt and used as means of roasting meat or removing hides from slaughtered animals. This is harmful to both humans and the environment.
3. Veterinary personnel's should be proactive in the monitoring of operations of the slaughter slab by carrying out routine inspection including animal and

meat supervisions and general sanitary inspection of the slaughter slab as well as ensuring maximum compliance to the global requirements and sanitary regulations and standards governing slaughter slab operations.

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