Jarikre, T.A., Taiwo, J.O., Emikpe, B.O., & Akpavie, S.O. (2019). Protective effect of intranasal peste des petits ruminants virus and bacterin vaccinations: Clinical, hematological, serological, and serum oxidative stress changes in challenged goats, *Veterinary World*, 12(7): 945-950.

Kumar, N., Maherchandani, S., Kashyap, S.K., Singh, S.V., Sharma, S., Chaubey, K.K. and Ly, H. (2014). *Peste des petits ruminants* virus infection of small ruminants: a comprehensive review. *Viruses*, 6. 2287–2327.

Muthuchelvan, D.; Rajak, K.; Muthannan, R.; Dheeraj, C.; Sakshi, B.; Saravanan, P.; Pandey, A. and Singh, R. *Peste Des Petits Ruminants*: An Indian Perspective. *Adv. in Anim. & Vet. Sci*. **2015**, 3. 422-429.

Obi, T.U. and Oduye, O.O. (1985). Haematological changes in natural and experimental pest des petits ruminants virus infection in goats. *Revue d'Elevage et de Medicine Veterinaire des pays Tropicaux, 38* (1): 11 – 15.

Omeh, C.N., Ugochukwu, I.C.I. & Ugochukwu, E.I. (2017). Physio-haematological observations in West African dwarf goats with natural infection of peste des petits ruminants (PPR). Int. Journal of Biological Science and Technology 9(2):8-17.

Pope, R.A., Parida, S., Bailey, D., Brownlie, J., Barrett, T., & Banyard, A.C. (2013). Early Events following Experimental Infection with Peste-Des-Petits Ruminants Virus Suggest Immune Cell Targeting. PLoS ONE 8(2): e55830.

Tizard, I. R. (2000). *Veterinary Immunology: An Introduction*, 6th ed. Philadelphia: WB Saunders, 210–252.

SLAUGHTER PRACTICES, FIGURES AND INCIDENCE OF POST-MORTEM CONDEMNATION AS AFFECTED BY SEASONS IN KARU MINI ABATTOIR ABUJA, NIGERIA

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ABSTRACT

The purpose of this study was to evaluate the operations, daily slaughter figures and incidences of post-mortem condemnation at the Karu Mini Abattoir in FCT, Abuja as affected by seasons. Data was collected through oral interview, use of structured questionnaires, personal observation as well as use of the abattoir's records and other documentary sources of information. Results showed that cattle, camel, goat and sheep are the livestock usually slaughtered throughout the year. Results further revealed that sheep and goats were the most frequently slaughtered livestock species (79.68%) in the study area. 38.66% were slaughtered in the early dry season and 28.43% at the late wet season (). Post-mortem rejects include whole carcasses, liver, lungs, gastro-intestinal tract, hearts, kidneys, udder, heads and legs. The highest post-mortem rejects were lungs (73.65%) which were due to tuberculosis (69.19%) and contagious bovine pleuropneumonia (33.10%), and the lowest were kidneys (0.35%). Observations during the study period, revealed certain negative abattoir practices comprising absence of lairage, rest, ante-mortem examination, crude immobilization of animals, unsanitary practices and insensitivity to fetal losses. However, there were positive practices that should be sustained, such as the method of cutting-up and by-products processing. The regulations on the operations of the abattoir were below the standard requirements and there was low post-mortem condemnation in cattle, which indicated slaughter of healthy animals. In conclusion, slaughter figures of livestock, were not affected by season. It is recommended that all stakeholders take appropriate steps to fund and enforce existing legislation relating to food hygiene and community health.

Keywords: Slaughter Practices, slaughter figures, season, post-mortem, abattoir.

INTRODUCTION

Abattoirs, if utilized effectively, play vital roles in disease surveillance, inspection of animals and meat, and could protect Man from most zoonotic infections, which potentially might occur following the consumption of unhygienic, unsafe and unwholesome animal flesh (Barde *et al*., 2019). The purpose of an abattoir is to produce hygienically prepared meat through humane handling of animals, using hygienic techniques for slaughter and dressing (Kundu *et al*., 2015). The quality of management of abattoirs and slaughter slabs, particularly, the adherence to standard practice of meat inspection and sanitation is key to sound public health standard. The poor state of abattoirs, meat processing, ineffective meat inspection services and the resultant consumption of unwholesome meat by the public have become a major cause of concern to all stakeholders in the industry and the general public (Nwanta *et al*., 2008)**.** In most developed nations, abattoirs have aided in the detection and eradication of several diseases besides their main purpose of meat inspection (Cousins, 2001; Kaneene *et al.,* 2006). Abattoirs are underutilized in underdeveloped countries like Nigeria and the meat passed for human consumption in many instances is not adequately monitored. However, according to a recent report, some African countries are increasingly adopting abattoir inspection services to combat tuberculosis (African Union-Interafrican Bureau for Animal Resources [AU-IBAR], 2013). Therefore, the study is aimed at accessing the slaughter practices, examining the effect of season on daily slaughter figures with regards to different livestock species at Karu Mini Abattoir, Abuja Nigeria.

MATERIALS AND METHODS

The study was carried out at Karu, which is a satellite town located about 15 kilometers east from the Federal City Centre (FCC) in Abuja Municipal Area Council (AMAC). Instruments used for data collection were oral interview, use of structured questionnaire and personal observations as well as use of the abattoir's records and other documentary sources of information. Slaughter figures of the different livestock species and disease records for cattle was collected on a daily basis for a period of 2 months (August and September 2020) after which daily slaughter figures and disease record for six months (October 2020-March 2021) was obtained from the abattoir's record book. Data collected for daily slaughter figures and disease records was analyzed using the Statistical Package for Social Sciences, version 21. The data was analyzed using descriptive statistics of mean. Data obtained from August 2020-March 2021 on slaughter practices were used to draw conclusions.

RESULTS AND DISCUSSION

Figure 1 shows the mean daily slaughter figures which reveals that the in late wet season, out of 31089 animals slaughtered, 0.02%, 18.79% and 81.28% were camels, cattle, sheep and goats respectively. During the Early dry season, 42268 animals were slaughtered, with 0.04%, 20.20%, and 77.75% of camels, cattle, sheep and goats slaughtered, respectively, while in late dry season, 35983 animals were slaughtered, with 0.02%, 19.46%, and 80.52% camels, cattle, sheep and goats slaughtered respectively. The result indicates that goats had the highest frequency in terms of slaughter while camels had the least frequency in all seasons in the study area compared to the other species of animals. It also revealed that more animals were slaughtered in the Early Dry Season (EDS) and less were slaughtered in the Late Wet Season (LWS). This result corroborates with the findings of Raimi, Oduguwa and Bamgboye (2017) who stated that a high fetal wastage observed during the early dry season, as the season progresses stress on cattle is increased and hence compels herders to liquidate pregnant females before they die naturally.

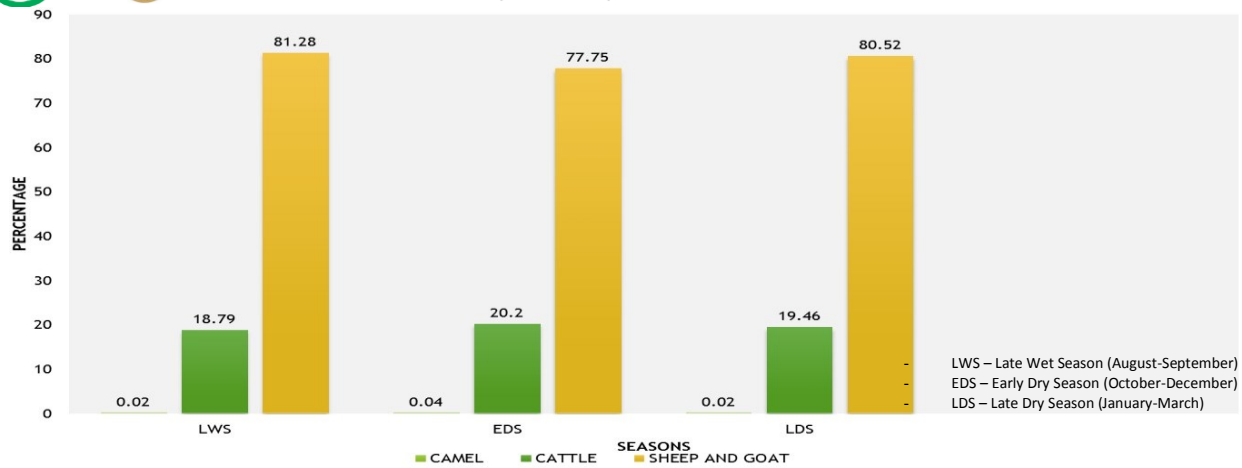

Figure 1. Distribution of total number of animals slaughtered between August 2020 and March 2021

There was adequate Lairage but no indication of ante-mortem examination at the Lairage section. These findings agreed with Adeyemo (2002), Lawan *et al.,* (2013) and Akpabio *et al.,* (2015) who all reported lack of lairage and absence of ante-mortem inspection in some Nigerian Abattoirs. The method of restraining the animals prior to slaughter is primitive as it involved physical struggle to wrestle down the animals through twisting of tails, twisting of neck and tripping of the animal, which according to Ikeme, (1990) affects the quality of the meat. Animals were slaughtered on the bare floor using the halal method, which included flaying and evisceration of the carcass. The slaughter floor was clean at the start of animal slaughtering, but there was no follow-up cleaning with hot water after each animal slaughtering as required by hygiene and sanitation rules in animal slaughtering. Slaughtering of other subsequent animals after the first one on each batch was carried out on top of the poorly flushed surface holding residual blood and dung feaces due to non-careful stunning and non-hygienic evisceration, which can lead to cross-contamination of carcasses (Dandago *et al.,* 2009; Douglas *et al.,* 2013). There is heavy contamination of carcasses due to the unhygienic situation (i.e. the presence of feces and blood on the floor). Joseph (1999), stated that when animals are slaughtered in places which are frequently polluted with blood and fecal materials, not protected from flies and rodents, meat produced thereof are prone to quick deterioration due to high level of bacterial contamination.

Table 1: Evaluation of Compliance Level to Standard Practices in Karu Mini Abattoir, FCT

Operations/ Equipment	Condition	Remark
Slaughter Facilities	Good design with some facilities present and functional.	There is need for renovation of faulty, inadequate and provision of new facilities.
Species of Animals Slaughtered	Cattle, camels, goats and sheep	Public demand is considered when selecting species.
Lairage Rest and Ante-mortem Inspection	Absent	Should be enforced.
Method of Restrain	Primitive which involves wrestling down animals	There is need for use of recommended practices
Method of slaughter	Halal method, Professional but done on the floor	Improper bleeding.
Flaying and Evisceration	Professional but carried out on the floor	Promote meat contamination.
Post-mortem Inspection	Professional and adequate	There is room for improvement.

Line system	Absent	Required so as to properly monitor the entry and exit of meat in order to prevent escape with contaminated products.
Fetal losses	Records were taken and foetus lost were condemned	A system should be created to prevent the slaughter of pregnant animals.
Cutting-up	Professional	Should be sustained.
By-products Handling	Professional	Should be sustained.
Waste Handling	Poor	Facilities should be provided for proper management and handling.
Sanitation	Fair	Requires improvement and special attention particularly in the slaughter halls and slabs.

Table 2 below shows the result of post-mortem examination, out of the total 695 condemnations, 12 (1.98%) animals were rejected, and 593 comprised of different organs among which were 422 (73.65%) lungs, 138 (24.08%) liver, 2 (0.35%) kidneys and 9 (1.57%) hearts were condemned due to various diseases. The major causes of lung condemnation were tuberculosis, contagious bovine pleuropneumonia, norcardiosis, and putrefaction of the organ**.** Fascioliasis, tuberculosis and abscess were found to be the main cause of liver condemnation**.** Hydronephrosis and Cysticercosis were the major causes of kidney condemnation and Reticulopericaditis was the major cause of heart condemnation.

Table 2: Slaughter Figures and Postmortem Condemnations of Cattle as affected by Seasons

Season	Total slaughter	Rejected Carcass	Lungs	Liver	Heart	Kidney
Late wet season	5814	3	138	45	2	1
Early dry season	9382	7	153	62	1	0
Late dry season	6992	2	131	31	6	1
Total	22188	12 (1.98%)	422 (73.65%)	138 (24.08%)	9 (1.57%)	2 (0.35%)

CONCLUSION AND RECOMMENDATIONS

Based on the study, it can be concluded that goats were the most slaughtered animals while camels were the least slaughtered animals in Karu Mini Abattoir. The results of the study further revealed that season had effect on the slaughter figures of livestock, a higher effect was observed in the early dry season and a lower effect was recorded at the late wet season. Additionally, there was very low post-mortem condemnation in cattle, which indicates slaughter of healthy animals. All stakeholders and enforcement of existing legislation on issues of food hygiene and community health should take adequate measures. Faulty, inadequate and required facilities should be renovated and provided respectively.

REFERENCES

Adeyemo, O.K. (2002). Unhygienic operation of a city abattoir in Southwestern Nigeria: Environmental implication. *African Journal of Environmental Assessment and Management,* 4(1): 23-28.

Akpabio, U., Kalu, E. and Babalola, S.A. (2015). Assessment of Facilities and Slaughter Practices in Aba Abattoir, Abia State, Nigeria. *Journal of Veterinary Advances,* 5(6): 957- 961.

AU-IBAR, (African Union-Interafrican Bureau for Animal Resources). (2013). Pan African Animal Resource Year Book, 2013 (60 p.). African union Commission (AUC). ISSN: 1881-007X. Retrieved from http://www.au-ibar.org/pan-african-animal-resources-year book.

Barde, I.J., Idachaba, S.E., Benson, M.N., Oguche, M.O., Egwu, K.O., Shekaro, A., Ijoma, S.I., Olabode, V.B., Oluwadare, M.L., Dashe, Y.G., and Ngulukun, S.S. (2019). Diagnostic survey of Kaduna Zango-abattoir, Kaduna State. *Research Journal of Veterinary Medicine and Animal Science,* 4 (6): 51-59.

Cousins, D.V. (2001). *Mycobacterium bovis* infection and control in domestic livestock. *Revue Scientifique et Technique*, 20:71–85.

Dandago, M.A., Farouk, S.U. and Igwe, E.C. (2009). Evaluation of slaughter practices in Kano abattoir. *Techno Science Africana Journal,* 3(1): 28-31.

Douglas, K.E., Ovua, A., Orji, C. and Sapira, B. (2013). Health Implications of Sanitation in a Public Abattoir in Port Harcourt, Nigeria. *Nigerian Health Journal,* 13(2): 91-95.

Igwe, E.C. (2005). Adamawa State Meat Industry. In Agriculture in Adamawa State. Edited by Igwe EC, Mshelia SI and Jada MY. Paraclete Publ. Yola., ISSBN: 978-8055-26-5.

Ikeme, A.I. (1990). Meat Science and Technology: A Comprehensive approach. Afr. FEP Publ., Onitsha.

Joseph, J.K. (1999). Investigations of cattle slaughtering and post-mortem handling in selected Nigerian cities. *Nigerian Journal of Animal Production;* 26: 106-110.

Kaneene, J.B., Miller, R., and Meyer, R.M. (2006). Abattoir surveillance: The US experience. *Veterinary Microbiology*, 112, 273–282. Http://dx.doi.org/10.1016/j.viketmic.2005.11.018.

Kundu, S., Idusiye, M. and Ternenge, A. (2015). Assessment of livestock slaughtered for food and meat inspection issues in selected abattoirs in Benue State, Nigeria. *Cogent Food & Agriculture*, 1: 1-9.

Lawan, M.K., Bello, M., Kwaga, J.K.P. and Raji, M.A. (2013). Evaluation of physical facilities and processing operations of major abattoirs in Northwestern states of Nigeria. *Sokoto Journal of Veterinary Sciences*, 11(1): 56-61.

Nwanta, J.A., Onunkwo, J.I., Ezenduka, V.E., Phil-Eze, P.O. and Egege, S.C. (2008). Abattoir operations and waste management in Nigeria: A review of challenges and prospects. *Sokoto Journal of Veterinary Sciences,* 7(2): 61-67.

Raimi, C.O., Oduguwa, B.O. and Bamgboye, F.O. (2017). Slaughtered cattle and reasons for slaughtering cows in ember months at Lafenwa Abattoir in Abeokuta, Nigeria. *European Journal of Agriculture and Forestry Research,* 5(1): 1-8.

PREVALENCE OF HAEMOPARASITES AND THEIR EFFECTS ON HAEMATOLOGICAL VALUES OF INFECTED ONE HUMPED CAMEL (*CAMELUS DROMEDARIUS*) IN THE SEMI- ARID REGION OF SOKOTO STATE, NIGERIA

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ABSTRACT

The objective of this study was to determine the prevalence of haemoparasites and their effects on the haematological profiles of dromedary camels in semi- arid region of northern Nigeria (12 ^{0} N, 700 to 800mm