

Research Article

Foetal Wastage in Sheep and Goats at the Kumasi Abattoir in Ghana: A Cross Sectional Study

Tasiame W¹, Emikpe B¹, Folitse R. D¹, Fofie C. O², Johnson S³, Burimuah V¹,
Atawalna J¹, Boateng E¹, Amemor E¹

¹School of Veterinary Medicine, College of Health Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

²Ghana Health Service, Upper West Regional Hospital, Wa,

³School of Veterinary Medicine, University of Ghana, Legon, Ghana

Accepted: February 2016

Abstract

The demand for meat from goats and sheep in Ghana far outweighs the local production which calls for a scrutiny of animal production systems including foetal wastage at the slaughter houses bearing in mind that there is dearth of information in this area which further hinders prudent planning. The objective of this study is to determine the level of foetal wastage of these small ruminants in the Kumasi abattoir in Ghana. A cross-sectional study was done from January to March 2015 to establish pregnancy status and characteristics of foetuses using visual inspection of the uterus of slaughtered animals. Out of a total of 939 sheep and 3394 goats slaughtered during the period, 733 (78.2%) were ewes and 2637 (77.7%) were does showing a higher propensity of slaughtering female animals and probably a general preference for goats to sheep in the locality. As high as 50.2% of ewes and 20.4% of does were pregnant. More than 85% of gestations were either in the second or third trimester. The foetuses were predominantly singletons except in goats where 95% were twins, 1.3% quadruplets and 0.5% quintuplets especially among the predominant West African dwarf breed (WAD). The rate of slaughtering of pregnant small ruminants at the Kumasi abattoir is very high. Improving animal husbandry practices of farmers and strict enforcement of standard operating procedures at the abattoir by inspectors could change this trend and increase animal production.

Keywords: Foetal wastage, sheep, goats, Ghana

INTRODUCTION

Food insecurity is still a major global concern as 795 million people suffer from starvation, under-nutrition and malnutrition (FAO, IFAD. WFP. 2015). Although the Millennium Development Goal 1 (MDG 1) that targets halving extreme hunger and poverty by 2015 has marginally been missed, the general trend is sharply declining except in Sub-Saharan Africa where progress is noted to be slow due to a complex mix of factors that range from poor governance, political instability, conflict, and climate shocks to uncontrolled population growth. (FAO, IFAD.WFP. 2015)

Ghana, like many developing countries has experienced a rapid population growth from 18.9 million in 2000 to 24.6 million in 2010 with population growth rates averaging from 2.4 - 2.7 percent and about 38.3 percent of the population under 15 years of age (Ghana Statistical Service, 2012). The total estimated livestock population of Ghana is about 58.4 million of which Northern Ghana accounts for over 50% of agricultural production, while Ashanti and Greater Accra are of the receiving end in the agricultural production chain due to the large human population (SRID, 2010). The above factors and the rapid urbanization have put pressure on the demand

for quality food and meat products which require quick and innovative response.

Animal proteins are generally referred to as complete proteins which contain all the amino acids needed in the body defense as opposed to plant proteins in which one or more of these essential amino acids are lacking (Oloyede, 2005). Statistics however shows that the average Ghanaian consumes 59 grams of dietary protein daily (Chartsbin, 2011). Ghana falls below the required amount of protein per day as a developing country with 77grams as the standard. The urge to bridge the gap between protein supply, consumption and the ever increasing population in the sub region often results in wastage of fetuses through the slaughter of reproductively sound dams with a resultant negative effect on livestock growth capacity (Cadmus and Adesokan 2009, Atawalna *et al.* 2013). Foetuses are discovered everyday on the daily routine of meat inspection by meat inspection officers at the abattoir, however, the evaluation of the magnitude has not been previously documented in the Ashanti region in Ghana. This obvious missing gap in information adversely affects the strategic planning and decision-making on animal food security (Jarikre *et al.* 2014). The aim of this study was to determine the rate of foetal wastage in sheep and goats during

*Author for Correspondence: +233244881073

E-mail: drwilly2002@gmail.com

routine postmortem inspection at the Kumasi abattoir of Ghana.

MATERIAL AND METHODS

Study site

Ashanti is the most populated region representing about 19.4% of the total population in Ghana. Kumasi Metropolitan area where the abattoir is located has the highest population of about 42.6% of the entire Ashanti regional population out of the 27 districts in the region (Ghana Statistical Service, 2012). The Kumasi Abattoir is located at 6°39'36.6"N Latitude and 1°36'15.4"W Longitude, in Kumasi city of Ghana. It is an ultra modern abattoir built by Canadian experts to meet the standards of the western abattoir. It is the largest abattoir among the slaughter business in Ghana with a daily slaughter and dressing capacity of 400 cattle, 300 sheep and goats and 100 pigs. The abattoir has a market where animals are brought from Brong Ahafo, Northern regions of Ghana and neighboring countries like Burkina Faso, Mali and Niger.

Data Collection: This cross sectional study covered a period of three (3) months from January to March 2015. Foetuses were collected, exteriorized and determined based on specie, breed, sex, types of birth and age. The carriage of the tail was used to separate sheep from goats. The tails of foetuses of sheep ranged from 4cm-9cm whilst that of goats ranged from 3cm-7cm. In all domestic forms, the tails of goats were erect while that of sheep were pendent (FAO, 1991). The two main breeds observed in sheep and goats were the West African Dwarf and the Sahelian. The length of the limbs of the fetuses was used to differentiate between the breeds since WAD breeds were shorter than the Sahelian breeds in sheep and goats.

The genital organs of the foetuses were used to determine the sex since the genital organs were prominent. Foetal age

was estimated by measuring the crown-rump length (CRL) of each foetus with a tailor’s tape measure in centimeters to arrive at the possible age as described by Hussein (2008). The estimated foetal ages were used to allot the foetuses into appropriate trimesters depicting the three stages of gestation. Data on male and female sheep and goats slaughtered were collected from records from the abattoir for a period of three (3) months. Data generated was analyzed in Excel using descriptive analysis such as simple average ratios and percentages.

RESULTS

A total of 939 sheep and 3394 goats were slaughtered during the period. Out of these, 733 (78.2%) were ewes and 2637 (77.7%) were does. The proportions of pregnant ewes and does slaughtered were 50.2% (Table I) and 20.4% (Table II) respectively, which indicated the prevalence of pregnancy wastage in sheep and goats. There were no significant changes in the number of sheep slaughtered during the study from 367 in January which slightly dropped in February and back to 308 in March. Similarly, the percentages of ewes and pregnant ewes slaughtered for the three months period ranged from 70-80 and 40-50 respectively (Table 1). Slaughter figures of does within the months maintained a regular pattern from 800 to 900 just as the pregnant does from 160 to 190 as shown in Table 2.

Ninety-eight percent (98%) of sheep foetuses discovered were of single and twins. Similarly, over 95% of goat foetuses were singles and twins. The study recorded three quadruplets and one quintuplet in goats representing 1.3% and 0.5% respectively as shown in Tables 3 and 4. Triplets found in sheep and goats were 1.6% and 2.3% respectively.

Table 1:
Proportion of pregnant ewes slaughtered from January to March 2015 in Kumasi Abattoir, Ghana

Months	Total sheep recorded	Total sheep studied	No of ewes (%)	Number pregnant (%)
January	942	367	290 (79.00)	146 (50.3)
February	660	264	214 (81.1)	113 (52.8)
March	811	308	229 (74.4)	112 (48.9)
Total	2413	939	733 (78.2)	371 (50.7)
Mean	804	313	244 (78.2)	124 (50.7)

Table 2:
Proportion of pregnant does slaughtered from January to March 2015 in Kumasi Abattoir, Ghana

Months	Total goats recorded	Total goats studied	No of does (%)	Number pregnant (%)
January	2824	1129	901 (79.8)	165 (18.3)
February	2638	1187	906 (76.3)	185 (20.4)
March	2567	1078	830 (77.0)	188 (22.6)
Total	8029	3394	2637 (77.7)	538 (20.4)
Mean	2676	1131	879 (77.7)	179 (20.4)

Table 3:

The incidence rate and breed of foetuses obtained from slaughtered ewes from January to March, 2015 in Kumasi Abattoir, Ghana

Type of birth	Total number of fetuses		WAD		Sahelian	
	n	%	n	%	n	%
Singles	278	49.6	183	65.8	95	34.2
Twins	273	48.8	194	71.1	79	28.9
Triplets	9	1.6	9	100	-	-
Quadruplets	-	-	-	-	-	-
Quintuplets	-	-	-	-	-	-
Total	560		386		174	-

Table 4:

The incidence rate and breed of foetuses obtained from slaughtered does from January to March, 2015 in Kumasi Abattoir Company Limited, Ghana

Types of birth	No of fetuses		WAD		Sahelian	
	n	%	n	%	n	%
Singles	396	42.9	268	67.7	128	32.3
Twins	490	53.0	299	61.0	191	39.0
Triplets	21	2.3	15	71.4	6	28.6
Quadruplets	12	1.3	12	100	-	-
Quintuplets	5	0.5	5	100	-	-

Breed of sheep and goats slaughtered

The study found 65% to 71% of single and twin sheep fetuses were of the West African Dwarf breed. All the three triplets recorded in sheep were also of WAD breed. Again the WAD breed recorded between 61 to 71 percent in singles, twins and triplets in goat fetuses as shown in Tables 3 and 4. All the quadruplets and quintuplets goat fetuses recorded were also of the WAD breed as illustrated in Table 4.

Period of gestation in slaughtered sheep and goats

Foetal CRL for sheep and goats ranged from 6-39 cm which represented second and third trimesters. Out of the total of 560 sheep fetuses 321 recorded CRL ranging from 6-21cm which corresponded 51-100 days of gestation representing the second trimester. The rest of 329 fetuses with CRL range of 22-39 cm were in the third trimester. About 74% (685/924) of goat fetuses were in the second trimester of gestation and the rest 239 were in the third trimester.

DISCUSSION

This study revealed high numbers of sheep and goats being slaughtered at Kumasi Abattoir with the goats being more slaughtered than sheep. This agrees with what was reported by Nwapku and Osakwe (2007) in Nigeria, Ahemen and Zahradden (2010) and Bokko 2011. This suggests the preference and high consumption of chevon by West Africans and the fact that goats can tolerate and adapt to wide range of climatic conditions especially during periods of fodder scarcity.

The study recorded ewe and doe slaughter as 78.2% and 77.7% respectively. Of these 50.2% of ewes and 20.4% of does were pregnant. The higher rate of slaughter of pregnant doe is contrary to report of Wosu and Dubia (1992) and Bokko 2011 where rate of slaughtered ewes was reported higher than does. The high rates of female slaughter during the period under study could be attributed to the high cost of males especially rams during festive Muslim occasions, similarly, bucks fetch better prices during Easter and Christmas seasons hence the males are retained for the festive period.

The high number of pregnant ewes and does slaughter which results in massive foetal wastages poses great danger to enhance small ruminant production (Ayodele *et al.* 2003). The fact that majority of the foetuses fall within the second and third trimesters which is easy to detect by simple ballotment even by the farmers further strengthens the believe that poverty can be a driving factor for small ruminant owners who are mainly smaller holder farmers to dispose off their pregnant animals as a need to pay bills in their homes. The lack of ante mortem inspection at the abattoir and lack of enforcement of legislation against slaughtering of pregnant animals may also have contributed to the high numbers recorded.

About 98% of sheep and 95% of goat fetuses discovered were singles and twins which is a lot higher than that reported with Ethiopian Highland sheep (Mukasa *et al.* 2003) and black bengal goats (Verma *et al.* 1991). The West African Dwarf breed recorded between 61 to 71 percent in singles, twins and triplets in goats which further showed that WAD breed is the most preferred breed in most parts of the country due to their hardy and trypanotolerant nature unlike the Sahelian breed. Foetal Crown rump length for sheep and goats ranged from 6-

39 cm which represented second and third trimesters. Similarly, Ndi *et al.* (1993), and Fayemi *et al.* (2008) found that 74%, 64.1%, and 75.7% of the fetuses recovered respectively were in the second and third trimesters. This finding makes the situation more worrisome because animals in the second and third trimesters are more visible and palpated if ante mortem examination is undertaken. It then further calls for awareness of this menace by owners to reduce the compulsion to sell their pregnant animals.

In conclusion, the slaughter of pregnant ewes and does at the Kumasi abattoir is very high and alarming. Non-compliance to the rules for which only unproductive, infertile, old or accidentally injured animals are allowed to be slaughtered makes this phenomenon of great concern to the small ruminant production system in Ghana. Negligence and non enforcement on the part of abattoir inspectors played a role in this menace. Poverty and non availability of other options by farmers might be the compulsion to dispose off their prime ewes and does.

REFERENCES

- Ahemen, T. & Zahraddeen, D., 2010, 'Species contribution as source of meat and their foetal wastage in Taraba State, Nigeria', *Archive of Applied Science Research* 2: 85-91.
- Atawalna, J., Emikpe B., Mensah E, Eyarefe O.D., Folitse R.D. 2013, 'Incidence of Fetal Wastage in Cattle Slaughtered at the Kumasi Abattoir, Kumasi, Ghana', *Global Veterinaria* 11 (4): 399-402, 2013. DOI: 10.5829/idosi.gv.2013.11.4.76104.
- Ayodele, A.O., Fadiyimu, A.A, Folorunsho, O.R and Olowu, O.P.A. 2003. 'Foetal wastages through the slaughtering of pregnant cows in Akure abattoir', proceedings of 28th conference of Nigeria Society of Animal Production (2003) Vol. 2: 45-51.
- Bokko, P. B., 2011, 'Pregnancy Wastage in Sheep and Goats in the Sahel Region of Nigeria', *Nigerian Veterinary Journal* Vol. 32(2): 2011; 120 – 126.
- Cadmus, S.I & Adesokan, H.K., 2009, 'Bovine fetal wastage in South-western Nigeria: a survey of some abattoirs', *Trop Anim Health Prod.* doi: 10.1007/s11250-009-9465-x.
- Anonymous 2011 Chartsbin statistics collector team, *Daily Protein Intake Per Capita*, ChartsBin.com
- Anonymous 1991, FAO., 'Animal Production and Health paper 88, Food and Agriculture Organization of the United Nations', Rome, Italy.
- Anonymous 2015 FAO, IFAD, WFP 2015, '[The State of Food Insecurity in the World 2015](#)'. Anonymous 2012, Ghana Statistical Service, 2010 Population and Housing census.
- Fayemi, A.O., Taiwo, B.B.A., Okubanjo, A.O., and Adekunmisi, A.A., 2008, 'Frequency of slaughtering gravid cows in some selected parts of Ogun State', *Proceedings of the 33rd Annual Conference of the Nigeria Society of Animal Production*, September, 2008, Ayetoro pp 234 -237.
- Hussein, A.A., 2008, 'Determination of first pregnancy and foetal measurements in Egyptian Baladi goats (*Capra hircus*)', [Veterinaria Italiana](#) (Impact Factor: 0.68). 44(2):429-37.
- Jarikre, T. A. Emikpe, B. O., Folitse, RD., Odoom, T. K., Fuseini, A., Shaibu, E., 2014, 'Assessment of fetal wastage in cattle, goat and sheep slaughtered at tamale abattoir, northern region, Ghana', *Bulletin of Animal Health and Production in Africa*, 62 (1) 31-35.
- Mukasa-Mugrewa, E., Tekelye, B., 2003, 'The reproductive performance of ethiopian highland sheep', *Animal reproduction science*, 95-102.
- Ndi, C., Tambi N.E., and Agharih, N.W. 1993, 'Reducing calf wastage from the slaughtering of pregnant cows in Cameroon', *Institute of Animal Research, (IRZ) Bamenda Cameroon*.
- Nwapku P. E and Osakwe I. I., 2007, 'Trends in volume and magnitude of foetal waste of slaughter animals 2000-2005 in Ebonyi State of Nigeria', *Research Journal of Animal Science*, 1:30-35.
- Oloyede H. O. B., 2005, 'All for the love of nutrients, The seventy eight inaugural lecture, Library and publication Committee, University of Ilorin'.
- Anonymous 2010. Statistics Research and Information Directorate (SRID), 2010, 'Facts and Figures, Ministry of Food and Agriculture (MOFA), Ghana, http://mofa.gov.gh/site/wp-content/uploads/2011/10/AGRICULTURE-IN_GHANA-FF-2010.pdf.
- Verma, R.R.P., Singh B.K., Singh M.P., Balraj-Singh., 1991, 'Factors affecting reproductive performance in Black Bengal goats', *Indian Veterinary Journal* 68:235-239.
- Wosu, L. O & Dubia, E. C., 1992, 'Lamb and kid wastage through slaughtering of pregnant ewes and goats at Enugu and Nsukka abattoirs in Anambra State, Nigeria'