

FOETAL LOSSES IN SMALL RUMINANTS: A CASE STUDY OF HADEJIA AND MALAM MADORI, JIGAWA STATE.

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ABSTRACT

A study was conducted to assess the extent of foetal losses from small ruminants and factors responsible for slaughtering of inbred female animals in semi-arid abattoirs of Hadeja and Malam-Madori, Jigawa State. The study was carried out through the use of structured questionnaire administered to 160 respondents in the abattoirs for a period of three months (June-August, 2013). The results revealed that youths aged less than 25 (35.71%) and 36-45 (37.14%) years were the main source of labour in Hadeja and Malam-Madori, respectively. The respondents were mostly engaged in evisceration and skinning (75.71% and 82.86%) in the abattoirs. Majority (77.15% and 72.00%) of the respondents in both study areas were males, mostly (68.00% and 60.00%) married, few (12.00% and 9.33%) had tertiary education, while many (26.67% and 32.00%) had acquired secondary education. Small ruminant foetuses recovered from 6 to 10 per day were 65.71% and 52.85% which vary with season. It was concluded that there was a cause for concern on loss of foetuses especially among small ruminants. It was suggested that awareness should be created among livestock rearers/farmers and butchers on the implication of the slaughtering of pregnant animals and its consequence on the future of our small ruminant's population since increase in population of any livestock species is based on reproduction. Thus, legislation prohibiting indiscriminate slaughter of pregnant or inbred female animals should be enforced or enacted as this has far reaching negative impact on reproduction/production and revenue generation in the subsector and thus enhance food security in the study areas.

Keywords: Ruminant, Foetus and livestock

Introduction

The increase in livestock and human population figures indicated a twice increased in human population growth rate as against livestock production (Taiwo *et al.* 2006). This has a far reaching negative impact on reproduction and revenue generation in the livestock sub-sector as well as progress on food security (Alhaji and Odetokun, 2013). A phenomenon that led to the common and unhealthy practice of slaughter of breeding and pregnant animals in most Nigerian abattoirs. It has been reported (Chaudhari and Bokko 2000; Taiwo *et al.* 2006) that slaughter of

pregnant sheep and goats contributes to livestock prenatal losses in Nigeria and possess uncertainty with regards to the country's ability to meet its long term demand for meat and meat products at affordable price. In the Nigeria livestock industry, sheep and goats are characterize as the main small ruminant animals and provides protein, essential minerals and vitamins (Alhaji and Odetokun, 2013). Nigeria falls among countries with very low per caput production and consumption of animal protein (Nwakpu and Ugwu 2004). The mean protein intake (meat, milk, eggs and fish) per caput per day in Nigeria

has been estimated at 14.85g, with meat alone representing 6.8g. In North American and European averages of 38.3 and 27.3g per caput per day which is much higher than the meat protein intake in Nigeria but slightly higher than African average of 4.5g (FAO 2006). In Kano, Northern western Nigeria Muhammad *et al.* (2007) reported a daily slaughter figures of 34.3% for sheep and 26.1% for goats at pregnancy. Similarly, Sunusi *et al.* (2006) reported that 57.85% and 61.39% of the total number of sheep and goats respectively, slaughtered at Bauchi and Jos Plateau States were pregnant.

Foetal wastage refers to the slaughtering of pregnant animals without consideration for the developing embryo. Foetuses, which are potential animals, are lost at the instance of slaughter whenever pregnant animals are involved. Many reasons have been suggested for the wastage and these include ill-health, urgent need and ignorance of livestock owners and butchers (Garba *et al.* 1992). This practice is a waste of foetuses and reproductively active dams and has a negative effect on livestock growth capacity (Cadmus and Adesokan, 2009). This study is aimed at investigating the trend, and impacts of this fetal wastage in slaughtered small ruminants in Hadejia and Malam Madori area of Jigawa State.

Materials and Methods

Description of the Study Area

Two abattoirs in Hadejia and Malam-Madori L.G.As of Jigawa state were selected for the study, Jigawa state shares boundaries with Bauchi, Kano, Yobe state and Niger Republic. Hadejia and Malam-Madori are situated in the eastern part of Jigawa state and with an annual rainfall of about 600mm-800mm and 4-8 month of dry season. Hadejia is located between latitude 12.45°N and longitude 10.04°E at an altitude of 340m above sea level with average minimum and maximum temperatures of 29°C and 38°C. while Malam Madori, is located on latitude 12°N and longitude 13°E at an altitude of 370m above sea level. The average minimum and maximum temperatures were 28°C and 35°C (LCR, 2013)

Experimental Procedure

This study was divided in two phases

1. Questionnaire Survey and,
- 2 Visual Observations

Questionnaire Survey

Structured questionnaires were used as sampling materials. A total number of 160 structured questionnaires (80 respondent for each abattoirs) were used for this study. Questionnaires were administered to livestock producers, butchers and veterinary health workers/meat inspectors.

Visual Observation

This procedure of collecting data involved regular visits early morning to Hadejia and Malam-Madori abattoirs on alternate days (from 6:00am-10:00am) over a period of 3 months (June-August, 2013) at small ruminants slaughter houses when sheep and goats are brought on to slaughter slabs continuously. Their numbers were recorded and other relevant information was also obtained using visual observation such as the number of male and female animals being slaughtered and the foetuses recovered after slaughter. Hence the measurements observed included:-

1. Total number of animals slaughtered (sheep and goats) (TNAS)
2. Number of female animals slaughtered (ewes and does) (NFS)
3. Number of male animals slaughtered (rams and bucks) (NMS)
4. Number of foetuses recovered from both (sheep and goats) (NFR)

Data analysis

The information obtained from the respondents and the record from visual observation were analyzed using simple descriptive statistics.

Results and Discussion

Socio economic background of Livestock rearers, Veterinary health workers and Butchers

The socio economic background of Livestock rearers, Veterinary health workers and Butchers at Hadejia and Malam-Madori Local Governments Areas of Jigawa State, Nigeria is shown in Table 4.1. Majority of the respondents (35.71%) in Hadejia aged less than 25 years; while in Malam-Madori most of the respondent (27.14%) aged between 36 to 45 years. This shows that more youths were engaged in this activity in Hadejia than in Malam-Madori. This result compares favourably with the report of Muhammad *et al.*, (2007) on age distribution of the respondent in Kano, a neighbouring state, with similar socio-economic background. The result on sex distribution indicate that the

respondents in both Hadejia and Malam-Madori were male (77.15% and 72.00%). This result is in conformity with the findings of Muhammad *et al.* (2007) on sex distribution of the respondents in Kano state. Most of the respondents in the study areas (68.00% and 60.00%) were married. The result is in conformity with that of Muhammad *et al.* (2007) who found 100% male and 76.67% married in Kano state. This is not far from the tradition and culture of the respondents. The occupation of the respondents in both Hadejia and Malam-Madori revealed that 15.50% and 26.67% were Livestock rearers; 32.00% and 25.33% were Butchers; 24.50% and 21.33% were Civil servants or Veterinary health workers and 28.00% and 26.67% were Artisans. Butchers in the study area had the highest value, though the figure does not reflect the number of animals slaughtered per day as shown in Table 4. The Educational status of the respondents in both Hadejia and Malam-Madori revealed that majority of the respondents (26.67% and 32.00%) had attained secondary education. This results is in line with report of Muhammad *et al.* (2007) who reported that more than 60% of livestock farmers in northern Nigeria were not literate.

Cause of Foetal loss in Small ruminants by Livestock rearers in Semi-arid Abattoirs of Hadejia and Malam-Madori

The cause of foetal loss in Small ruminants by Livestock rearers in the abattoirs of Hadejia and Malam-Madori is presented in Table 2. About 68.57 and 51.43% of the respondents in Hadejia and Malam-Madori had 1 to 5 years' experience in livestock production with 42.85% and 55.71% (Sheep and goats) being the main species of livestock kept by the respondents. This probably could be due to the lower relative cost of acquiring and maintaining these species of livestock. Sanusi *et al.* (2006) reported similar observations. Experience of sale/slaughter of inbred animals constitute about 58.57 and 68.57% in the study area and the main reasons were as a results of either urgent need (54.29% and 51.43%), disease (28.57% and 25.71%) or economic factors (70.10% and 87.71%). This observation agrees with the reports of Sanusi *et al.* (2006) who stated that the reason for slaughter of pregnant animals could be due to disease and/or urgent need of income. Muhammad *et al.* (2008) also reported that disease incidence is one

of the major constraints associated with small ruminants' production in Nigeria.

Cause of Foetal loss in Small ruminants by Butchers in Semi-arid Abattoirs of Hadejia and Malam-Madori

The cause of Foetal loss in Small ruminants by butchers in the semi-arid abattoirs of Hadejia and Malam-Madori is presented in Table 3. Majority of the respondents (80.00% and 67.14%) paid regular visits to slaughter slab. Muhammad *et al.* (2007) reported that majority of the butchers do visit the abattoir in northern Nigeria. Greater percentage of the butchers were usually involved in carcass dressing (85.71% and 74.29%) and skinning (35.71% and 51.43%) and evisceration (40.00% and 31.43%) which constitute the main activities engaged by the respondents at the abattoir visited for this study. Most of the respondent (84.28% and 91.42%), reported that they had experience in slaughter of animals with pregnancy. In addition, majority of them (65.71% and 52.85%) reported that 6 to 10 foetuses had been recovered daily and the incidence of foetal loss mostly occurs during early wet season (51.42% and 61.43%) as a result of either urgent need (37.14% and 47.14%) or disease (40.00% and 31.43%). This is similar to the report of Swai *et al.* (2015) that losses of foetuses could be related to dry season under nourishments in the semi-arid zone.

Cause of Foetal loss in Small ruminants by Meat inspectors or Veterinary health workers in the Semi-arid Abattoirs of Hadejia and Malam-Madori

The cause of Foetal loss in Small ruminants by Meat inspectors or Veterinary health workers in Semi-arid Abattoirs of Hadejia and Malam-Madori is presented as Table 4 The attendance to slaughter slab at Hadejia and Malam-Madori abattoirs by veterinary health workers or meat inspectors was mostly regular (100.00% and 60.00%) and they conduct of inspection prior to slaughter (Ante-mortem inspection). The veterinary health workers (80.00%) had been carrying ante-mortem inspection frequently in Hadejia abattoir, while that was not the case in the Malam-Madori abattoir, probably due to inadequate manpower and incompetence to conduct pregnancy diagnosis. Swai *et al.* (2015) also reported that pregnancy diagnosis are not routinely conducted during ante-mortem

inspection in the abattoir due to various reasons including poor infrastructures and staff competence in carrying out pregnancy diagnosis. It has been reported by the respondents that the number of small ruminant animals slaughtered per day ranges from 100 to 299 animals (60.00% and 20.00%), the fetuses recovered daily is very high in the early wet seasons (40.00% and 60.00%), Nevertheless the present study shows that early wet seasons has the highest incidence of foetal recovery,

Number of Small Ruminants Slaughtered and the Fetuses Recovered in Hadejia and Malam-Madori Abattoirs between June to August, 2013

The number of small ruminants slaughtered and fetuses recovered in Hadejia and Malam-Madori abattoirs between June to August, 2013 is presented in Table 5. The total numbers of sheep and goats slaughtered at Hadejia abattoir were 2487 and 3631, respectively out of which females (ewes and does) were higher than their male counterparts. The higher rates of female stock slaughtered in this survey is comparable to other studies carried elsewhere (Bokko *et al.* 2011; Borji *et al.* 2011; Simenew *et al.* 2011; Zulu *et al.* 2013). Abattoir survey of Sheep and goats in the Gambia, West Africa shows that 60% of the 1,248 female goats slaughtered at an abattoir over a period of 1 year were pregnant (Goossens *et al.* 1998) though the sample size and the duration of the study of the survey differ from the present study. The fetuses recovered from sheep and goats were 386 and 671, respectively. In Malam-Madori abattoir, the total numbers of sheep and goats slaughtered were 2151 and 2879, respectively out of which 1297 and 1812 were ewes and does, respectively. The fetuses recovered were 206 and 382 from sheep and goats, respectively. The results shows that more sheep and goats were slaughtered at Hadejia than Malam-Madori and this could be probably due to some economic factors and/or population or urbanization. Accordingly, more fetuses were recovered in Hadejia abattoir than that of Malam-Madori. The findings of the presents study is in conformity with the report of Muhammad *et al.* (2008) observed that slaughtering percentage of sheep and goats in Sokoto abattoir is high. Mukasa-Mugerwa and Tekelye (2003) observed that 70.1% ewes in the process of slaughter were found pregnant and 24% of them carried twins in

the Ethiopian highlands. The record from a semi-arid abattoir in Nigeria, also confirmed that 34.3% (of the 0.26 million) ewes were pregnant at the point of slaughter (Muhammad *et al.* 2009). Earlier report in the same region, indicated that of 0.21 million goats that are slaughtered yearly, 26.1% of these 'does' were pregnant (Sanusi *et al.* 2006). According to some research surveys, rates of slaughtered ewes are usually higher than does (Wosu and Dubia 1992; Bokko 2011), contrary to the findings in this study but in agreement with the observations of Ahemen and Zahraddeen (2010) which indicated lower rate in ewes. The variation between reports and survey could be due to volume of stock slaughtered, location, seasonal and demand of small ruminant meat (Fayemi and Muchenje 2013). The ever increasing slaughter of pregnant ruminant stock in their various stages of gestation has some additional motives other than lack of competency on Pregnancy Diagnosis (PD) or gross ignorance. It is also possible that livestock keepers/ or traders sell pregnant females because, phenotypically they appear heavier and presentable and consequently sell at better prices as opposed to non pregnant ones. Financial resources limitation in time of crisis such as dry season may motivate indiscriminate sale of females for slaughter. The high values of foetal wastage encountered poses a significant threat not only to meat and livestock production but also to the economy of the country.

Conclusion

In conclusion, generally among sheep and goats breeds pregnant female animals were found to be slaughtered mostly during time of feed scarcity. Unlike females, males were found to be slaughtered most during feed availability which might be due to the fact that males can resist Time of feed scarcity better than pregnant females. Slaughtering of pregnant animals therefore will be reduced if feed is provided during feed scarcity and pregnancy diagnosis should be embarked upon by veterinarians according to law guiding slaughtering of animals.

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Tables 1: Socio Economic Background of the Respondents (Livestock rearers Veterinary health Workers and Butchers)

Variables	Hadejia (%)	MalamMadori (%)
Age (yrs)		
<25	35.71	27.14
26---35	25.71	28.57
36---45	28.57	37.14
> 45	10.01	7.15
Gender		
Male	77.15	72.00
Female	22.85	28.00
Marital status		
Single	32.00	40.00
Married	68.00	60.00
Occupation		
Livestock rearing	15.50	26.67
Butcher	32.00	25.33
Civil servant	24.50	21.33
Artisan	28.00	26.67
Educational status		
Qur'anic school	24.00	6.67
Primary school	20.00	24.00
Secondary school	26.67	32.00
Tertiary school	12.00	9.33
Adult education	17.33	8.00

Source: - Field survey, 2013.

Tables 2: Cause of Foetal loss in Small ruminants by Livestock rearers in Semi-arid Abattoirs of Hadejia and Malam-Madori

Variables	Hadejia (%)	MalamMadori (%)
Experience in livestock production		
1----5yrs	68.57	51.43
6----10yrs	31.43	48.57
Above 10yrs	----	-----
Species of livestock kept		
Cattle	----	----
Sheep	20.00	22.85
Goats	37.14	21.43
Combination (sheep and goats)	42.85	55.71
Experience of animal sale/slaughter with pregnancy		
Yes	58.57	68.57
No	41.43	31.43
Reason for sale/slaughter of animal with pregnancy		
Urgent needs	54.29	51.43
Ill-health (disease)	28.57	25.71
Ignorance	17.14	22.85
Economic factors as a cause of foetal loss		
Yes	70.00	85.71
No	30.00	14.29

Source:- Field survey, 2013

Tables 3: Cause of Foetal loss in Small ruminants by Butchers in the Semi-arid Abattoirs of Hadejia and Malam-Madori

Variables	Hadejia (%)	MalamMadori (%)
Regular visitation to slaughter slab		
Yes	80.00	67.14
No	20.00	32.85
Involvement in carcass dressing		
Yes	85.71	74.29
No	14.28	25.71
Type of activity engaged		
Slaughtering	24.28	17.14
Skinning	35.71	51.43
Evisceration	40.00	31.43
Experience of animal slaughter with pregnancy		
Yes	84.28	91.42
No	15.71	8.57
Estimate numbers of fetuses observed per day		
1----5	11.42	14.28
6----10	65.71	52.85
> 10	22.85	32.86
Season in which incident mostly occur		
Early wet season	51.42	61.43
Late dry season	48.56	37.71
Source of occurrence of foetal loss		
Urgent needs	37.14	47.14
At will	17.14	10.00
Ill-health (disease)	40.00	31.43
Ignorance	5.71	11.4

Source:- Field survey, 2013

Tables 4: Cause of Foetal loss in Small ruminants by Meat inspectors or Veterinary health workers in Semi-arid Abattoirs of Hadejia and Malam-Madori

Variables	Hadejia (%)	MalamMadori (%)
Regular visitation to slaughter slab		
Yes	100.00	60.00
No	-----	40.00
How frequent ante mortem is carried out		
Frequent	80.00	40.00
Not frequent	20.00	60.00
Do you take records regularly?		
Yes	100.00	100.00
No	-----	--
Number of animals slaughtered per day		
50----100	20.00	60.00
100----299	60.00	20.00
300----499	20.00	20.00
Number of foetuses recovered per day		
Regular records	20.00	----
Not- regular records	80.00	100.00
Season in which incidence is most likely to occur		
Early wet season	61.41	60.00
Late dry season	38.59	40.00

Source:- Field survey, 2013

Table 5: Number of Small Ruminants Slaughtered and of Fetuses Recovered in Hadejia and Malam-Madori Abattoirs

Location	Animals							
	Ts	Tg	Ms	Mg	Fs	Fg	FRs	FRg
Hadejia	2487	3631	998	1472	1489	2159	386	671
Malam-Madori	2151	2879	854	1067	1297	1812	206	382

Source: field survey, 2013

Key

Ts: Total sheep

Tg: Total goats

Ms: Male sheep (rams)

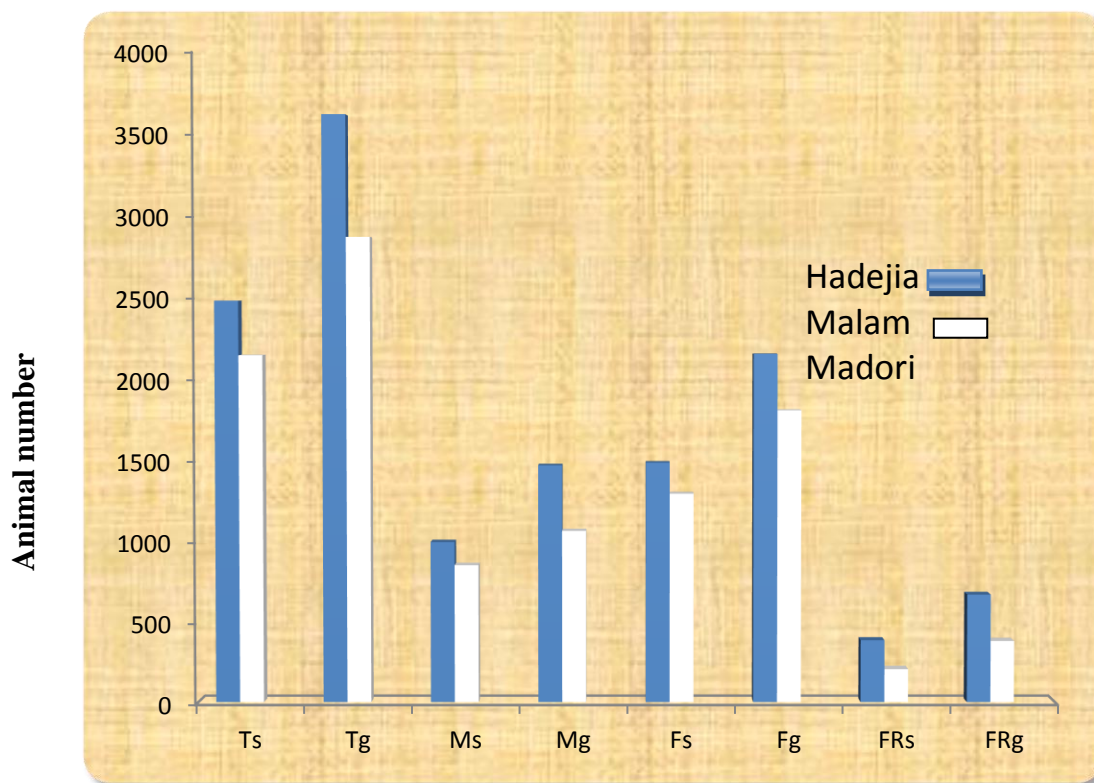
Mg: Male goats (bucks)

Fs: Female sheep (ewes)

Fg: Female goats (does)

FRs: Foetus Recovered in sheep

FRg: Foetus Recovered in goats



Animal structure

Figure 1. Trend of small ruminant animals slaughtered and fetuses recovered at abattoirs of Hadejia and Malam-Madori between June-August, 2013

Key

Ts: Total sheep

Tg: Total goats

Ms: Male sheep (rams)

Mg: Male goats (bucks)

Fs: Female sheep (ewes)

Fg: Female goats (does)

FRs: Foetus Recovered in sheep

FRg: Foetus Recovered in goats