



Evaluation of some Factors Influencing Slaughtering of Pregnant does by Meat Processors in Ibadan Nigeria

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Abstract

Livestock production plays a significant role in providing animal protein and financial security for rural households. Foetal wastages in Nigeria for livestock is rampant among abattoirs, restaurants and hotels. The reasons could be linked to ignorance or out of necessity. A survey was carried out in Ibadan in the locations of registered abattoirs, hotels and canteens to assess pregnant doe wastages among goat meat processors/retailers and their distribution pattern by a means of structured questionnaire. A total of two hundred and sixty-two (262) respondents were purposively selected for the study to determine their socio-economic characteristics and also to elicit information on breeds, age, sex and pregnant goats slaughtered. The effect of seasons on breed and sex of goat purchased for slaughter was also affirmed. The study lasted over a period of four months (January- April). Data were subjected to descriptive statistics (frequencies and percentages) and chi-square analysis. The results showed that most (66.0%) of the respondents fell within the age group of 35-60 years. They all (100.0%) took their present business as primary occupation. Red Sokoto (93.4%) was the predominant breed of goats slaughtered and age of goat was significant ($p < 0.001$) for young goats (1-1.5 years). Preferred sex for slaughter was high for female goats (56.9%) in canteen only while, there was significant observation (79.6, 47.1 and 41.9% in canteens, abattoirs and hotels respectively) of pregnant does slaughtered in the three groups of location. Season was found not to affect breed and sex of goat purchased for slaughter. Based on these results, it can be concluded that goats are slaughtered in the study area regularly and there was preponderance (52.87%) slaughtering of pregnant does. It is therefore suggested that the growing practice of indiscriminate slaughtering of pregnant goats for consumption be check-mated in order to sustain and improve small ruminant productivity in Nigeria.

Keywords: Young Goat; Goat-Meat; Pregnant Does; Slaughtering; Red Sokoto

Introduction

Sheep and goats are the main small ruminants in the Nigerian livestock industry and provide bulks of protein, essential minerals and vitamins. In Nigeria, there is a disturbing trend of pregnant ruminant animal slaughtering observed among the populace. Nigeria is one of the four leading livestock producers in sub-Saharan Africa [1]. Its livestock population as at 2005 was estimated at 15

million cattle and 49 million sheep and goats with annual growth rates of 0.8 and 2.9%, respectively. However, one of the confronting challenges in attaining self-sufficiency in animal protein is the indiscriminate slaughtering of pregnant animals nationwide; [1-10]. According to [11] the slaughtering of these pregnant animals in abattoirs will no doubt aggravate the already precarious supply of animal protein to the ever-increasing human population in the coun-

try. The practice, if not checked, will no doubt have a far-reaching implication on income of the livestock producers. The practice may impede the current policies of the nation on food security [10]. The practice actually puts the future of domestic ruminant production in urban centres in Nigeria under threat due to mass destruction or extermination of fetuses. Slaughtering pregnant animals will have a negative implication on ruminant production/consumption balance [12]. Various reasons have been reported by many researchers for the indiscriminate slaughtering of pregnant ruminants. Ignorance on the part of the livestock producers, ill-health and urgent needs of the family were implicated in the current practice [13]. The collapse of proper inspection of the animals, above all lack of legislation prohibiting the slaughter of pregnant animals in Nigeria have also been attributed to the menace [14]. For many decades, beef has been the main commercial source of meat consumption; however, there is now an increased interest in goat meat in technologically developing regions of the world [15]. Coincidentally these regions account for more than 90% of the estimated world goat population of 504 million with approximately 56% in Asia, 33% in Africa and 7% in South and Central America and the Caribbean [16]. Although, goat in body size is less than cattle, it facilitates economic, managerial and biological advantages. The northern region is a major supplier of livestock for the nation's meat protein and leather needs [17], while Ibadan, south western Nigeria is one of the major ruminant markets and centers of meat consumption. Despite the widespread ownership of small ruminants in the south of Nigeria and the market orientation of producers, production is insufficient to satisfy local demand for small-ruminant meat. This has led to the major challenge faced by small ruminant business which is the indiscriminate sale of young seeming healthy pregnant animals that are still reproductively active. The uneconomic sales are always due to feed resources, pest and diseases and other inadequate routine management practices [18]. Therefore, assessment and distribution pattern of slaughtering of pregnant goat was investigated in Ibadan.

Materials and Methods

Study areas

The study was conducted among goat end-marketers in Ibadan, Nigeria. The processors/retailer were categorised into three groups namely: restaurants/canteens, abattoirs and hotels. To ensure uniformity of data, registered members of these groups were

purposively selected. List of registered members was obtained at the Ministry of Agriculture and Natural Resources (for abattoirs), Oyo State tourism board (for hotels) and association of canteen and restaurant owners' office (for canteen/restaurant).

Experimental materials

The study was carried out through the aid of structured questionnaire. Digital camera was used to take relevant pictures.

Methodology

Selection of goat meat processor/retailer

Butchers

Two-stage sampling procedure was used

- **Stage 1:** Purposive selection of functional 10 abattoirs out of existing 20 registered abattoirs.
- **Stage 2:** In each of the selected abattoirs, all butchers were interviewed resulting in 105 respondents.

Chefs

There were 192 registered hotels in Ibadan as obtained from Tourism Board, out of these, 64 had functional restaurants, and all 64 chefs in these hotels were interviewed.

Canteen owners

There were 202 registered canteens with association of canteen owners in Ibadan. Out of these, 93 were executive canteens, and in each of these, the owners were interviewed. In all, 262 respondents were sampled and interviewed.

Hypotheses of the study

- Ho1: Pregnant Does are not slaughtered for sales
- HA1: Pregnant Does are slaughtered for sales
- Ho2: There is no high loss of potentially reproductive Does
- HA2: There is high loss of potentially reproductive Does
- Ho3: There is no relationship between seasonality and gender of animal slaughtered for sale

- HA3: There is relationship between seasonality and gender of animal slaughtered for sale

Data analysis

Data generated from the study were analysed using the descriptive statistics (frequency count and percentages (SPSS, 2012) and Pearson correlation analysis. Chi-square analysis was used in drawing relevant conclusions.

Results and Discussion

The background information of respondents from canteens, hotels and abattoirs in Ibadan expressed in frequencies and percentages are presented in table 1. The result of the analysis shows that in the canteen, 28.0% of the respondents were between the ages 18-34, 64.5% were between the ages 35-60 while 7.5% were above the age of 60 years. In the hotels, 11.3% were between the ages

of 18-24 and those between the ages of 35-60 years were 88.7%. Majority (55.2%) of respondents in the abattoirs were between the ages 35-60 years while those between the ages of 18-34 years were 44.8%. All the respondents from the three population (canteens, hotels and abattoirs) took their present business as their primary occupation. Duration in the business for each of the population showed that respondents from canteens had spent less than five years were 4.3% those that spent 5-10 years were 45.2%, those that spent 11-15 years were 41.9% and those that had spent more than 15 years were 8.6%. In the hotels, respondents had spent 5-10 years in business were 87.1% and those that spent 11-15 years were 12.9%. Respondents from abattoirs with 5-10 years duration in the business were 67.6% and those with 11-15 years were 32.4%. The results indicates that distribution of pregnant goat slaughtering will be high among middle age goat meat processors with more than five years business experience as this group dominate the population.

Variable	Canteen		Hotels		Abattoir		χ ²	p-value
	Frequency	Percentage	Frequency	Percentage	Fre- quency	Percent- age		
Age							9.49***	< 0.001
Below 18 years								
18-34 years	26	28	7	11.3	47	44.8		
35-60 years	60	64.5	55	88.7	58	55.2		
Above 60 year	7	7.5	-	-	-	-		
Primary occupation	93	100	62	100	105	100		
Duration in Biz							12.59***	< 0.001
Less than 5 year	4	4.3	-	-	-	-		
5-10 years	42	45.2	54	87.1	71	67.6		
11-15 years	39	41.9	8	12.9	34	34.4		
Above 15 years	8	8.6						

Table 1: Distribution of goat meat processors/retailer by their socio-economic characteristics.

***: significant at p < 0.001.

The frequency distribution of slaughtering pattern, breed, source and frequency of goat slaughtering among respondents from canteen, hotels and abattoirs is shown on table 2. All the respondents from the three population slaughtered goat for sale. The preferred breed for slaughter in canteens was Red Sokoto (100%)

while in the hotels, breed preference was high (73.8%) for the same breed (Red Sokoto), while West African Dwarf goat (WAD) was less preferred (26.2%). In the abattoirs, the preferred breed for slaughter was high (99.0%) for Red Sokoto and WAD were seldom (1.0%) slaughtered. This result made Red Sokoto breed

(93.4%) overall preferred breed for slaughter and WAD breed 6.6% preferred breed for slaughter among the goat meat processors/retailer in Ibadan. All the respondents (100%) from canteens and abattoirs sourced their goat for slaughter from markets, while in the hotels larger percentage (51.6%) of respondent sourced goat for slaughter from markets, 46.8% of the chefs sourced their

goats from middle men and 1.6% source from farmers. Chi-square (χ^2) analysis was however, significant ($p < 0.01$) for market at the three population. Frequency of slaughtering for sale was 100% in the canteens, while in the abattoirs 98.1% of respondents slaughtered daily and 1.9% weekly. In the hotels, weekly slaughtering was 66.1% and fortnight was 33.9%.

Variable	Canteen		Hotels		Abattoir		χ^2	P-value
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Do you slaughter goat for sales								
Yes	93	100	61	98.4	105	100		
No	-	-	1	1.6	-	-		
Breed of goat preferred for slaughter							5.99***	< 0.001
Red Sokoto	93	100	45	73.8	104	99		
WAD	-	-	16	26.2	1	1		
Others	-	-	-	-	-	-		
Source of goats							9.49***	< 0.001
Market	93	100	32	51.6	105	100		
Middle men	-	-	29	46.8	-	-		
Farmer	-	-	1	1.6	-	-		
Other	-	-	-	-	-	-		
Frequency of slaughtering for sales							9.49***	< 0.001
Daily	93	100	-	-	103	98.1		
Weekly	-	-	41	66.1	2	.9		
Fortnightly	-	-	21	33.9	-	-		
Monthly	-	-	-	-	-	-		
Others	-	-	-	-	-	-		

Table 2: Distribution, breed, source and frequency of goat slaughtered by respondents.

***: significant at $p < 0.001$.

The sex, age and average number of goat slaughtered is shown in table 3. Results show that 54.8% and 58.4% of respondents from both canteens and abattoirs claimed that sex was considered in the goats they slaughtered for sale while 45.2% and 41.6% of respondents from canteens and abattoirs respectively were different. However, in the hotels, larger percentage (98.4%) of respondents claimed that sex was considered in the goats they slaughtered and 1.6% were different. Sex preference was high for male goats in ho-

tels (85.9%) and abattoirs (69.5%). Some respondents in hotels (14.1%) and abattoirs (30.5%) however, preferred female goats. In the canteens, 56.9% of respondents preferred female goats while 43.1% preferred bucks. All the respondents (100%) from canteens stated that age of the goat for slaughter was vital, while in the hotels and abattoirs, almost all (96.8% and 99.0%, respectively) of the respondents expressed same. Age preference was high for young goats in canteens (63.4%) and abattoirs (93.3%). It was

however, low (36.6% and 6.7%) for matured goats in canteens and abattoirs respectively. In the hotels however, age preference was high (88.7%) for matured goats and was low (11.3%) for young ones. The average number of goats slaughtered per day was high (90.2%) for less than five in the canteens and was low (9.8%) for 5-10. Hotels had similar trend as larger percentage of respondents

(72.1%) slaughtered less than five goats and some (27.9%) of the respondents slaughtered between 5-10 goats. In the abattoirs, 50.5% of respondents slaughtered 5-10 goats daily while 48.5% slaughtered less than five goats daily and 1.0% slaughtered more than ten goats daily.

Variable	Canteen		Hotels		Abattoir		χ^2	p-value
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Does sex matter in the animal you slaughter goat for sales								
Yes	51	54.8	1	98.4	59	58.4		
No	42	45.2	61	1.6	42	41.6		
Sex preference for slaughter								
Male	22	43.1	55	85.94	73	69.52		
Female	29	56.9	9	14.06	33	30.48		
Does age matter in the animal you slaughter for sales								
Yes	93	100	60	96.8	101	99.0		
No	-	-	2	3.2	1	1.0		
Age preference							5.99***	<0.001
Young	59	63.4	7	11.3	98	98.3		
Matured	34	36.6	55	88.7	7	6.7		
Old	-	-	-	-	-	-		
Average number of goat slaughtered per day							9.49***	<0.001
Below 5	83	90.2	44	72.1	51	48.6		
5-10	9	9.8	17	27.9	53	50.5		
More than 10	-	-	-	-	1	1		

Table 3: Sex, age and average number of goats slaughtered by respondents.

***: significant at p < 0.001 Young goat - 1-1.5years, matured goat - 2-3years, old goat -4years and above.

The distribution pattern of pregnant Doe wastage among respondent from canteens, hotels and abattoirs is shown in table 4. Results show that 79.6% of respondents from canteens observed pregnant goats among the ones they slaughtered for sale. Also, 41.9% and 47.1% of respondents from hotels and abattoirs, respectively observed the same. However, lower percentages (20.4%) of respondents from canteens did not observe pregnant goats among the ones slaughtered for sale. In the hotels and abattoirs, higher percentages of 58.9% and 52.8% of respondents, respectively did

not observe pregnant goats among the ones they slaughtered for sale. Chi-square (χ^2) analysis was significant (p < 0.01) for pregnant animal observation among all the respondents. Season was found not to affect the choice of breed of goat for slaughter as all (100.0%) respondents from canteens and hotels and 99.0% from abattoirs confirmed this. Seasonality was also found not to be significant in the choice of gender of animal purchase for slaughter as all (100%) of respondents from the three populations ascertain this.

Variable	Canteen		Hotels		Abattoir		χ^2	p-value
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Do you observe pregnant animals among the animals you slaughter								
Yes	74	79.6	26	41.9	49	47.1		
No	19	20.4	36	58.1	55	52.9		
Frequency of pregnant animal observed							9.49***	<0.001
Often	45	60.0	11	22.9	17	35.4		
Occasional	28	37.3	21	43.8	29	60.4		
Seldom	2	2.7	16	33.3	2	4.2		
Does season affect the breed of animal you purchase for slaughter								
Yes	-	-	-	-	1	1		
No	93	100	62	100	104	99		
Does season affect the gender of animal slaughtered								
Yes	-	-	-	-	-	-		
No	93	100	62	100	104	99		

Table 4: Distribution pattern of pregnant does wastage by respondents.

***: significant at p < 0.001.

Presented in table 5 is the inter-relationship among parameters evaluated and distribution pattern of pregnant Does in Ibadan. There was negative significant relationship between duration in business and slaughtering, source of goat, slaughtering frequency and sex as determinant for slaughtering. There was also similar relationship (i.e., negative significance) existing between occupation and age preference, sex as determinant for slaughtering and pregnancy observation. The table (Table 5) also shows that there was positive significant relationship between: Source of goat and breed slaughtered, slaughtering, sex as determinant for slaughtering, age preference and pregnancy observation. Slaughtering

frequency and slaughtering, sex as determinant for slaughtering, age preference, frequency of observation and pregnancy observation. Duration in business and occupation, age preference and average goat slaughtered per day. Age preference and frequency of observation, pregnancy observation and age (of respondents). Breed slaughtered and slaughtering frequency, sex as determinant for slaughtering, age preference and pregnancy observation. Sex as determinant for slaughtering and frequency of observation and age preference. Occupation and pregnancy observation, frequency of observation and average goat slaughtered per day. Age and frequency of observation and pregnancy observation.

	Occupation	Duration in Bus. (DIB)	Slaughtering	Breed slaughtered (BS)	Source of Goat (SOG)	Slaughtering frequency (SF)	Sex as determinant for slaughtering (SDS)	Age determinant for slaughtering (ADS)	Age preference (AP)	Avg goat slaughtered per day (AGSPD)	Pregnant observation (PO)	frequency of observation (FO)
Age	-0.215**	0.538**	0.034	0.024	0.039	0.146*	-0.062	-0.012	0.330**	0.063	0.154*	0.220**
Occupation		-0.166**	-0.003	0.004	-0.019	-0.014	-0.041	0.037	-0.287**	0.394**	0.281**	0.206**
Duration in Biz (DIB)			-0.039	-0.085	-0.183**	-0.213**	-0.251**	-0.068	0.150*	0.175**	0.082	0.076

Slaughtering				-0.017	0.163**	0.168**	0.055	-0.007	0.081	-0.041	0.072	0. ^b
Breed slaughtered (BS)					0.277**	0.391**	0.171**	-0.029	0.284**	0.021	0.152*	0.093
Source of Goat (SOG)						0.572**	0.290**	0.069	0.393**	-0.067	0.321**	-0.038
Slaughtering frequency (SF)							0.446**	0.117	0.537**	-0.031	0.138*	0.327**
Sex as determinant for slaughtering (SDS)								0.021	0.157*	-0.071	-0.384**	0.177*
Age determinant for slaughtering (ADS)									0.066	0.006	-0.019	0.132
Age preference (AP)										0.020	0.262**	0.304**
Avg goat slaughtered per day (AGSPD)											0.096	0.109
Pregnant observation (PO)												-0.061

Table 5: Inter-relationship among parameters and distribution pattern of pregnant does in Ibadan.

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

b. Cannot be computed because at least one of the variables is constant.

Demography of processors

The socio-economic characteristics of meat processors especially the number of years spent in business and age of respondents shows that youth/middle-aged people are found in meat processing business in the study area, indicating the lucrative and flourishing nature of the business and support the assertion of [19]. This

lucrative nature however, can transcend to high loss of pregnant doe wastage in the area in future if indiscriminate slaughtering is not checkmate. Again, the age range of 35-60 years is indicative of the potential that exists for improved marketing practices since people within this age range would be expected to be more receptive to new innovations, considering the fact that all the processors took

their present business as primary occupation. It could be inferred therefore that these carcass retailers (butchers, hoteliers and canteen owners) are professionals in their respective field. Although their educational background were not revealed, it appears that experience rather than education, help the carcass retailers in their managerial ability. However, for the purpose of curbing excesses in the business, the high percentage recorded for primary occupation is a plus as resistance to government policies and innovations means out of business which the retailers will resist.

Breed

The Red Sokoto breed was observed in this study to be mostly preferred by meat processors for slaughter. This findings corroborates the report of [20] who reported the breed as the largest breed of goats in Nigeria. It was only at the hotels that retailer there slaughtered indigenous breed (the West African Dwarf goat). The indication of this is that most pregnant goats slaughtered are from the Northern part of Nigeria and are Northern breeds. Field observation reveals that female WAD goats are better for 'asun' (a special barbecue delicacy) which gave the breed consideration at hotels as customers demand for the product on a regular basis indicating possibility of pregnant doe wastage of this breed too in this particular outlet. The large volume of trade of Red Sokoto breed makes it readily available and might account for its preference. However, respondents claimed that Red Sokoto meat (popularly called 'ogufe' in the study area) is well relished by their customers because of its characteristics flavor and aroma, hence it commands better demand. The report here is pointing at the regular slaughtering of Red Sokoto and West African Dwarf breed and high potential of pregnant doe wastage among these breeds.

Source of goats

In the study area, the meat processors in the three outlets evaluated source their live goat for slaughter mainly from ruminant market. It has been similarly observed by [21] that ruminant production is concentrated more in the North, and they are marketed in major cities and urban areas of the south. The pattern of ruminant movement according to [18] is from farmers to ruminant market to processors and later to consumers. Thus, ruminant market serves as reservoir of pregnant does and therefore can be targeted for appropriation.

Sex of goats

Sex preference was high for male goats slaughtering in the abattoirs and hotels however, in the canteens preference was higher for female goats. This finding is at variance with the report of [12] who reported large number of female slaughtering in two abattoirs in Jalingo, Nigeria. Some of the retailers from canteens and abattoirs claimed that sex of the animal matters in their business, however, in the hotels, majority of the retailers had contrary opinion. Probable reason for this trend might be due to price. According to [22] male animals command higher price at markets than female animals. Consequently, [23] observed that the majority of butchers prefer to purchase male animals for slaughter because of their body conformation and carcass characteristics but the purchase largely depends on what the livestock farmers put forward for sale to the public. Canteen owners will incur more expenses in processing the carcass and this will probably reduce their profit margin and so might be reason for high female goats slaughtering observed in these outlets. Although processing of carcass is done at hotels too, field observation confirm that customers patronizing the hotels demand exclusively for male goat. It can be inferred therefore that pregnant doe wastage will be minimal with this set of meat processors. However, the emergence of high number of female goat slaughtering in canteens in this study shows indication of foetal and reproductive active doe wastages in these outlets. Observation of pregnant does among meat retailers in canteens was more than meat retailers from abattoirs and hotels and this might be due robust and bulkiness of female goats that was the choice animal in these outlets. The assertion is in agreement with [9] who noted that robust animals command higher price and pregnant animals due to their conformation, some marketers exploits the situation to their advantage. Observation on the field confirm that canteen owners in trying to increase their profit margin, purchase more of doe than buck and in the process pregnant does are bought ignorantly.

Age

The present study observed that young goats between the ages of one to two years were mostly slaughtered by meat processors. This pattern was consistent with the three outlets assessed. This might be attributed to cost, what obtained in the market [24] or consumers preference. According to [25], livestock farmers sell off their young animals/stock due to illiteracy, poverty and diseases

condition. However, this phenomenon can have a detrimental effect on ruminant production in such environment where it is been practiced.

Volume of slaughter

Larger numbers of goats are being slaughtered in abattoirs daily than in the other two outlets (Hotels and canteens). This observation indicates higher wastage of pregnant does in the abattoir. Although the study confirm the ratio of male to female goat slaughtering in abattoirs to be ratio 7:3, pregnant goats slaughtering observation among the respondents in these outlets (Abattoirs) was 50%. According to [12] large numbers of pregnant female animals slaughtered in abattoirs can lead to colossal foetal wastages from ruminants especially goats. This phenomenon if not eradicated will put the future of domestic goats production in urban centres in Nigeria under threat.

One of the confronting challenges in attaining self-sufficiency in animal protein production in Nigeria is indiscriminate slaughtering of pregnant animals nationwide [26] and pregnant ruminants wastage has been observed by many researchers in abattoirs [27,28].

Seasonality

Season was generally believed to affect livestock sales as farmer disposed off their animals during the onset of rains to enable them purchase farming inputs for crop farming [28]. However, in this study seasonality was found not to affect choice of breed and sex of goat purchased for slaughtering among all the respondents. This finding is at variance with the reports of [29] and [28] that wastage of pregnant bovines and other animals is high in the peak of dry season. However, probable reason for this contradiction might be attached to high preference for goat meat in the study area and so attracting increase in supply and sale of goats from the North. The null hypothesis 3 is therefore accepted that season do not affect the choice of gender of goat purchased for slaughter among meat processors in the study area.

Conclusion

The null hypothesis 1 was accepted that pregnant does are slaughtered for sale in the study area however, the growing practice of indiscriminate slaughtering of pregnant does would have a negative consequence on the overall productivity of goats especial-

ly the Red Sokoto breed because of its high preference. The alternative hypothesis 2 was accepted that there are high losses of potentially reproductive active does in the study area and this conclusion put the future production of Red Sokoto breed and other breeds of pregnant does in the study area in danger as they are likely to suffer poor rapid multiplication if their production is not enhanced through eradication of indiscriminate pregnant doe slaughtering. Based on the results of this study, null hypothesis 3 was accepted that there is no relationship between seasonality and gender of goat slaughtered for sale, it is concluded also that wastage was higher in Red Sokoto breed, ruminant market is the main source of slaughtered pregnant does, young does of ages 1-1.5 years are mostly slaughtered and wastage is more pronounced in canteens. Studying foetal wastages in goats is germane/imperative in determining their availability and productivity in the coming years. It also spotlight factors that might militate or enhance production.

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