

Prevalence of Rumen Impaction in Small Ruminant (Sheep and Goat) in Bauchi Metropolis

¹Lawan, S.K., ¹Shuaibu, B., ¹Abubakar, M. M., ²Haliru, M. I., ²Ibrahim, U. M., ³Zakka, T. and ⁴Abdullahi, U.

¹*Department of Animal Production, Faculty of Agricultural Technology Abubakar Tafawa*

Balewa University Bauchi, Nigeria.

²*National Animal Production Research Institute, Shika, zaria, Nigeria.*

³*Department of Animal Science, Ahmadu Bello University, Zaria, Nigeria.*

⁴*Department of Animal, Federal University, Gashua, Nigeria*

Corresponding Author: kachalla1171@gmail.com : Phone Number: +2347036915298

Target Audience: *Researchers, government policy makers, sheep and goat farmers. Local farmers*

Abstract

A study was conducted to assess the prevalence of rumen impaction in small ruminant (sheep and goat) in Bauchi metropolis and identify the common risk factor associated with its occurrence as presented at the area veterinary clinic, ran road, Bauchi from 2008 to 2012, primary and secondary data were collected by recording the number of animal brought to the clinic each day in 2012 (1 year) and use of record book for four years (2008 - 2011) respectively. The result of the study showed that out of the 46,653 small ruminants brought to the clinic, 313 (0.675%) had rumen impaction, sheep had the highest prevalence of 0.475% (221/46,653) representing 70.60 % of the total incidence while goats had a prevalence of 0.19 % (92/46,653) representing 29.4% of the total incidence. Overall, there were more female with rumen impaction than male counterpart (71% versus 29%). Also, the 2008 and 2012 had the highest prevalence of rumen impaction than other years. Clinical finding includes distended abdomen, dullness, anorexia, fever, difficulty in breathing, recumbences and anemia, rumen was markedly with foreign materials such as nylon, rubber, plastic and rope. It is recommended that salt lick should be given to small ruminant so as to reduce the incidence of rumen impaction and sheep and goats should be provided with high quality and quantity feed throughout the season, special treatment should be given to female because they need high nutrition programme, proper environmental sanitation and management.

Keywords: *Rumen impaction, prevalence, clinical sign, foreign materials.*

Description of Problem

Sheep and goats have contributed to the economy of many farmers and countries, through the production of high-quality protein (meat, milk and eggs), hides, skins,

fertilizer, power and traction for agricultural purposes (1). Small ruminants such as sheep and goats also serve as a financial reserve for periods of economic distress and crop failure and as primary

source of cash income (2).

Rumen impaction occur when the rumen become packed with (usually with low quality forage) to the point that exit in to other, stomach obstructed, and the animal going off feed, bloating and eventually death. The impaction of the rumen results from the accumulations of foreign bodies such as plastic, bags, rope, hair and others which cause interference with the flow of ingested feed leading to the distension of rumen and absence defecation (3).

Causes of rumen impaction include the feeds high in starch or sugar with lack of protein e.g. low quality forage, corn, cereals grain and roots crop, eating plastics and other foreign debris, lack of water, hungry animal gorging on forage and hair ball in fiber goats. Alterations in the microbial populations of the digestive chambers is a common findings in ruminants that have large amounts of indigestible foreign bodies in the reticulo-rumen, thereby facilitating the pathogenesis of rumen impaction (4). Rumen impaction can result as a primary condition or may be secondary to other conditions including impaction of other parts of the stomach, traumatic reticuloperitonitis, metabolic disorders, viraemia, bacteremia or blood parasitism and ingestion of indigestible foreign bodies such as plastic, leather, nylon, clothes, rope and metal; dry feeds materials especially those that have high fiber content, sand as well as blockage of the omasal orifice by a foreign body and dehydration (5; 6;). Ingestion of indigestible foreign bodies is mainly associated with nutritional deficiencies, environmental pollution and poor feeding management, and causes various problems

in the rumen and reticulum of ruminants (7). Ruminants reared in peri-urban and sub-urban (rural) areas are exposed to indigestible materials when reared on free range in environment that is polluted with such materials (3; 8). The effect of rumen impaction is interference of the flow of ingesta leading to rumen distension and absence of defecation and death (6; 3; 8), leading to serious economic loss (9).

A high proportion of this livestock population are reared under the extensive system of animal husbandry which is characterized by uncontrolled movement over a large expanse of land, grossly inadequate feed intake, poor nutrition and high diseases prevalence. Ingestion of foreign body in cattle was reported to be a condition of great economic importance and causes loss of population and high mortality rate (10). Sheep and goat are highly selective feeders and ingest significantly less amount of foreign bodies as compared to cattle (10). The area available for grazing particularly in the case of animals reared in the urban and sub-urban areas are polluted with plastics, rope, wool and metal. This pollution may be predicted as a growing problem for grazing animals because of the poor waste management system and inadequate available of feed during the long dry season. The study was carried out to determine the precedence of rumen impaction on small ruminant (sheep and goat) with respect to sex, species and year and also to evaluate factors associated with the ingestion of those indigestible materials in sheep and goat and to improve livestock production in local, state and country in general.

Material and Methods

Study Location:

Bauchi local government area is located in the northern guinea savanna region of Bauchi state, northeastern part of Nigeria, on latitude 100, 100 norths, longitude 90,49 east at an altitude of 690m above the sea level (11). Bauchi has a total land area of 48,200km² with population of about 2.8300 million (1991 census). Rainfall in Bauchi range from 700mm to 1000mmper annum, the vegetation is widely in the northern part of the central zone of the state. The soil ranges from light texture sandy to clay, loam and to lesser extent heavy lateric soil.

Data collection:

The primary and secondary data were collected by recording the animal brought to the clinic each day in (2012 one year) and use of record book for 4 years (2008-2011) respectively.

Data analysis:

All the data were stored using computer base management system employing MS excel and analyzed using SPSS software (SPSS 18.0). For the analysis descriptive statistics (frequency distribution, mean, percentage and standard deviation) was also employed.

Result

From a total of 313 small ruminant's animal, 221 sheep (70.60%), and 92 goats (29.39%) were examined for the presence of indigestible materials of these, 91 (29.02%) and 222 (71.02%) were male and female respectively. The year of the occurrence was 27.14%, 12.45%, 17.89%, 15.01%, and 27.145 are 2008, 2009, 2010,

2011, and 2012 respectively. The result show that the animal brought to the area veterinary were in poor body condition they were moderately to severely emaciated with prominent rib cage and pelvicbone.

Table 1 shows the sex distribution in relation to prevalence of rumen impaction. The result indicated that more female 222(71.02%) were affected by prevalence of rumen impaction than male counterpart 91 (29.02%). Furthermore, the result revealed that the prevalence of rumen impaction was significantly higher ($p < 0.05$) in female than male.

Prevalence of indigestible materials in relation to animal species examined revealed that about 221 (70.39%) were ovine while 92 (29.39%) were caprine. The result indicated that there was significantly ($p < 0.05$) difference in terms of indigestible material ingestion between ovine and caprine as shown in table 2.

The prevalence of indigestible material among sheep and goat based on the year of occurrence, indicated that 2008 and 2012 has the greater value of 86 (27.49%) and 85 (27.15%) respectively while lower value of 39 (12.46), 56 (17.89), 47 (15.04) were obtained from the other years of 2009,2010,2011 as shown in table 4.

Indigestible materials were more frequently encountered in sheep and goat in the year 2008 and 2012 were 86 (27.49%) and 85 (27.15%) respectively, as in table 4.

Incidence frequency by species and year in table 5 indicates prevalence of undegradable materials found in ovine 48 (15.33%) and 64 (20.4%) were 2008 and 2012, respectively have higher percentage.

Table 1: Effect of sex on the incidence of rumen impaction in sheep and goat

Sex	Number	Percentage (%)
Male	91	29.02
Female	222	71.02
Total	313	100

Table 2: Effect of specie on incidence of rumen impaction in sheep and goats

Sex	Number	Percentage (%)
Ovine	221	70.60%
Caprine	92	29.39%
Total	313	100

Table 3: Incidence frequency by specie and sex on rumen Effect of sex and specie on incidence of rumen impaction in sheep and goats

Specie	Sex	Number	Percentage (%)
Ovine	Male	66	21.08
	Female	155	49.52
Caprine	Male	25	7.98

Table 4 Effect of years in incidence of rumen impaction in sheep and goats

Year	Number of Incidence	Number (%)
2008	86	27.47
2009	39	12.46
2010	56	17.89
2011	47	15.04
2012	85	27.15
Total	313	100

Discussion

The present study has shown that the female small ruminants are more affected with cases of rumen impaction especially female sheep which expressed the highest percentage of 222 (71.02%). A much higher prevalence rate (97%) was reported in Nigeria in sheep and goats brought from urban area for slaughter (8). Female small ruminants are more affected with rumen impaction may be due to the fact that they

are kept for many years at farm or home than male which are usually culled from herd.

Ovine specie was found to have higher prevalence in rumen impaction with the 70.60% than caprine specie. Rumen foreign body occurred less frequently in goat than in sheep due to the selective nature of goat while grazing (8). Similarly, the findings of this study revealed the frequency of occurrence of rumen foreign

Table 5 Effect of year and specie on incidence of rumen impaction in sheep and goats

Year	Specie	Number	Percentage (%)
2008	Ovine	48	15.33
	Caprine	38	12.14
2009	Ovine	29	9.26
	Caprine	10	3.19
2010	Ovine	43	13.74
	Caprine	13	4.15
2011	Ovine	37	11.82
	Caprine	10	3.19

body in sheep, (3) reported a higher prevalence in female small ruminants due to the nutritional demand during pregnancy, lactation and kept longer than the male for breeding and hence predisposing could be more than that of the female.

Specie and sex were found to have higher prevalence in ovine female with 48.52% than other interaction. Different results reported for sex and age were significantly higher ($p < 0.05$) interaction with rumen foreign body (12).

The years 2008 and 2012 were found positive of prevalence of rumen impaction than the rest of the years due to the increase in literacy of the farmer.

Ovine in 2012 had significantly ($p < 0.05$) higher presence of rumen impaction because are the one stayed for a long period of time in herd for production.

Conclusion

1. prevalence of rumen impaction recorded in the present study calls for proper environmental sanitation and management of small ruminants, which can be confused with pregnancy.
2. When clinical signs such as distended abdomen were observed in female sheep and goats during pregnancy, examinations by

ballottement and proper examination should be done, bearing in mind the possibility of rumen impaction

3. Livestock should be fed with proper ration to avoid low mineral content in feed.

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