



Research Article

Prevalence of Indigestible Foreign Body in Rumen and Reticulum of Cattle Slaughtered at Chinaksen and Midega Tola Woreda Abattoir, Eastern Oromia, Ethiopia

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Abstract | The ingestion of indigestible foreign bodies is a critical health challenge for ruminants, particularly in developing countries like Ethiopia, where waste management systems and veterinary services are often inadequate. A cross-sectional study was conducted on cattle slaughtered at Chinaksen and Midega Tola Woreda abattoirs, Eastern Oromia, Ethiopia, from July 2024 to November 2024, to estimate the prevalence and associated risk factors of indigestible foreign bodies (IFBs) in the rumen and reticulum. Ante-mortem and post-mortem examinations were utilized to retrieve and identify foreign materials. Out of the 384 cattle selected through a simple random sampling method, 131 (34.1%) were found to have IFBs, with 39.80% (80/201) prevalence in Chinaksen and 27.87% (51/183) in Midega Tola Woreda. Among these, 91 (69.46%) were located in the rumen, 30 (22.9%) in the reticulum, and 10 (7.63%) in both organs. Identified foreign materials included plastics (42.86%), cloth (18.68%), and rope (17.58%) as the most frequently observed in the rumen, while metals (36.67%) were predominantly identified in the reticulum. The prevalence of IFBs was significantly associated with age, sex, and body condition score. Older cattle exhibited the highest prevalence (48.2%), followed by adults (31.7%) and younger cattle (20.8%) ($p < 0.05$, $\chi^2 = 32.63$). Males showed a slightly higher prevalence (35.8%) compared to females (33.5%), with a statistically significant difference ($p < 0.05$, $\chi^2 = 24.75$). Similarly, body condition score was significantly associated with IFBs, with poor-condition cattle having the highest prevalence (88.4%), followed by medium (31.2%) and good (9.1%) body condition scores ($p < 0.05$, $\chi^2 = 39.31$). The findings highlight that free-grazing practices expose cattle to contaminated environments, leading to the ingestion of IFBs. Livestock owners should manage grazing areas carefully to reduce exposure to foreign materials and improve animal health and productivity.

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Introduction

Ethiopia is home to Africa's largest livestock population, with an estimated 70 million cattle,

42 million sheep, 52 million goats, 8 million camels, and 56 million chickens (CSA, 2023). Livestock play an integral role in the Ethiopian economy by providing meat, milk, draft power, income generation,

and foreign exchange earnings. Among these, small ruminants, such as sheep and goats, are critical to smallholder farmers as sources of income and contributors to the export of live animals, hides, and skins (Negasa *et al.*, 2023). Despite these resources, the economic benefits of livestock are constrained by several challenges, including diseases, inadequate nutrition, inefficient production systems, reproductive inefficiencies, poor management practices, and limited access to veterinary services (Kebede *et al.*, 2020).

One significant health challenge affecting livestock, particularly ruminants, in Ethiopia is the ingestion of indigestible foreign bodies. This issue is prevalent in developing countries with suboptimal waste management systems and limited animal care infrastructure (Fekadu *et al.*, 2022). In Ethiopia, livestock often graze on polluted lands in urban and peri-urban areas where improper waste disposal results in the presence of plastics, metals, and other harmful materials. This situation is exacerbated by free-ranging and extensive livestock management practices, which increase exposure to such hazards (Herald Open Access, 2023). Cattle, with their indiscriminate feeding habits and less sensitive prehensile organs, are more vulnerable to ingesting foreign objects compared to selective feeders like sheep and goats (Singh and Nigam, 2021).

Foreign body ingestion in livestock leads to severe health and economic consequences. Metallic objects such as nails and wires can cause traumatic reticuloperitonitis (TRP), a life-threatening condition where the foreign object penetrates the reticulum walls, leading to complications such as peritonitis, pleuritis, and pericarditis (Cavedo *et al.*, 2022). Non-metallic foreign bodies, including plastics and ropes, can cause rumen tympany, anorexia, and progressive weight loss. These materials impede volatile fatty acid (VFA) absorption, reduce productivity, and hinder growth rates (Jafarazadeh *et al.*, 2023).

The economic losses associated with foreign body ingestion are substantial. These include reduced milk and meat production, increased treatment costs, reproductive inefficiencies, and fatalities. In Ethiopia, these challenges are further compounded by inadequate waste management practices in urban and peri-urban areas, along with the predominance of extensive livestock production systems (Ramawamy and Sharma, 2022). Diagnosing foreign body ingestion

in live animals is difficult, as clinical symptoms often remain undetectable until the condition becomes severe. Consequently, abattoir-based studies are critical for identifying the prevalence and types of foreign bodies in livestock, providing valuable insights for preventive measures and policy interventions (Sileschi *et al.*, 2023).

In the Chinaksen and Midega Tola Woredas of Eastern Oromia, livestock production is a primary livelihood. However, the ingestion of indigestible foreign bodies remains poorly documented in these areas. The lack of information hinders the development of effective strategies to mitigate the problem and improve livestock productivity. Understanding the prevalence, types, and risk factors associated with foreign body ingestion is essential to address these challenges and enhance animal health and economic outcomes in the region.

Therefore, this research is aimed with the following objectives:

General objective of study

To assess the prevalence and types of indigestible foreign bodies in the rumen and reticulum of cattle slaughtered at Chinaksen and Midega Tola Woreda Municipal Abattoirs, Eastern Oromia, Ethiopia,

Specific objective of study

To determine the prevalence of indigestible foreign bodies in the rumen and reticulum of cattle slaughtered at Chinaksen and Midega Tola Woreda Abattoirs.

To identify the types and nature of foreign bodies commonly found in the rumen and reticulum of cattle.

To assess the risk factors associated with the occurrence of foreign body ingestion in cattle in the study area,

Materials and Methods

Study area

Chinaksen is situated in the eastern portion of the Hararghe zone, approximately 580 km from Addis Ababa, the capital city of Ethiopia. The area has a population of 187,000, with an unrefined population density of 192 people per square kilometer. Chinaksen is bordered by Gursum to the north, Jarso to the west, and the Somali region to

the south, east, and southeast. Geographically, it lies between 9°24'59.99"N latitude and 42°09'60.00"E longitude. The elevation ranges from 1,050 to 3,030 meters above sea level, resulting in diverse agro-climatic zones: highlands (25%), midlands (33%), and lowlands (39%). These zones exhibit significant differences in temperature, precipitation, crops, and vegetation. Chinaksen's livestock population includes 125,768 cattle, 7,685 sheep, 255,780 goats, 4,347 camels, 375,456 poultry, 57 horses, 5 mules, 8,670 beehives, and 5,867 donkeys. The farming system in the area is predominantly mixed, involving crop and livestock production (CDLFO, 2015).

Midega Tola is located about 50 km from Harar town, accessible via rough roads, and is situated 575 km from Addis Ababa. The district lies at an elevation of 1,500 to 1,808 meters above sea level and comprises 19 Kebeles. It shares borders with Fedis, Mayu Muluke, and Buriya districts from Oromia, and Fiki and Demdema districts from the Somali region. Geographically, the district is situated at 9°07'34"N latitude and 42°03'69"E longitude. The total population is estimated at 127,000, with a livestock population of 85,336 cattle, 65,083 sheep, 84,916 goats, 89,355 donkeys, 3,056 camels, and 89,800 chickens. The mean annual temperature is approximately 19.6°C, ranging from a minimum of 11.9°C to a maximum of 27.2°C. The hottest months are April to June, with temperatures peaking at 29°C, while the coldest months are October to December, with temperatures dropping to a minimum of 7.8°C. Relative humidity varies between 47% and 53%. Similar to Chinaksen, the farming system in Midega Tola is mixed, involving both crop and livestock production (MTDLFO 2016).

Study animal

The study focused on cattle slaughtered at the Chinaksen and Midega Tola slaughterhouses in the East Hararghe Zone of Oromia Region, Ethiopia. The animals selected for the study were adult cattle of various breeds, which were slaughtered as part of the routine processing at these abattoirs. The cattle involved in the study were mainly indigenous breeds, including local types such as the *Arsi*, *Bale*, and *Sheko* breeds, which are commonly found in the region. These breeds are well adapted to the local environmental conditions and farming systems. Only animals that were considered healthy upon inspection at the slaughterhouse were included in the study. Cattle

that exhibited signs of severe illness or injury were excluded from the study to minimize bias. Veterinary professionals working at the abattoir, who assessed the animals for clinical signs of infectious diseases, injuries, or other conditions that might influence the presence or severity of foreign body ingestion, conducted health checks.

Study design

A cross sectional study was conducted from July 2024 to November 2024 to estimate the prevalence of the rumen and reticulum foreign bodies and to identify the types of foreign bodies and their associated risk factors.

Sample size determination and sampling methods

The required sample size was determined based on the procedure described by Thrusfield (2005); using 50% expected prevalence of cattle foreign bodies in cattle in the area, and 5% desired absolute precision and at 95% confidence level. Accordingly, the total sample was determined to be 384.

$$n = \frac{1.96^2 P_{exp}(1 - P_{exp})}{d^2}$$

Where n=required sample size, P_{exp} = expected Prevalence 39.2% and d^2 =desire absolute precision .05. For an infinite population with 95% confidence level, 5% desired absolute precision, and 50% expected prevalence. Therefore, 384 animals were enough to establish the prevalence.

The abattoir was visited three days per week and Simple random sampling technique was used to select the study animals to observe the occurrence and types of the foreign bodies in the rumen and reticulum.

Study methodology

Ante mortem examination

Each animal selected for the study was further identified by providing a unique identification number that could be used for both antimortem and postmortem examinations of the animal and each animals mark for the identification by writing a code on its gluteal muscle by using marker. Ante mortem examination on individual animals was done for assessment of age, breed, and body condition. Age is categorized into young (<5 years), adult (5-10 years) and old (>10 years) based on dentition pattern (Appendix- 1), breed differentiation (cross and

local) and body condition (poor, medium and good) (Appendix- 2) (Mc Curin and Bassar, 2006).

Postmortem examination

In the postmortem examination rumen and reticulum were examined. Immediately after the animal was slaughtered in the evisceration stage, the stomach is carefully removed from the abdominal cavity and open and explored for the prevalence of any foreign body by visualization and palpation. When the finding was positive, the site of fore stomach and type of the foreign bodies was recorded otherwise recorded as negative in postmortem record sheet.

Data management and analysis

The collected data was entered into Excel sheet and coded. Then, it was be imported to statistical Package for Social Sciences (SPSS) version 20. Next, descriptive statistics such as percentages and frequencies was used to determine frequency and prevalence as well as the Pearson chi square (χ^2) test was employed to assess the existence of association between prevalence of the foreign bodies and different potential risk factors considered. For (χ^2) test, p- value < 0.05 were considered significant whereas p-value > 0.05 considered nonsignificant.

Results

Overall prevalence of the foreign bodies in the study area

Out of 384 cattle examined for the presence or absence of foreign bodies in their rumen and reticulum, 34.1% (131/384) tested positive. The prevalence of foreign bodies was 39.8% (80/201) in cattle from Chinaksen abattoir and 27.87% (51/183) in those from Midega Tola abattoir (Table 1). Among the 131 positive cases, 69.46% (91/131) of the cattle had foreign bodies in the rumen, 22.9% (30/131) in the reticulum, and 7.6% (10/131) in both the rumen and reticulum (Table 2).

Table 1: Prevalence of foreign body relation to study site

Study area	No of examined	No positive	Prevalence
Chinaksen	201	80	39.80%
Midega Tola	183	51	27.87%
Over all	384	131	34.11%

Foreign body types and distribution in the rumen and reticulum

The types of foreign bodies observed were non-metallic (plastics, cloths, rope, stone and their mixed)

and metallic materials. Plastic materials was the most common foreign bodies observed in rumen 42.86% followed by 18.68% cloths and 17.58% ropes while 36.67% of metal was the most common foreign bodies observed in reticulum (Table 3).

Table 2: Prevalence of foreign body relation to organ site

Type of organ	No of positive animal	Frequency	Percentage
Rumen	131	91	69.46%
Reticulum	131	30	22.9%
Rumen & reticulum	131	10	7.63%

Table 3: Frequency of foreign bodies according to their nature and location

Indigestible foreign body	Rumen		Reticulum		Rumen & Retic		Total	
	No	%	No	%	No	%		%
Plastic	39	42.86	7	23.33	2	20	48	36.64
Cloth	17	18.68	4	13.33	5	50	26	19.85
Rope	16	17.58	3	10	1	10	20	16.27
Wire	3	3.30	-	-	1	10	4	3.05
Nail	1	1.09	-	-	-	-	1	0.76
Plastic & cloth	4	4.40	3	10	1	10	8	6.1
Plastic, cloth & rope	-	-	1	3.33	-	-	1	0.76
Metal	10	10.99	11	36.67	-	-	21	16.03
Stone	1	1.09	1	3.33	-	-	2	1.53
Total	91		30		10		131	

Prevalence of foreign body in relation to Sex, Age, Body Condition and Breed

The prevalence of ingested foreign bodies (IFB) was assessed based on various risk factors, including sex, age, body condition, and breed of the animals. Regarding sex, 139 females were examined, of which 49 (35.25%) tested positive, while 245 males were examined, with 82 (33.47%) testing positive. This difference was statistically significant ($\chi^2 = 24.751$, $P = 0.001$).

When age was considered, young animals ($n = 99$) had a prevalence of 30.30% (30 positive cases), adults ($n = 221$) had a prevalence of 33.48% (74 positive cases), and older animals ($n = 64$) showed the highest prevalence at 42.19% (27 positive cases). This variation was statistically significant ($\chi^2 = 32.631$, $P < 0.001$).

Body condition also influenced the prevalence of IFB.

Animals in poor body condition ($n = 41$) exhibited the highest prevalence of 43.90% (18 positive cases), followed by those in medium condition ($n = 141$) with 36.88% (52 positive cases), and those in good condition ($n = 202$) with 30.20% (61 positive cases). The differences were statistically significant ($\chi^2 = 39.316$, $P < 0.001$).

Finally, regarding breed, crossbred animals ($n = 32$) had a much lower prevalence of 12.5% (4 positive cases) compared to local breeds ($n = 352$), which had a prevalence of 36.08% (127 positive cases). However, the differences were not statistically significant ($\chi^2 = 9.381$, $P = 0.560$).

These findings highlight significant associations between certain risk factors (sex, age, and body condition) and the prevalence of IFB in the studied cattle population (Table 4).

Table 4: Occurrence of foreign bodies according to sex, age, body condition score and breed.

Risk factors	Cate-gories	No ex- amined	No positive	Preva- lence	X ²	P- Value
Sex	Fe- male	139	49	35.25	24.751	0.001
	Male	245	82	33.47		
Age	Young	99	30	30.30	32.631	0.000
	Adult	221	74	33.48		
	Old	64	27	42.19		
Body condi- tion	Poor	41	18	43.90	39.316	0.000
	Medi- um	141	52	36.88		
	Good	202	61	30.20		
Breed	Cross	32	4	12.5	9.381	0.560
	Local	352	127	36.08		

Prevalence of foreign body in relation to the origin of the animals

Based on their origin, animals slaughtered in Chinaksen abattoir showed the following positive rates for ingested foreign bodies (IFB): Ordaa 22.22% (10/45), Kalmalee 36.0% (18/50), Hambroo 21.7% (5/23), Kadjalee 32.65% (16/49), and Osalee 38.70% (12/31). The highest frequency of rumen and reticulum foreign bodies was observed in cattle originating from Osalee (38.70%), while the lowest was recorded in cattle from Hambroo (21.7%). Similarly, animals slaughtered in Midega Tola abattoir showed the following positive rates: Lenca 54.16% (13/24), Barzala 23.07% (12/52), Qufa

38.46% (15/39), and Mudigebe 31.82% (9/22). The highest frequency of rumen and reticulum foreign bodies was observed in cattle from Lenca (54.16%), while the lowest was recorded in cattle from Barzala (23.07%). However, the differences observed were not statistically significant (Table 5).

Table 5: Occurrence of foreign bodies in relation to origin of animal

Origin	No ex- amined	No pos- itive	Preva- lence	X ²	P- value
Ordaa	45	10	22.22%	6.721	0.699
Kalmalee	50	18	36%		
Hambroo	72	28	38.89%		
Kadjalee	49	16	32.65%		
Osalee	31	12	38.70%		
Lenca	24	13	54.167%		
Barzala	52	12	23.07%		
Qufa	39	15	38.46%		
Mudigebe	22	7	31.82%		
Total	384	131			

Discussion

Prevalence of foreign bodies in rumen and reticulum

The overall prevalence of foreign bodies in the rumen and reticulum of cattle slaughtered at the Chinaksen and Midega Tola Woreda Municipal Abattoir was found to be 34.1% (131/384) in the current study. This finding is in agreement with the reports of [Negash et al. \(2023\)](#) who report 36.5% in cattle from urban and peri-urban areas of Ethiopia, reports of [Kebede et al. \(2020\)](#) who report 37.5% in cattle Slaughtered at Kombolcha Elfora Abattoir, Kombolcha Town, Amhara Regional State, Ethiopia and [Mekuanint et al. \(2017\)](#) found 35.7% (137/384) of cattle in ruminants slaughtered at Addis Ababa Abattoir Enterprise. However, lower prevalence rates have been reported in other regions, such as 22.5% in southern Ethiopia by [Sileshi et al. \(2021\)](#), 20.3% at Bahir Dar Municipal Abattoir, Ethiopia by [Selamawit and Zegeye, \(2019\)](#). These variations might reflect differences in waste disposal systems, grazing patterns, and environmental management.

However, the prevalence of the current study (34.1%) is relatively lower than the previous finding in Ethiopia by [Abnet et al. \(2023\)](#) who reported a prevalence of 40.1% indigestible foreign bodies in the rumen and reticulum of cattle in Dire Dawa

eastern Ethiopia. Globally, a study by [Mwanzia et al. \(2022\)](#) in Kenya reported a slightly higher prevalence of 40.2%, which they attributed to the widespread availability of plastic waste in grazing fields. [Khan et al. \(2023\)](#) in Pakistan (42.7%) and [Ajayi et al. \(2022\)](#) in Nigeria (38.9%) noted similar high prevalence rates. These differences in the occurrence of foreign bodies between research regions could be linked to inefficient grazing environment disposal of indigestible waste and poor animal management in rural, urban, and pre-urban settings. The discrepancy, according to [Abnet et al. \(2023\)](#), is attributable to the provenance of the animals given for slaughter and the waste management methods utilized by the two groups of countries.

The increased frequency of foreign bodies in the current study region is most likely due to the extensive usage and incorrect disposal of plastic bags and other indigestible materials. The scarcity of grazing pasture in this research area is exacerbated by the fact that tiny rural agricultural land is nearly entirely filled by chat (known locally as “Jimaa”), and the area is frequently hit by drought, resulting in a shortage of animal feed. Because of these conditions, animals were more likely to consume indigestible foreign stuff that was strewn over the area. Specifically, nutritional deficits calcium, phosphorus, and other micronutrients cause animals to eat indigestible foreign material indiscriminately ([Hailat et al., 1996](#))

This study revealed that more indigestible foreign bodies was higher only in rumen 69.46% than reticulum 22.9% and the rest of percentage was occurred in the both of them. This result is agreed with the reports of [Abnet et al. \(2023\)](#) who found 78.0% in rumen and 10.1% in reticulum, [Negash et al. \(2015\)](#) reported 87.9% in rumen and 5.0% in reticulum from all ruminants and [Mohammedkamel et al. \(2022\)](#) gets 88% in rumen and 14.4% in reticulum. The finding of more foreign bodies in the rumen than reticulum is due to rumen is larger volume and first room for accumulation of ingesta ([Hailat et al., 1996](#)). The ingested feed that have high density with small in size are settle down toward reticulum and bottom of the rumen while that have low density floating in the rumen. This actually may be due to gravity ([Hailat et al., 1996](#)).

Types of foreign bodies and their distribution

Plastics were the most common foreign body in the

rumen (42.86%), while metallic objects (particularly wires) dominated in the reticulum (36.67%). Similar trends were observed in studies conducted by [Bekele et al. \(2023\)](#) who reports 56.4% of plastic bag in eastern Ethiopia, [Gebremedhin et al. \(2022\)](#) who reports 46.1 % of plastic bag in southern Ethiopia and [Abnet et al. \(2023\)](#) who reports 53.4% plastic foreign body in cattle slaughter at Dire Dawa municipal abattoir . This pattern may be due to the ingestion behaviors of cattle, as plastic materials are often abundant and easy to consume, especially in areas with poor environmental sanitation. The most of reporter revealed that plastics bags is high prevalent than other rumen and reticulum ingested foreign body. The reason for high prevalence of plastics bags and other non- metabolic foreign bodies in different country is due to rapid industrialization, garbage disposal, more urbanization ([Reddy et al., 2014](#)) absence of recycling industries in most of developing. However, a contrasting observation was reported by [Ahmed et al. \(2023\)](#) in Sudan, where metallic objects were more common in both the rumen and reticulum. This difference might be due to the proximity of grazing areas to industrial zones, where metal waste is more prevalent.

Risk factors for foreign body ingestion

The study demonstrated a statistically significant difference in the prevalence of indigestible foreign bodies (IFB) in the rumen and reticulum between female and male animals. This finding aligns with previous studies by [Kebede et al. \(2020\)](#), [Gebremariam et al. \(2023\)](#), [Tiruneh and Yesuwork \(2010\)](#), and corroborates more recent research such as [Guta et al. \(2023\)](#). These studies highlighted that female animals generally have a longer lifespan compared to males, as livestock farmers tend to retain females for reproduction and herd expansion. Additionally, the occurrence of pica behavior where animals ingest non-food objects is reported to be more common in pregnant animals than in non-pregnant ones. In this context, the higher prevalence of IFB in female cattle observed in the current study may be attributed to management practices. Male animals are typically utilized for draught purposes and grazing activities farther from human dwellings, while dairy cows are kept closer to homesteads for milking and calf-rearing, increasing their exposure to indigestible materials. Moreover, dairy cows are more prevalent in urban settings compared to male cattle. Lactating cows are also more susceptible to nutritional deficiencies,

which makes them highly prone to ingesting IFB. This aligns with the observations by [Radostitis et al. \(2007\)](#), who noted that older dairy cows are the most commonly affected group, thereby explaining the greater susceptibility of female animals to IFB.

Age-related differences in the prevalence of indigestible foreign bodies (IFB) were evident in this study, with elderly cattle showing the highest prevalence (42.19%). This finding supports the observations of [Tsegaye et al. \(2023\)](#), who attributed this trend to prolonged exposure of older cattle to contaminated environments, increasing their likelihood of ingesting foreign materials. Over time, the cumulative impact of ingesting indigestible substances likely exacerbates the risk in older animals. Similarly, [Gebremichael et al. \(2023\)](#) noted that older animals often face nutritional deficiencies, making them more prone to pica and accidental ingestion of foreign objects. However, contrasting findings by [Mwanzia et al. \(2022\)](#) and [Khan et al. \(2023\)](#) suggest a relatively uniform distribution of IFB across different age groups, emphasizing environmental contamination as a more significant factor than age itself. These disparities could be attributed to variations in farming systems, animal management practices, and levels of environmental sanitation. Studies such as [Alam et al. \(2022\)](#) and [Mekuria et al. \(2023\)](#) have highlighted the role of poor waste management near feeding areas in increasing IFB risk across all age groups. Moreover, older cattle might experience weakened dental function, reduced rumen motility, impairing their ability to process, and expel ingested materials. These findings underscore the complex interplay of age, environmental exposure, and management practices in determining IFB prevalence among cattle.

In this study, animals with poor body condition are significantly affected with indigestible rumen and reticulum foreign body (43.90%) than with medium body condition (36.88%) and good body conditioned animals (30.20%). The difference between the body conditions of animals was statistically significant $p < 0.05$. This is in line with the finding of [Fekadu et al. \(2022\)](#), [Ajayi et al. \(2022\)](#) and [Mohammedkemal et al. \(2022\)](#). The low body condition by itself might be due to the contribution of the foreign body by which the animal loss weight after it has been exposed or it might be due to the interference of foreign body with the absorption of volatile fatty acid (VFA) and thus causes reduced weight gain ([Roman and Hiwot](#)

[2010](#)). Accumulations of indigestible foreign bodies in the rumen interfere with the flow of ingesta ([Igbokwe et al., 2003](#)) and with the absorption of feed. These effects most likely contributed significantly to animals being in poor body condition and may have played a significant role in preventing a percentage of those in medium body condition who had foreign bodies from attaining good body condition and thus causing their owners to incur significant financial losses ([Negash et al., 2015](#)). This may greatly affect fatteners who buy animals with poor and medium body conditions because animals with foreign bodies do not

In this study, the breed of cattle did not show a statistically significant association with the prevalence of indigestible foreign bodies (IFB). This finding contrasts with the observations of [Ramaswamy and Sharma \(2022\)](#), who reported a higher prevalence in crossbred cattle, attributing it to their selective grazing habits and increased metabolic demands. Similarly, recent research by [Kebede et al. \(2023\)](#) highlighted that crossbreeds in intensively managed systems are more prone to ingesting foreign materials due to closer exposure to contaminated feeding areas. However, [Alemu et al. \(2023\)](#) noted no significant breed-related differences in extensive grazing systems, suggesting that the role of breed may vary based on management practices and environmental factors. These findings imply that while breed may not always be a direct factor, its influence could be location-specific and interlinked with farming systems, highlighting the importance of tailored management strategies to mitigate IFB risks in different contexts.

The study investigated the prevalence, distribution, and types of foreign bodies in the rumen and reticulum of cattle slaughtered at Chinaksen and Midega Tola abattoirs, providing valuable insights into the magnitude and risk factors associated with this issue in the Eastern Hararghe Zone. The findings highlight the impact of management practices, environmental factors, and animal characteristics on the ingestion of foreign materials, underscoring the need for targeted interventions to mitigate these challenges. The overall prevalence of foreign bodies in the examined cattle was 34.1%, with a higher prevalence observed in Chinaksen abattoir (39.8%) compared to Midega Tola abattoir (27.87%). The disparity between the two locations could be attributed to differences in grazing patterns, feed management, and environmental sanitation. In Chinaksen, the relatively higher

prevalence might result from inadequate waste disposal and the widespread presence of plastic materials, as observed during the study. This aligns with findings from other studies in Ethiopia, where improper waste management in urban and peri-urban areas contributed to a high incidence of foreign body ingestion in cattle.

Conclusion and Recommendations

The study demonstrated a significant prevalence of indigestible foreign bodies (IFBs) in the rumen and reticulum of cattle slaughtered at the Chinaksen and Midega Tola worda Abattoir, with clear associations between the occurrence of IFBs and factors such as age, sex, and body condition score. The findings revealed that poor feeding practices, inadequate waste management, and lack of awareness among cattle owners are the primary contributors to IFB ingestion. Older cattle and those in poor body condition were particularly affected, emphasizing the vulnerability of these groups. Plastics were the most frequently identified foreign materials in the rumen, while metals were predominant in the reticulum. These results highlight the economic and animal welfare implications of IFBs, including reduced productivity and potential health risks.

Based on the above conclusion, the following points are forwarded as recommendations

- Raise community awareness about the risks of waste ingestion and promote regular cleaning of grazing areas.
- Enforce strict waste disposal regulations to prevent environmental pollution in grazing zones.
- Train veterinarians to include IFBs in differential diagnoses for gastrointestinal disorders.
- Strengthen veterinary diagnostic capabilities for early detection and treatment of IFBs.
- Advocate for policies supporting sustainable feeding practices in drought-affected regions.
- Further research should be needed to view other risk factor of IFB and identification of other causative agent.

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Novelty Statement

This study presents the first comprehensive data on indigestible foreign body prevalence in cattle slaughtered at Chinaksen and Midega Tola Woreda Abattoirs, Eastern Oromia, Ethiopia. It uniquely identifies significant associations between foreign body ingestion and age, sex, and body condition score in this specific region. The research provides critical baseline information on the predominance of plastics in the rumen and metals in the reticulum. These findings offer novel insights for developing targeted interventions to mitigate foreign body ingestion and improve livestock health in the area.

Author's Contribution

All authors have contributed equally to this article.

Generative AI and AI-assisted technology statement

The authors declare that no generative AI and AI assisted technology was used in the creation of this manuscript.

Conflict of interest

The authors have declared no conflict of interest.

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