

## Retrospective Study (2010- 2014) of Disease Conditions among Reproductive System of Ruminants at Guto-Gida Veterinary Clinic, East Wollega Zone, Ethiopia

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**Abstract:** Reproductive disorders of domestic ruminants significantly reduce their productivity which is of great concern of production worldwide, because most reproductive disorders adversely affect the future fertility. A five year retrospective study of reproductive disorders of ruminants presented to Guto-Gida Veterinary Clinic, Nekemte, Ethiopia was conducted with the objective of prevalent reproductive problems (reproductive diseases) determination in domestic ruminants between January 2010 and December 2014. All Data about ruminants were collected from case registration books and entered into Microsoft excel sheet and analyzed based on the year of study, the disease condition, species and sex of the animals. Out of a total of 2846 ruminants examined, 54(1.89%) were found to have reproductive disorders comprising mastitis 41(75.92%), abortion 6(11.11%), metritis 3(5.56%), vaginal prolapse 2(3.70%), dystocia 1(1.85%) and paraphimosis 1(1.85%), with 53(98.14%) in cattle, 1(1.85%) in sheep and 0(0%) in goats. 846 (29.73%) of the cases observed were male and 2000 (70.27%) were female. In conclusion, from this study, reproductive cases were most prevalent in cattle than sheep and goats. Therefore, Major causes of reproductive disorders especially in cattle should be identified and followed by appropriate measures according to the disorders, to minimize the reproductive wastage.

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### 1. Introduction

The livestock play very important economic, social and cultural roles or functions for rural households once they contribute to improve income and wellbeing of the farm family. Livestock helps on food supply, family nutrition, family income, asset savings, soil productivity, livelihoods, transport, agricultural traction, agricultural diversification and sustainable agricultural production, family and community employment, ritual purposes and social status (Moyo and Swanepoel 2010).

Ethiopia holds the largest livestock population in Africa estimated at about 56.71 million heads of cattle, 29.33 million sheep, 29.11 million goats, 7.43 million donkeys, 2.03 million horses, 0.4 million mules, 56.87 million poultry and 5.89 million beehives (CSA, 2014). The livestock sector is estimated to account for 10% of the GDP and provides employment to over 30% of the agricultural labor force. The activity in the sector has picked up since the government ended its monopoly on livestock trading in 1999, thereby encouraging local and foreign private investments in ranches, meat processing companies and abattoirs. Livestock and livestock by products generate export income. The sale of leather and leather products increased from US\$43.6 million in 2003/04 to US\$75 million in 2005/06, while exports of meat and live animals rose even faster, from US\$ 9.6 million to US\$46 million over the same period (NBE, 2006). Despite some improvement in recent

years, however, the sector still remains underexploited due to disease conditions always impair livestock production (Lamorde, 1996).

The production of livestock is dependant greatly on their well being particularly their reproductive performances. Disease conditions always impair livestock production (Lamorde, 1996). Apart from this, several other factors such as environment and nutrition, especially inadequate protein intake (Smith and Somade, 1994) decrease reproductive performance.

The major reproductive problems of confined or free-roaming large and small ruminants include: abortions, still births, agalactia, mastitis, metritis, dystocia and perinatal mortality retained placenta (retention of fetal membrane), prolapse (uterine and/or vagina), anoestrus and repeat breeder (Winrock, 1992).

Many of the above problems are associated with systemic diseases that lower the overall performance of the animal, while others specifically cause foetal mortality, abortion or male infertility. Foetal mortality and abortion can be caused by vibriosis (due to *Camphylobacter fetus intestinalis*), salmonellosis (due to *Salmonella abortus-ovis* and *S. dublin*), *Listeria monocytogenes*, *Chlamydia*, sheep ticks (*Ixodes ricinus*) carrying tick-borne fever, Border disease, mycotic abortion, Q' fever (*Coxiella burnetti*) and *Toxoplasma gondii*. Infertility in male animals may arise from infectious epididymitis (caused by *B. ovis* and *Actinobacillus seminis*). It is noteworthy that

*Brucella abortus* is not a major cause of abortion in sheep (Chaarani *et al.*, 1991).

Reproductive disorders affect society in diverse ways, from reducing the efficiency of food production to impacting survival of endangered species. A major limitation to improved reproductive efficiency in mammals' species is embryonic mortality, which is estimated to be 25% to 60%, depending on the species. In the United States, high rates of unexplained infertility and peri-implantation embryonic loss occur in both humans and domestic animals. Reproductive and production disorders of Livestock significantly reduce their productivity which is of great concern of dairy producers worldwide because most reproductive disorders (RD) adversely affect the future fertility. Ten to 30% of lactations may be affected by infertility and RD, and 3-6% of the herd is culled annually in developed countries for these reasons. These result in considerable economic loss to the dairy industry due to slower uterine involution, reduced reproductive rate, prolonged inter-conception and calving interval, negative effect on fertility, increased cost of medication, drop in milk production, and early depreciation of potentially used cows (Khair *et al.*, 2013).

There exists a variety of problems in livestock sector of Ethiopia such as insufficient pasture land, lack of technical expert, insufficient supply of vaccine, lack of epidemiological study and various diseases of different systems of animals. Among various problems, diseases play an important role interfering with the development of healthy livestock and livestock industry in our country. Infectious diseases cause a great harm in livestock. Disease also causes nutritional deficiency and disturbances in fertility. The knowledge of reproductive diseases is useful information on disease pattern and thus can be used in preventing diseases as well as formulating policies for future management of prevalent reproductive problems (diseases).

There is no previous retrospective study that has been conducted to evaluate reproductive problems (disease condition) among domestic ruminants on health center/clinic bases.

Therefore, the present retrospective study was designed to determine the prevalent reproductive problems (reproductive diseases) in domestic ruminants (cattle, sheep and goat) at Guto-Gida Veterinary Clinic, within a five year period (2010-2014).

## 2. Materials and Methods

**2.1. Study Area:** The study was conducted at Guto-Gida Veterinary clinic, which is located at Nekemte town. Nekemte is found in East wollega zone, Oromia regional state, Western Ethiopia. It is located at about

328 km west of Addis Ababa at latitude and longitude of 95°5' N and 36°33', respectively with an elevation of 2,088 meters above sea level. The minimum and maximum annual rain fall and daily temperature ranges between 1450 to 2150mm and 15 to 27c°, respectively. The estimated animal population of the area is 85,584 cattle, 14,702 sheep, 11,861 goats, 98,674 equine and 94,276 chickens (NDAO, 2013).

**2.2. Study population:** The study populations were ruminants (cattle, sheep and goats) brought from different areas to the Vet. Clinic and recorded on the case books. All the ruminants which were recorded in the case books starting from January 2010 up to December 2014 were included in the study.

**2.3. Study Design:** Retrospective study design were conducted to determine the frequency (patterns) of ruminants reproductive system problems (diseases) encountered at Guto-Gida Veterinary Clinic, within a five year period records (2010- 2014).

**2.4. Sampling Method and sample size:** Purposive sampling method was conducted. A total of 2846 ruminants were examined over a five year period (2010-2014) at Guto-Gida Veterinary Clinic.

## 2.5. Study Methodology

**Retrospective Study:** Data on ruminants were collected from Guto-Gida Veterinary Clinic case registration books between the periods January 2010 and December 2014.

**2.6. Data Management and Analysis:** The data which were gathered from case registration books about domestic ruminants (sheep, goat and cattle) presented to Guto-Gida Veterinary Clinic were coded and entered to Microsoft Excel 2007 spread sheet. Reproductive disorders of sheep, goat and cattle obtained from clinical case records between January, 2010 and December, 2014 was analyzed by using Statistical Package for Social Science (SPSS) software versions 20, based on study year, disease condition, species and sex of the animals. Simple descriptive statistics was used to determine the prevalence of reproduction disorders and results expressed as simple percentile.

## 3. Results

This study revealed that a total of 54 reproductive disorders of cattle, sheep and goats were recorded between January 2010 and December 2014 from a total of 2846 examined ruminants for different clinical cases at Guto-Gida Veterinary Clinic. The highest prevalence was recorded in 2011 with 23 (42.59%) followed by 11(20.37%) in 2010 and the lowest in 2013 with 4(7.41%) as indicated in table 1. The study also revealed that mastitis is the most prevalent disorder 41(75.92%) followed by abortion 6(11.11%) compared to the least prevalent as Dystocia and paraphimosis with 1(1.85%) for each (Table 1).

Table 1: Prevalence of Reproductive Disorders of Ruminants Based on Year of Study

Disease condition	2010	2011	2012	2013	2014	Total (%)
Mastitis	8(14.81)	16(29.63)	7(12.96)	3(5.56)	7(12.96)	41(75.92)
Abortion	0(0)	4(7.41)	0(0)	0(0)	2(3.70)	6(11.11)
Metritis	1(1.85)	1(1.85)	0(0)	1(1.85)	0(0)	3(5.56)
Vaginal Prolapse	1(1.85)	1(1.85)	0(0)	0(0)	0(0)	2(3.70)
Dystocia	0(0)	1(1.85)	0(0)	0(0)	0(0)	1(1.85)
paraphimosis	1(1.85)	0(0)	0(0)	0(0)	0(0)	1(1.85)
<b>Total</b>	<b>11(20.37)</b>	<b>23(42.59)</b>	<b>7(12.96)</b>	<b>4(7.41)</b>	<b>9(16.67)</b>	<b>54 (100)</b>

Table 2 shows the prevalence of reproductive disorders amongst cattle, sheep and goats. A total of 53(98.14%) cattle were affected which was higher than sheep and goats with 1(1.85%), 0(0%) respectively.

Table 2: Prevalence of Reproductive Disorders amongst Sheep, Cattle and Goats at Guto-Gida Veterinary Clinic

Disease condition	Number of animals affected (%)		
	Cattle	Sheep	Goat
Mastitis	41(77.36)	0(0)	0(0)
Abortion	6(11.32)	0(0)	0(0)
Metritis	2(3.77)	1(100)	0(0)
Vaginal Prolepses	2(3.77)	0(0)	0(0)
Dystocia	1(1.89)	0(0)	0(0)
Paraphimosis	1(1.89)	0(0)	0(0)
<b>Total</b>	<b>53(98.14)</b>	<b>1(1.85)</b>	<b>0(0)</b>

Table 3 shows the prevalence of reproductive disorders based on the sex of the animals. Female cattle had higher prevalence of reproductive disorders with 52(2.73%) compared with the males having 1(0.12%).

Table 3: Prevalence of Reproductive Disorders based on the Sex of Animals

Species		Number examined (%) (n= 2846)	Number affected (%) (n= 54)
Cattle	Male	818	1(0.12)
	Female	1902	52(2.73)
Sheep	Male	27	0(0)
	Female	93	1(1.08)
Goat	Male	1	0(0)
	Female	5	0(0)

#### 4. Discussion

A total of 2846 ruminants were examined for different cases at Guto-Gida veterinary clinic between January 2010 and December 2014. From 2846 cases recorded, 54 cases were reproductive disorders of domestic ruminants. The highest prevalence of cases was reported in 2011 with (42.59%) and the lowest in 2013 with (7.41%). Higher prevalence of reproductive disease conditions in cattle (98.14%) over small

ruminants (sheep and goats) (1.85%) and 0(0%) has been recorded respectively. The highest prevalence of reproductive disorders in cattle might be due to the greatest cases number handled in the clinic. The overall prevalence of reproductive disorders of domestic ruminants was (1.89%). The overall prevalence of the present study was lower (1.89%) as compared to the 4.07% by Waziri *et al.* (2006) and 9.1% by Williams *et al.* (2000) from Nigeria. The difference might be due to environmental or location difference, the present retrospective study incorporates only five years recorded data and differences in the number total cases analyzed.

The results of this study have shown that mastitis (75.92%), abortion (11.11%) and metritis (5.56%) were the most common reproductive disorders encountered. This findings was higher than reports of Umaru *et al.* (2013) from Nigeria which were (10.23%) and (6.82%) for mastitis and abortion, respectively. The divergence might be due to different ways of data recording systems and differences in the period of the study. In addition, the management system might also exposed animals to different types of reproductive problems.

The results of this study also revealed that the prevalence of mastitis in cattle (77.36%) is higher than sheep and goats (0%). Even though the reason for this difference is not clear, but it might be due to poor recording system of the cases. In addition the culture of the people to bring the small ruminants for the mastitis cases to the clinic is very poor.

Most livestock in Guto-Gida district are reared under extensive system of production and under unsanitary surroundings where they are allowed to roam freely, thus exposing them to pathogens or allergens that could cause mastitis and other reproduction disorders that are infectious in nature. This may lead to a generalized disease.

Females had a higher prevalence of reproductive disorders than males for both cattle and sheep in this study. This is similar to the reports by Waziri *et al.* (2006) and Umaru *et al.* (2013) in Nigeria. This may be due to the fact that females are kept for longer periods in the herd and probably due to their unique position as reproduction vessels.

## 5. Conclusion and Recommendations

This study revealed that from 2846 ruminants which were examined for different cases at Guto-Gida veterinary clinic in Nekemte town, between January 2010 and December 2014, 54 cases were reproductive disorders of domestic ruminants. The overall prevalence of reproductive disorders of domestic ruminants in the present retrospective study at clinic was (1.89%). Mastitis (75.92%), abortion (11.11%) and metritis (5.56%) were the most common reproductive disorders encountered. Female animals had a higher prevalence of reproductive disorders than males for both cattle and sheep in this study. The reproductive cases were most prevalent in cattle (98.14%) than in sheep (1.85%) and goats (0%).

In line with above facts the following recommendations are forwarded:

➤ Major causes of reproductive disease/disorders should be identified and followed by the application of appropriate measures to control diseases and minimise reproductive wastage.

➤ Livestock owners should receive basic training regarding animal reproductive problems prevention, modern techniques in animal husbandry and managerial skills which can fit to the local situation.

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