American-Eurasian Journal of Scientific Research 15 (1): 28-33, 2020
ISSN 1818-6785

DOI: 10.5829/idosi.aejsr.2020.28.33

Retrospective Survey on Cattle Diseases and Disorders in Aira Woreda, West Wollega Zone, Oromia, West Ethiopia

[1]Yomifan Moti, [1]Geremu Batu and [2]Mekuriya Lamessa

[1]Jimma University College of Agriculture and Veterinary Medicine,
Jimma, South West Ethiopia, P.O. Box: 307, West Ethiopia
[2]Aira Woreda Livestock Health Care and Development Office,
West Wollega Zone, Oromia, West Ethiopia

Abstract: A retrospective survey of five years was undertaken at Aira district of West Wollega zone, Oromia region, Ethiopia, from October 2015 to May 2019 with the aim of describing the important diseases and disorders observed in cattle and to assess and estimate the financial loss due to the treatment of such cases. During the study, a total of 40, 276 cattle were examined and 20 various types of diseases and disorders were identified. The commonly found diseases were trypanosomosis (27.83%), gastrointestinal worm infestation (22.4%), ecto-parasite infestation (16.54%), mixed infections (6.3%), wound (4.3%), pneumonia (3.6%), mastitis (2.4%), bloat (1.4%), fasciollosis (1.6%), mechanical injury (1.84%), salmenollosis (1.2%) and blackleg (1.14%). The rest of the diseases and disorders had lower percentage than 1%. The occurrence of diseases and disorders were higher in female and young animals than male and adult animals. Trypanosomosis was found to be the most prevalent cattle diseases among all groups of diseases, which was followed by internal parasite and ecto-parasite infestation. For the treatment and management of 40276 head of cattle were adminstered different types of antibiotics, anthelmentics, antiprotozoal, acaricide, disinfectants and multivitamins were used. The total estimated financial loss was found to be 468, 320.76 ETB and high amount of money was lost because of antibiotic purchase (154, 286.8 ETB). Thus, these diseases and disorders were found that they cause a considerable financial loss due to treatment of the affected animals. This study suggested that implementing the control programs targeting these diseases and disorders and conducting further retrospective epidemiological analysis for a long period of years to identify risk factors of diseases and exact economic impact will help to reduce the occurrence and the direct and indirect economic loss due to these diseases and disorders in this study area.

Key words: Aira · Cattle · Diseases and Disorders · Retrospective Study

INTRODUCTION

The contribution of livestock to the human beings particularly in the developing countries is enormous and ruminants are important components of livestock production in Africa. Like in many developing countries, domestic animals play a crucial role in Ethiopia. They provide food in form of meat and milk and non-food items such as draft power, manure and transport services as inputs into food crops production and for cooking food. Livestock was also a source of cash income through sales of items such as animal hide and skins. Furthermore, they acted as a store of wealth and determine social status within the community [1, 2]. Similarly, the domestic economic feature of Ethiopia was agricultural sector and more than 80% of its population played the significant role of which livestock is an essential component. Livestock with poultry in Ethiopia are believed to be the engine for the development of the nation's economy in general and the small holder resource-poor farmers in particular.

Ethiopia is known for its high livestock population, being the first in Africa and tenth in the world [1] and among the livestock population, about 53.4 million heads

Corresponding Author: Yomifan Moti, Jimma University College of Agriculture and Veterinary Medicine, Jimma, South West Ethiopia, P.O. Box: 307.

of cattle, 25.5 million sheep, 22.78 million goats and 44.9 million poultries are found in Ethiopia. The total livestock population of West Wollega Zone is estimated to be 1.1 million heads of cattle, 332350 and 135555 sheep and goats respectively [3]. The total cattle populations of Aira district from 2015 to 2019 are about 314, 158 [4]. Despite the large number of livestock in the area, the sector is characterized by low productivity, hence income derived from this sector of agriculture could play significant role in the development of the region's economy. The bottle necks for the decline of productivities of livestock were low genetic potential of indigenous breeds, feed shortage, inadequate management, poor nutrition and reproductive performance, insufficient pasture land, presence of various economically important diseases, inappropriate policies, insufficient supply of vaccine, lack of epidemiological study, poor infrastructure like veterinary services and inadequate institutions [5]. Among these constraints, diseases numerous influenced the productivity and fertility of herd as well as interfered with the development of healthy livestock and livestock industry in our country [6, 7].

Disease is defined as inability to perform physiological functions at normal level even though nutrition and other environmental requirements were provided at adequate levels [8]. Disease also caused nutritional deficiency and disturbance in fertility as well as caused mortality and morbidity, loss of weight, slowed down growth, reduced fertility and decreased physical power [9]. In the low lands, disease prevalence, the environment experiences high temperature, low rain fall, inadequate feed availability and low vegetation coverage and the other major reason were lack of health services [5]. Disease can be broken down into infectious and non-infectious diseases. Infectious diseases resulted from pathogens like viruses, protozoa, parasites, bacteria and fungi. Not all pathogens are carried by vectors and the non-infectious diseases are not caused by virulent pathogens and are not communicable from one animal to another. They may be caused by hereditary factors or by the environment in which the animals live [10].

In tropical areas, livestock health problem is high due to environmental factors like high temperature and humidity, topography, structure of sloppy area is exposed to flood and it is so easy to cause soil borne diseases, stress factors and drought were common in these area as a result of the limitation of feed availability and low vegetation coverage. The other major reason was the lack or the weakness of animal health services [5].

Understanding on the incidence, prevalence, distribution, determinants or risk factors and direct and indirect economic and financial losses of disease in an area is necessary to systemic health program or formulate effective control strategies. However, technological difficulties in these countries hindered extensive use of modern diagnostic techniques in disease surveillance [11]. This retrospective evaluation of clinical case record helps to understand the predominant clinical problems and their demographic and seasonal distribution in a particular area. Therefore, the aim of this study was studying diseases of animals retrospectively as rapid and cheap means to identify the strategy of effective disease control when it is analyzed statistically. Hence such knowledge was essential in planning control strategies against livestock diseases.

Therefore, the current study was conducted with the objectives of:

- Describing important diseases and disorders of cattle observed in the district
- Elucidating the top ten diseases and disorders examined in different age and sexes of cattle
- Assessing and estimating the financial loss due to the treatment of cattle diseases and disorders in the study district.

MATERIALS AND METHODS

Study Area: The study was conducted from October 2015 to May 2019 in Aira district of West Wollega zone. This district is one of 20 districts of West Wollega zone, in Oromia region, Ethiopia, which is located 504 KM away from Addis Ababa to West direction and it has a latitude and longitude of 80°12' N and 10°03' N and 34°08' E and 36°10' E respectively with an elevation of 1800-2000 meters above sea level. The area is characterized by crop-livestock mixed farming system. Teff, wheat, barley, maize, sorghum, millet, beans, peas, coffee and nug seed are annual crops grown in the area and also cattle, sheep, goats, horse, mules, donkey, honey bee and poultry are the main livestock species raised in the study area.

West Wollega Zone receives the maximum annual rainfall of approximately 1200 mm and the minimum annual rainfall is expected to be 1000 mm. Therefore, the average rain fall for the Zone is 1100 mm. The average temperature for this zone is found to be 14°C to 26°C.

Study Animals: The study population consists of all cattle treated during the past five years at the district of selected veterinary clinic having different health problems.

Sample Size: For this preliminary survey, the sample size covers all cattle treated during the included years at the study area of the selected veterinary clinic.

Retrospective Study: Data were collected from veterinary clinic case registration book during the period from 2015 to 2019 to determine the occurrence of major animal health problems encountered/examined during the past 5 years. Consultation of the woreda veterinary professionals to identify the major livestock health problems in their area and about the health service coverage was also included.

Data Analysis: The data collected were entered into MS-Excel 2000 computer program. The analysis and summarization of the data were made using descriptive statistics.

RESULTS

The present retrospective study was conducted on major cattle disease and disorders, top ten disease and disorders and financial loss due to treatment of these diseases and disorders in the study area. The tentative diagnosis of these diseases and disorders are quite different from clinic to clinic and the result is shown in table form. In the present study area, it was found that 40, 276 cattle were suffering from 20 various diseases and disorders, where maximum number of cattle, 11445 (28.41%) and 9275 (23.03%) were infected by trypanosomosis and GIT parasite infestation respectively (Table 1).

During this study, top ten cattle diseases and disorders were graded in relation to cattle age and sex. Accordingly, results acquired from the studies mention that trypanosomosis, GIT and ectoparasite infestation were more frequent in all studied age groups of cattle as compared with other diseases and disorders. The study also revealed that cattle of young ages were mostly susceptible to GIT parasite infestation in contrast to cattle of other studied age. Table 2 below shows details of the prevalence variation between the two age groups.

Table 1: The major cattle diseases and disorders treated during 2015- 2019 in the study area

No	Major diseases and disorders	No. of animals	Frequency
1.	Trypanosomosis	11445	27.83
2.	GIT parasite	9275	22.4
3.	Ectoparasite infestation	6964	16.54
4.	Mixed infection	2738	6.3
5.	Wound	1937	4.3
6.	Pneumonia	1642	3.6
7.	Mastitis	1176	2.4
8.	Bloat	779	1.4
9.	Fasciollosis	763	1.6
10.	Salmenollosis	625	1.2
11.	Mechanical injury	743	1.84
12.	Blackleg	540	1.14
13.	Dermatitis	150	0.27
14.	Food poisoning	146	0.24
15.	Coccidiosis	367	0.61
16.	Babesiosis	290	0.52
17.	Dermatophytosis	249	0.42
18.	Dermatophilosis	209	0.32
19.	Brucellosis	188	0.27
20.	Hernia	50	0.10
Total	40, 276		

Sex wise diseases and disorders in cattle were also seen that the study presents that female cattle were highly affected with diseases and disorders (Table 2). Similarly to sex based phenomena, trypanosomosis, wound and salmenollosis were also graded as the most frequent in cases of both sexes in the study area.

In the present study, financial loss due to the treatment of diseases and disorders were also calculated. For this analysis, the masses of drugs prescribed and their respective current market prices in the study area were used as parameter for the calculation of the total financial loss due to treatment (Table 3). For the treatment and management of 40, 276 various cases, different types of antiprotozoal, acaricide, antibiotics, anthelmentics, disinfectants, multivitamins, anesthesial drugs and indigestion powder were used. The total estimated financial loss was found to be 468, 320.76 ETB and high amount of money was lost to purchase antibiotics (162, 471.86 ETB) followed by money lost for the purchase of anthelmintics (154, 286.8 ETB), acaricide (21, 656.4 ETB), multivitamins (21, 294.4 ETB), disinfectant (7682.6 ETB), indigestion powder (2, 604.5 ETB) and the lowest amount was lost for anesthesial drugs purchasing (396.00 ETB).

Table 2: The top ten diseases and disorders in relation to age and sex of cattle

		Variables/ factors			
		Age		Sex	
No.	Name of major top ten diseases	Young	Adult	Male	Female
1.	Trypanosomosis	3081 (7.4%)	8364 (20.43%)	5966 (14.43%)	5479 (13.4%)
2.	GIT parasite	5521 (13.2%)	3754 (9.1%)	4066 (10.0%)	5209 (12.3%)
3.	Ectoparasite infestation	2607 (6.14%)	4357 (10.4%)	3179 (7.32%)	3785 (9.24%)
4.	Mixed infection	1, 043 (2.3%)	1695 (4.0%)	1373 (3.1%)	1365 (3.2%)
5.	Wound	538 (1.1%)	1399 (3.2%)	1002 (2.2%)	935 (2.1%)
6.	Pneumonia	744 (1.6%)	898 (2.0%)	724 (1.5%)	918 (2.1%)
7.	Mastitis	263 (0.4%)	913 (2.0%)		1176 (2.4%)
8.	Bloat	241 (0.3%)	538 (1.1%)	312 (0.4%)	467 (1.0%)
9.	Fasciollosis	127 (0.1%)	636 (1.3%)	455 (1.0%)	308 (0.4%)
10.	Salmenollosis	383 (0.7%)	242 (0.4%)	287 (0.5%)	338 (0.6%)

Table 3: Estimated financial losses due to treatment in different ways of drug prescription

No.	Types of drug	Drug description	Total dose	Unit price	Total price
1	Antibiotics	Pen-Strips	54400	1.071	58262.4
		Oxy TTC (10% and 20%)	143428	0.6242	89527.8
		Alamycine	1382	0.48	663.36
		Sulpha- injection	14268	0.9825	14018.3
2	Anthelmintics	Albendazole 2500mg	15652	2.3	35999.6
		Albendazole 300mg	13093	1.00	13093.0
		Tetraclosan 900mg	10837	3.00	32511
		Tetraclosan 3400mg	11014	5.6	61678.4
		Ivermectin (1%)	27513	0.4	11005.2
3	Antiprotozoal	Veridium	33534	0.985	33031.0
		Ethedium	20626	1.056	21781.1
		Different types of diminal	77547	0.556	43116.1
4	Acaricide	Acarimic	81110	0.267	21656.4
5	Disinfectants	Savlon	13779	0.364	5015.6
		Alcohol	6965	0.364	2535.3
		Iodine	330	0.4	132
5	others	Multivitamins	23385	0.9106	21294.4
		Anesthesial drugs	120	3.3	396
		Indigestion powder	43700	0.0596	2604.5
Total			894, 483	23.7199	468, 320.76

DISCUSSION

Retrospective study of this survey involving the analyses of five years data of cattle health problems treated for different diseases and disorders was conducted from October 2015 to May 2019 in Aira district of West Wollega zone.

Animal health problems such as disease and disorders were the major constraints preventing large livestock resources from being fully exploited in Ethiopia including the study area over the years and hence should necessarily have a negative impact not only on the economy of livestock rearing but also on public health. However, prior to 2015 major cattle diseases and disorders could not be accurately determined as data on both infectious and non infectious diseases systematically in the study area.

Accordingly, the present study revealed that trypanosomosis and GIT infestations were the prime diseases in the study area with 27.83% and 22.4% frequency respectively and posing many economic problems. This finding is in agreement with Eshetu [12] by 26.3% or 26.2% and 27.1% of GIT infestation and trypanosomosis respectively. Within the smallholder dairy sector in East Africa, trypanosomosis was generally associated with tsetse in Africa. However, it is also found in Asia and South America and caused serious losses in a range of species and production systems. Additionally,

the disease was a zoonotic caused sleeping sickness and for one form of sleeping sickness (*T.b. gambiense*), animals were known to be reservoirs of the parasite even though there was evidence that trypanosomosis susceptible animals can establish a delicate balance with potential pathogens [13]. However, it is much lower than that of many other reports of similar studies from different districts in the country and elsewhere in Africa [14] which was reported with a frequency of 34.2% and 51.5% of worm infestation in cattle respectively.

Consistent with my findings, several major cattle diseases and disorders were studied in different parts of Ethiopia reported the predominance of ecto-parasite infestation by Abdeta *et al.* and Eshetu *et al.* [10, 12], however, recorded lower frequency of ectoparasite infestation in cattle at Uganda. The finding of mixed infection with 6.3% frequency in the study area indicated that there was suit climate-ecological conditions for the existence of the determinant factors that caused the mixed infections of cattle in study area.

This result is closely in agreement with retrospective study done at Soddo Zuria district, Southern Ethiopia on major cattle diseases and disorders by Eshetu printed out 7.0 % frequency of mixed infection at surveillance took place.

The current study also documented that the frequency of pneumonia and mastitis occurred in cattle at the study area is reflected as 3.6% and 2.4% respectively. This finding is closer to the report of Eshetu [12] with frequency of 2.7% and 1.9% pneumonia and mastitis respectively and as well as the concurrent study is also much lower than that of the study reported by Bhuiyan [14] with 7.9% and 46.2 % pneumonia and mastitis in cattle. The moment survey study also manifests that the frequency of wound by 4.3% is observed in cattle in the study area. This result is contradicted with 20.19% of reported by Department of Medicine, Bangladesh Agricultural University, Mymensingh in 2013.

This study suggests that implementing control programs targeting these diseases and disorders and conducting further retrospective epidemiologic analysis for a long period of years to identify risk factors of diseases and exact economic impact which will help to initiate efficient control program.

CONCLUSION AND RECOMMENDATION

Based on the results of this retrospective study of cattle disease and disorders conducted in Aira district, 20 various disease and disorders of cattle were found. Accordingly, trypanosomosis was found to be the most frequent (27.83%) cattle disease, followed by internal parasite (22.4%) and ectoparasite infestation (17.4%). Occurrence of almost all disease and disorders were higher in female and young animals than male and adult animals. Antibiotics, antiprotozoal, antihelmetics, acaricide, disinfectants, indigestion powder, anesthesial drugs and multivitamins were different types of drugs and chemicals used for the treatment and management of various diseases and disorders. The total estimated financial loss was found to be 468, 320.76 and high amount of money was lost because of antibiotic purchase (154, 286.8 ETB). Thus, these diseases and disorders in this study area were found that they cause a considerable financial loss due to treatment and management of affected animals. Overall, these results indicate that diseases and disorders are among the major hindrances to livestock production and productivity but more profoundly validate the role of veterinary diagnostic laboratories in active disease diagnosis.

Therefore, based on the above conclusion the following recommendations are forwarded:

- Control program targeting these diseases and disorders should be implemented and local education programs and awareness about these diseases should be established.
- The concerned bodies should also have to supply adequate amount of drugs and chemicals for the treatment and management of the above mentioned diseases and disorders.
- Further retrospective epidemiologic analysis of diseases for long period of years will help to identify risk factors of diseases and exact economic impact and thereby efficient control program should be implemented.
- Data should be recorded in veterinary clinics of the district seriously for further surveillance of livestock health problem investigation and adequate service of veterinary laboratories should be met in the study area as other related issues should be taken into consideration by all concerned bodies.

REFERENCES

1. Mekonnen, G., T. Forsido, A. Gebre-Wold, A. Dagnachew and A. Anteneh, 1989. Th e Ethiopian Livestock Industry retrospect and prospect. IAR proceedings, Addi s Ababa, Ethiopia, pp: 9-19.

2. Waruru, R.M., M.N. Mutune and R.O. Otieno, 2005. Gastrointestinal parasite infections of sheep and goats in a semi-arid area of Machakos District, Kenya. Bulletin of animal health and production in Africa, 53(1): 25-34.
3. Asmare, B. and Y. Mekuriaw, 2017. Assessment of livestock production system and feed balance in watersheds of North Achefer District, Ethiopia. Journal of Agriculture and Environment for International Development (JAEID), 111(1): 175-190.
4. Aira Livestock Health Care and Development Office (ALHCDO), 2019.
5. Assegid, W., 2000. Constraints to livestock and its products in Ethiopia: policy implications in Ethiopia. DVM Thesis. Debre Zeit: Faculty of Veterinary Medicine, Addis Ababa University.
6. Abera, M., T. Mohammed, R. Abebe, K. Aragaw and J. Bekele, 2010. Survey of ixodid ticks in domestic ruminants in Bedelle district, Southwestern Ethiopia. Tropical Animal Health and Production, 42(8): 1677-1683.
7. Bekele, J., M. Tariku and R. Abebe, 2011. Wolmera District of Oromiya Region, Central Ethiopia. Journal of Animal and Veterinary Advances, 10(4): 518-523.
8. Radostitis, O.M., C.C. Gay, D.C. Blood and K.W. Hinchcliff, 2000. Diseases caused by viruses and chlamydia II. Veterinary Medicine: a Textbook of the Disease of Cattle, Sheep, Pigs, Goats and Horses, pp: 115-1260.
9. Central Agricultural Census Commission, 2003. Ethiopian agricultural sample enumeration, 2001/02 (1994 EC) results for southern, nations, nationalities and peoples region. Statistical Report on Farm Management Practices.
10. Abdeta, D., T. Zenebe, L. Fikirte, D. Negessu and E. Hirpa, 2015. Retrospective Survey on Major Cattle Diseases in Guto Gida woreda, Eastern Wollega, Nekemte, Ethiopia. Science, Technology and Arts Research Journal, 4(4): 120-123.
11. Tisdell, C.A., 2006. Economics of controlling livestock diseases: basic theory (No. 1741-2016-140679).
12. Eshetu, E., A. Tilahun, N. Thomas and A. Awukew, 2018. Retrospective Study on Major Bovine Diseases and Financial Loss Due to Treatment in Wolaita Zone: A Case of Sodo Zuria District, Southern Ethiopia. Int. J. Vet. Health Sci. Res., 6(1): 225-229.
13. Delia, K.J. and J. Delia Kurt, 2009. Multi-function access tool. U.S. Patent Application 29/336, 136.
14. Bhuiyan, N., 2011. A framework for successful new product development. Journal of Industrial Engineering and Management (JIEM), 4(4): 746-770.