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MODJO VETERINARY CLINIC

A RETROSPECTIVE STUDY OF ANIMAL DISEASES AND THEIR SEASONAL DISTRIBUTION IN AND AROUND MODJO TOWN

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MODJO, OROMIA, ETHIOPIA

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LIST OF ABBREVIATIONS

AAU	Addis Abeba University
AHS	African Horse Sickness
DVM	Doctor of Veterinary Medicine
FAD	Flea Allergy Dermatitis
FMD	Foot and Mouth disease
FVM	Faculty of veterinary medicine
GIT	Gastrointestinal tract
MOA	Ministry of agriculture
NCD	Newcastle Disease
LSD	Lumpy skin disease
PPR	peste des petitsruminats
RFM	Retained fetal membrane
SPSS	Statistical packaging for social sciences
UK	United Kingdom
UT	urinary tract

ABSTRACT

The retrospective data taken from Modjo veterinary clinic case registration book from September 2015 to April 2017 analyzed to determine the prevalence and seasonal distribution of animal disease that appear in Modjo veterinary clinic which serve as base line information on the major animal diseases in the areafor further studies and control and prevention of diseases in the area. Animal species, disease diagnosed and season it registered was the information collected from case registration book. A total of 5087 diseased animals (2102 Cattle, 1367 sheep, 380 goats, 630 horse, 198 donkeys, 184 Avian and 226 Canine) were registered. The major Cattle diseases identified were GIT parasites (19.4), Tick infestation (15.8), Bovine pasteurellosis(11.9), Pneumonia(9.13), Enteric disease(7.2), Pedicullosis (4.6) and LSD(3.7); Pneumonia (25.3), GIT parasites (12), Tick infestation (4.8), Ovine pasteurellosis(3.9) and Sheep & goat pox(3.4) in Sheep; Pneumonia (18.2), Enteritis(16.8), GIT parasites(15), PPR(7.6) and Tick infestation(4.2) in Goat; GIT parasites(32.1), Pneumonia(24.6), Wound(12.06) and Colic(6.2) in Horse; Pneumonia(27.3),GIT parasites(24.8),Colic(12.7), Strangles(5.6), Wound(5.6) and Tetanus(2.02) in Donkey; GIT parasites(23), Tick(19.9) and Enteric disease(19.5) in Dog and Fowl cholera(24.5), Salmonellosis(21.5), Fowl pox(21.2) and NCD(8.2)in Poultry. The analysis also indicated the seasonal variation of diseases registered. Accordingly, pneumonia(17.7), GIT parasites(17), Enteritis(8.6), tick(7.3), Lumpy skin disease(3.4), bloat(2.9), Pediculosis(2.6) and Sheep and Goat pox(1.7) in spring; GIT parasites(19.8), pneumonia(17.5), septicemia(14.9), enteritis(10.3), ovine pasteurellosis(1.7), Mange(2) and Acidosis(1.3) in winter; GIT parasites(17.7), Tick(15.4), Pneumonia(15.7), Bovine pasteurellosis(7.7), and Colic(1.7) in Autumn and GIT parasites(19.4), tick(12.2), Bovine pasteurellosis(7.6), Pediculosis(2.3) and Sheep & Goat pox(2.3) in Summer were the predominant diseases. This analysis demonstrates that diseases are among the most important constraints animal production leading to important economic lossesand attention should be given to control interventions, developing the knowledge of the farmer and further study on the prevalence of diseases and their effect on the livestock.

Key words: Modjo, Animal diseases, Retrospective study, Prevalence, Season

INTRODUCTION

Ethiopia is believed to have the largest livestock population in Africa. This livestock sector has been contributing a considerable portion to the economy of the country, and still promising torally round the economic development of the country.The recent livestock population estimates that the country has about 52.1million heads of cattle, 24.2 million sheep, 22.6 million goats and 44.9 million poultry (MoA, 2013).

Ethiopia's economy is dominated by agriculture and cattle play a vital role in agricultural production. In addition to the products of meat and milk, cattle provide draught power for the cultivation of the agricultural lands of many peasants. Skins and hides are also essential components of the livestock sector in generating foreign currency (Tessema and Gashaw, 2010).

However, the contribution to the economic aspect of the country is still lowest. The low productivity is attributed to high disease incidence and parasite burden, low genetic potential of indigenous breeds, inadequate management, poor nutrition and reproductive performance. Among these constraints, diseases have numerous influences on productivity and fertility of herds. The effect of livestock diseases could be expressed regarding losses due to mortality and morbidity, loss of weight, slow down growth, poor fertility performance and decrease physical power (G/libanos, 2016).In tropical regions, where ambient temperature and solar radiation are high, forage production fluctuates seasonally, disease poses a serious threat to the development and utilization of the animal resource.

Despite the wide spread of different animal health problems in tropical countries, experiences haves shown that informationon animal health was never a significant focus of research.However, knowing the type and extent of the common and major health problems is very important so that Veterinarians, researchers and other responsible governmental and nongovernmental bodies can assist in the development of herd health strategies (G/Libanos, 2016).

Animal production development requires a sound knowledge of the magnitude, the cause and predisposing factors of disease. Any producer should be aware of how disease pass from one animal to other animals. This allows farmers to develop management practices that minimize the spread of diseases. Information on the prevalence of Animal disease facilitates the development of sustainable control strategies that enable farmers to reduce the burden of these disease on their stock productivity. In this awareness creation woreda veterinary clinics play a major role. Even thoughlimited efforts have been made so far to investigate the status of animal disease in the area, the retrospective data taken from the case book likely assist in analyzing the disease that are prevalent in this district. Therefore the objectives of this analysis were:

➢ To determine the prevalence and seasonal distribution of animal disease that appear at mojo veterinary clinic.

➢ To forward base line information on the major animal diseases in the areafor further studies.

➢ To set some critical recommendations for the Prevention and Control of animal diseases in the area.

MATERIALS AND METHODS

Study Area

The study was carried out inModjo veterinary clinic that serves in and around Modjotown. This clinic is located in Lumeworeda of East Shoa zone of Oromia regional states on the southeast of Addis Abeba at distance of 73km. Modjo lies between $8^{o}39'$ N latitude and $39^{o}5'$ E longitude and an altitude of 1788 meter above sea level. It gets an annual rainfall of 500-1200mm of which 80% is received during the long rainy season starting from June to September and the remaining in short rainy season extending from March to May, and the dry season from October to February. The mean annual maximum and minimum temperature are28^{o}c and18^{o}c, respectively with a minimum relative humidity of 46%(WIKIPEDIA, 2018).

Study animals

The study was conducted on different species of animal which include cattle, sheep, goats, horse, donkey, poultry and dog that were brought to Modjo veterinary clinics during the study period.

Data Collection

The retrospective study was conducted from September 2015 to April 2017 at Modjoveterinary clinic. The retrospective data of animal species, disease diagnosed and their season of occurrences was collected from Modjo veterinary clinic case book on which different diseases were registered.

Data Analysis

All data was collected and recorded in a sheet of paper and transferred to Microsoft excel spread sheet and encoded in SPSS version 17 statistical software and analyzed.

RESULTS

Table 1: Prevalence of diseases in relation to animal species

Diseases/disorder	Bovine N=2102	Ovine N=1367	Caprine N=380	Horse N=630	Donkey N=198
GIT parasites	407(19.4)	164(12)	57(15)	202(32.1)	49(24.8)
Tick infestation	332(15.8)	65(4.8)	16(4.2)	9(1.4)	2(1)
Bovinepasteurollosis	251(11.9)	-	-	-	
Septicemia	193(9.2)	201(14.7)	46(12.1)	50(7.9)	14(7.07)
Pneumonia	192(9.13)	346(25.3)	69(18.2)	155(24.6)	54(27.3)
Enteritis	152(7.2)	146(10.7)	64(16.8)	13(2.1)	2(1)
Peduculosis	98(4.6)	15(1.1)	4(1.1)	2(.3)	1(0.5)
LSD	78(3.7)	-	-	-	-
Bloat	62(2.9)	35(2.7)	13(3.4)	-	-
Wound	52(2.4)	41(3)	9(2.4)	76(12.06)	11(5.6)
Local abscess	38(1.8)	7(.5)	-	9(1.4)	6(3.3)
Mange	39(1.8)	21(1.5)	4(1.1)	3(.5)	-
FMD	35(1.7)	-	-	-	-
Mastitis	34(1.4)	4(.3)	5(1.3)	-	-
Ovine pasteurollosis	-	54(3.9)	-	-	-
Sheep&goat pox	-	46(3.4)	9(2.4)	-	-
Circling D^+	-	39(2.9)	-	-	-
Acidosis	6(0.3)	24(1.8)	4(1.1)	-	-
PPR	-	19(1.4)	29(7.6)	=	-
Orf	-	4(0.3)	11(2.8)	-	-
RFM	15(0.7)	17(1.7)	10(2.6)	-	-
Colic	-	-	-	39(6.2)	25(12.7)
Lameness	6(0.3)	-		23(3.6)	1(0.5)
UT problem	14(0.66)	6(0.4)		15(2.4)	5(2.6)
Strangles	-	-		5(0.7)	11(5.6)
Tetanus	-	-		5(0.7)	4(2.02)

Table 2: Prevalence of diseases of Dog and Poultry

Diseases/disorder	Dog(N=226)	Poultry(N=184)
GIT parasites	52(23)	4(2.1)
Tick	45(19.9)	-
Enteritis	44(19.5)	-
Septicemia	28(12.8)	-
Pneumonia	23(10.2)	-
Myiasis	6(2.7)	-
FAD	6(2.7)	-
Fowl cholera	-	45(24.5)
Salmonellosis	-	40(21.5)
Fowl pox	-	39(21.2)
Newcastle disease	-	15(8.2)
Coccidiosis	-	13(7.06)
Infectious coryza	-	12(6.5)
Fowl typhoid	-	8(4.3)
Pediculosis	-	7(3.8)

A total of 5087 diseased animals (2102 cattle, 1367 sheep, 380 goats, 630 horse, 198 donkeys, 184 Avian and 226 Canine) were tentatively/definitively diagnosed based on history, general and systemic examination and laboratory tests in ModjoVeterinary Clinic from September 2015to April 2017(Figure 1).
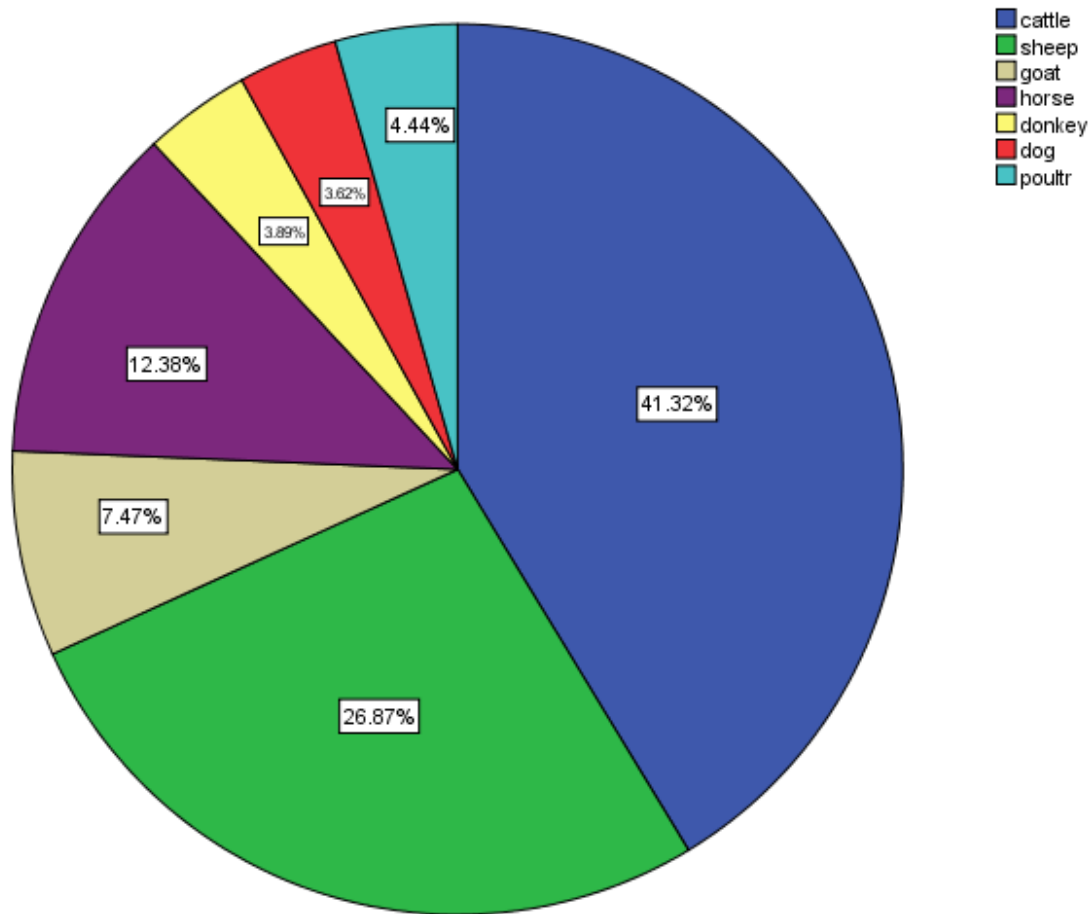
Figure 1: Overview of reported cases per species of animal

There are several animal diseases tentatively diagnosed according to the retrospective data taken from Modjo veterinary Clinic case book of past three years. Around sixty five types of infectious and noninfectious animal disease were registered on this case book for the last three years according to this analysis. Out of the animal disease diagnosed at this clinic GIT parasites(18.14), Pneumonia(16.3), Septicemic diseases (10.4), Tick infestation (9.1), Enteric diseases, Bovine pasteurellosis(4.8), Wound(3.9), Pediculosis(2.3), Bloat(2.2), Ovine pasteurellosis(1.6) and LSD(1.5) were more predominant disease during the study period .

Cattle disease

A large number of diseased cattle were observed in this clinic with diverse categories of diseases. GIT parasites (19.4), Tick infestation(15.8), Bovine pasteurellosis(11.9), Septicemic diseases (9.2),Pneumonia(9.13), Enteric disease(7.2), Pediculosis(4.6), LSD(3.7), Bloat(2.9),

Wound(2.4), Local Abscess(1.8), Mange(1.8), FMD(1.7) and Mastitis(1.2) were the most frequently observed diseases/disease causing agents in cattle(Table 1).

Sheep disease

In case of sheep Pneumonia (25.3), Septicemia (14.7), GIT parasites(12), Enteritis(10.7), Tick infestation (4.8), Ovine pasteurellosis(3.9) andSheep & goat pox(3.4) were regarded as the most critical diseases(Table 1).

Goat disease

Pneumonia (18.2), Enteritis(16.8), GIT parasites (15), Septicemia(12.1), PPR(7.6), Tick infestation(4.2), Bloat(3.4), Orf (2.8), RFM(2.6) and Sheep & goat pox were the most prevalent goat disease diagnosed in the Modjoveteterinary clinic(Table 1).

Equine disease

In Horse GIT parasites(32.1) , Pneumonia(24.6), Wound(12.06) and Colic(6.2) were the predominant disease while Pneumonia(27.3), GIT parasites(24.8), Colic(12.7), Strangles(5.6), Wound(5.6) and Tetanus(2.02) were the predominant in donkey according to the retrospective data taken from the case book(Table 1).

Dogdisease

This study revealed that, the significantdiseases/disease causing agents identified in the case of canine wasGIT parasites(23), Tick infestation (19.9) and Enteritis(19.5) (Table 2).

Poultry disease

Among the diseases which were tentatively diagnosed in Poultry Fowl cholera(24.5), Salmonellosis(21.5), Fowl pox(21.2)and NCD(8.2) were the most commonly observed ones (Table 2).

Seasonal distribution of diseases

According to this analysis there is a variation in occurrence of diseases among the seasons. In spring season Pneumonia(17.7), GIT parasites(17), Enteritis(8.6), Tick infestation(7.3), Lumpy skin disease(3.4), Bloat(2.9), Pediculosis(2.6) and Sheep and goat pox(1.7) were the predominant diseases While GIT parasites(19.8), Pneumonia(17.5), Septicemia(14.9), Enteritis(10.3), Ovine pasteurellosis(1.7), Mange(2) and Acidosis(1.3) were the major cases in winter season. In autumn season GIT parasites(17.7), Tick(15.4), Pneumonia(15.7), Bovine pasteurellosis(7.7), and Colic(1.7) were the frequently detected cases whileGIT parasites(19.4), Tick(12.2), Bovine pasteurellosis(7.6),Pediculosis(2.3), Sheep & goat pox(2.3) and yokegall(1) were the predominant diseases (Table 3).

Table 3: Seasonal distribution of diseases

Diseases	Season			
	Spring N=1911	Winter N=1149	Autumn N=1000	Summer N=1092
Pneumonia	339(17.7)	201(17.5)	157(15.7)	142(13)
Bovine pasteurellosis	61(3.2)	30(2.6)	77(7.7)	83(7.6)
LSD	64(3.4)	1	1	12(1.1)
Septicemia	206(10.8)	172(14.9)	77(7.7)	80(7.3)
Sheep &goat pox	33(1.7)	11(0.9)	5	25(2.3)
PPR	18(0.9)	12(1.0)	6	12(1.1)
Ovine.Pasteurellosis	19(1)	19(1.7)	7	11(1.0)
AHS	2	0	0	2
Tick	139(7.3)	43(3.7)	154(15.4)	133(12.2)
Enteritis	164(8.6)	118(10.3)	95(9.5)	46(4.2)
Mange	26(1.4)	23(2.0)	8	11(1.0)
Wound	67(3.5)	38(3.3)	46(4.6)	51(4.7)
Footrot	3	0	3	6
Lice	49(2.6)	34(3)	14(1.4)	25(2.3)
GIT parasites	323(17)	228(19.8)	172(17.2)	212(19.4)
Actinibacillosis	7	3	8	2

Colic	28(1.5)	8	17(1.7)	12(1.1)
Fowl pox	10	5	10(1.0)	15(1.4)
Urolithiasis	14	10(0.8)	3	14(1.3)
FMD	13	6	1	15(1.4)
Bloat	55(2.9)	19(1.7)	13(1.30)	25(2.3)
Fasciola	10(.5)	8	2	1
Actinomycosis	4	1	0	0
Atresia ani	2	0	1	0
Fowl Cholera	8	16(1.4)	14(1.4)	7
Salmonellosis	9	15(1.3)	11	12(0.11)
Coccidiosis	4	15(1.3)	3	3
Infectious Coryza	2	4	3	3
NCD	6	4	2	3
Acidosis	6	15(1.3)	10	8
Yokegall	0	0	1	11(1.0)

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DISCUSSION

According to this analysis many infectious and noninfectious diseases were diagnosed as major livestock, small animal and poultry health problems in the area. Livestock diseases have several impacts on the small holder farmers' livelihood directly and in directly. The direct effect of diseases is the mortality of animals and the indirect effects include low out put such as meat, milk, and draft power, weakgrowth and fertility, and cost of treatment. Animal diseases have also been indicated as public health hazards (Assegid, 2000).It may be expected that the animal health intensified by different factors like poor management, polluted water, traditional healers such as cauterisation, incision and drenching, the agro-ecology of the area, and high animal movement in the area. Beside this, the animal health is also affected by different factors like low quality inadequate animal health services and minimum attention to the services.

Bovine Diseases

Several diseases are affecting Cattle that causes serious effect on the production of animals, human health, trade of livestock and animal products were observed in this clinicaccording this retrospect data. GIT parasites (19.4), Tick infestation(15.8), Bovine pasteurellosis(11.9), Septicemia(9.2), Pneumonia(9.13), Enteric disease(7.2), Pedicullosis(4.6), LSD(3.7), Bloat(2.9), Wound(2.4), Local Abscess(1.8), Mange mites(1.8), FMD(1.7) and Mastitis(1.2)were the most frequently observed diseases/disease causing agents whileActinobacillosis, Dystocia, Urolithiasis, Abortion, Fasciolosis, Actinomycosis, Babesiosis, RFM, Pinkeye, Salmonellosis, Uterine Infection, Coccidiosis, Gangrene, Paraphimosis, Wart, Acidosis, Over Growth of Hoof, Vaginal Prolapse, Poison, Listeriosis, Lameness, and Yokegall were diagnosed in the Modjo veterinary Clinic.This disagreed with the reports of Sarker*et al* (2015) that reported Liver and rumen fluke infestation, Ectoparasite infestation and Myiasis as top prevalent diseases of cattle in Bangladesh and also with the reports of Mokonen(2007) that reported LSD, Anthrax, Pneumonia &Endoparasitesas top prevalent diseases of cattle in Alaba district. This may be due to the difference in agro ecology. Such a large number of diseases may be due to different factors such as management systems and environmental determinants which includes location, climate and husbandry.

Ovine diseases

According to this retrospective data, Pneumonia (25.3), Septicemia(14.7), GIT parasites(12), Enteritic diseases (10.7), Tick infestation (4.8), Ovine pasteurellosis(3.9) andSheep & goat pox(3.4) were regarded as the most important diseases of sheep.Mange, Wound, Mastitis, Foot rot, Nasal bot, Lice, Actinobacillosis, Dystocia, Urolithiasis, Abortion, Lameness, Local abscess, Fasciola, RFM, Atresia ani, Pinkeye, Uterine infection, Coccidiosis, Hypocalcemia, Orf, Paraphimosis, Over growth of hoof, Poison, Swayback and Pregnancy toxaemia were also diagnosed. This agrees with reports of Mokonen(2007)that reported Pneumonia, Endoparasites and Pasteurellosis as prevalent Ovine diseases at Alaba. This high occurrence of diseases may be due to stress such as transport on marketing, high and close contact between flock, high animal movement, high vector distribution, poor management system and sudden changes of weather.

Caprine Diseases

Pneumonia (18.2), Enteric diseases (16.8), GIT parasites (15), Septicemia (12.1), PPR (7.6), Tick infestation (4.2), Bloat (3.4), Orf(2.8), RFM (2.6) and Goat pox were the most prevalent goat disease whileMange, Wound, Mastitis, Lice, Actinobacillosis, Dystocia, Listeriosis, Urolithiasis, Abortion, Lameness, Local abscess, salmonellosis, Pinkeye, Uterine infection, Coccidiosis, Paraphimosis, Poison and Swayback were diagnosed in the Modjo veterinary clinic. This is in close agreement with reports of Mekonen(2007) that reported Ectoparasites and Pneumonia as a prevalent diseases of Goat. Such high number of diseases may be due to different predisposing factors such as high stress, poor feeding and housing and poor awareness of community on health service practice of these animals on regular deworming, vaccination and treatment of the animal.

Horse Diseases

According to this data;GIT Parasites(32.1),Pneumonia(24.6), Wound(12.06), Colic(6.2), Lameness(3.6), UT Problem(2.4), Enteritis(2.1) and Tick infestation(1.4) were predominant

while AHS, Actinobacillosis, Pediculosis, Mange, Tetanus, Strangles, Local abscess, Babesiosis, Pinkeye, Wart, EpizooticLymphangitis, Hoof overgrowth and poison were considerably detected disease in Horse may due to irregular vaccination and deworming, close contact between animals, inadequate housing and feeding, stress such as work overload and improper harnessing,

Donkey Diseases

According to this study, Pneumonia(27.3), GIT Parasites(24.8), Colic (12.7), Strangles (5.6), Wound (5.6), Local abscess and Tetanus (2.2) were the predominant whereasUT problem, Enteritis, Tick, Lice, Dystocia, Abortion, Lameness, Rectal prolapse, Paraphimosis and Ventral edema were slightly diagnosed diseases indonkeys and are low in relative to other animal species. This may occur due to a low number of cases of donkeys and high resistant nature of donkey but the diseases recorded may due to poor management, work load, improper harnessing, and little care on their health.

Dog Diseases

The predominant disease in dog was GIT parasites(23), Tick infestation(19.9), Enteritis(19.5), Pneumonia(10.2), Myiasis(2.7) and FAD(2.7) while   Mange, Local abscess, Canine distemper, Paraphimosis, Vaginal prolapse and Poison were other disease diagnosed.The disease may due to poor hygienic condition, poor housing and health care.

Poultry Diseases

According to analysis of this retrospective data, Fowl cholera(24.5), Salmonellosis(21.5), Fowl pox(21.2), NCD(8.2), Coccidiosis(7), Infectious coryza(6.5), Fowl typhoid(4.3), Pediculosis(3.8), and GIT parasites(2.1) were the predominant diseases whileTick infestation, Enteritis wound, and Marek's diseases were other disease diagnosed in the clinic.However, the current finding is different with that of the report of G/Libanos (2016) which claims NCD, fowl pox and coccidiosis as the main problems of poultry in his study site and this could probably be related with the agro-ecological difference the two areas. These poultry diseases may be due to different reason such as poor biosecurity, housing, feeding, seasonal distribution of vectors, poor vaccination and treatment habits of poultry.

Seasonal Distribution of Diseases

This study detected a variation in the occurrence of diseases among the seasons whereother pneumonia and GIT parasites were the most prominent and profound diseases across all (Table 3). This was supported by the finding of Ameen and Ajayi (2013) who had reported GIT parasites as the prominent disease in all season.A seasonal trend is a particular case of a cyclical trend, where the periodic fluctuations in disease incidence are related to particular seasons and fluctuations may be caused by changes in host density, management practices, and survival of infectious agents, vector dynamics and other ecological factors (Thrusfeild, 2007).

The study identified Pneumonia, GIT parasites, Enteritis, Tick, Lumpy skin disease, Bloat, Pediculosis and Sheep and goat pox were the prevalent diseases in the spring season.This agrees with Andrews et al., 2004 that reported Pneumonia to occur when animals are exposed to cold and wet weather; Walker *et al* (2013) that reported peak numbers of tick larvae toward the end of the wet season when humidity is highest;Radostits*et al* (2006) that reportedconcomitant high levels of insect activity with a peak of Lumpy skin disease in the late summer and early autumn. Bloat may vary due to the foaming qualities of the soluble leaf proteins in bloating legumes and other bloating forages ingested by cattle on pasture.

The significant diseases diagnosed in winter season were GIT parasites, Pneumonia, Enteritis, Ovine pasteurellosis, Mange and Acidosis.This was in line with the findings ofDessie and Menzir(2017) and Omoike*et al* (2014) who were reported the highest occurrence of Ovine pasteurellosis and Mange in this season respectively.

This retrospective study, in autumnseason Bovine pasteurellosis, GIT parasites, Tick infestation, Pneumonia and Colic were the frequently detected cases. This was in close agreement with the findings of Ameen and Ajayi (2013) that reported GIT parasites in early wet season.In summer Bovine pasteurellosis, Tick, Pediculosis, Sheep & goat pox and Yokegall were the prevalent diseases diagnosed.This was in line with the findings of Walker *et al* (2013) who reported thereproduction of adult Tick is at the beginning of the wet season which followed by peak numbers of larvae toward the end of the wet season when humidity is highest.

CONCLUSION AND RECOMMENDATIONS

Livestock diseases have several impacts on the farmers' livelihood directly and in directly. This analysis showed a high prevalence of infectious and noninfectious animal in the area. GIT parasites, Tick infestation and Pneumonia were the prevalent diseases almost in all species of animal included in this study. The other essential and prevalent animal diseases investigated in this retrospective study were Bovine pasteurellosisand LSD in cattle; Enteritis, Ovine pasteurellosis, Sheep & goat pox, PPR and Pediculosis in shoat; Wound, Colic, Lameness, Strangles, Tetanusand Enteritis in equines; Enteritis, Myiasis and FAD in dog and Fowl cholera, Salmonellosis, Fowl pox, NCD, Coccidiosis and Infectious coryza in poultry. This study also detected a variation in the occurrence of diseases among the seasons whereother pneumonia and GIT parasites detected across all season.However, the attentions given to the animal diseases was not sufficient and the lack of available information (research) on animal diseases and their consequence; aggravates the disease occurrence in the area. Based on this conclusion the following recommendations were forwarded:

- There should be close attention by all stakeholders; Farmers, veterinarians and government on control and prevention measures to reduce losses caused by these diseases,

- Awareness should be created in small holder farmer concerning the cause, transmission, and effect and control methods of diseases in order to minimize the loss incurred due to animal diseases in the area

- A further detailed study should be conducted to have appropriate information on the prevalence, seasonal occurrence, and the effect of these diseases on animals and economic losses caused by them in the area.

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