

Original Article

A longitudinal study on clinical diseases and disorders of cattle and goats in Sylhet, Bangladesh

Nasrin Sultana Lucky, Mohammad Kawsar Hossain, Animesh Candra Roy, MD. Mahfuzul Haque, AHM Musleh Uddin, Md. Monirul Islam and Md. Matiar Rahman Howlader

• Received: January 2016 • Revised: February 2016 • Accepted: February 2016 • Published Online: February 2016



AFFILIATIONS

- Nasrin Sultana Lucky
- Mohammad Kawsar Hossain
- Animesh Candra Roy
- MD. Mahfuzul Haque
- AHM Musleh Uddin

Department of Surgery and Theriogenology,
Faculty of Veterinary and Animal Science,
Sylhet Agricultural University,
Sylhet, Bangladesh.

- Md. Monirul Islam

Department of Pharmacology,
Faculty of Veterinary and Animal Science,
Sylhet Agricultural University,
Sylhet, Bangladesh.

- Md. Matiar Rahman Howlader

Department of Physiology,
Faculty of Veterinary and Animal Science,
Sylhet Agricultural University,
Sylhet, Bangladesh.

CORRESPONDENCE

Nasrin Sultana Lucky

Department of Surgery and Theriogenology, Faculty of
Veterinary and Animal Science, Sylhet Agricultural
University, Sylhet, Bangladesh.
E-mail: nslucky.10@gmail.com

ABSTRACT

Objective: The objective of this research work was to find out the prevalence of clinically occurring diseases and the disorders in cattle and goats at the Sylhet Agricultural University area, Sylhet during January to December 2013.

Materials and methods: This clinical study was carried out on 775 clinical cases (553 cattle and 222 goats) based on the general, clinical, physical and microscopical examination along with common laboratory techniques.

Results: The clinically observed cases in cattle were (i) gyneco-obstetrical (15.37%; n=85/553; $P=0.038$), (ii) metabolic and nutritional (9.94%; n=55/553; $P=0.245$), (iii) bacterial and viral (26.22%; n=145/553; $P<0.001$), (iv) parasitic (26.58%; n=147/553; $P<0.001$), and (v) digestive diseases (21.88%; n=121/553; $P=0.008$). Similarly, in goats, the prevalences were found to be 14.41 (n=32/222; $P=0.041$), 15.76 (n=35/222; $P=0.078$), 30.63 (n=68/222; $P=0.001$), 23.87 (n=53/222; $P=0.020$), and 15.31% (n=34/222; $P=0.069$), respectively.

Conclusion: This research work is a groundwork which may facilitate the potential researchers to investigate the details possessions for extensive therapeutic exercises in Bangladesh particularly in Sylhet region for designing the control strategies and conducting the treatment of infection and disorders in cattle and goats.

KEYWORDS

Cattle, Clinical cases, Diseases, Disorders, Goats

How to cite: Lucky NS, Hossain MK, Roy AC, Haque MM, Uddin AHMM, Islam MM, Howlader MMR (2016). A longitudinal study on clinical diseases and disorders of cattle and goats in Sylhet, Bangladesh. *Journal of Advanced Veterinary and Animal Research*, 3(1): 24-37.

INTRODUCTION

Livestock rearing is a vital element of farming system in Bangladesh for decades. It plays an imperative role in the growth of conventional economy in Bangladesh. Approximately, 3.02% of the Gross Domestic Products (GDP) in Bangladesh comes from animal farming sector ([Economic Index, 2010](#)). In Bangladesh, most of the animals in rural areas are maintained by traditional management system. Among the animals, cattle is the first and goats are the second important livestock population in Bangladesh. According to the report of [BBS \(2010\)](#), 0.544 million buffalo, 26.828 million cattle, 16.242 million goats and 1.221 million sheep are presently predictable in livestock population of Bangladesh. These livestock population plays a significant responsibility in the urban economy ([Kamaruddin, 2003](#)).

In rural areas, animals are reared under smallholder traditional management system by the villagers. The favorable causes for the incidence of different diseases in Bangladesh are the management scheme of animals and geographical location. The Veterinary hospitals are the idyllic and consistent resource of information about animal diseases and their elucidation. Veterinary clinics and hospitals become an authentic source of the information about animal diseases and their management. The animals that are affected with various diseases and disorders are always bringing to Veterinary Clinics and Hospital. The owners of the animals from the adjoining areas to the Veterinary hospital or clinic bring their sick animals daily. Cautiously record and analysis of these disease problems at different Upazilla Veterinary Hospital gives an appropriate idea about the cases in local areas for cattle and goats. The inclusive information knows about the disease status by the investigation of the case record at particular areas. Although in various veterinary hospitals a number of reports on medical case records are accessible ([Samad, 2001a](#); [Samad et al., 2002](#); [Kabir et al., 2010](#); [Pallab et al., 2012](#); [Rahman et al., 2012](#)), but alike information on animals are very inadequate in the clinic of Sylhet Agricultural University, Sylhet, Bangladesh. However, for the stipulation of suitable veterinary care and successful disease control program essential for more information to describe the outline of longitudinal study of diseases and disorders.

The objectives of this investigation were (i) to establish the longitudinal study of diseases and disorders in animals at the Sylhet Agricultural University area, Sylhet (ii) to study the seasonal occurring diseases and various disorders and their percentage are followed at the clinic and (iii) the study therefore aimed to find out the clinically occurring diseases and disorders of the cattle and goat.

MATERIALS AND METHODS

This clinical observation was carried out at the Veterinary clinic of Sylhet Agricultural University, Sylhet during one year study time from January to December, 2013. For the purpose of the universal clinical prevalence of proven diseases and disorders total 775 clinical cases (553 cattle and 222 goats) were considered. For the examination of the animals clinical history of each case was cautiously recorded. On the basis of obligatory treatment the cases were alienated into five groups; (1) Gyneco-obstetrical diseases (2) Metabolic and nutritional disease and disorders (3) Bacterial and Viral diseases (4) Parasitic infestations (5) Digestive diseases and disorders. The cattle and goats were taken for treatment to the Veterinary clinic from adjacent areas to this University like Baluchor Noya bazaar, Uttar Baluchor, Polash Bari, Tilagor, Shapla Bag, Alutol, Shibgonj, Upo shahar, under the village of Tultikor Union Parishad, from Sylhet City and its surrounding area. The season comprised summer (March to June), rainy (July to October) and winter (November to February). The following events were adopted for performing of this work- (i) by general examination of affected animal, (ii) physical examination, (iii) clinical examination, and (iv) fecal examination in the laboratory

In the procedure of general examination behavior, physical condition, external skin wound, posture, gait, uterine and vaginal prolapse, salivation, discharge from nasal cavity, enlargement of the abdomen, instability of locomotion were observed of the patient by visual examination and were recorded. In physical examination various parts and structures of the body were examined by palpation, percussion, auscultation with the stethoscope, needle pierce and movement of the affected animals. In clinical inspection the pulse, respiratory rate and temperature were recorded. These examinations were conducted on the foundation of the disease history and complaint of the owner's, symptoms and techniques such as microscopical examination, commonly used laboratory techniques ([Samad et al., 1988](#)).

In the laboratory parasitic infestations were recognized by fecal sample examination. The adequate amount of fecal samples were collected and examined by usual methods; (a) by direct smear method: a little amount of feces was positioned on a glass slide and tap water of 1-2 drops was poured on this slide. Spreads the diluted feces over that slide by the help of a glass rod. The coarse undigested particles were separated by glass rod, it was covered with the cover slip and the slide was directly inspected under microscope with the use of low power (10×6 ocular) lens. (b) By flotation method: About 5 gm of feces was put in a beaker and was poured saturated salt solution of 25 mL

on it. By the using of a glass rod the feces were mixing. The fecal suspension was strained and was poured the filtrate inside the glass vial up to its top. The glass slide was leaved on it for contacting the surface of the flaccid and set aside for about 30 min, after which the glass slide was detached. The flaccid holding to the slide was covered with cover slip and studied under microscope with low power lens and infrequently high power lens. The parasitic eggs were identified (Soulsby, 1986).

Data were structured in the Microsoft® Excel spreadsheet and the percentages of disease conditions prevalent in different groups and seasons were intended. For the significant differences in the conditions of the diseases among groups and seasons the Chi-square goodness of fit test was done.

RESULTS AND DISCUSSION

Within 553 clinical cases of cattle, the gynecological cases (15.37%), metabolic and nutritional diseases (9.94%), bacterial and viral diseases (26.22%), parasitic diseases (26.58%) and digestive diseases (21.88%) were recorder in this investigation (Table 1). Out of 222 recorded clinical cases of goat (14.41%), (15.76%), (30.63%), (23.87%), (15.31%) were observed in the respective diseases and disorders (Table 2). In Bangladesh Agricultural University (BAU) Veterinary Clinic, Mymensingh the alike explanations were found in the previous report that were 5.46% gynecological and 3.78% recorded the surgical cases in cattle; 3.67% gynecological and the surgical cases was 19.42% in goat for the period of 1999 to 2001 (Samad, 2001b). In cattle (50.4%) the utmost cases was documented with parasitic diseases, followed by (14.8%) systemic states and (14.2%) digestive diseases, the metabolic diseases (1.3%) and urogenital diseases (1.5%) at the veterinary clinic of Patuakhali Science and Technology University by Rahman et al. (2012). This observation of digestive diseases is not dependable with the prior report of 60.55% digestive diseases (Samad et al., 2002). The incidence of disease varies with different geographical locations in Bangladesh.

Gynecological cases

Gynecological cases were recorded in 15.37% and 14.41% cattle and goats, respectively (Table 1 and 2). These cases observed in winter 11.92% in rainy 17.11%, in summer season 15.02% in cattle and in goat 14.70% in winter, 8.10% in rainy and 20% in summer season (Table 3 and 4). These cases were found in female 28.24% in present studies (Table 5 and 6). Karim et al. (20014), Rahman et al. (2012), Samad (2001a) and Kabir et al. (2010) were deliberated on the gynecological diseases in cattle and goat.

Repeat breeding

Repeat breeding was found in 20% cattle and 12.5% goats (Table 1 and 2). Samad (2001a) found repeat breeding in 1.26% cattle and 0.24% goats. In the present study, repeat breeding in cattle was recorded as 15.63% in winter followed by summer (21.86%) and rainy seasons (15.63%). On the other hand, in goats, the rate was 18.75% in summer and 16.67% in rainy seasons (Table 3 and 4). The disease in female cattle was 20%, and 12.5% in female goat (Table 5 and 6). In another study, Rahman et al. (2012) recorded repeat breeding case in 16.2% cattle and 20% goats. They also reported that the highest rate of repeat breeding in cattle was found in winter (20%) as compared to summer (15.8%) and rainy seasons (12.5%). At Upazilla Veterinary Hospital, Ulipur, Kurigram, Kabir et al. (2010) found only 4 (1.15%) repeat breeding cases among 348 investigated cattle.

Anestrus

This disease was recorded in 23.52% cattle and 31.25% goats (Table 1 and 2). The anestrus in cattle was during winter (12.5%), followed by summer (31.25%) and rainy seasons (18.75%) in the present study and in goat was (30%) in winter followed by summer (31.25%) and (33.33%) in rainy seasons (Table 3 and 4). Table 5 and 6 showed anestrus in cattle was in female (23.52%) and (31.25%) in goat. This disorder was observed in cattle 59.5% during the study period of Rahman et al. (2012) and during winter (80%) was recorded which followed by rainy (75%) and summer (42.1%) seasons. Samad (2001b) worked on anestrus case and reported 0.86% in cattle and 0.47% in goats.

Retained placenta

The disease was found in cattle 4.71% and in goats 6.25% (Table 1 and 2) in this examination. Table 3 and 4 showed the retained placenta in cattle was (3.13%) during winter, followed by summer (3.13%) and rainy seasons (6.25%) and in goat was (12.5%) in summer. Table 5 showed this disease in cattle was in female (4.71%). The disorder was only 8.1% recorded in cows by Rahman et al. (2012). They also reported that the cases of retained placenta were 10.5% and 12.5% in summer and rainy season respectively. Karim et al. (2014) recorded this disorder only 30% in cows and 50% in does.

Endometritis

Endometritis was pragmatic in 1.17% cattle and 3.12% in goats (Table 1 and 2). The disease in cattle was (3.13%) in rainy seasons showed in Table 3 and in goat was (6.25%) in summer seasons (Table 4). Table 5 and 6 showed that endometritis was recorded in 1.17% cattle

and 3.12% in goats. [Drillich et al. \(2005\)](#) focusing the studies on clinical endometritis on prevalence ranging from 18 to 37%. Metritis was recorded 8.1% in cows and 40% in does at the Veterinary Clinic of Patuakhali Science and Technology University by [Rahman et al. \(2012\)](#). They also reported that the rate of metritis in cattle was only 15.8% in summer. [Samad \(2001a\)](#) reported only 0.10% metritis in cows. [Galvão et al. \(2009\)](#), [Hammon et al. \(2006\)](#), and [Huzzey et al. \(2007\)](#) worked on metritis cases in several farms and reported about 20% lactating dairy cows were suffering from metritis.

Uterine prolapse

In the present study, 4.70% cattle and 3.12% goats were affected with uterine prolapse, as indicated in **Table 1 and 2**. **Table 3 and 4** showed the disease in cattle was during winter (3.13%), followed by summer (3.13%) and rainy seasons (6.25%) and in goat was (10%) in winter season. This case was in female (4.70%) in cattle showed in **Table 5**. [Ishii et al. \(2010\)](#) also studied on uterine prolapse. At the time of clinical examination, the majority of the animals (86.36%) suffering from uterine prolapse observed by [Hiranya et al. \(2012\)](#). The cases of uterine prolapse were found only in summer season both in cows and does and that was in 2.7% and 20.0% in respectively ([Rahman et al., 2012](#)).

Vaginal prolapse

In the current study the disease was recorded 2.35 % in cattle (**Table 1**) and was (3.13%) during summer and (3.13%) in rainy seasons. This case was not found in goat during the study period (**Table 3 and 4**). Vaginal prolapse deliberated by [Miesner et al. \(2008\)](#), [Nayak and Samantara \(2010\)](#) and [Ahmed et al. \(2005\)](#). The occurrence in beef cattle has been recorded 39% vaginal and 45% uterine prolapse which have been allied with dystocia.

Dystocia

The prevalence of dystocia was 21.18% in cattle and 12.5% in goats (**Table 1 and 2**). The disease in cattle was 12.5% in winter followed by summer (12.5%) and rainy seasons (31.25%), and in goats, the rate was 10% in winter, followed by 6.25% in summer and 33.33% in rainy seasons (**Table 3 and 4**). **Table 5 and 6** showed that the rate of dystocia in cattle was 21.18%, and in goats, it was 12.5%. [Hansen et al. \(2004\)](#) reported this rate over 50%. [Rahman et al. \(2012\)](#) described the disease of dystocia was recorded in 1.1% cows and 20% does.

Abortion

In the current study abortion was recorded 7.06% in cattle and 12.5% in goats (**Table 1 and 2**). The disease in cattle was (3.13%) in winter, followed by summer (12.5%), (3.13%) in rainy seasons and in goat was during winter (20%), followed by (12.5%) in summer season (**Table 3 and 4**). This case in cattle was (7.06%) and in goat (12.5%) in female (**Table 5 and 6**). [Bekana et al. \(1994a, b\)](#), also worked on the dead fetus and exercise the term as abortion.

Stillbirth

Stillbirth was found 5.87% in cattle and in goats 3.12% (**Table 1 and 2**). The disease in cattle was (9.38%) during winter, followed by summer (3.13%) and (3.13%) in rainy seasons and in goat was (10%) in winter (**Table 3 and 4**). The Stillbirth in cattle was (5.87%) and in goat was (3.12%) in female (**Table 5 and 6**). [Citek et al. \(2009\)](#), [Kornmatitsuk et al. \(2004\)](#), [Eriksson et al. \(2004\)](#), [Berglund et al. \(2003\)](#) and [Fiedlerova et al. \(2008\)](#) were studied on the stillbirth of cattle and goat. They reported that a minor calving difficulty increased the odds of stillbirth in heifers by 2.91 and in multiparous cows 4.67.

Teat fistula

The circumstance in 2.35% cattle and 6.25% goats was recorded (**Table 1 and 2**). The teat fistula in cattle was (3.13%) during winter and (3.13%) in summer and in goat was (20%) in winter season (**Table 3 and 4**). The disease in cattle was (2.35%) and in goat was (6.25%) in female (**Table 5 and 6**) in present study.

Pyometra

Pyometra was identified in cattle 7.06% and in goats 9.37% (**Table 1 and 2**). The disease in cattle was (3.13%) during winter, followed by summer (6.25%) and (9.31%) in rainy seasons and in goat was (12.5%) in summer and (16.69%) in rainy seasons (**Table 3 and 4**). The case in cattle was (7.06%) and in goat was (9.37%) in female (**Table 5 and 6**). Previously, [Cunéo et al. \(2008\)](#) and [Sheldon et al. \(2006\)](#) worked on pyometra cases in animal.

Metabolic and nutritional diseases

Mastitis

Mastitis found in cattle was 40.0% and in goats 34.28% (**Table 1 and 2**). The case in cattle was (30%) during winter, followed by summer (47.62%) and (42.86%) in

Table 1: The clinical incidence of diseases and disorder found in Cattle at Sylhet Agricultural University's Veterinary clinics, Sylhet

Diseases (cattle)		Affected (n)	%	P-value
Gynecological	Retained placenta	4	4.71	0.038
	Repeat breeding	17	20.0	
	Teat fistula	2	2.35	
	Abortion	6	7.06	
	Stillbirth	5	5.87	
	Dystocia	18	21.18	
	Endometritis	1	1.17	
	Pyometra	6	7.06	
	Anestrus	20	23.52	
	Uterine prolapse	4	4.70	
Vaginal prolapse	2	2.35		
Sub total		85	15.37	
Metabolic and nutritional	Mastitis	22	40	0.245
	Grass tetany	5	9.09	
	Downer's cow syndrome	4	7.27	
	Acidosis	13	23.64	
	Ketosis	3	5.45	
	Milk fever	8	14.54	
Sub total		55	9.94	
Bacterial and viral	Foot and mouth disease	56	38.62	<0.001
	Rabies	32	22.06	
	Haemorrhagic Septicemia	4	2.75	
	Actinobacillosis	2	1.37	
	Foot Rot	7	4.82	
	Contagious Ecthyma	10	6.89	
	Black Quarter	12	8.27	
	Tetanus	6	4.13	
	Pneumonia	16	11.03	
	Sub total		145	
Parasitic	Fasioliasis	45	30.61	<0.001
	Tick Infestation	35	23.80	
	Hump Sore	8	5.44	
	Bottle Jaw	9	6.12	
	Maggot	25	17.01	
	Mite Infestation	15	10.20	
	Warts	10	6.80	
Sub total		147	26.58	
Digestive	Bloat	18	14.87	0.008
	Diarrhea	40	33.05	
	Dysentery	18	14.87	
	Dehydration	20	16.52	
	Anorexia	25	20.66	
Sub total		121	21.88	
TOTAL		553	99.99	<0.001

rainy seasons and in goat was (66.66%) during winter, followed by summer (43.75%) and (57.14%) in rainy season (**Table 3 and 4**) Mastitis was (47.83%) in cattle and in goat was (57.21%) in female (**Table 5 and 6**). Mastitis in cows 1.1% and in doe 1.6% was recognized and by [Karim et al. \(2014\)](#). [Rahman et al. \(2012\)](#) and [Samad \(2001a\)](#) accounted the clinical mastitis in cows as 0.89% and 0.9%, respectively.

Table 2: The clinical incidence of diseases and disorders in Goat at the Sylhet Agricultural University's Veterinary clinics, Sylhet

Diseases (goat)		Affected (n)	%	P-value
Gynecological	Retained placenta	2	6.25	0.041
	Repeat breeding	4	12.5	
	Teat fistula	2	6.25	
	Abortion	4	12.5	
	Stillbirth	1	3.12	
	Dystocia	4	12.5	
	Endometritis	1	3.12	
	Pyometra	3	9.37	
	Anestrus	10	31.25	
	Uterine prolapse	1	3.12	
Vaginal prolapse	0	0		
Sub total		32	14.41	
Metabolic and nutritional	Mastitis	12	34.28	0.078
	Acidosis	15	42.85	
	Ketosis	8	22.85	
Sub total		35	15.76	
Bacterial and viral	Peste Des Petits Ruminants	19	27.94	0.001
	Rabies	12	17.64	
	Foot Rot	12	17.64	
	Contagious Ecthyma	14	20.58	
	Tetanus	3	4.41	
	Pneumonia	8	8.82	
	Sub total		68	
Parasitic	Fasioliasis	9	16.98	0.020
	Tick Infestation	22	41.50	
	Maggot	15	28.30	
	Mite Infestation	7	13.20	
Sub total		53	23.87	
Digestive	Bloat	9	26.47	0.069
	Diarrhea	10	29.41	
	Dysentery	4	11.76	
	Dehydration	3	8.88	
	Anorexia	8	23.52	
Sub total		34	15.31	
Total		222	99.99	<0.001

Grass tetany

This disease was recorded in 9.09% cattle (**Table 1**). The grass tetany in cattle was recorded as 15% in winter, followed by rainy season (14.29%), as shown in **Table 3**. It was found in 10.86% female cattle (**Table 5**). [Radositis et al. \(2007\)](#) worked on this disease and stated that the occurrences of this case was seasonal, and it was more frequent in cool and rainy weather conditions.

Downer's cow syndrome

This disease was recorded in 7.27% cattle (**Table 1**), and it was 10% during winter followed by summer (4.76%) and (7.14%) rainy seasons (**Table 3**). On the other hand, it was 8.69% in female (**Table 5**). [Karim et al. \(2014\)](#) stated that the cows during the dry period and fed a ratio of 15% crude protein had a 69.4% incidence of metabolic diseases and a 31% incidence of the downer cows syndrome.

Table 3: The prevalence of diseases and disorders in cattle at the Sylhet Agricultural University's Veterinary clinics, Sylhet (Season wise)

Diseases (cattle)		Summer		Rainy		Winter		P-value
		Affected (n)	%	Affected (n)	%	Affected (n)	%	
Gynecological	Retained placenta	1	3.13	2	6.25	1	3.13	0.305
	Repeat breeding	7	21.86	5	15.63	5	15.63	
	Teat fistula	1	3.13	-	-	1	3.13	
	Abortion	4	12.5	1	3.13	1	3.13	
	Stillbirth	1	3.13	1	3.13	3	9.38	
	Dystocia	4	12.5	10	31.25	4	12.5	
	Endometritis	-	-	1	3.13	-	0	
	Pyometra	2	6.25	3	9.38	1	3.13	
	Anestrus	10	31.25	6	18.75	4	12.5	
	Uterine prolapse	1	3.13	2	6.25	1	3.13	
Vaginal prolapse	1	3.13	1	3.13	-	0		
Sub Total	32	15.02	32	17.11	21	11.92		
Metabolic and nutritional	Mastitis	10	47.62	6	42.86	6	30.00	<0.001
	Grass tetany	-	0	2	14.29	3	15.00	
	Downer's cow syndrome	1	4.76	1	7.14	2	10.00	
	Acidosis	6	28.57	3	21.43	4	20.00	
	Ketosis	2	9.52	-	0	1	5.00	
	Milk fever	2	9.52	2	14.29	4	20.00	
Sub Total	21	9.86	14	7.49	20	11.35		
Bacterial and viral	Foot and mouth disease	11	28.94	15	28.84	30	54.54	0.450
	Rabies	8	21.05	20	38.46	4	7.27	
	Haemorrhagic septicemia	3	7.89	1	1.92	-	-	
	Actinobacillosis	1	2.63	1	1.92	-	-	
	Foot rot	1	2.63	2	3.86	4	7.27	
	Contagious Ecthyma	2	5.26	4	7.69	4	7.27	
	Black quarter	6	15.78	4	7.69	2	3.63	
	Tetanus	2	5.26	3	5.76	1	1.81	
	Pneumonia	4	10.52	2	3.86	10	18.18	
Sub Total	38	17.84	52	30.47	55	31.25		
Parasitic	Fasioliasis	11	22.45	21	36.84	13	31.71	0.022
	Tick infestation	18	36.73	9	15.79	8	19.51	
	Hump sore	2	4.01	5	8.77	1	2.44	
	Bottie jaw	-	0	4	7.02	5	12.20	
	Maggot	11	22.45	13	22.81	1	2.44	
	Mite infestation	4	8.16	2	3.51	9	21.95	
	Warts	3	6.12	3	5.26	4	9.76	
Sub Total	49	23.00	57	30.47	41	23.29		
Digestive	Bloat	12	17.14	3	11.11	3	12.50	0.080
	Diarrhea	26	37.14	8	29.63	6	25.00	
	Dysentery	8	11.43	5	18.52	5	20.83	
	Dehydration	11	15.71	4	14.81	5	20.83	
	Anorexia	13	18.57	7	25.93	5	20.83	
Sub Total	70	32.86	27	14.43	24	13.64		
Total	210	99.994	182	99.97	161	99.96	<0.001	

Acidosis

Acidosis was documented 23.64% in cattle and in goats 42.85% (Table 1 and 2). During winter the disease in cattle was (20%), followed by summer (28.57%) and (21.43%) in rainy seasons and in goat was (25%) in winter, followed by summer (31.25%) and (14.25%) in rainy seasons (Table 3 and 4). In the present investigation, it was (88.88%) in male and was (10.86%) in female in cattle and was (64.28%) in male and was (328.58%) in female in goat (Table 5 and 6). Duffield (2000) worked on acidosis and declared that the acidosis is produced when oxygen levels in the body was fallen.

Ketosis

This disease 5.45% in cattle and 22.85% in goats was evidenced (Table 1 and 2). Ketosis in cattle was 5% in winter, followed by 9.52% in summer and 8.33% in winter. Similarly, in goats, the rate was 25% and 28.51% in summer and winter seasons, respectively (Table 3 and 4). In cattle, ketosis was 11.11% in male and 4.35% in female, and in goats, it was 35.71% in male and 14.29% in female (Table 5 and 6). An occurrence of 34% ketosis has been reported by Duffield (2000). The incidence rates of ketosis between 11.10% and 12.10% have been reported by Ostergaard and Grohn (2000).

Table 4: The prevalence of diseases and disorder in goat at the Sylhet Agricultural University's Veterinary clinics, Sylhet (Season wise)

Diseases (goat)		Summer		Rainy		Winter		P-value
		Affected (n)	%	Affected (n)	%	Affected (n)	%	
Gynecological	Retained placenta	2	12.5	-	0	-	0	0.003
	Repeat breeding	3	18.75	1	16.67	-	0	
	Teat fistula	-	0	-	0	2	20	
	Abortion	2	12.5	-	0	2	20	
	Stillbirth	-	0	-	0	1	10	
	Dystocia	1	6.25	2	33.33	1	10	
	Endometritis	1	6.25	-	0	-	0	
	Pyometra	2	12.5	1	16.67	-	0	
	Anestrus	5	31.25	2	33.33	3	30	
	Uterine prolapse	-	0	-	0	1	10	
Vaginal prolapse	-	0	-	0	-	0		
Sub Total		16	20	6	8.10	10	14.70	
Metabolic and nutritional	Mastitis	7	43.75	4	57.14	8	66.66	0.064
	Acidosis	5	31.25	1	14.28	3	25	
	Ketosis	4	25	2	28.57	1	8.33	
Sub Total		16	20	7	9.45	12	17.64	
Bacterial and viral	Peste des petits ruminants	4	28.57	8	29.62	12	44.44	0.019
	Rabies	2	14.28	7	25.92	4	14.81	
	Foot rot	3	21.42	2	7.40	4	14.81	
	Contagious ethyma	2	14.28	4	14.81	1	3.70	
	Tetanus	1	7.14	1	3.70	1	3.70	
	Pneumonia	2	14.28	5	18.51	5	18.51	
Sub Total		14	17.5	27	36.48	27	39.70	
Parasitic	Fascioliasis	4	26.66	13	50	6	50	0.001
	Tick infestation	4	26.66	6	23.07	3	25	
	Maggot	5	33.33	6	23.07	3	25	
	Mite infestation	2	13.33	1	3.84	-	0	
Sub Total		15	18.75	26	35.13	12	17.64	
Digestive	Bloat	5	26.31	1	12.5	2	28.57	0.085
	Diarrhea	5	26.31	2	25	1	14.28	
	Dysentery	3	15.78	2	25	1	14.28	
	Dehydration	2	10.52	1	12.5	2	28.57	
	Anorexia	4	21.05	2	25	1	14.28	
Sub Total		19	23.75	8	10.81	7	10.29	
Total		80	100	74	99.97	68	99.97	<0.001

Milk fever

Milk fever was recorded as 14.54% in cattle (Table 1). However, it was 20% during winter followed by summer (9.52%) and rainy (14.29%) seasons in cattle (Table 3 and 5). Bar and Ezra (2005) observed clinical hypocalcemia before, during or after calving caused by milk fever. Thirunavukkarasu et al. (2010) reported that among the 3774 cows in five milk sheds at the State of Tamil Nadu, 516 (13.67%) were affected with milk fever. Hutjens (2003) studied on Israeli holstein cows and reported that 8% of the pretentious animals died and culled were 12% of them due to milk fever.

Bacterial and viral diseases

Foot and mouth disease

In the current study, FMD was found in 38.62% cattle, and was 54.54% in winter, followed by summer (28.94%)

and rainy (28.84%) seasons in cattle (Table 1 and 3). The rate of FMD in male was 38.96%, and in female, it was 40.12% in cattle (Table 5). Rahman et al. (2012) stated 1.79% cases of FMD in cattle and 0.08% in goats.

Rabies

Rabies was recorded in cattle (22.06%) and goats (17.64%), as mentioned in Table 1 and 2. In cattle, the disease was 7.27% in winter followed by summer (21.05%) and rainy (38.46%) seasons, and in goats, it was 14.81% in winter followed by summer (14.28%) and rainy (25.92%) seasons (Table 3 and 4). The rabies in cattle was 18.80% in males and 28.12% in females and was 15.79% in males and 20% in female goats (Table 5 and 6). Tekki et al. (2014) explained that the rabies in cattle, sheep and goats is a deadly disease caused by a virus that attacks the nervous system. Bishop et al. (2003) reported that the incidence of rabies in cattle frequent.

Table 5: Sex wise structured of prevalence of diseases and disorders in cattle at the Sylhet Agricultural University's Veterinary clinics, Sylhet.

Diseases (cattle)		Male		Female		P-value
		Affe-cted	%	Affe-cted	%	
Gyneco-obstetrical	Retained placenta	-	-	4	4.71	<0.001
	Repeat breeding	-	-	17	20.0	
	Teat fistula	-	-	2	2.35	
	Abortion	-	-	6	7.06	
	Stillbirth	-	-	5	5.87	
	Dystocia	-	-	18	21.18	
	Endometritis	-	-	1	1.17	
	Pyometra	-	-	6	7.06	
	Anestrus	-	-	20	23.52	
	Uterine prolapse	-	-	4	4.70	
Vaginal prolapse	-	-	2	2.35		
Sub total	-	-	85.0	28.24		
Metabolic and nutritional	Mastitis	-	-	22	47.83	0.252
	Grass tetany	-	-	5	10.86	
	Downer's cow syndrome	-	-	4	8.69	
	Acidosis	8	88.88	5	10.86	
	Ketosis	1	11.11	2	4.35	
	Milk fever	-	0	8	17.38	
Sub total	9	3.57	46	15.28		
Bacterial and viral	Foot and mouth disease	30	38.96	26	40.62	0.042
	Rabies	14	18.18	18	28.12	
	Haemorrhagic Septicemia	3	3.89	1	1.56	
	Actinobacillosis	1	1.29	1	1.56	
	Foot Rot	4	5.19	3	4.68	
	Contagious Ecthyma	6	7.79	4	6.25	
	Black Quarter	10	12.98	2	3.12	
	Tetanus	4	5.19	2	3.12	
	Pneumonia	9	11.68	7	10.93	
	Sub total	81	32.14	64	21.26	
Parasitic	Fascioliasis	27	29.36	18	32.72	0.008
	Tick Infestation	20	21.74	15	27.27	
	Hump Sore	6	6.52	2	3.64	
	Bottle Jaw	6	6.52	3	5.45	
	Maggot	17	18.46	8	14.54	
	Mite Infestation	9	9.78	6	10.91	
	Warts	7	7.60	3	5.45	
Sub total	92	36.50	55	18.27		
Digestive	Bloat	10	14.28	8	15.69	0.015
	Diarrhea	25	35.71	15	29.41	
	Dysentery	10	14.28	8	15.69	
	Dehydration	14	20.0	11	21.56	
	Anorexia	11	15.71	9	17.64	
Sub total	70	27.77	51	16.94		
Total	252	99.98	301	99.99	<0.001	

Hemorrhagic septicemia

This disease was recorded 2.75% in cattle and was (7.89%) in summer, (1.93%) in rainy seasons (**Table 1 and 3**). It was in male (3.89%) and female (1.56%) in cattle (**Table 5**). The prevalence of this disease has been well renowned (Shivachandra et al., 2011). The case of HS was also worked by Shafarin et al. (2009) on goat and Dey et al. (2007) on different animals.

Actinobacillosis

Actinobacillosis was recorded 1.37% in cattle and was (2.63%) in summer and (1.92%) in rainy seasons (**Table 1 and 3**). The disease was (1.29%) in male and female (1.56%) in cattle (**Table 5**). Rycroft and Garside (2000), Vadillo et al. (2002), Dirksen et al. (2005) and Radostits et al. (2007) reported that actinobacillosis is an infectious disease with a worldwide distribution that often affects the soft tissues of cattle and sheep. In cattle, the classical presentation of infection affects by actinobacillosis diseases described by Milne et al. (2001), Taghipour et al. (2010) and Angelo et al. (2009). On the other hand, Peli et al. (2009) and Magnano et al. (2010) described different presentations of clinical signs in ruminant's actinobacillosis.

Foot rot

Foot rot was found in cattle (4.82%) and goats (17.64%), as mentioned in **Table 1 and 2**. The disease was 7.27% prevalent in cattle during winter, followed by summer (2.63%) and rainy (3.86%) seasons, and in goats, it was 14.81% in winter, followed by summer (21.42%) and rainy (7.40%) seasons (**Table 3 and 4**). In cattle, it was 5.19% in males and 4.68% in females, and in goats, it was 18.42% in males and 16.67% in females (**Table 5 and 6**). John and Webb (2005) stated that the foot rot is a transferable disease of cattle, sheep and goats and in the medium to high rainfall areas it was the mostly found.

Contagious ecthyma

This disease was identified (6.89%) in cattle and (50.58%) in goat (**Table 1 and 2**). In cattle the disease was (7.27%) during winter, followed by summer (5.26%) and (7.69%) rainy seasons and in goat was (3.70%) during winter followed by summer (14.28%) and (14.81%) in rainy seasons (**Table 3 and 4**). The disease in cattle was in male (7.79%) and female (6.25%) and in goat was (23.68%) in male and (16.67%) in female (**Table 5 and 6**). Gokce et al. (2005) pragmatic that the contagious ecthyma occurs at any time of the year without any considerable relation to a season.

Black quarter

This disease was recorded in 8.27% cattle (**Table 1**). The black quarter (BQ) in cattle was 3.63% in winter, followed by summer (15.78%) and rainy (7.69%) seasons, and was 12.98% in males and 3.12% in female cattle (**Table 3 and 5**). BQ was recorded in 1.4% cattle, as reported by Karim et al. (2014).

Table 6: Sex wise structured of prevalence of diseases and disorders in goat at the Sylhet Agricultural University's Veterinary clinics, Sylhet.

Diseases (goat)		Male (n)		Female (n)		P-value
		Affected	%	Affected	%	
Gyneco-obstetrical	Retained placenta	-	-	2	6.25	<0.001
	Repeat breeding	-	-	4	12.5	
	Teat fistula	-	-	2	6.25	
	Abortion	-	-	4	12.5	
	Stillbirth	-	-	1	3.12	
	Dystocia	-	-	4	12.5	
	Endometritis	-	-	1	3.12	
	Pyometra	-	-	3	9.37	
	Anestrus	-	-	10	31.25	
	Uterine prolapse	-	-	1	3.12	
Vaginal prolapse	-	-	0	0		
Sub total	-	-	32	26.01		
Metabolic and nutritional	Mastitis	0	0	12	57.21	0.720
	Acidosis	9	64.28	6	28.58	
	Ketosis	5	35.71	3	14.29	
Sub total	14	14.14	21	17.07		
Bacterial and viral	Peste des Petits Ruminants	9	23.68	10	33.33	0.025
	Rabies	6	15.79	6	20.00	
	Foot Rot	7	18.42	5	16.67	
	Contagious Ethyma	9	23.68	5	16.67	
	Tetanus	2	5.26	1	3.33	
	Pneumonia	5	13.15	3	10.00	
Sub total	38	38.38	30	24.39		
Parasitic	Fascioliasis	5	18.52	4	15.38	0.358
	Tick Infestation	12	44.44	10	38.46	
	Maggot	6	22.22	9	34.61	
	Mite Infestation	4	14.82	3	11.52	
Sub total	27	27.27	26	21.11		
Digestive	Bloat	5	25.00	4	28.58	0.205
	Diarrhea	5	25.00	5	35.72	
	Dysentery	3	15.00	1	7.14	
	Dehydration	2	10.00	1	7.14	
	Anorexia	5	25.00	3	21.42	
Sub total	20	20.20	14	11.38		
Total	99	99.99	123	99.99	<0.001	

Tetanus

Tetanus was documented in 4.13% cattle and 4.41% goats (Table 1 and 2). In cattle, the disease occurrence was 1.81% in winter, followed by summer (5.26%) and rainy (5.76%) seasons, and in goats, it was 3.70% in winter, followed by summer (7.14%) and rainy (3.70%) seasons (Table 3 and 4). Karim et al. (2014) confirmed 0.5% tetanus cases in goats. This variation might be due to difference in geographical location, host and management practices.

Pneumonia

Pneumonia was found 11.03% in cattle and in goats 8.28% (Table 1 and 2). The case in cattle was (18.18%) during winter, followed by summer (10.52%) and (3.86%) rainy seasons and in goat was during winter (18.51%), followed by summer (14.28%) and (18.51%) rainy seasons (Table 3 and 4). In cattle, it was 11.68% in males

and 10.93% in female, whereas in goats, it was 13.15% in males and 10% in females (Table 5 and 6). Similar results were reported by Rahman et al. (2012), who reported 5.1% pneumonia in cattle and 16.8% in goats. Our reports are relatively higher than the reports of Samad (2001a) and Samad et al. (2002), who accounted 0.84% in cattle and 1.24% in goats, respectively.

Peste des petits ruminants (PPR)

PPR was found 27.94% in goats (Table 2). In goat PPR was (44.44%) during winter, followed by summer (28.57%) and rainy seasons (29.62%) and was in male (23.68%) and (33.33%) in female (Table 4 and 6). These results did not sustain the result of Rahman et al. (2012) who stated that the PPR case was 5.2% in goats. Kabir et al. (2010) recorded total 11 diseases and disorders in 115 clinical cases and observed at the Upazilla veterinary hospital, Ulipur, Kurigram 33 (28.69%) goats affected with PPR. In Magura, Karim et al. (2014) documented 5.3% cases of PPR in goats at the Mohammadpur Upazilla veterinary hospital. Samad (2001b); Rahman et al. (2012) also reported the PPR cases were 1.1% and 5.2% in goats, respectively.

Parasitic diseases

Karim et al. (2014) described the incidence of various parasitic diseases in cattle and goats as 12.4 and 1.6% fascioliasis, 8.8 and 2.6% paramphistomiasis, 37.8 and 19.6% gastro-intestinal nematodiasis, 1.4% ectoparasites, 1.4 and 1.1% humpsore, respectively. Islam et al. (2015) worked on nematodiasis on cattle, and observed that the occurrence was highest for *Haemonchus* (17.31%), which was followed by mixed infection (13.46%), *Oesophagostomum* infection (7.69%), *Trichostrongylus* infection (9.61%), Trichuriasis (5.77%) and *Bunostomum* (3.85%) infection.

Fascioliasis

In cattle, the rate was 30.61% and in goats, it was 16.98%, as mentioned in Table 1 and 2. The fascioliasis in cattle was 31.71% in winter, followed by summer (22.45%) and rainy (36.84%) seasons, and in goats, it was 50% in winter, followed by summer (26.66%) and rainy (50%) seasons (Table 3 and 4). The fascioliasis in cattle was 29.36% in males and 32.72% in females, whereas in goats, it was 18.52% in males and 15.38% in females (Table 5 and 6). Kabir et al. (2010) studied and established that 10.44% goats were affected with fascioliasis. Out of 15 calves, 13 (86.67%) were found to be affected with *Fasciola gigantica*, 10 (66.67%) with *Paramphistomum* sp., and 7 (46.67%) calves were affected with gastrointestinal nematodes in Mymensingh (Hossain et al., 2005).

Tick infestation

Tick infestation was found in cattle 23.80% and 41.50% in goats (**Table 1 and 2**). In cattle, the rate was 19.51% during winter, followed by summer (36.73%) and rainy (15.79%) seasons, and in goats, it was 25% in winter, followed by summer (26.66%) and rainy (23.07%) seasons (**Table 2 and 4**).

Hump sore

Hump sore was recorded in 5.44% cattle (**Table 1**). During winter, hump sore in cattle was 2.44%, followed by summer (4.01%) and rainy (8.77%) seasons (**Table 3 and 5**). [Singh et al. \(2014\)](#) recorded hump sore in indigenous cattle as 22.60%, whereas in exotic cattle and crossbred, it was 36.64%. The infection rate was 29.25% in males and 21.84% in females. They also established that the prevalence was maximum (47.13%) in rainy season, followed by summer (21.64%) and winter (8.76%) seasons.

Bottle jaw

Bottle jaw was recorded 6.12% in cattle (**Table 1**). It was (12.20%) during winter, followed by summer (0.00%) and (7.02%) in rainy seasons in cattle (**Table 3**). This case was (6.52%) in male and (5.45%) in female (**Table 5**). Bottle jaw that has been documented in 2.27% in cattle and 3.48% in calves up to one year old ([Samad, 2001b](#)).

Maggot

Maggot was found 17.01% in cattle and in goats 28.30% (**Table 1 and 2**). In cattle the maggot infestation was during winter (2.44%), followed by summer (22.45%) and (22.88%) in rainy seasons and in goat was during winter (25%), followed by summer (33.33%) and (23.07%) in rainy seasons (**Table 3 and 4**). It was in cattle (18.46%) in male and female (14.54%) and in goat was in male (22.22%) and (34.61%) in female (**Table 5 and 6**). For maggot infestation the most common host was cattle (46.4%) followed by dogs (15.3%), humans (14.7%), pigs (6%), horses (4%) and (1%) in sheep ([Sergio et al., 2007](#)). Among the affected cattle 67% were female and 33% in male. In the cross bred cattle 53% of the affected cases were found ([Rahman et al., 2009](#)).

Mite infestation

Mite infestation 10.20% in cattle and 13.20% in goats was recorded (**Table 1 and 4**). It was in cattle during winter (21.95%), followed by summer (8.16%) and rainy seasons (3.51%) and in goat was (13.33%) in summer and (3.84%) in rainy seasons (**Table 2 and 4**). This case in cattle was (9.78%) in male and female (10.91%) and in goat was in male (14.82%) and (11.52%) female (**Table 5 and 6**).

[Baker \(2003\)](#) worked on the mite infestation which causes ulcerative dermatitis and skin damaged.

Warts

Warts were recorded in 6.80% cattle and 3.12% goats (**Table 1 and 2**). The rate of wart during winter was 9.76%, followed by summer (6.12%) and rainy (5.24%) seasons in cattle (**Table 3 and 5**). In cattle, 0.7% cases of papillomatosis was observed by [Karim et al. \(2014\)](#). In cattle, [Samad \(2001\)](#) showed 0.58% and [Rahman et al. \(2012\)](#) showed 0.19% occurrence of warts in Bangladesh.

Digestive diseases

Bloat

Bloat was recorded in 14.87% cattle and 26.47% goats (**Table 1 and 2**). In cattle, bloat was found in winter (12.50%), followed by summer (17.14%) and rainy (1.11%) seasons (**Table 3**). The bloat in goat was 28.57% during winter, followed by summer (26.31%) and rainy (12.5%) seasons (**Table 4 and 5**). The observation recorded by [Karim et al. \(2014\)](#) was 2.5% in cattle and 2.6% in goats. The incidence of bloat was 2.2% in cattle and in goats, its was 2.5% ([Rahman et al., 2012](#)).

Diarrhea

Diarrhea was presented 33.05% in cattle and 29.44% in goats (**Table 1 and 2**). This case in cattle was (25%) during winter, followed by summer (37.14%) and (29.63%) in rainy seasons and in goat was (14.28%) during winter, followed by summer (26.31%) and (25%) rainy seasons (**Table 3 and 4**). It was (35.71%) in male and female (29.41%) in cattle and in goat was in male (25%) and (35.72 %) in female (**Table 5 and 6**). The cases of diarrhea were in cattle 7.6% and in goats 12.1% found at the veterinary clinics of Patuakhali Science and Technology University by [Rahman et al. \(2012\)](#). They also reported the highest percentage was recorded (8.4%) during summer season, followed by (7.5%) in winter and (7.3%) in rainy season. [Samad et al. \(2002\)](#), reported the diarrheal disease was maximum rainy season, followed by summer and minimum in winter seasons. Diarrhea cases in cattle were 13.4% and 19.6% in goats ([Karim et al., 2014](#)).

Dysentery

Dysentery was recorded 14.87% in cattle and 11.76% in goats (**Table 1 and 4**). The disease in cattle was (20.83%) during winter followed by summer (11.43%) and (18.52%) in rainy seasons and in goat was during winter (14.28%), followed by summer (15.78%) and (25%) rainy seasons (**Table 3 and 4**). The dysentery in cattle was in male (14.28%) and female (15.69%) and in goat was in male (15%) and (7.14%) female (**Table 5 and 6**). This

case was recorded in cattle (1.1%) and goats (6.3%), as reported by Karim et al. (2014). Samad (2001a) stated in cattle it was 1.76%, and in goats it was 1.87%.

Dehydration

Dehydration was found in 16.52% cattle and 8.88% goats, as mentioned in the Table 1 and 2. In cattle, dehydration was 20.83% during winter, followed by summer (15.17%) and rainy (14.88%) seasons, and in goats, the rates were 28.57% during winter, 10.52% in summer and 12.5% in rainy season (Table 3 and 4). In cattle, it was 20% in males and 21.56% in females, and in goats, it was 10% in males and 7.1% in females (Table 5 and 6). Smith (2005) studied on clinical signs of dehydration in cattle and goats and found almost similar results.

Anorexia

Anorexia was recorded in cattle 20.66% and 3.52% in goats (Table 1 and 2). Cattle were affected by the anorexia during in winter (20.83%), followed by summer (18.57%) and (25.93%) rainy seasons and in goat during winter (14.21%), followed by summer (21.05%) and (25%) rainy seasons (Table 3 and 4). The anorexia in cattle was in male (15.71%) and female (17.64%) and in goat was in male (25%) and (21.42%) in female (Table 5 and 6). Within 348 cattle and 115 goats anorexic condition observed in cattle 11 (3.17%) and 7 (6.09%) in goat (Kabir et al., 2010).

Relative clinical prevalence of diseases and disorders in cattle and goats

Among 553 cattle and 222 goats, gynecological, metabolic and nutritional, bacterial and viral, parasitic diseases and digestive diseases were recorded as 15.37, 9.94, 26.22, 26.58, 21.88 and 14.41, 15.76, 30.63, 23.87, 15.31% cases in both cattle and goats, respectively. In cattle, parasitic diseases were found to be mostly prevalent, and in goats, bacterial and viral diseases were highly prevalent.

The clinical prevalence of diseases and disorders of male and female cattle

The findings is in attendance in Table 5 that was showed gynecological, metabolic and nutritional, bacterial and viral, parasitic diseases and digestive diseases in both male and female as 0 (<0.001), 3.57 (0.252), 32.14 (0.042), 36.50 (0.008), 27.77 (0.015) and 28.24 (<0.001), 15.28 (0.252), 21.26 (0.042), 18.27 (0.008), 16.94% (0.015), respectively. Parasitic diseases were mostly found in males, whereas gynecological diseases were mostly found in females.

The clinical prevalence of diseases and disorders of male and female goats

The results are mentioned in Table 6 showing that gynecological, metabolic and nutritional, bacterial and viral, parasitic diseases and digestive diseases were 0 (<0.001), 14.14 (0.720), 38.38 (0.025), 27.27 (0.358), 20.20 (0.205) and 26.01 (<0.001), 17.07 (0.720), 24.39 (0.025), 21.11 (0.358), and 11.38% (0.205) in both males and females, respectively. Gynecological diseases were occurred only in female goats.

CONCLUSION

Various diseases are prevailing among the animals especially in cattle and goats in Sylhet region of Bangladesh. These two animals are mostly vulnerable to parasitic infestation, and are frequently affected with FMD and PPR, respectively. However, the findings of the current study can be considered as groundworks which may assist the veterinarian and researchers to investigate the particular consequence for extensive curative exercise in Bangladesh, and finally for effective control and treatment of specific infection and disorders in cattle and goats of the the Sylhet region.

CONFLICT OF INTEREST

The authors declare that they have no competing interest.

ACKNOWLEDGEMENT

The authors express their deep sense of appreciation and enormous gratitude to the Director of Veterinary Clinics, Sylhet Agricultural University, Sylhet and the authority of the Library of Bangladesh Agricultural University (BAU), Mymensingh, Bangladesh for their cordial cooperation in conducting researchers and collection of articles.

REFERENCES

- Ahmed S, Ahmad I, Lodhi L, Ahmad N, Samad HA (2005). Clinical haematological and serum macro mineral contents in buffaloes with genital prolapse. Pakistan Veterinary Journal, 25: 167-170.
- Angelo P, Alessandro S, Noemi R, Giuliano B, Filippo S, Marco P (2009). An atypical case of respiratory actinobacillosis in a cow. Journal of Veterinary Science, 10: 265-267.
- Baker DG (2003) Natural Pathogens of Laboratory Animals: Their effects on research. Washington DC: ASM Press; pp 385.
- Bar D, Ezra E (2005). Effects of Common Calving Diseases on Milk Production in High-Yielding Dairy Cows. Israel Journal of Veterinary Medicine, 60: 106-111.

- BBS (2008). Statistical year book on Bangladesh, Bangladesh Bureau Statistics, Ministry of Planning, Dhaka. Blood DC, Radostits OM (1989). Veterinary Medicine, 7th Edn., Balliere and Tindal, London.
- Bekana M, Ekman T, Kindahl H (1994a). Ultrasonography of the bovine postpartum uterus with retained fetal membrane. *Journal of Veterinary Medicine*, 41: 653-662.
- Bekana M, Ekman T, Kindahl H (1994b). Intrauterine bacterial findings in postpartum cows with retained fetal membrane. *Journal of Veterinary Medicine*, 41:663-670
- Berglund B, Steinbock L, Elvander M, (2003). Causes of stillbirth and time of death in Swedish Holstein calves examined post mortem. *Acta Veterinaria Scandinavica*, 44: 111-120.
- Bishop DN, Durrheim PE, Kloock JD, Godlonton, JB, Spear R (2003). Rabies Guide for the medical, Veterinary and allied professions. Department of Agriculture and department of health. 2nd print. ISBN: 1-86871-119-6, Design and layout: Marina Lubbe, Printed by: Government Printer, Pretor.
- Citek J, Rehout V, Hajkova J (2009). Congenital disorders in the cattle population of the Czech Republic. *Czech Journal of Animal Science*, 54: 55-64
- Cuneo SP, Card CS, Bicknell EJ (2008). Diseases of Beef cattle Associated with Post-calving and Breeding. Cattle Producer's Library (Animal Health Section) Western Beef Resource Committee. The University of Arizona, Second edition; December 2008, pp 36-37
- Dey S, Singh VP, Kumar AA, Sharma B, Srivastava SK, Singh N (2007). Comparative sequence analysis of 16S rRNA gene of *Pasteurella multocida* serogroup B isolates from different animal species. *Research Veterinary Science*, 83: 1-4.
- Dirksen G, Gründer HD, Stöber M (2005). *Medicina Interna y Cirugía del Bovino*. Vol.1. 4th Edn., Interamericana, Buenos Aires; pp 131-132.
- Drillich M, Wittke M, Tenhagen BA, Unsicker C, Heuwieser W (2005b). Behandlung chronischer Endometritiden bei Milchkühen mit Cephapirin, Tiaprost oder einer Kombination aus beiden Wirkstoffen. *Tierärztl Prax* .33: 404-41.
- Duffield T (2000). Subclinical Ketosis in Lactating Dairy Cattle. *Veterinary Clinics of North American Food Animal Practice*, 16: 231-253.
- Economic Index (2010) Finance division, Ministry of Finance, Government of the People's Republic of Bangladesh.
- Eriksson S, Näsholm A, Johansson K, Philipsson J (2004). Genetic parameters for calving difficulty, stillbirth, and birth weight for Hereford and Charolais at first and later parities. *Journal of Animal Science*, 82: 375-383.
- Fiedlerova M, Rehak D, Vacek M, Volek J, Fiedler J, Simecek P, Masata O, Jilek F, (2008). Analysis of non-genetic factors affecting calving difficulty in the Czech Holstein population. *Czech Journal of Animal Science*, 53: 284-291.
- Galvão KN, Frajblat M, Brittin SB, Butler WR, Guard CL, Gilbert RO (2009b). Effect of prostaglandin F2alpha on subclinical endometritis and fertility in dairy cows. *Journal of Dairy Science*, 92:4906-4913.
- Gokce HI, Genc O, Gokce G (2005). Sero-prevalence of Contagious Ecthyma in Lambs and Humans in Kars, Turkey. *Turkish Journal of Veterinary Animal Science*, 29: 95-101
- Hammon DS, Evjen IM, Dhiman TR, Goff JP, Walters JL (2006). Neutrophil function and energy status in Holstein cows with uterine health disorders. *Veterinary Immunology & Immunopathology*, 113: 21-22.
- Hansen M, Misztal I, Lund MS, Pedersen J Christensen LG (2004). Undesired phenotypic and genetic trend for stillbirth in Danish Holsteins. . *Journal of Dairy Science*, 87: 1477-1486.
- Hiranya K, Bhattacharyya, Mujeeb R, Fazili, Bashir A, Buchoo, Afzal H, Akand (2012). Genital prolapse in crossbred cows: prevalence, clinical picture and management by a modified Bühner's technique using infusion (drip) set tubing as suture material. *Veterinary Arhive*, 82: 11-24,
- Hossain KA, Samad MA, Islam MA, Bhuiyan AA (2005). Clinical observations with therapeutic management of parasitic bottle jaw syndrome in calves. 3: 124-128
- Hutjens M (2003). An Alternate to Metabolic Disorders: Looking at Hypocalcaemia, Dairy Decision Column. University of Illinois, Urbana. 18 Feb.
- Huzzey JM, Veira DM, Weary DM, von Keyserlingk MA (2007). Prepartum behavior and dry matter intake identify dairy cows at risk for metritis. *Journal of Dairy Science* , 90: 3220-3233.
- Ishii M, Aoki T, Yamakawa K, Uyama T, El-khodery S, Matsui M, Miyake Y (2010) Uterine prolapse in cows: Effect of raising the rear end on the clinical outcomes and reproductive performance. *Veterinari Medicina*, 55: 113-118.
- Islam MM, Islam MS, Howlader MMR, Lucky NS (2015). Prevalence of Gastrointestinal Nematodiasis and Comparative Efficacy of Anthelmintics on Body Weight of Cattle in Bangladesh. *International Journal of Scientific Research in Agricultural Sciences*, 2: 61-75.
- John D, Webb Ware (2005). Footrot Control and Eradication. The Mackinnon Project Veterinary

- Clinical Centre, University of Melbourne 250 Princes Highway, Werribee, Victoria, 3030
- Kabir MH, Reza MA, Razi KMA, Parvez MM, Bag MAS and Mahfuz SU (2010). A report on clinical prevalence of diseases and disorders in cattle and goat at the Upazilla Veterinary Hospital, Ulipur, Kurigram. *International Journal of BioResearch*, 2: 17-23.
- Kamaruddin K (2003). Controlling Grass Tetany in Livestock. Cooperative Extension Service. College of Agriculture and Home Economics. New Mexico State Univ. Guide B-809.
- Karim MR, Parvin MS, Hossain MZ, Islam MT, Hussan MT (2014). A report on clinical prevalence of diseases and disorders in cattle and goats at the upazilla veterinary hospital, mohammadpur, magura. *Bangladesh Journal of Veterinary Medicine*, 12: 47-53.
- Kornmatitsuk B, Dahl E, Ropstad E, Beckers JE, Gustafsson H, Kindahl H (2004). Endocrine profiles, haematology and pregnancy outcomes of late pregnant Holstein dairy heifers sired by bulls giving a high or low incidence of stillbirth. *Acta Veterinaria Scandinavica*, 45: 47-68.
- Magnano GG, Macias AF, Mació MN, Costamagna F, Caminos JM, Sticotti E, Scheneider MO, Schleef N, Giraudo JA (2010). Actinobacilosis atípica en un engorde de bovinos. VII Reunión Argentina de Patología Veterinaria (Rapave), Buenos Aires.
- Miesner MD, Anderson DE (2008). Management of uterine and vaginal prolapse in the bovine. *The Veterinary Clinics of North America Food Animal Practice*, 24: 409-419.
- Milne MH, Barrett DC, Mellor DJ, Fitzpatrick JL, O'Neill R (2001). Clinical recognition and treatment of bovine cutaneous actinobacillosis. *Veterinary Record*, 148: 273-274.
- Nayak S, Samantara S (2010). Surgical Correction of Chronic Cervico-Vaginal Prolapse in a Red Sindhi Cow through Intravaginal approach. *Veterinary World*, 3: 427-428.
- Ostergaard S, Grohn YT (2000). Concentrate Feeding, Dry Matter Intake and Metabolic Disorders in Danish Dairy Cows. *Livestock Production Science*, 65: 107-118.
- Pallab MS, Ullah SM, Uddin MM and Miazi OF (2012). A cross sectional study of several diseases in cattle at Chandanaish Upazilla of Chittagong district, Bangladesh. *Scientific Journal of Veterinary Advances* 1: 28-32.
- Peli A, Spadari A, Romagnoli N, Bettini G, Scarpa F, Pietra M (2009). An atypical case of respiratory actinobacillosis in a cow. *Journal of Veterinary Science*, 10: 265-267.
- Radostits OM, Gay CC, Hinchcliff KW, Cons PD (2007). *Veterinary Medicine. A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs, and Goats*. Saunders Elsevier, Spain.
- Rahman MA, Hossain MA, Alam MR (2009). Clinical evaluation of different treatment regimes for management of myiasis in cattle. *Bangladesh Journal of Veterinary Medicine*, 7: 348-352.
- Rahman MA, Islam MA, Rahman MA, Talukder AK, Parvin MS, and Islam MT (2012). Clinical diseases of ruminants recorded at the Patuakhali Science and Technology University Veterinary Clinic. *Bangladesh Journal of Veterinary Medicine*, 10: 63-73.
- Rycroft AN, Garside LH (2000). Actinobacillus species and their role in animal disease. *Veterinary Journal*, 159:18-36.
- Samad MA (2001a). Observations of clinical diseases in ruminants at the Bangladesh Agricultural University Veterinary Clinic. *Bangladesh Veterinary Journal*, 35: 93-120.
- Samad MA (2001b). Observation of clinical diseases in ruminants at the Bangladesh Agricultural University Veterinary clinic. *Bangladesh Veterinary Journal*, 35: 93-120.
- Samad MA, Bari ASM, Bashar SA (1988). Gross and histopathological studies on bovine babesiosis in Bangladesh. *Indian Journal of Animal Science*, 58: 926-928.
- Samad MA, Islam MA and Hossain A (2002). Patterns of occurrence of calf diseases in the district of Mymensingh in Bangladesh. *Bangladesh Veterinary Journal*, 36: 1-5.
- Sergio EB, José DE, Angel BC, Franklin C, Janina S, Sabina B, Enrique M (2007). Incidence of myiasis in Panama during the eradication of *Cochliomyia hominivorax*. Sección de Entomología Médica, Instituto Conmemorativo Gorgas de Estudios de la Salud, PO Box 0816-02593, Panamá
- Shafarin MS, Zamri -Saad M, Khairani BS, Saharee AA (2009). Pathological changes in the respiratory tract of goats infected by *Pasteurella multocida* B:2. *Journal of Comparative Pathology*, 140: 194-197.
- Sheldon IM, Lewis GS, LeBlanc S, Gilbert RO (2006). Defining postpartum uterine disease in cattle. *Theriogenology*, 65: 1516-1530.
- Shivachandra SB, Viswas KN, Kumar AA (2011). A review of hemorrhagic septicemia in cattle and buffalo. *Animal Health Research Review*, 12: 67-82.
- Singh KS, Mukhopadhyay SK, Majumder S, Laha R, Niyogi D, Ganguly S (2014). Study on different aspects of stephanofilarial dermatitis infection in cattle population of west Bengal, *The IIOAB Journal*, 5: 19-22.

- Smith G (2005). Fluid therapy in adult cattle. The North American Veterinary Conference- 2005 proceedings; pp 38-39.
- Soulsby EJJ (1986). Helminths, Arthropods and Protozoa of Domesticated Animals, 7th Edn., The ELBS and Baillier Tindall, London, UK; pp 763-766.
- Taghipour BT, Khodakaram TA, Atyabi N, Faghanizadeh G (2010). An unusual occurrence of Actinobacillosis in heifers and cows in a dairy herd in Tehran suburb- Iran Arch. Razi Institute, 65: 105-110
- Tekki IS, Meseko CA, Omotainse SO, Atuman YJ, Chukwukere, Olaleye S (2014). Incidences of rabies in domestic animals and consequent risk factors in humans. Journal of Medical Microbiology and Diagnosis, 3: 143. doi: 10.4172/2161-0703.1000143
- Thirunavukkarasu M, Kathiravan G, Kalaikannan A, Jebarani W (2010). Quantifying Economic Losses Due to Milk Fever in Dairy Farms. Agricultural Economics Research Review, 23: 77-81.
- Vadillo S, Píriz S, Mateos E (2002). Manual de Microbiología Veterinaria. Mc Graw-Hill-Interamericana, Madrid; pp 357-364.
