



## Full Length Research Paper

### Common Infectious Diseases of Goats in Chittagong District of Bangladesh

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**Abstract.** Goat is an important source of nutrition and integral part of rural economy in Bangladesh. Goats are affected by several infectious diseases which can affect their growth. This study was conducted to investigate the prevalence of common infectious diseases of goat in Chittagong district of Bangladesh. The study was carried out in S.A Quaderi Teaching Veterinary Hospital, CVASU, Chittagong in between November 2011 to October 2012. The diseases were diagnosed on basis of clinical signs, owner's statement and laboratory diagnosis. The prevalence of Peste des Petis of Ruminant (PPR) was highest (11.33%) whereas babesiosis was less common (0.40%). The prevalence of infectious disease was highest in 13-18 month age group (68.00%) and lowest at 19-24 month age group (53.73%). The prevalence of infectious disease was highest at Black Bengal breed (64.23%) and lowest in Jamunapari cross (57.39%). Prevalence of PPR was found highest both for male and female goat. Highest percentage was observed in case of mixed infection (49%) and lowest in case of fungal infection (4%). Occurrence of various infectious diseases was higher in rainy season (36.43%) followed by winter season (34.94%) and summer season (28.62%). Female goat was found to be more susceptible (64.22%) than the male animal (35.77%). These results indicate the high incidence of various infectious diseases in the goats of Chittagong region. Thus, there is a need for an immediate action by the veterinary workers, development partners to come forward in order to prevent and minimize the loss caused by infectious diseases in goats.

**Keywords:** Prevalence, Infectious, Goat, Bangladesh

## 1. INTRODUCTION

Small ruminants especially goat is very important in rural economy and nutrition and has the potentiality of using it as a tool for poverty reduction in Bangladesh. Goats, as far as known, were probably the first domesticated animals (Herre and Rohrs, 2001). Goats are one of the most important livestock species in Bangladesh, which is known as "poor man's" cow. Generally goats are raised by poor farmers and distressed women with very little capital investment. Livestock diseases not only cause huge losses in the farmer's level but also can affect country's economy (Hussain, 1999). The basic knowledge about diseases at the practitioner level on goat for their development in the region is felt necessary. Medium and large farmers interested in commercial goat farming are

managed either in intensive or semi intensive conditions.

This system of goat rearing inherently incurs different diseases which intern reduces profitability of farming by treatment costs, reducing productivity and by mortality (Singh and Prasad, 2008) Viral diseases like peste des petits of ruminant (PPR), goat pox, contagious ecthyma and viral pneumonia, and bacterial diseases such as enterotoxaemia, tetanus, brucellosis, mastitis and metritis, mycotic diseases like ring worm infection, and rickettial infections like conjunctivitis are common causes for goat mortality in rural areas. Gastro-intestinal nematodiasis, fascioliasis and tape worm causes less mortality but cause severe depression in the growth and reproductive rate of the Black Bengal Goat (BBG). Lack of proper care and overall faulty husbandry practices are also responsible for higher goat mortality in the prevailing production

system (Ndegwa et al., 2001). Considering the above situations, the present study was undertaken to investigate the disease prevalence, morbidity and mortality of goats in relation to season, location and management systems and possible causes of mortality of adult goats and kids in the Chittagong region. It is believed that the study would be useful for scientists, extension service providers and veterinary practitioners for designing appropriate control measures for such diseases of goat.

## 2. MATERIALS AND METHODS

### 2.1. Study Area and Time

The study was conducted in S.A Quaderi Teaching Veterinary Hospital, CVASU, Chittagong during the period of November 2011 to October 2012. The diseases were diagnosed on basis of clinical signs, owner's statement and laboratory diagnosis.

### 2.2. Sample Size

During this study period a total of 2,013 goats were recorded to visit this hospital from which prevalence of infectious diseases were made. Among those the number of animals in winter, summer and rainy season were 598, 605 and 810, respectively. The numbers of male and female were 797 and 1216, respectively. Jamunapari cross (1312) was the dominant breed followed by Local (427) and BBG (274).

### 2.3. Physical Examination

Information of affected goats were recorded according to age, sex, breed, months and seasons were also recorded by carefully asking questions to the owner or farmers which was described by Balamurugan et al. (2012). Body condition score, temperature, consistency of feces and any prominent clinical signs were also recorded. The body surface of calves and goat was examined for any swelling, wound or hernia ring or any outgrowth. The hindquarter and thigh muscles were observed to see lameness crepitation on palpation. The animals were palpated to detect any enlargement, reddening of udder or pain. In animals, mouth and feet were observed to detect any vesicle wound or salivation. Different joints of the animals were observed through palpation and were examined to detect any swelling or pain. Abnormal sound of

respiratory tract was detected through stethoscope. The preputial mucosa and glans penis were examined for the presence of any purulent discharge or ulceration.

### 2.4. Disease Diagnosis

The viral, bacterial, protozoal, fungal and mixed infections were diagnosed by owner's complaint & specific clinical signs of the diseases described by Kahn (2000) and Jones et al. (1998). The symptomatic signs used to presumptive diagnosis were made. The long-term and short-term history of the herd and patient should be considered. Environmental factors were carefully checked. The goat was observed as unobtrusively as possible respiratory rate and character was assessed before restraint, temperature and pulse (from the femoral artery) was taken immediately after the animal was restrained. The mucous membrane colour was assessed in the conjunctival or vulval mucosa. Skin thickness and mobility was checked and any variation in temperature noted for evidence of local inflammation. Lymph node enlargement was palpated. The two sides of the head were compared to see if there was any disparity between them. The animal was examined for identifying difficulty of breathing, coughing and other signs of respiratory distress as per methods described by Jackson and Cockcroft (2002).

## 3. RESULTS

Those 2,013 goats reported to the hospital 1199 (59.56%) was infected. The highest prevalence of infection was shown by PPR (11.33%) and lowest was by Babesiosis (0.40%) (Table 1). Occurrence of upper respiratory tract infection, pneumonia & diarrhea was recorded 8.74%, 5.61% and 5.36% respectively. Occurrence of PPR was found highest in all season. Lowest occurrence of babesiosis was recorded in winter whereas contagious ecthyma and listeriosis was found lowest in summer & rainy season respectively (Table 1). According to age, 13- 18 month aged group was found to be more susceptible for various contagious diseases (68.00%). In 0-6 month age group, highest prevalence was recorded in case of PPR (11.46%) and lowest was recorded in case of babesiosis (0.31%). In 7-12 month age group, highest prevalence was found in case of PPR (14.41%) and lowest was found in case of coccidiosis (0.16%).

**Table 1:** Prevalence of infectious diseases of goats with respect to breed, sex, age and seasons

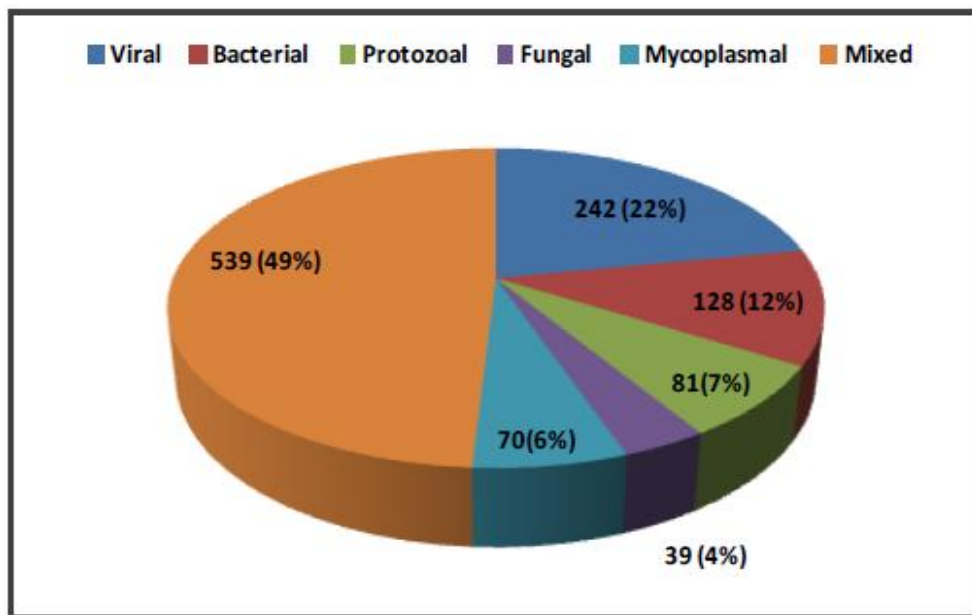
Disease	Breed			Sex		Age in months					Season			Percent Prevalence (n=2013)
	JP (n=1312)	BB (n=274)	L (n=427)	Male (n=797)	Female (n=1216)	0-6 (n=637)	7-12 (n=562)	13-18 (n=300)	19-24 (n=201)	>24 (n=313)	Winter (n=598)	Summer (n=606)	Rainy (n=810)	
PPR	133 (10.14) <sup>§</sup>	38 (13.87)	57 (13.35)	89 (11.17)	139 (11.43)	73 (11.46)	81 (14.41)	39 (13.00)	13 (6.47)	22 (7.03)	80 (13.38)	54 (8.93)	94 (11.60)	228 (11.33)
Contagious ecthyma	6 (0.46)	4 (1.46)	4 (0.94)	7 (0.88)	7 (0.58)	6 (0.94)	4 (0.71)	2 (0.67)	2 (1.00)	x	6 (1.00)	1 (0.17)	7 (0.86)	14 (0.70)
Shipping fever	37 (2.82)	11 (4.01)	18 (4.22)	30 (3.76)	36 (2.96)	25 (3.92)	17 (3.02)	11 (3.67)	2 (1.00)	11 (3.51)	19 (3.18)	15 (2.48)	32 (3.95)	66 (3.28)
Pneumonia	71 (5.41)	14 (5.11)	28 (6.56)	50 (6.27)	63 (5.18)	43 (6.75)	30 (5.30)	15 (5.00)	11 (5.47)	14 (4.47)	25 (4.18)	44 (7.27)	44 (5.43)	113 (5.61)
Actinomycosis	17 (1.30)	5 (1.82)	6 (1.41)	14 (1.76)	14 (1.15)	11 (1.73)	9 (1.60)	6 (2.00)	2 (1.00)	X	8 (1.34)	8 (1.32)	12 (1.48)	28 (1.39)
Foot rot	12 (0.91)	3 (1.09)	3 (0.70)	8 (1.03)	10 (0.82)	5 (0.78)	3 (0.53)	5 (1.67)	1 (0.50)	4 (1.28)	4 (0.67)	8 (1.32)	6 (0.74)	18 (0.89)
Tetanus	11 (0.84)	3 (1.09)	3 (0.70)	11 (1.38)	6 (0.49)	7 (1.10)	5 (0.89)	2 (0.67)	1 (0.50)	2 (0.64)	5 (0.84)	2 (0.33)	10 (1.23)	17 (0.84)
Listeriosis	7 (0.53)	X	2 (0.47)	3 (0.38)	6 (0.49)	4 (0.63)	2 (0.36)	1 (0.33)	X	2 (0.64)	4 (0.67)	2 (0.33)	3 (0.37)	9 (0.45)
Mastitis	43 (3.28)	6 (2.19)	8 (1.87)	X	57 (4.690)	6 (0.94)	8 (1.42)	13 (4.33)	7 (3.48)	23 (7.35)	17 (2.84)	23 (3.80)	17 (2.10)	57 (2.83)
Metritis	24 (1.83)	4 (1.46)	6 (1.41)	X	34 (2.80)	7 (1.10)	5 (0.89)	5 (1.67)	6 (2.99)	11 (3.51)	14 (2.34)	7 (1.16)	13 (1.60)	34 (1.69)
Urinary tract infection	19 (1.45)	1 (0.36)	7 (1.64)	11 (1.38)	16 (1.32)	14 (2.20)	6 (1.07)	1 (0.33)	1 (0.50)	5 (1.60)	9 (1.51)	8 (1.32)	10 (1.23)	27 (1.34)
Arthritis	30 (2.29)	7 (2.55)	11 (2.58)	18 (2.26)	30 (2.47)	7 (1.10)	22 (3.91)	10 (3.33)	4 (1.99)	5 (1.60)	19 (3.18)	13 (2.15)	16 (1.92)	48 (2.38)
Dermatitis	18 (1.37)	7 (2.55)	4 (0.94)	12 (1.51)	17 (1.40)	4 (0.63)	8 (1.42)	8 (2.67)	1 (0.50)	8 (2.56)	5 (0.84)	7 (1.16)	17 (2.10)	29 (1.44)
Anaplasmosis	28 (2.13)	6 (2.19)	16 (3.75)	21 (2.63)	29 (2.38)	14 (2.20)	15 (2.67)	7 (2.33)	8 (3.98)	6 (1.92)	15 (2.51)	17 (2.81)	18 (2.22)	50 (2.48)
Babesiosis	5 (0.38)	1 (0.36)	2 (0.47)	4 (0.50)	29 (0.33)	2 (0.31)	4 (0.71)	2 (0.67)	X	X	1 (0.17)	3 (0.50)	4 (0.49)	8 (0.40)
Coccidiosis	17 (1.30)	1 (0.36)	5 (1.17)	11 (1.38)	12 (0.99)	9 (1.41)	1 (0.18)	2 (0.67)	1 (0.50)	10 (3.19)	6 (1.00)	7 (1.16)	10 (1.23)	23 (1.14)
Fungal infection	27 (2.06)	6 (2.19)	6 (1.41)	13 (1.63)	26 (2.14)	16 (2.51)	7 (1.25)	4 (1.33)	5 (2.49)	7 (2.24)	14 (2.34)	10 (1.65)	15 (1.85)	39 (1.94)
Keratoconjunctivitis	43 (3.28)	11 (4.01)	16 (3.74)	20 (2.51)	50 (4.11)	12 (1.88)	8 (1.42)	21 (7.00)	13 (6.47)	16 (5.11)	27 (4.52)	9 (1.49)	34 (4.20)	70 (3.48)
Diarrhoea(infectious)	65 (4.95)	19 (6.93)	24 (5.62)	45 (5.65)	63 (5.18)	60 (9.42)	27 (4.80)	9 (3.00)	6 (2.99)	6 (1.92)	41 (6.86)	32 (5.29)	35 (4.32)	108 (5.36)
Abortion(infectious)	21 (1.60)	6 (2.19)	10 (2.34)	X	37 (3.04)	x	x	15 (5.00)	9 (4.48)	13 (4.15)	17 (2.84)	8 (1.32)	12 (1.48)	37 (1.84)
Upper respiratory tract infection	119 (9.07)	23 (8.39)	34 (7.96)	62 (7.78)	114 (9.38)	54 (8.48)	54 (9.61)	26 (8.67)	15 (7.46)	27 (8.63)	62 (10.37)	48 (7.93)	66 (8.15)	176 (8.74)

JP= Jamunapari, BB= Black Bengal, L= Local; <sup>§</sup>Number in the parenthesis indicates percent prevalence.

In 13-18 month age group, highest prevalence was found in case of PPR (13.00%) and lowest was found in case listeriosis (0.33%) & urinary tract infection (0.33%). In 19-24 month age group, highest prevalence was recorded in case of upper respiratory tract infection (07.46%) and lowest was found in foot rot, tetanus, urinary tract infection, dermatitis and coccidiosis that is 00.50% in all cases. Interestingly, listeriosis and babesiosis was not found in this age group. In above 24 month age group, highest prevalence (8.63%) was found in case of upper respiratory tract infection and lowest prevalence (0.64%) was found both for tetanus and listeriosis. Not a single case was found for contagious ecthyma, actinomycosis and babesiosis in this age group (Table 1). In case of male animal, highest prevalence was found in PPR (11.17%) and lowest in listeriosis (00.38%). Mastitis, metritis and abortion was absent in case of male due to genetic characters. In Female, highest prevalence was found in PPR (11.43%) and

lowest in babesiosis (0.33%). In Jamunapari cross, highest prevalence was found in case of PPR (10.14%) and lowest in babesiosis (00.38%). In BBG the highest prevalence was found in case of PPR (13.87%) and lowest prevalence was found in case of urinary tract infection, babesiosis and coccidiosis (0.36%), zero prevalence was found in case of listeriosis. In local breed, highest prevalence was found in case of PPR (13.35%) and lowest in listeriosis and babesiosis (0.47).

In whole year, the highest percentage (Figure 1) was observed in case of mixed infection (49%) and lowest in case of fungal infection (4%). Prevalence of bacterial infection and viral infection was found 22% and 12% respectively. Among the diseases recorded, 36.43% of diseases were found in rainy season whereas 34.94% diseases were recorded in winter and 28.62% diseases were recorded in summer season (Figure 2). Female goats was found more infected (64.22%) than the male (35.77%) (Figure 3).



**Fig. 1:** Percentage of diseases according to causal agent

#### 4. DISCUSSION

Across the developing world, viral pathogens such as peste des petits ruminants virus (PPRV) place a huge disease burden on livestock production, in particular affecting small ruminant production and in turn increasing poverty in some of the poorest parts of the world like Bangladesh. PPR is a highly infectious viral disease of goat that can occur any time. The prevalence of PPR was highest (Table 1) in winter (13.38%) and lowest in summer (08.93%). Occurrence of PPR was recorded highest in 7-12 month age group (14.41%) and lowest in 19-24 month age group (06.47%). Young goat found to be more susceptible for PPR than the adult. PPR outbreak was

found to be higher in male (28.52%) than female (13.04%) goats. These results were almost similar to the findings of Abubakar (2008), Razmi et al. (2006) and Sarkar and Islam (2011).

Anaplasma infection in goats reached its highest level in summer, while a decrease was observed in rainy, and reached the lowest level in winter. Prevalence of anaplasmosis was highest (Table 1) in summer (2.81%) and lowest in rainy season (2.22%). Overall rates of coccidial infection were very high, peaked during the late wet season, when the proportion of heavy infections also increased significantly. Prevalence of coccidiosis was highest in rainy season (01.23%) and lowest in winter (01.00%).

These result of agrees the result of Razmi et al. (2006), Manser et al. (1986) and Woji et al. (1994).

Jumuna pari breed was found to be good in response to disease resistance. It was found that the prevalence of various infectious diseases was highest in BBG than other goat breeds. Breed susceptibility of various infectious diseases of this study is supported by the findings of Dey et al. (2007), Kashem et al. (2011) and Amir et al. (2001).

Seasonal wise prevalence indicated that in rainy season goats were more susceptible for infectious diseases. Due to wet environmental condition and improper management, highest percentage of diseases was found in rainy season, similar results were also reported by Sarkar and Islam (2011). Female goats were more susceptible than the male. The present study further supports the observation of Greenwood et al. (1995) who found 58% of female goats were infected with infectious diseases.

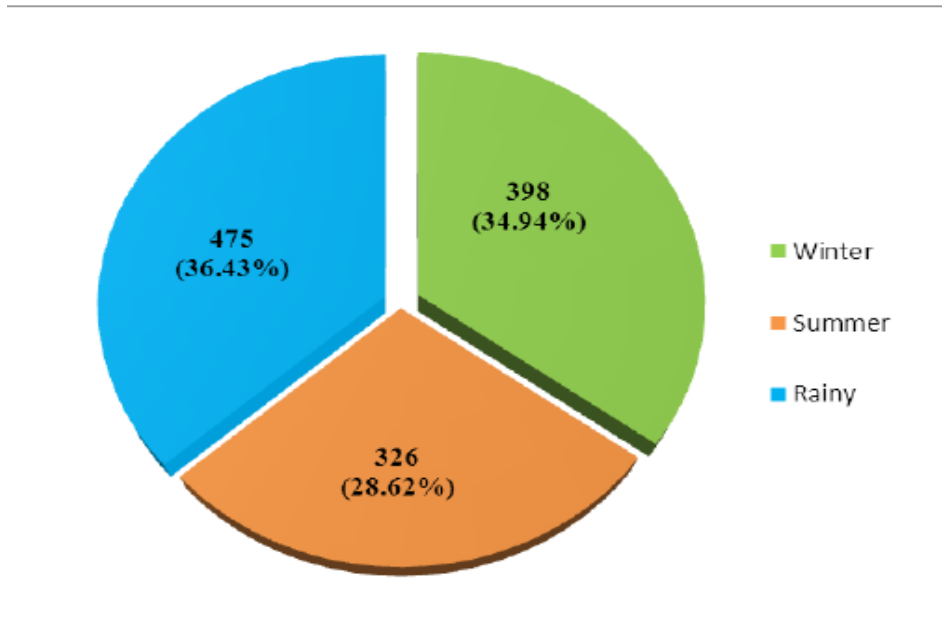


Fig. 2: Percentage of diseases according to season

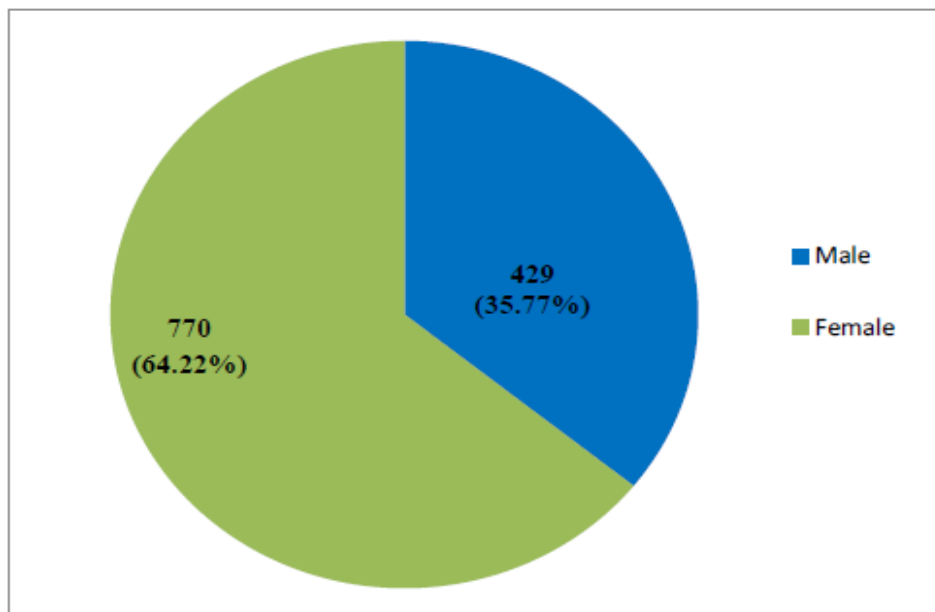


Fig. 3: Percentage of diseases according to sex

## 5. CONCLUSION

Infectious diseases are a global problem and considered as a major obstacle in the health and product performance of livestock specially goats. This

study represents the prevalence of common infectious diseases of goats in Bangladesh which has significant impact in overall production. The study documented high incidence of various infectious diseases in the goats of Chittagong region. This is very alarming for

the farmer. Veterinary inspection should pay attention for these all farm animals to detect the infectious diseases that may hamper the production of animals and make loss of the farmer. Government and private sectors should come forward to prevent and minimize the losses caused from the infectious disease. The present study will be helpful to control the diseases in the farm. Further investigation on infectious disease should be conducted to find out the source of various diseases.

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