Original Article

Occurrence of diseases and disease conditions in cattle and goats at the Upazilla Veterinary Hospital, Debidwar, Comilla

Md Badiul Alam[1], Tareq Mahmud[2], Shahneaz Ali Khan[1], Ariful Islam[3], Md Abdul Hai[4] and Mohammad Mahmudul Hassan[1,#]

AFFILIATIONS

[1]*Department of Physiology, Biochemistry and Pharmacology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University, Khulshi, Chittagong-4225, Bangladesh.*

[2]*Department of Livestock Services, Comilla, Bangladesh.*

[3]*EcoHealth Alliance, NY, USA.*

[4]*Jhenidah Government Veterinary College, Jhenidah, Bangladesh.*

ABSTRACT

Objective: A significant number of animals enrolled at UVH regularly from surrounding villages for treating their sick animals, de-worming, vaccination purposes. Therefore, a study was done to define the occurrence of common diseases and disease conditions in cattle and goats at the Upazilla Veterinary Hospital, Debidwar under Comilla district.

Materials and methods: Data on various diseases were collected from the record book of hospital during April 2016 to March 2017. The total number of animals were 889, among which cattle were 637 (71.65%) and goats were 252 (28.35%). The presumptive diagnosis was performed based on general examination, physical examination, and clinical examination of animals, and microscopic examination based on common laboratory techniques.

Results: Based on clinical examinations, 14 different types of diseases and disease conditions were detected. In cattle (N=637; 71.65%), where FMD (14.44%, n=92), mastitis (6.59%, n=42), digestive disorders (19%, n=121), respiratory disorders (6.12%, n=39), parasitic infestations such as mixed infestation of both ecto- and endo-parasites (34.22%, n=218), acidosis (1.88%, n=12), myiasis (6.12%, n=39), corneal opacity (1.57%, n=10), protozoal diseases (1.26%, n=8), BQ (2.20%, n=14), milk fever (0.94%, n=6), reproductive disorders (4.87%, n=31) and others (0.75%, n=5) were detected. Age wise prevalence in young and adult were (38.62%, n=246) and (61.38%, n=391), respectively. Moreover, sex wise prevalence in male and female were (34.85%, n=222) and (65.15%, n=415) respectively. In goat, (N= 252; 28.35%) 11 different types of diseases and disease conditions such as PPR (12.30%, n=31), mastitis (2.38%, n=6), digestive disorders (19.84%, n=50), parasitic infestation (29.76%, n=75), respiratory disorders (15.08, n=38), myiasis (11.11%, n=28), corneal opacity (4.76%, n=12), acidosis (1.98%, n=5) protozoal diseases such as babesiosis, anaplasmosis (0.79%, n=2) and reproductive disorders (1.59%, n=4), correspondingly. Sex wise prevalence in male and female goat were (44.05%, n=111) and (55.95%, n=141), respectively.

Conclusion: All the diseases and disease conditionswere recorded more or less frequently among all age group of cattle and goats though some of the specific diseases and disease conditionshad specific age and species susceptibility such as black quarter in young cattle and PPR in young goats, respectively. A comprehensive updated data with the total population record of that area and proper analysis is needed to identify the actual level of disease and disease conditions in UVH.

CORRESPONDENCE:

#Mohammad Mahmudul Hassan*, Department of Physiology, Biochemistry and Pharmacology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University, Khulshi, Chittagong-4225, Bangladesh.
E-mail: miladhasan@yahoo.com*

http://bdvets.org/javar/

Alam et al./ *J. Adv. Vet. Anim. Res., 5(2): 117-122, June 2018*   **117**

INTRODUCTION

Livestock is an imperative element of the diverse farming structure practiced in Bangladesh for the centuries. Livestock sub sector gives 12% to agricultural GDP and 3% to National economy (Mia, 2013). Ruminant, particularly cattle and goats constitute the key fundamentals of the livestock. There are near 26.828 million cattle and 16.242 million goats in Bangladesh (BBS, 2010) and the concentration of livestock population per acre of cultivable land is almost 7.37. This density has been increasing each year that makes the livestock population well above the averages for many other countries of the world. Maximum numbers of animals are raised under smallholder old-style management system in rural zones (Karim et al., 2014).

Though, more than 10 million people unswervingly depend on these segments for their incomes (Karim, 2010). Unfortunately, improper managemental practices, poor sanitation, and agro-geo-climatic ailment of Bangladesh are advantageous for the occurrence of many diseases (Onneshan, 2014). Nutritional deficiency such as animal receiving inadequate amounts of macro and micro molecules lower the resistance against diseases. Moreover, disturbances in metabolic pathway may also affect the livestock reproductive health. Poor reproductive performances are often associated with conception failure, infertility, embryonic deaths and abortion, and other reproductive disorders. Ruminants especially cattle and goats are reared by marginal farmers for their subsistence household income. In recent time, farm based animal rearing systems got momentum in rural areas.

Cattle usually suffer from a wide range of diseases including different systemic diseases, metabolic disorder and reproductive problems as well. Poor hygienic condition and inadequate managemental system as such bio-security, vaccination might be responsible for different disease and reproductive failure of cattle and goat (Hassan et al., 2007; Miazi et al., 2007).

A strong database on the disease prevalence in any areas might contribute the provision of appropriate veterinary practices and effective disease control program and animal production system. We have few published reports in recent time about clinical case records indifferent geographical location such as Haluaghat, Mymensingh, Mohammadpur, Magura (Sarker et al., 1999), Chandanaish, Chittagong (Karim et al., 2014). Considering the different geographic location, it is an important issue to have a baseline data base on clinical diseases. With these backgrounds, we are aiming to determine theprevalence of diseases and disease conditions in cattle and goats, at the Upazilla Veterinary Hospital, Debidwar, Comilla.

MATERIALS AND METHODS

Study site, duration and data collection: Debidwar Upazilla with an area of 238.36 sq km is bounded by Chandina upazilla on the south, Burichang and Brahmanpara upazillas on the east, Muradnagar upazilla on the west. The present study was undertaken at the Upazilla Veterinary Hospital, Debidwar, Comilla to determine the prevalence of clinical diseases and disease conditions in cattle and goats during the period between April, 2016 and March, 2017. The data were collected from the case record register of UVH. A total of 889 animals were registered where 637 were cattle and 252 were goat. Age of the cattle was categorized as young (≤2.5 years), adult (>2.5 years) and in case of goat young (≤1 year), adult (>1 year) (Kabir et al., 2010).

Examination of the animal

General examination: Physical ailment, behavior, posture, skin wound or abscess, nasal discharge and salivation, abdomen distension, prolapse of the uterus and vagina etc. were observed by visual inspection of the patient. This checkup is made by standing a few feet (about 5ft) away from the animal without disturbing and handling the animal. General appearance and activities includes demeanor, physical condition (weight of animal), posture, gait, eating, defecation, urination, voice, respiration, peristalsis and other adventitious sounds of the viscera of the body. Body regions includes rumination, respiratory character (type, depth, dyspnea), abdomen, size, skin and coat, head (eyes, ears, horns, face, nose, lips etc.) tail, digits, mammary glands, scrotum, vulva, prepuce, umbilicus, brisket, lymph nodes etc.

Physical examination: In physical checkup of various parts and structures of the body were examined by proper restraint (movement control) of the animal on standing position is necessary prior to physical examination. All of the organs and systems of body were examined. A general physical exanimation technique includes close inspection, auscultation, palpation, percussion and their modified forms. Special physical examination techniques includes skin fold test, weakness test, exertion test, breathing inhibition test, deafness test, pole test, zone test etc.

Clinical examination: The animals were restrained so that it can be examined carefully, safely and with confidence by well-trained veterinarian. After restraining animal were visually examined more closely if any further abnormalities can be detected. Clinical examination of different organs and system (lymph node, skin, head and neck, cardiovascular system, respiratory system, urinary system, genital system, musculo-skeletal system, nervous system etc.) were performed. These inspections were conducted on the basis of the disease history and owner's complains, symptoms and techniques such as micros-copic check, laboratory common techniques used by Samad et al. (1988).

Statistical analysis: Data were structured in the Microsoft Excel spreadsheet. Descriptive statistics were performed and reported the percentages of presumptive disease and disease conditions with 95% confidence interval (CI).

RESUTS

After presumptive diagnosis by registered veterinarian, a total of 13 diseases and disease conditions were recorded in 637 cattle, brought to the Veterinary Hospital for treatment purposes during the study period. Among the 637 cases, 14.44%(n=92), 6.59%(n=42), 19%(n=121), 6.12%(n=39), 34.22%(n=218), 1.88%(n=12), 6.12% (n=39), 1.57%(n=10), 1.26%(n=8), 2.20%(n=14), 0.94%(n=6), 4.87%(n=31), and 0.75%(n=5) were recorded as FMD, mastitis, digestive disorders, respiratory disorders, parasitic infestation, acidosis, myiasis, corneal opacity, protozoal diseases, BQ, milk fever, reproductive disorders, and others like fever and unidentified cases respectively (**Table 1**). In total, 11 diseases and disease conditions were recorded in 252 goats presented. 29.76%(n=75) were affected with parasitic infestation, 19.84%(n=50) were affected with digestive disorders, 15.08%(n=38) were affected with respiratory disorders, 11.11%(n=28) were affected with myiasis, 4.76%(n=12) were affected with corneal opacity, 12.30%(n=31) were affected with PPR, 2.38%(n=6) were affected with mastitis, 1.98%(n=5) were affected with acidosis, and 0.79%(n=2) were affected with protozoal diseases.

Table 2 presented that in cattle, FMD, digestive disorders, parasitic infestation, respiratory disorders, acidosis, myiasis, corneal opacity, BQ were recorded in male as 7.54%(n=48), 5.18%(n=33), 15.07%(n=96), 0.47%(n=3), 0.16%(n=1), 3,77%(n=24), 0.63%(n=4), 0.63%(n=4) and 1.10%(n=7), respectively, whereas, in

female the prevalence was 6.91%(n=44), 13.81%(n=88), 5.65%(n=36), 1.73%(n=11), 2.35%(n=15), 0.94%(n=6), 0.63%(n=4) and 1.10%(n=7), respectively. In goats, PPR, respiratory disorders, myiasis, protozoal diseases, corneal opacity, acidosis, parasitic infestation, digestive disorders were recorded in male as 5.16%(n=13), 7.94%(n=20), 3.17%(n=8), 0.40%(n=1), 1.98%(n=5), 1.19%(n=3), 13.10%(n=33) and 11.11%(n=28), respectively, whereas, in female, the prevalence was 7.14%(n=18), 7.14%(n=18), 7.94%(n=20), 0.40%(n=1), 2.78%(n=7), 0.79%(n=2), 16.67%(n=42) and 8.73%(n=22), respectively. It is ntoed that, PPR, myiasis, corneal opacity, parasitic infestations were more frequent in female than male.

Table 1: Occurrence of diseases and disease conditions in cattle and goats

Diseases	Cattle (N=637)	Goat (N=252)
	%, n, 95%CI	%, n, 95%CI
FMD	14.44 (92, 11.80-17.42)	-
PPR	-	12.30(31, 8.51-17.00)
Mastitis	6.59 (42, 4.79-8.81)	2.38(6, 0.88-5.11)
Digestive disorders	19.00 (121, 16.02-22.26)	19.84(50, 15.10-225.31)
Respiratory disorders	6.12 (39, 4.39-8.27)	15.08(38, 10.90-20.10)
Parasitic infestation	34.22(218, 30.54-38.05)	29.76(75, 24.19-35.82)
Acidosis	1.88(12, 0.9-3.27)	1.98(5, 0.65-4.57)
Myiasis	6.12(39, 4.39 8.27)	11.11(28, 7.51-15.66)
Corneal opacity	1.57(10, 0.8-2.9)	4.76(12, 2.84-8.17)
Protozoal diseases	1.26(8, 0.5-2.46)	0.79(2, 0.09-2.84)
BQ	2.20(14, 1.20-3.66)	-
Milk fever	0.94(6, 0.34-2.04)	-
Reproductive disorders	4.87(31, 3.33-6.84)	1.59(4, 0.43-4.01)
Others	0.75(5, 0.65-4.57)	0.40(1, 0.01-2.19)

In **Table 3** presented that in cattle, FMD, digestive disorders, parasitic infestation, respiratory disorders, acidosis, myiasis, corneal opacity and protozoal diseases were recorded in adult as 10.83%(n=69), 11.62%(n=42), 19.94%(n=127), 2.51%(n=16), 1.57%(n=10), 1.10%(n=7), 0.47%(n=3), and 0.78%(n=5), respectively; whereas, in young the prevalence was 3.61%(n=36), 7.38%(n=47), 14.29%(n=91), 3.61%(n=23), 0.31%(n=7), 5.02%(n=32), 1.10%(n=7) and 0.47%(n=3), respectively. In goats, PPR, respiratory disorders, myiasis, protozoal diseases, corneal opacity, acidosis, parasitic infestation were recorded in both adult as 1.98%(n=5), 9.13%(n=23), 7.94%(n=20), 0.40%(n=1), 3.57%(n=9), 1.19%(n=3) and 19.84%(n=50), respectively; whereas, in young the prevalence was 10.32%(n=26), 5.95%(n=15), 3.17%(n=8), 0.40%(n=1), 1.19%(n=3), 0.79%(n=2) and 9.92%(n=25), respectively.

Table 2: Comparative occurrence of disease and disease conditions in male and female cattle and goats

Diseases	Cattle		Goat	
	Male (N=222)	Female (N=415)	Male (N=111)	Female (N=141)
	%, n, 95%CI	%, n, 95%CI	%, n, 95%CI	%, n, 95%CI
FMD	7.54(48, 5.61-9.87)	6.91(44, 5.06-9.16)	-	-
PPR	-	-	5.16(13, 2.78-8.67)	7.14(18, 4.29-11.05)
Mastitis	-	6.59(42, 4.97-8.81)	-	2.38(6, 0.88-5.11)
Digestive disorders	5.18(33, 3.59-7.20)	13.81(88, 11.23-16.74)	11.11(28, 7.51-15.66)	8.73(22, 5.55-12.92)
Parasitic infestation	15.07(96, 12.38-18.09)	19.15(122, 16.17-22.43)	13.10(33, 9.19-17.90)	16.67(42, 12.28-21.85)
Respiratory disorders	0.47(3, 0.09-1.37)	5.65(36, 3.99-7.74)	7.94(20, 4.92-11.99)	7.14(18, 4.29-11.05)
Acidosis	0.16(1, 0.003-0.87)	1.73(11, 0.87-3.07)	1.19(3, 0.25-3.44)	0.79(2, 0.09-2.84)
Myiasis	3.77(24, 2.43-5.55)	2.35(15, 1.32-3.85)	3.17(8, 1.38, 6.16)	7.94(20, 4.92-11.99)
Corneal opacity	0.63(4, 0.17-1.60)	0.94(6, 0.35-2.04)	1.98(5, 0.65-4.57)	2.78(7, 1.12-5.64)
Protozoal diseases	0.63(4, 0.17-1.60)	0.63(4, 0.17-1.60)	0.40(1, 0.01-2.19)	0.40(1, 0.01-2.19)
BQ	1.10(7, 0.44-2.25)	1.10(7, 0.44-2.25)		
Milk fever	-	0.94(6, 0.35-2.04)	-	-
Reproductive disorders	-	4.87(31, 3.33-6.84)	-	1.59(4, 0.43-4.01)
Others	0.31(2, 0.04-1.13)	0.47(3, 0.09-1.37)	-	0.40(1, 0.01-2.19)

Table 3: Age wise occurrence of diseases and disease conditions in cattle and goats

Diseases	Cattle		Goat	
	Adult (N=391)	Young(N=246)	Adult (N=149)	Young(N=103)
	%, n, 95%CI	%, n, 95%CI	%, n, 95%CI	%, n, 95%CI
FMD	10.83(69, 8.53-13.51)	3.61(23, 2.30-5.37)	-	-
PPR	-	-	1.98(5, 0.65-4.57)	10.32(26, 6.85-14.75)
Mastitis	6.59(42, 4.47-8.81)	-	2.38(6, 0.88-5.11)	-
Digestive disorders	11.62(74, 9.24-14.36)	7.38(47, 5.47-9.69)	11.11(28, 7.51)	8.73(22, 5.55-12.92)
Parasitic infestation	19.94(16.90-23.25)	14.29(91, 11.66-17.25)	19.84(50, 15.10-25.31)	9.92(25, 6.52-14.30)
Respiratory disorders	2.51(16, 1.44-4.05)	3.61(23, 2.30-5.37)	9.13(23, 5.87-13.38)	5.95(15, 3.37-9.63)
Acidosis	1.57(10, 0.76-2,87)	0.31(7, 0.44-2.25)	1.19(3, 0.25-3.44)	0.79(2, 0.09-2.84)
Myiasis	1.10(7, 0.44-2.25)	5.02(32, 3.46-7.02)	7.94(20, 4.92-11.99)	3.17(8, 1.38, 6.16)
Corneal opacity	0.47(3, 0.09-1.37)	1.10(7, 0.44-2.25)	3.57(9, 1.65-6.67)	1.19(3, 0.25-3.44)
Protozoal diseases	0.78(5, 0.26-1.82)	0.47(3, 0.09-1.37)	0.40(1, 0.01-2.19)	0.40(1, 0.01-2.19)
BQ	-	2.20(14, 1.21-3.66)	-	-
Milk fever	0.94(6, 0.35-2.04)	-	-	-
Reproductive disorders	4.87(31, 3.33-6.84)	-	1.59(4, 0.43-4.01)	-
Others	0.16(1, 0.003-0.87)	0.63(4, 0.17-1.60)	-	0.40(1, 0.01-2.19)

Among the cattle and goats, mastitis, digestive disorders, respiratory disorders, parasitic infestation, acidosis, myiasis, corneal opacity, protozoal diseases, reproductive disorders were recorded as 6.59%(n=42) and 2.38%(n=6), 19%(n=121) and 19.84%(n=50), 6.12%(n=39) and 15.08%(n=38), 34.22%(n=218) and 29.76%(n=75), 1.88%(n=12) and 1.98%(n=5), 6.12%(n=39) and 4.76%(n=12), 1.57%(n=10) and 4.67%(n=12), 1.26%(n=8) and 0.79%(n=2), 4.87%(n=31) and 0.40%(n=4), respectively.

DISCUSSION

The prevalence of FMD is 14.44% which is slightly lower than the reported prevalence (38.62%) of FMD according to Lucky et al. (2016). Vaccination might a cause to reduce the infection in this region compare to the other parts of Bangladesh. Livestock movement and trade play a key role in the spreading of FMD. The compound effect of FMD is to reduce fertility through abortion and decreased conception rates. Biannual vaccination of all cattle in selected areas and regular surveillance system and antibody monitoring in vaccinated populations would reduce the disease progression process. In this regard, national veterinary services and disease surveillance are important arms of successful FMD control program. Rahman et al. (2013) reported that the prevalence of parasitic diseases (50.4%), gastrointestinal disorders (14.2%) and FMD (3.6%) under different hospital cases.

In diverse topographical location of Bangladesh, Hoque and Samad (1996) described 2.17% occurrence of BQ in cattle. In another study clinical mastitis was described 0.89%, 0.71% and 0.9% in cows, respectively by Sarker et al. (1999), Samad (2001) and Rahman et al. (2013) in Bangladesh. However, Rahman et al. (2013) described 1.9% corneal opacity in cattle of Bangladesh. Samad (2001) noted 5.46% reproductive disorder in cattle from Bangladesh Agricultural University (BAU) Veterinary Clinic, Mymensingh.

In this study, the prevalence of FMD was 7.54% in male and 6.91% in female which is lower than the prevalence of FMD (16.09% in male and 19.82% in female) reported by Kabir et al. (2010). According to Garcia-Blanco and Cullen (1991) immunity may vary on the basis of sex as female physiological and immunological conditions vary from male. There are some reports indicating male reproductive system productive some immuno-suppressive hormone that might contribute towards increased susceptibility of FMD infection in male animals. However, in this study we found less infection in male compare to their counterpart.Therefore, it is not understood, how much effects of X-chromosome have to induce significant immune response. Further study is needed to explain the sex wise differentiation of immunological response against FMD infection.FMD, digestive disorders, parasitic infestation, respiratory disorders, acidosis, myiasis, corneal opacity, protozoal diseases were recorded in both young and adult. But diseases and disease conditions may vary according to age. In this study the prevalence of FMD was higher in adult and the prevalence of BQ was lower in adult which has similarity with the reports of Ullah et al. (2015).

Results of this study found more or less similar but in contrary with the results higher prevalence reported by Islam et al. (2013), Subir and Islam (2011), Rahman et al. (2011) described 50.27% in Patuakhali, 20.57% in Rajshahi, 55% in Mymensingh. This variation might be due to different geographical location, seasonal variation during research period, and different management practices. Karim et al. (2014) reported that the prevalence of mastitis in does was 1.6%. Lucky et al. (2016) found digestive diseases (15.31%) parasitic in an investigation. Hassan et al. (2011) stated 52.72% parasitic diseases in a study that performed in Chittagong which is higher than the present study. Kabir et al. (2010) described 6.97% prevalence of respiratory disorders. According to the investigation of Alam et al. (2014) the prevalence of lactic acidosis is 1.90% which is similar with this study. Finding of myiasis have conformity with the earlier reports of Karim et al. (2014) reported 11.1% myiasis in goats. Rahman et al. (2013) reported 9.9% cases of corneal opacity in goats. Karim et al. (2014) reported 0.9% cases of reproductive disorder of goats. Prevalence of PPR was higher in young goats than the adult. Diseases other than PPR were higher in frequency in adult goats than the young goats.

Parasitic infestation like ecto-and endo parasites found highest in both cattle and goats. In this study mastitis, parasitic infestation, reproductive disorders were more in cattle than goats. According to Karim et al. (2014) mastitis in higher in goats than cattle who reported 1.6% in goats and 1.1% in cattle. In this study myiasis was more frequent in goats than cattle that opposed by the Karim et al. (2014) who reported 11.1% and 20.8% myiasis in goats and cattle, respectively. Finding of reproductive disorders have similarity with the reports of Rahman et al. (2013) stated 1.1% gynaeco-obstetrical cases in goats and 4.7% in cattle.

CONCLUSION

Various diseases werereported in cattle and goats in this part of Bangladesh. These two animals are mostly affected by parasitic infestation and digestive disorders. The two most important infectious viral diseases namely FMD and PPR infected cattle and goat population respectively, though the percentage of disease outbreak was low compare to the other study Therefore, the restriction of animal movement in and around the border areas and proper vaccination strategy might contribute the less disease frequency in this region. However, the findings of the current study could be a baseline whichmay assist the veterinarian to investigate the particular diseases and inform the national veterinary services to implement further strategy to control diseases and disease condition in this particular area of Bangladesh.

CONFLICT OF INTEREST

The authors declare that there is no conflicting interest with regards to the publication of this manuscript.

AUTHORS' CONTRIBUTION

MBA, MMH and SAK designed the experiment. MBA and MMH collected the data and conducted the analysis. MBA, MMH and TM drafted the first version of the manuscript. MBA, TM, MMH, SAK, AI and MAI critically reviewed the article and finally approved for publication.

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