



Original Research

Diseases and diseases conditions of treated animals at Upazila Veterinary Hospital, Kaliganj, Jhenaidah, Bangladesh

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Abstract

The Upazila Veterinary Hospital (UVH) in Kaliganj Upazila, Jhenaidah, Bangladesh, plays a critical role in providing animal healthcare in a region renowned for dairy farming and rearing Black Bengal goats. Despite the sector's importance, livestock farming in Bangladesh faces challenges such as high disease prevalence and inadequate veterinary services. This study aimed to determine the prevalence and distribution of common diseases among various species treated at UVH Kaliganj from February 2019 to April 2019. Data were collected from UVH's daily record books, encompassing 511 animals categorized into cattle (40.70%), goats (51.85%), poultry (3.32%), and other animals (4.10%). Clinical evaluations identified 11 disease categories, and monthly variations in disease prevalence were analyzed across different age groups of animals. In cattle, the predominant diseases included worms (33.65%), foot-and-mouth disease (FMD) (8.65%), respiratory diseases (14.90%), and fever (11.05%). Goats exhibited high occurrences of worm infestations (27.92%), Peste des Petits Ruminants (PPR) (9.43%), fever (25.66%), and diarrhea (12.83%). Poultry primarily suffered from respiratory diseases (29.41%), parasitic infections (17.64%), and digestive disorders (23.52%). Other animals, including sheep and monkeys, showed diverse disease profiles, including parasitic infections (19.04%), respiratory disorders (19.04%), and fever (14.28%). Monthly analysis revealed varying disease prevalence, with peaks in February and March 2019 for both cattle and goats. Diseases were prevalent across all age groups of animals, highlighting the widespread impact on livestock health in Kaliganj Upazila. This study underscores the critical role of UVH Kaliganj in managing animal health in an agricultural community heavily reliant on dairy and goat farming. The findings suggest the need for targeted veterinary interventions to mitigate disease burdens and improve animal welfare in the region.

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1. Introduction

Livestock farming plays a crucial role in Bangladesh's agriculture sector, contributing significantly to the national economy and rural employment. The livestock sub-sector accounts for 12% of the total agricultural GDP and supports approximately 20% of rural employment (Rahman *et al.*, 2014; Mehrabi *et al.*, 2020). The essential components of this sector include ruminants, particularly cattle and goats, as well as poultry. Bangladesh hosts a substantial livestock population, comprising 23.64 million cattle, 16.96 million goats, and 261.77 million poultry, collectively producing 5.68 million metric tons of meat annually against a demand of 6.95 million metric tons (DLS, 2022).

The density of livestock, approximately eight per acre of cultivable land, has been steadily increasing, reflecting the sector's growing

importance and challenges (DLS, 2022). Rural smallholders predominantly manage livestock using traditional methods aimed at maximizing animal productivity (Alam *et al.*, 2018). Importantly, over 10 million people directly or indirectly depend on livestock for their livelihoods, underscoring its socio-economic significance, which accounts for about 16% of the country's total population (Moller *et al.*, 2023).

Despite its economic contributions, the livestock sector faces significant challenges, including a decline in its contribution to GDP from 4.4% in 2011-2013 to approximately 1% in recent years (Hamid, 2017). Moreover, the widespread use of antibiotics in animal treatment has led to the development of antibiotic resistance, posing serious health risks to livestock and potentially compromising food safety (Ahmed *et al.*, 2019).

The Upazila Veterinary Hospital (UVH) in Kaliganj, Jhenaidah, located near a highway, serves as a critical facility for treating a variety of animal health issues, including accidents and fractures. Cattle commonly suffer from a range of diseases such as Foot and Mouth Disease (FMD), tetanus, mastitis, Peste des Petits Ruminants (PPR), as well as systemic conditions like diarrhea and bloat. Similarly, goats and poultry exhibit distinct disease profiles, including parasitic infections, respiratory ailments, and digestive disorders.

A comprehensive understanding of disease epidemiology specific to this region is crucial for implementing effective veterinary practices

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and disease management strategies. This study aims to fill this gap by investigating the prevalence, incidence, and distribution of common diseases among cattle, goats, poultry, and other animals treated at UVH Kaliganj. By identifying prevalent diseases and associated risk factors, this research seeks to inform targeted interventions that can enhance animal health outcomes, improve livestock productivity, and mitigate economic losses in the region.

2. Materials and Methods

2.1 Ethical approval

No ethical approval is required for this study.

2.2 Study area

Kaliganj Upazila is strategically located at 23.4139°N latitude and 89.1333°E longitude in Bangladesh (Figure 1). It encompasses 38,339 households within an area of 310.16 km². According to the 2022 Bangladesh census, Kaliganj had a population of 308,474.

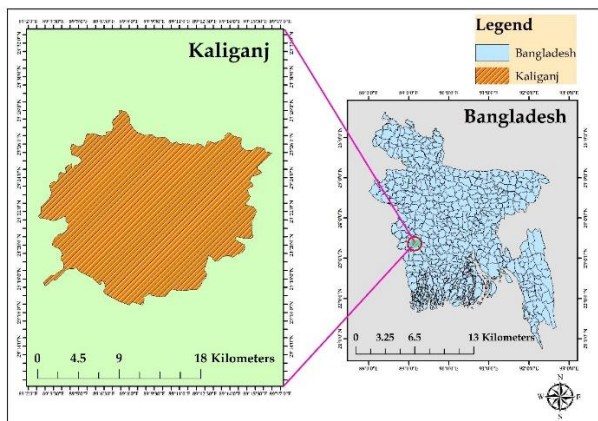


Figure 1. Map of the study area.

2.3 Examination of the animal

Examination of animals is essential for the preliminary diagnosis of cases. This process involves conducting both a general examination and a physical examination, adhering to specific criteria.

2.4 General examination

Visual inspection of the patient revealed physical sickness, behavior, posture, skin wound or abscess, nasal discharge and salivation, belly distension, uterine and vaginal prolapse, and so on. For poultry animal observed properly and post mortem examination were done for proper examinations.

2.5 Physical examination

Proper restraining (movement control) of the animal in a standing position is required prior to the physical examination. Every organ and systems of the body were evaluated. Close observation, auscultation, palpation, and percussion in various forms, are examples of general physical examination techniques. Skin fold test, weakness test, exertion test, breathing inhibition test, deafness test, pole test, zone test, and so on are examples of special physical examination techniques.

2.6 Statistical analysis

The data was structured in a Microsoft Excel (2016) spreadsheet, and the report was completed using Microsoft Word (2016). Descriptive statistics were used to report the percentages of presumptive disease and disease conditions. The prevalence was calculated by using the following formula,

$$\text{Prevalence of diseases} = \frac{\text{Number of infected animals in respected diseases}}{\text{Total number of animal treated}} \times 100$$

3. Results

In February, a total of 66 cases were recorded in cattle. The most prevalent conditions were respiratory diseases, accounting for 15.15%, and worm infestations, which constituted 2.06%. Foot-and-mouth disease (FMD) affected 9.09%, while diarrhea and bloat/acidosis each had a prevalence of around 6%. Fever cases were

fewer, with a prevalence of 48.48%. Tick infestations were the least prevalent, at 1.51%. March saw an increase in the total number of cases to 74. The prevalence of worm infestations rose significantly to 27.02%, indicating a potential seasonal peak. Fever cases also increased to 9.45%, while respiratory diseases maintained a high prevalence of 16.21%. Tick infestations saw a notable rise to 6.75%, suggesting a seasonal increase in external parasitic issues. FMD cases rose slightly to 10.81%. Diarrhea and bloat/acidosis remained relatively stable, with prevalence rates of 5.40% and 6.75%, respectively. In April, the total number of cases slightly decreased to 68. Fever cases surged dramatically, constituting 20.58% of the total. Worm infestations remained high at 26.47%, indicating a continued peak in this period. Respiratory diseases accounted for 13.23%, while tick infestations rose significantly to 17.64%, marking the highest prevalence of this condition across the three months. FMD cases decreased to 5.88%. Diarrhea cases dropped to 1.47%, and bloat/acidosis prevalence was stable at 5.88% (Table 1).

Table 1. Monthly diseases and diseases conditions in cattle.

Diseases and diseases conditions	Months					
	February		March		April	
	No. of cases	Prevalence (%)	No. of cases	Prevalence (%)	No. of cases	Prevalence (%)
FMD	6	9.09	8	10.81	4	5.88
Worm	32	2.06	20	27.02	18	26.47
Fever	2	48.48	7	9.45	14	20.58
Diarrhea	4	6.06	4	5.40	1	1.47
Bloat/Acidosis	2	3.03	5	6.75	4	5.88
Respiratory diseases	10	15.15	12	16.21	9	13.23
Ticks	1	1.51	5	6.75	12	17.64
Surgical correction	2	3.03	4	5.40	3	4.41
Others	6	9.09	9	12.16	3	4.41
Total	66	100	74	100	68	100

February, out of 99 cases in goat, fever was the most prevalent condition, accounting for 31.31%. Worm infestations were also significant, comprising 30.30%. Diarrhea accounted for 12.12%, while Peste des petits ruminants (PPR) had a prevalence of 6.06%. Bloat, wounds, and surgical corrections each had a prevalence of around 4%, while respiratory diseases and meiosis were less common, at 2.02% and 5.05%, respectively. In March, the total cases decreased to 79, with fever still being highly prevalent at 30.37%. Worm infestations saw a reduction to 17.72%. Diarrhea cases were at 16.45%, and PPR increased slightly to 8.86%. Meiosis cases rose to 10.12%. Bloat cases dropped significantly to 1.26%. Wound prevalence decreased to 1.26%, while surgical corrections increased to 6.32%. Respiratory diseases remained stable at 2.51%. In April, the total number of infected goat was 87. Worm infestations peaked at 34.48%, indicating a significant seasonal increase. Fever cases dropped to 14.94%, while PPR rose to 13.79%. Diarrhea accounted for 10.34%, and meiosis increased to 11.49%. Respiratory diseases saw a rise to 5.74%. Wound cases increased to 6.89%, while surgical corrections dropped to 1.14%. Bloat cases remained low at 1.14% (Table 2).

On the basis of primary tentative diagnosis 11 distinct categories of diseases and disease conditions were enrolled in the registration book where in Among cattle, the predominant issues included worm infestations (33.65%), Foot and Mouth Disease (FMD, 8.65%), respiratory diseases (14.90%), and fever (11.05%). Goats primarily suffered from worm infestations (27.92%), fever (25.66%), and diarrhea (12.83%).

Table 2. Monthly diseases and diseases conditions in goats.

Diseases and diseases conditions	Months					
	February		March		April	
	No. of cases	Prevalence (%)	No. of cases	Prevalence (%)	No. of cases	Prevalence (%)
Fever	31	31.31	24	30.37	13	14.94
PPR	6	6.06	7	8.86	12	13.79
Wound	4	4.04	1	1.26	6	6.89
Worm	30	30.30	14	17.72	30	34.48
Bloat	6	6.06	1	1.26	1	1.14
Diarrhea	12	12.12	13	16.45	9	10.34
Meiosis	5	5.05	8	10.12	10	11.49
Respiratory diseases	2	2.02	2	2.51	5	5.74
Surgical correction	4	4.04	5	6.32	1	1.14
Total	99	100	79	100	87	100

In goat 27.92% worm infestation, 9.43% PPR, 3.39% respiratory diseases, 25.66% fever conditions, 3.01% bloat, 12.83% diarrhea, 8.67% ticks infestation, 4.15% wound and 2.22% other diseases conditions were recorded. In poultry 29.41% respiratory diseases, 17.64% parasitic infections, 5.88% fever, 23.52% digestive disorders and 23.52% other disease were exhibited. Sheep, Monkey also enrolled, which is enlisted as others animals. Among those 19.04% parasitic infections, 4.76% PPR, 14.28% fever, 9.52% diarrhea, 19.04% respiratory disorders 9.52% surgical correction and 23.80% others diseases conditions were recorded (Table 3).

Table 3. Diseases and disease conditions in cattle, goats, poultry, and other animals.

Disease/ diseases conditions	Cattle (N=208)	Goats (N=265)	Poultry (N=17)	Others (N=21)
FMD	8.65%	-	-	-
PPR	-	9.43%	-	4.76%
Respiratory disorders	14.90%	3.39%	29.41%	19.04%
Fever	11.05%	25.66%	5.88%	14.28%
Worm	33.65%	27.92%	17.64%	19.04%
Bloat/Tympany	5.28%	3.01%	-	4.76%
Diarrhoea	4.32%	12.83%	23.52%	9.52%
Ticks/Myiasis	8.64%	8.67%	-	-
Wound	-	4.15%	-	-
Surgical Correction	4.32%	3.77%	-	9.52%
Others	8.65%	2.22%	23.52%	23.80%

4. Discussion

The study investigated the disease prevalence among various animal species across different months in 2019. The findings indicated a relatively balanced distribution of diseases, with February, March, and April showing comparable enrollment rates. Specifically, February had a higher number of goats enrolled compared to March and April, whereas poultry enrollment remained consistently low, potentially influenced by private treatments and incomplete data.

The diseases condition of various species according to months, where 34.24% animals in February, 31.70% animals in March and 34.35% animals were enrolled in April 2019 which is symmetrical and the recorded case was more or less equal in those 3 months. March exhibited peak cattle enrollments, likely influenced by favorable weather conditions compared to February. The enrolment of poultry is considerably less compared to other animals.

The FMD prevalence was 8.65%, which is slightly lower than the stated prevalence 53.87%, 38.62%, and 14.44% of FMD according to the Ali et al. (2019), Lucky et al. (2016), and Alam et al. (2018). But our study the FMD prevalence was 8.65% which was higher than the findings of Ullah et al. (2015) and Khan et al. (2018) who described that the FMD prevalence was 3.33% and 3.33% in cattle and goat, respectively.

Parasitic infections affected 33.65% of cattle, 27.92% of goats, 17.64% in poultry and 19.04% in other species. In contrast to the increased prevalence reported by Alam et al. (2018); Islam et al.

(2013); Ahaduzzaman (2020); Sen et al. (2018) described 34.17% in Cumilla, 50.27% in Patuakhali, 20.57% in Rajshahi, 55% in Mymensingh. This study is significantly variable with the previous study. This difference could be attributed to varied geographical locations, seasonal variations during the research period, and variable management approaches. This amount is higher among other diseases. Parasitic infection is greatly responsible for production loss of animals. This study shows the situation of worm control as well as significance of this diseases condition to production performances of animal.

A total of 9.43% PPR found in goats which is less than Alam et al. (2018) which is 12.38% prevalence for this study. This variation may be due to proper vaccination and diseases control by the farmers. The prevalence of PPR was higher in young goats than in adults. Adult goats were more likely to contract diseases other than PPR than young goats.

Respiratory diseases prevalence are more found in poultry 29.41% which caused by environment of the study period when climate were humid and just after winter season. Management practices are also responsible for this poor diseases conditions in poultry. Goats are less in respiratory diseases conditions which may be for proper management and treatment of goats. Among 14.90% cattle infected with respiratory problems most of them are calf.

Fever is recorder higher among goats 25.66%, which due to management or lack of diagnosis the actual causal agents and termed as fever. Fever is less frequent in cattle, poultry and other species.

The findings of meiosis are consistent with previous reports of Karim et al. (2014), who reported 11.1% meiosis in goats, and Alam et al. (2018), who reported 10.05%, which is somewhat higher than this study's findings (8.67%). Bloat or acidosis found in cattle and goat are 5.28% and 3.01% which is higher than the Alam et al. (2018) (1.88% and 1.95% respectively cattle and goat). This variation due to Alam et al. (2018) study separate digestive disorders from acidosis and which is significantly greater in this area.

Diarrhea conditions are also a significant part among all disease conditions which is prominently found among goats and poultry which is 12.83% and 23.52% respectively. Cattle also found 4.32% diarrhea which is less than other species. This may be due to proper diagnosis of cattle and some case of PPR may be enlisted as diarrhea. Confirmatory diagnosis of diseases in UVH is not possible in all cases. So tentative diagnosis may also influences the actual outcomes.

Both cattle and goats reported incidences of myiasis, with rates of 8.64% and 8.67%, respectively. This parasitic condition can lead to significant discomfort and economic losses in livestock, necessitating effective control measures (Karim et al., 2014; Alam et al., 2018).

Surgical corrections were necessary in various cases, including wound treatment and other medical interventions. Cattle and other species required surgical corrections in 4.32% and 9.52% of cases, respectively, highlighting the need for veterinary interventions to manage severe health conditions in these animals. 4.15% wound found in goats which is dressed properly and provide supportive treatment.

The findings from this study provide valuable insights into the prevalence and distribution of diseases and health conditions among different animal species. The economic implications of diseases such as worm infestations and respiratory disorders highlight the need for integrated approaches that promote animal welfare and sustainable livestock production practices.

By advancing our understanding and practices in veterinary epidemiology and livestock health, we can enhance overall animal health outcomes and contribute to sustainable agricultural practices globally. This comprehensive discussion synthesizes the presented data, emphasizing its implications for animal health management and outlining future research directions in the field.

5. Conclusions

The study at Upazila Veterinary Hospital in Kaliganj, Jhenaidah, Bangladesh, documented prevalent diseases in cattle and goats, mainly due to parasite infestations, diarrhea, fever, and respiratory issues. Foot-and-mouth disease (FMD) and Peste des Petits Ruminants (PPR) were notable viral infections, affecting cattle and goats respectively, with moderate outbreak rates. To reduce disease incidence, strategies such as restricting animal movement and implementing effective vaccination programs are recommended. These measures could improve livestock health outcomes. The findings provide a baseline for veterinarians and national veterinary services to develop targeted disease management strategies in southwest Bangladesh. Addressing these health challenges requires collaboration among veterinarians, farmers, and policymakers. Continued research and collaboration are essential to create an epidemiological database for effective disease control and treatment protocols tailored to local livestock conditions. Future research should focus on understanding disease prevalence factors and evaluating intervention measures' efficacy to improve overall animal health outcomes.

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Data availability

The data generated from this study might be available on the valid request from the corresponding author.

Informed consent statement

No informed consent was required to conduct the study.

Conflict of interest

The authors declare no conflict of interest.

Authors' contribution

Conceptualization and data collection: Kazi Abdus Sobur; **Data analysis and validation:** Kazi Abdus Sobur, Palash Bose, and Sakib Mowdood; **Conducted data analysis and interpretation of result:** Kazi Abdus Sobur and Md. Zaminur Rahman; **Manuscript formatting:** Palash Bose, Md. Zaminur Rahman, and Md. Mosharraf Hossen; **Reviewed and revised the final manuscript:** Kazi Abdus Sobur, Sakib Mowdood, and Md. Ashiquen Nobi. All of the enlisted authors have read and approved the final version of the published article.

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