

## Study on Status of Cattle Diseases in Relation to Age, Sex and Season at Debidwar, Bangladesh

<sup>1</sup>Kazi Dilshad Mostari, <sup>2</sup>Kazi Md. Al-Noman\*, <sup>1</sup>S.M Harun-Ur-Rashid, <sup>3</sup>Md. Anowarul Haque and <sup>1</sup>Md. Golam Azam

<sup>1</sup>Department of Pathology and Parasitology, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200.

<sup>2</sup>Department of Animal Production, Gono University, Savar, Dhaka-1344.

<sup>3</sup>Department of Surgery and Theriogenology, Sher-e-Bangla Agricultural University, Dhaka-1207.

\*Corresponding Author: Kazi Md. Al-Noman,

---

**Abstract:** This study detects the prevalence of several diseases and to evaluate the disease condition of cattle population in the selected area with relation to age, sex and seasonal variation of Comilla district of Bangladesh. According to the case record, a total of 1145 sick animals were examined and 45 types of diseases were identified during this period. Disease diagnosis was made on the basis of owner's statement, general examination, physical examination and clinical examination. The clinically observed cases in cattle were bacterial (12.66%; n=145/1145), viral (19.56%; n=224/1145), gyneco-obstetrical (15.46%; n=71/1145), Parasitic diseases (8.91%; n=102/1145), surgical affection (4.63%, n=53/1145), digestive disorder (16.9%, n=1145) and other clinical disorder (15.72%, n=180/1145) respectively. According to the study the highest prevalence was recorded by viral diseases followed by bacterial diseases, gyneco-obstetrical cases, parasitic diseases, surgical affection, digestive disorder and other clinical condition. Identification and analysis of the clinical diseases available in study area will be useful for veterinary practitioners, researcher's, academician and also for policy planner to take necessary steps to control the incidence of clinical diseases of cattle.

**Keywords:** Cattle, Disease prevalence, Demographic variable, Debidwarupazila

---

Date of Submission: 26-12-2019

Date of Acceptance: 11-01-2020

---

### I. Introduction

The economy of Bangladesh depends mainly on agriculture. Agriculture consisting of crop, fisheries, livestock and forest sub sector continues to be the largest sector of Bangladesh. Livestock are domesticated animals raised in an agricultural setting to produce commodities such as food, fiber and labor. The term is often used to refer solely to those raised for food and sometimes only farmed ruminants, such as cattle and goats (Wikipedia). The livestock Sector not only the vital source of animal protein (about 44%) but also plays an important role in poverty reduction, employment generation, women empowerment and earning of leather goods (4.31% of total export) [1]. Most of these animals are reared under smallholder traditional management system in rural areas. Among the animals, cattle are the first and goats are the second important livestock population in Bangladesh. Livestock plays a significant role to keep the rural economy enduring. There are about 25.7 million cattle, 0.83 million buffalo, 14.8 million goats and 1.9 million sheep, 118.7 million chickens and 34.1 million ducks in Bangladesh [1]. These livestock population plays a significant responsibility in the urban economy [2]. Livestock is an integrated part of our farming system and plays an important role in the consecutive economy of Bangladesh. According to Bangladesh Economic Review [3], the growth rate of GDP in 2012-2013 for livestock was the highest sub sector at 3.49% compared to 0.15% crops and 1.18% for agriculture and forestry sub sector. Bangladesh is densely populated developing country where about 45.1% people depend on agriculture for their livelihood [4]. About 80% of our population is employed in agriculture and livestock farming. Twenty percent people are involved in livestock sector as permanent occupation. The contribution of Livestock in the magnitude of Gross Domestic Product (GDP) is about 1.66 % in Bangladesh (FY, 2015-16). The PRSP (Poverty Reduction Strategy Paper) stresses the importance of the livestock subsector in sustaining the acceleration of the poverty reduction in the country. (National Livestock Development Policy, 2007; Ministry of Livestock & Fisheries). So the dynamic potential of this emerging subsector, thus requires critical policy attention to animal health & production. Livestock sub sector contributes 12% to agricultural GDP and 3% to National economy [5]. Livestock subsector provides new raw material for industry serves a social security for the rural poor and provides security against crop failure or damage during draught or cyclone. Though Bangladesh has one of the highest livestock populations in the world, but characterized by very low productivity, particularly in cattle because of low productivity, inferior genetic

material, indiscriminate breeding leading to severe genetic erosion, neglect of animal health care and non-existence of an efficient value chain, shortage of feeds and fodder resources and lack of awareness [6]. The management practices of animals and geo-climatic condition of Bangladesh are favorable for the occurrence of various diseases [7]. Among the various constrains in the development of cattle, disease is one of the most important limiting factors which not only degrade the productivity of cows but also causing mortality [8]. Bovine diseases affect production, cattle health, impacts negatively on profitability and trade and can decimate years of genetic improvement towards, desirable production traits [9]. The incidence of disease not only higher in the developing nations but in the absence of any national control and eradication program, is also increasing worldwide particularly in the Asian, African and Latin american countries. Among the different constrains of cattle rearing, outbreak of several devastating disease is the major constrains causing economic loss and discouraging dairy farming in this country. Among the different diseases available in the comilla district include Food and mouth diseases (FMD) which is severe, highly contagious viral disease of livestock with significant economic impact. The disease affects cattle, swine, sheep, goats and other cloven hoofed ruminants. Furthermore, elephant and girffe are susceptible to FMD [10]. Parasites are organisms that are metabolically and physiologically dependent on other organisms, their hosts, for survival and development [11]. The distribution of parasitic diseases is throughout the world, but it varies in effects in the developed and developing world. The most impact of diseases is probably due to costs of control, particularly helminthic parasitosis of the developed world. Poor reproductive performance is a crucial production imitating issue. It has been reportable that reproductive disorders are accountable exceptional economic losses to the dairy farmers in Bangladesh [12]. The dairy industry's major goal is to provide milk for the consumer market. Most important constraint to achieve this goal is reduced fertility e.g., goats open for longer, more services per conception and higher incidence of reproductive problems, which in turn, contribute to reduced fertility e.g. [13]. Amongst domestic farm animals the metabolic diseases achieve their greatest importance in dairy cows. In farm cows, the incidence of metabolic diseases is highest within the amount commencing at parturition and lengthening till the height of lactation is reached, and this susceptibleness seems to be relating to the extremely high turnover of fluids, salts and soluble organic materials throughout the first a part of lactation [14]. There exists a variety of problems in livestock sector of Bangladesh such as insufficient pasture land, lack of technical expert, insufficient supply of vaccine, lack of epidemiologic study and shortage of government employee in the field level and various diseases of different systems of animals. Infectious diseases cause a great harm in livestock. It has been estimated that about 10% animals die annually due to diseases [15]. Disease also causes nutritional deficiency and disturbances in fertility. Understanding on the incidence, prevalence, distribution and determinants or risk factors of diseases in a region is important for effort economical management program. The Veterinary hospitals are the ideal and compatible resource of information about animal diseases and their illustration. Veterinary clinics and hospitals become a crucial 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 clinging 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 correct idea about the cases in local areas for cattle. The ambient information knows about the disease status by the investigation of the case record at particular areas. Although some reports on clinical case records from Bangladesh Agricultural University Veterinary Clinic[16-18], HaluaghatUpazila Veterinary Hospital, Mymensingh[19] and Dairy Cooperatives in Pabna district [20], UlipurUpazila Veterinary Hospital, Kurigram[21], ChandanaishUpazila of Chittagong district, Bangladesh [22] and Patuakhali Science and Technology University Veterinary Clinic [23] are available but similar report on ruminants are very limited in Debidwarupazila of comilla district of Bangladesh. In the last few decades, as the major infectious diseases of cattle in Bangladesh are brought under control by vaccination and farmer's awareness, emphasis has increasingly shifted to economically important diseases to the dairy producers. However, more information is required to describe the pattern of occurrence of clinical diseases for the measure of appropriate veterinary care and feasible disease control program and animal production. That's why our current research goals were 1). Study of diseases and disorders in animals in cattle at the Upazilla Veterinary Hospital (UVH), Debidwar, comilla, 2). To study the seasonal occurring diseases and various disorders and their percentage are followed at the clinic and 3). The study therefore aimed to find out the clinically occurring diseases and disorders of the cattle.

## **II. Materials and Methods**

### **2.1 Study area**

This clinical study was undertaken at the Upazila Veterinary Hospital, Debidwar, Comilla to determine the general clinical prevalence of clinical diseases and disorders in cattle.

## **2.2 Experimental animal**

The patient registered and physically visited for the diagnosis and treatment at the upazila veterinary Hospital, Debidwar in comilla district were considered as the experimental animals.

## **2.3 Study Period**

The duration of the experiment was one year and conducted from July,2016 to June, 2017. A total of 1145 cattle population were recorded. For the examination of the animal's clinical history of each case was cautiously recorded. Various types of diseases like bacterial, Viral, parasitic, metabolic, respiratory, Gynecological and surgical cases were registered in the study. 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.

## **2.4 Procedure**

### **2.4.1 General examination**

In the procedure of general examination behaviour, physical condition, external skin wound, posture, gait, uterine and vaginal prolapse, salivation, discharge from nasal cavity, enlargement of the abdomen, instability of locomotion was observed of the patient by visual examination and were recorded.

### **2.4.2 Physical examination**

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.

### **2.4.3 Clinical examination**

The temperature, pulse, and respiratory rate from each of these sick animals were recorded. Clinical examinations of all cattle and goats were conducted on the basis of diseases history, owner complaint, symptoms, to diagnose the following diseases and disorders. History of each case (Present and past) was carefully taken which gave a guideline for examination of the animals. According to the merit of the individual case, general clinical examination was conducted on the basis of disease history and owner's complaint, symptoms and techniques such as microscopic examination, laboratory common techniques used by Rosenberger (1979) [24] and Samadet *et al.*, (1988) [25].

#### **2.4.3.1 Fever**

Fever was diagnosed on the basis of recorded rectal temperature [26].

#### **2.4.3.2 Anorexia**

Anorexia syndrome were diagnosed on the basis owner's complaint with the history of partial and complete absence of appetite with varying decreased food intake and following the procedure of Prasad *et al.*, 1976 [27].

#### **2.4.3.3 Digestive disorders (diarrhoea)**

Faecal samples of the diarrheic selected animals were examined in the laboratory and those samples found negative on parasitological examination were diagnosed as diarrhoea and also by taking history whether of regular anthelmintic treatment of this animals were practiced or not.

#### **2.4.3.4 Dysentery**

Clinical Presumptive diagnosis of dysentery can be on history of growing animals and clinical signs including dysentery, tenesmus, mild systemic involvement and dehydration. Confirmatory diagnosis can be made by demonstrating the oocysts in faecal sample of clinically affected animals.

#### **2.4.3.5 Respiratory disorders (pneumonia)**

This disorder was diagnosed on the basis of owner's complaint and recording abnormal function respiratory system like polypnoea, dyspnoea, coughing, sneezing, nasal discharging, thoracoabdominal breathing etc. and by examining the entire respiratory tract as described [28].

#### **2.4.3.6 Skin diseases**

Different type discrete and diffuse skin lesions were diagnosed clinically by visual examination.

#### **2.4.3.7 Corneal opacity**

Corneal opacity was diagnosed on examination. The presence of non-transparency, cloudiness and opaque condition on the cornea was diagnosed as corneal opacity.

#### **2.4.3.8 Viral diseases**

Foot and Mouth Disease (FMD) was diagnosed in calves and adult cattle on the basis clinico-epidemiological determinants. The presence of fever and vesicular eruption in the mouth and on the feet of same animal with the history of rapid spread of the disease in bovine population were regarded as Foot and Mouth Diseases. PPR was diagnosed in both kids and goat on the basis of clinico epidemiological determinants [29]. Papillomatosis was diagnosed in calves and visual examination and palpation of solid outgrowth of epidermis.

#### **2.4.3.9 Bacterial disease**

Black quarter diagnosed in young cattle on the basis of clinical examination. The presence of fever, lameness and palpation of the affected muscles revealed crepitation and needle puncture of the affected muscles resulted oozing blackish fluid confirmed the diagnosis of black quarter. Clinical mastitis was diagnosed on the basis of owner's complaint about abnormalities of udder and milk production. Palpation of udder revealed enlarged and painful with the presence of clots/ flakes in the milk confirmed the diagnosis of mastitis.

#### **2.4.3.10 Arthritis**

Clinically arthritis in sucking and growing animals was diagnosed using clinical signs of lameness and swollen joints.

#### **2.4.3.11 Urogenital diseases**

Urolithiasis was diagnosed mainly in castrated goats with the history and owners complain of complete retention of urine, and clinical findings of distension of urinary bladder, restlessness, occasionally rupture of urinary bladder and aspiration of fluid from the abdominal cavity rupture of the bladder.

#### **2.4.3.12 Reproductive diseases**

Reproductive diseases and disorders are frequently occurred in livestock in subcontinent and cause significant economic losses. Common reproductive cases are dystocia, retained placenta, abortion, ovarian cyst etc. Repeat breeders was diagnosed on the basis of reproductive history of the cow, checking of individual breeding records and giving a special view to the characteristic of repeat breeder's cow [29]. Anestrus was diagnosed on the basis of history of not coming into heat within the normal cycle length. Uterovaginal prolapse was diagnosed when uterus was descended into the vagina and visible of the vaginal orifice. Cows with the history of failure to conceive after insemination for more than three times were examined by rectal palpation.

#### **2.4.3.13 Parasitological diseases**

The Ectoparasitic infection (mange infection) was diagnosed by itching, scab, alopecia lesion on skin. Parasitic infection was diagnosed by hair loss, emaciation, weakness, rough coat and pale visible mucus membrane. Humpsore (Stephanofilaria), fascioliasis and paramphistomiasis were diagnosed on the basis of history and clinical findings and faeces examination [26]. The metabolic disorder was diagnosed by just after parturition. In surgical cases Myiasis wound was found & Abscess was confirmed by needle puncture.

### **2.5 Prevalence**

Prevalence were calculated as number of cases of disease divided by population at risk and multiply by 100.

### **2.6 Statistical Analysis**

The collected data was analyzed by a statistical software namely, SPSS version 20. For the significant differences in the conditions of the diseases among groups and seasons the Chi-square goodness of fit test was done.

## **III. Results and Discussion**

### **3.1 Results**

#### **Prevalence of bacterial diseases in cattle**

The prevalence of bacterial diseases in cattle were shown that overall prevalence was 12.66% and the highest prevalence of bacterial diseases were Dermatophilosis (5.68%), Mastitis (5.32%), Foot rot (1.05%), Black quarter (0.44%) and lowest Actinobacillosis (0.17%). Regarding the data shown that bacterial diseases of cattle in relation to the different seasons of the year differed insignificantly ( $p > 0.05$ ). In the summer season the highest prevalence of bovine bacterial disease was observed in Dermatophilosis (7.73%) and the lowest was found in Actinobacillosis (0.22%) the rest of bacterial disease show intermediate. Moreover, in rainy season the highest prevalence of bovine bacterial disease was observed in Dermatophilosis (4.90%) and Mastitis (4.90%) both and the lowest was found in Actinobacillosis (0.33%) the rest of bacterial disease show intermediate.

Furthermore, in winter season the highest prevalence of bovine bacterial disease was observed in Dermatophilosis (3.89%) and Mastitis (3.89%) both and the lowest was found in Black quarter (0.26%), Actinobacillosis was absent in winter season. The result showed that Dermatophilosis was the most prevalence bacterial disease in all the three seasons. females (14.64%) followed by male animals (10.48%). Incidence of bacterial diseases in the different sexes was significant ( $p < 1\%$ ). Mastitis (10.15%) followed by Dermatophilosis (3.33%), Foot rot (.83%), Black quarter (0.17%) and Actinobacillosis (0.17%). The age wise annual incidences of bacterial diseases in cattle was found more in adult (14.34%) followed by Young (8.75%). Significant ( $p < 1\%$ ) annual incidence of bacterial diseases in cattle was observed due to the variation of ages of animal. Mastitis (7.61%) followed by Dermatophilosis (5.61%), Foot rot (.87%), and Actinobacillosis (0.25%). The overall prevalence of viral diseases in cattle were (19.56%). Among Viral diseases the highest Prevalence was found in Foot and mouth disease (12.66%) followed by Bovine ephemeral fever (5.50%), whereas the lowest prevalence was documented in Papillomatosis (1.40%). There was significant variation ( $p < 1\%$ ) of viral diseases in cattle according to the season of the year in study area. The incidence of Foot and mouth disease (11.34%) was common in all three season followed by bovine ephemeral fever (7.19%) and papillomatosis (1.31%). The sexwise annual incidences of bacterial diseases in cattle was found more in males (24.44%) followed by female animals (15.14%). Incidence of viral diseases in the different sexes was insignificant ( $p > 0.05$ ). Foot and mouth disease (15.63%) followed by bovine ephemeral fever (6.80%) and papillomatosis (2.02%). The age wise annual incidence of viral diseases was found more in adult animals (14.34%) followed by young animals (8.74%). Insignificant ( $p > 0.05$ ) annual incidence of viral disease in cattle was observed. Foot and mouth disease (17.49%) followed by bovine ephemeral fever (7.87%) and papillomatosis (2.62%).

#### **Prevalence of gyneco-obstetrical cases in cattle**

The overall prevalence of gyneco-obstetrical cases in cattle were (15.46%). Among gyneco-obstetrical cases the highest Prevalence was found in repeat breeding (4.02%) whereas the lowest prevalence was documented in teat fistula (0.17%).

#### **Prevalence of metabolic disorder in cattle**

The overall prevalence of metabolic disorder in cattle were (6.20%). Among metabolic diseases the highest Prevalence was found in acidosis (3.93%) whereas the lowest prevalence was observed in ketosis (0.26%). acidosis 3.93% milk fever 1.57%, Grass tetany 0.44%, ketosis 0.26%.

#### **Prevalence of metabolic disorder in cattle based on season**

There was significant variation of cattle metabolic disorder in relation to the season of the year which shown in. The result showed that acidosis was the most prevalence metabolic disorder in all the season. The sexwise annual incidences of metabolic disorder in cattle was found more in males (6.25%) followed by female animals (6.16%). Incidence of metabolic disorder in the different sexes was significant ( $p < 0.05$ ). in case of male Acidosis 6.07%, ketosis 0.18% and in female male milk fever 3.0%, Acidosis 2.0%, ketosis 0.18%, grass tetany 0.83. The age-wise prevalence of metabolic disorder in cattle was found more in young (4.37%) followed by adult (6.98%). Incidence of metabolic disorder in the different ages was significant ( $P < 0.01$ ). The overall prevalence of parasitic diseases in cattle were (8.91%). The highest prevalence of parasitic disease was observed in tick (3.93%) and the lowest prevalence was detected in hump sore (0.35%). Other diseases were Fascioliasis 1.31%, Maggot 1.31%, Mite infestation 1.13%, Paramphistomiasis 0.87%.

#### **Prevalence of metabolic disorder in cattle based on age**

The age-wise prevalence of metabolic disorder in cattle was found more in young (4.37%) followed by adult (6.98%). Incidence of metabolic disorder in the different ages was significant ( $P < 0.01$ ). In case of Young we found Acidosis 4.37%, and in case of Adult Acidosis 3.74%, Milk fever 2.24%, Ketosis 0.37%.

#### **Prevalence of metabolic disorder in cattle based on sex**

The sexwise annual incidences of metabolic disorder in cattle was found more in males (6.25%) followed by female animals (6.16%). Incidence of metabolic disorder in the different sexes was significant ( $p < 0.05$ ). In case of male we found Acidosis 6.08%, Ketosis 0.18% and in case of female Milk fever 3.0%, Acidosis 2%, Ketosis 0.33%.

#### **Prevalence of Parasitic diseases in cattle based on season**

It was evident from that cattle parasitic diseases significantly varied in relation to season of the year in study area. In all three season the highest prevalence of bovine parasitic disease was observed in tick whereas the lowest prevalence was observed in hump sore.

### **Prevalence of Parasitic diseases in cattle**

The overall prevalence of parasitic diseases in cattle were (8.91%). The highest prevalence of parasitic disease was observed in tick (3.93%) and the lowest prevalence was detected in hump sore (0.35%). Other diseases were Fasioliasis 1.31%, Maggot 1.31%, Mite infestation 1.13%, Paramphistomiasis 0.87%. It was evident from that cattle parasitic diseases significantly varied in relation to season of the year in study area. In all three seasons the highest prevalence of bovine parasitic disease was observed in tick whereas the lowest prevalence was observed in hump sore. During summer the prevalence of Tick infestation 5.96%, Fasioliasis 0.88%, Maggot 1.32%, Mite infestation 0.88%, Paramphistomiasis 0.44%, hump sore 0.44%. In case of rainy season Tick infestation 3.27%, Fasioliasis 2.61%, Maggot 2.29%, Mite infestation 0.65%, Paramphistomiasis 0.65%, hump sore 0.65% and in winter Tick infestation 2.07%, Fasioliasis 0.78%, Maggot 0.51%, Mite infestation 1.81%, Paramphistomiasis 1.55%. The sexwise annual incidences of parasitic diseases in cattle was found more in male animals (12.3%) followed by female animals (5.82%). Prevalence of parasitic diseases in cattle was insignificant ( $P > 0.05$ ). In case of male the prevalence of Tick infestation 4.96%, Fasioliasis 2.02%, Maggot 1.84%, Mite infestation 1.47%, Paramphistomiasis 1.29%, hump sore 0.73%. and in female the prevalence of Tick infestation 3.0%, Fasioliasis 0.67%, Maggot 0.83%, Mite infestation 0.83%, Paramphistomiasis 0.50%. There was significant ( $P < 0.01$ ) variation of cattle parasitic diseases in relation to the age of the year. Prevalence of parasitic diseases was found more in adult (10.97%) followed by young (4.08%). In young animal the prevalence of Maggot 2.62%, Fasioliasis 0.87%, Mite infestation 0.58% and in case of adult the prevalence of Tick infestation 5.61%, Fasioliasis 1.50%, Maggot 0.75%, Mite infestation 1.37%, Paramphistomiasis 1.25%.

### **Prevalence of surgical affection in cattle**

The overall prevalence of surgical affection in cattle were (4.63%). The highest prevalence of surgical affection was observed in abscess (1.31%) and the lowest prevalence was detected in myiasis (0.35%). Other diseases were Atresia ani 1.04%, Navel ill 0.87%, Fracture 0.61%, Upward patellar fixation 0.44%. There was insignificant variation of surgical affection in cattle according to the season of the year in study area. In summer Abscess 0.66%, Atresia ani 0.44%, Navel ill 0.44%, Fracture 0.66%, Upward patellar fixation 0.44%. In rainy season Abscess 3.92%, Atresia ani 1.31%, Navel ill 1.31%, Fracture 0.65%, and during winter, Atresia ani 1.55%, Navel ill 1.04%, Fracture 0.52%, Upward patellar fixation 0.78%. There was insignificant dissimilarity of cattle surgical affection in relation to the sex of the year. The sexwise incidence was found more in male (4.78%) followed by female animals (4.49%). In case of male Abscess 1.65%, Atresia ani 0.55%, Navel ill 0.74%, Fracture 0.92%, Upward patellar fixation 0.55%. Myiasis 0.37. and in female Abscess 1.0%, Atresia ani 1.5%, Navel ill 1.00%, Fracture 0.33%, Upward patellar fixation 0.33%. Myiasis 0.33. The age-wise prevalence of surgical affection in cattle was found more in young (8.16%) followed by adult (3.12%). Incidence of surgical affection in the different ages was significant ( $P < 0.01$ ). In case of young the prevalence of Navel ill 2.92%, Abscess 1.17%, Fracture 0.58%, Atresia ani 3.50% and in adult Abscess 1.37%, Fracture 0.62%, Upward patellar fixation 0.62%.

### **Prevalence of digestive disorder in cattle**

The overall prevalence of digestive disorder in cattle was (16.9%). The highest prevalence of digestive disorder was observed in diarrhoea (6.38%) and the lowest prevalence was observed in dehydration (1.31%) and bloat (1.31%). Others were Dysentery 3.23%, Anorexia 4.63%. There was insignificant variation of digestive disorder in cattle according to the season of the year. In summer season the highest prevalence of bovine digestive disorder was observed in diarrhoea (11.70%) and the lowest was found in dehydration (1.77%). Moreover in rainy season the highest prevalence was observed in anorexia (3.92%) and the lowest was found in bloat (0.98%). Furthermore, in winter season, the highest prevalence of bovine digestive disorder was observed in diarrhoea (2.59%) whereas the lowest was observed in dehydration (0.78%) and bloat (0.78%). In case of other diseases in summer Anorexia 7.73%, Dysentery 5.52%, Bloat 1.99%, Dehydration 1.77%, in rainy season Diarrhoea 3.27%, Anorexia 3.92%, Dysentery 2.29%, Bloat 0.98%, Dehydration 1.31%. and in case of winter Anorexia 1.55%, Dysentery 1.30%, Bloat 0.78%, Dehydration 0.78%, Diarrhoea 2.59%. The sexwise annual incidences of digestive disorder in cattle was found more in males (23.16%) followed by female animals (11.15%). Incidence of viral diseases in the different sexes was insignificant ( $p > 0.05$ ). In male Diarrhoea 8.27%, Dysentery 4.23, Dehydration 2.02%, Anorexia 6.99%, Bloat 1.65%, in female Diarrhoea 4.66%, Dysentery 2.33, Dehydration 0.67%, Anorexia 2.50%, Bloat 1.00%. The age-wise prevalence of digestive disorder in cattle was found more in young (23.91%) followed by adult (13.84%). Incidence of digestive disorder in the different sexes was insignificant ( $P > 0.01$ ). The prevalence of diseases in young were Diarrhoea 9.04%, Dysentery 5.25%, Dehydration 1.75%, Anorexia 6.71%, Bloat 1.17% and in adult Diarrhoea 5.24%, Dysentery 2.37%, Dehydration 1.12%, Anorexia 3.74%, Bloat 1.37%.

### **Prevalence of other clinical disorder in cattle**

The overall prevalence of other clinical disorder in cattle were (15.72%). The highest prevalence was observed in fever (6.29%) and the lowest prevalence was observed in dog bite (0.44%). In case of Pneumonia 4.10%, Allergic Reaction 2.18%, Arthritis 2.18%, Corneal opacity 0.52%. There was insignificant variation of surgical affection in cattle according to the season of the year in study area. total prevalence of diseases was 7.28%, 13.07%, 0.78% during summer, rainy and winter season chronologically. other diseases were in summer fever 3.09%, Pneumonia 1.55%, Allergic Reaction 1.55%, Arthritis 0.66%, dog bite 0.44%. in case of rainy season fever 4.58%, Pneumonia 3.27%, Allergic Reaction 1.96%, Arthritis 2.29%, and in winter summer fever 11.40%, Pneumonia 7.77%, Allergic Reaction 3.11%, Arthritis 3.89%, dog bite 0.78%. The sexwise annual incidences of other clinical disorder in cattle was found more in males (18.57%) followed by female animals (13.14%). Incidence of other clinical disorder in the different sexes was insignificant ( $p > 0.05$ ). in young fever 7.72%, Pneumonia 6.52%, Allergic Reaction 2.39%, Arthritis 2.39%, dog bite 0.37%. and in case of female fever 5.0%, Pneumonia 6.54%, Allergic Reaction 2.0%, Arthritis 2.0%, dog bite 0.50%. The age-wise prevalence of other clinical disorder in cattle was found more in young (25.66%) followed by adult (11.47%). Incidence of other clinical disorder in the different ages was significant ( $P < 0.01$ ). in case of young fever 7.87%, Pneumonia 7.87%, Allergic Reaction 2.04%, Arthritis 7.29% in case of adult fever 5.61%, Pneumonia 2.50%, Allergic Reaction 2.24%, dog bite 0.62%.

## **3.2 Discussion**

### **Prevalence of bacterial diseases in cattle**

#### **Dermatophilosis**

Bovine dermatophilosis has worldwide distribution and more prevalent in the tropical and subtropical regions [30-32]. Bangladesh is geographically placed in the subtropical regions of the world and dermatophilosis in cattle has been diagnosed in the context of this environment of [33-35]. In this study the prevalence of bacterial diseases in cattle. Where the overall prevalence was 12.66% and the highest prevalence of bacterial diseases were by Dermatophilosis (5.68%) followed by Mastitis (5.32%), Foot rot (1.05%), Black quarter (0.44%) and lowest Actinobacillosis (0.17%). According to the bacterial diseases the present result was lower than the result of Juliet *et al.* (2015) [36] who reported that the overall prevalence of bacterial diseases in dinajpur were 15.27%. In which highest prevalence was observed in dermatochalasis (10.43%), followed by conjunctivitis (1.76%), pneumonia (1.76%), mastitis (0.73%), black quarter (0.59%). Nath *et al.* (2010) [37] reported that the prevalence of dermatophilosis 13.55% which is higher than this result. Badruzzaman *et al.* (2015) [38] reported prevalence of dermatophilosis 0.19% which significantly differ from this result and mastitis 1.30% which is lower than this result.

#### **Mastitis**

Mastitis is an economically important disease of milch animals, was diagnosed on the basis of history and physical abnormalities of udder (Radostits *et al.*, 2007) [39]. Mastitis was recorded 5.32%. Rahman *et al.* (1997) reported 13.3% of clinical mastitis in cows which is higher than the result and comparatively lower portion of mastitis (0.84%) was reported by Samad, (2001) [40].

#### **Black quarter**

In cattle the disease is mostly confined to young stock between 6 months to 2 years but occasionally it may occur in younger animals and cattle up to 3 years [39]. Black quarter was recorded 0.44%. These observations support the earlier findings of Rahman *et al.* (1972) [41] and Samad (2001) [40] who reported 0.31%, 0.46% and 0.23% incidence of BQ in cattle. However, Haque *et al.* (1988) [42] reported 0.04% and Hoque and Samad (1996) [43] reported incidence of BQ in cattle from different geographical location in Bangladesh.

#### **Actinobacillosis**

Actinobacillosis was recorded 0.7%. Rycroft and Garside (2000) [44], Vadillo *et al.* (2002) [45] and Radostits *et al.* (2007) [39] reported that actinobacillosis is an infectious disease with a worldwide distribution that often affects the soft tissues of cattle and sheep. Lucky *et al.*, (2016) [46] reported prevalence of actinobacillosis 1.37% which almost similar than the present study.

#### **Foot rot**

Foot rot was found in cattle 1.05%. John and Webb (2005) [47] 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 the mostly found. Lucky *et al.*, (2016) [46] reported prevalence of foot rot 4.82% which is higher than the present study.

### **Prevalence of viral diseases in cattle**

#### **Foot and mouth disease**

The occurrence of FMD has been reported in all age groups of animals and all the seasons of the years but higher susceptibility to young's and associated with increased movement of animals of the start of dry winter grazing season in Pabna district [48], FMD is a transboundary disease [49]. In the present study FMD was found in 12.66% in cattle. Mannan *et al.* (2009) [50] reported that the prevalence of foot and mouth disease (25.07%) at Rajshahi district 24.51% at Megnaupazila of comilla respectively which was higher than this result.

#### **Bovine ephemeral fever**

Bovine ephemeral fever was recorded 5.50%. Badruzzaman *et al.* (2015) [51] conducted a study in Chittagong district of Bangladesh and reported that the prevalence of ephemeral fever was 0.27% which is significantly lower from this result.

#### **Papillomatosis**

Papillomatosis was recorded 1.40% in cattle. 0.7% cases of papillomatosis were observed by karim *et al.* (2014) [52], Samad (2001) [39] showed 0.58% and Rahman *et al.* (2012) [23] showed 0.19% occurrence of warts in Bangladesh.

### **Prevalence of gyneco-obstetrical cases in cattle**

#### **Retention of placenta**

The disease was found in cattle 1.31%. Samad *et al.* (2001) [40] who reported 0.37% and 0.50% cases of retention of placenta in cows respectively which is close to the present observation.

#### **Repeat breeding**

Repeat breeding was found in 4.02% in the present study. Samad (2001a) [40] found repeat breeding in 1.26% in cattle. Rahman *et al.* (2012) [23] and Kabir *et al.* (2010) [21] recorded 16.2% and 1.15% repeat breeding cases.

#### **Teat fistula**

In the current study the disease was recorded 0.17%. Lucky *et al.* (2016) [46] reported teat fistula 2.35% in cattle.

#### **Abortion**

In the present study abortion was recorded 3.14%. Lucky *et al.* (2016) [46] reported abortion (7.06%) in cattle which is higher than the present study.

#### **Dystocia**

The prevalence of dystocia was 3.14% Hansen *et al.* (2004) [53] reported this rate over 50%. Rahman *et al.* (2012) [23] described the disease of dystocia was recorded in 1.15% cows.

#### **Endometritis**

Endometritis was recorded 0.70%. Samad (2001a) [40] reported only 0.10% metritis in cows. Hammon *et al.* (2006) [54] worked on metritis cases in several farms and reported about 20% lactating dairy cows were suffering from metritis.

#### **Pyometra**

Pyometra was recorded 0.44% in cattle. Lucky *et al.* (2016) [46] reported 7.06% pyometra in cattle which is higher than the present study.

#### **Anestrus**

This disease was recorded 3.06%. Samad (2001b) [40] worked on anestrus case and reported 0.86% in cattle which is lower than the present study.

#### **Uterine Prolapse**

Uterine prolapse was recorded 1.05%. Hiranya *et al.* (2012) [55] reported 86.36% suffering from uterine prolapse.



### **Vaginal Prolapse**

Vaginal prolapse was recorded 0.26%. Lucky *et al.* (2016) [46] reported 2.35% in cattle.

### **Prevalence of parasitic diseases in cattle**

The overall prevalence of parasitic diseases in cattle were (8.91%). The highest prevalence of parasitic disease was observed in tick (3.93%) and the lowest prevalence was detected in hump sore (0.35%). Rony *et al.* (2010) [56] conducted a study in Gazipur of Bangladesh and recorded 68.49%, 65.5%, 65.4% and 64.07% prevalence of tick infestation in cattle, respectively which was higher than this result. Ghosh *et al.*, (2007) [57] reported 80% cattle affected by ticks in Bangladesh, India and Pakistan. Singhet *al.* (2004) [58] recorded hump sore in indigenous cattle as 22.60%, whereas in exotic cattle and crossbred, it was 36.64%.

### **Prevalence of metabolic disorder in cattle**

The overall prevalence of metabolic disorder in cattle were (6.20%). Among metabolic diseases the highest Prevalence was found in acidosis (3.93%) followed by milk fever 1.57%, Grass tetany 0.44% and ketosis 0.26%. Lucky *et al.* (2016) [46] documented 23.64% acidosis in cattle. Bar and Ezra (2005) [59] observed clinical hypocalcaemia before, during or after calving caused by milk fever. Thirunavukarasue *et al.* (2010) [60] 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) [61] studied on Israil Holstein cows and reported that 8% of the pretentious animals died and culled were 12% of them due to milk fever. Radostit *et al.* (2007) [39] worked on grass tetany and stated that the occurrences of this case was seasonal and it was more frequent in cool and rainy weather conditions. An occurrence of 34% ketosis has been reported by Duffield (2000) [62]. The incidence rates of ketosis between 11.10% and 12.10% have been reported by Ostegard & Grohn (2000) [63].

### **Prevalence of Surgical affection in cattle**

The overall prevalence of surgical affection in cattle were (4.63%) as shown in. The highest prevalence of surgical affection was observed in abscess (1.31%) followed by atresia ani (1.04%) Navel ill (0.87%), Fracture (0.61%), upward patellar fixation (0.44%) and myiasis (0.35%). Rahman *et al.* (2012) [23] reported 1.1% cattle affected with abscess at Patuakhali Science and Technology University which is lower than the present observation. Karim *et al.* (2014) [52] and Rahman *et al.* (2012) [23] who reported that navel ill presence in calf 12.5% and 10.1% which is higher from the present observation.

### **Prevalence of digestive disorder in cattle**

The overall prevalence of digestive disorder in cattle were (16.9%). The highest prevalence of digestive disorder was observed in diarrhoea (6.38%) followed by anorexia 4.63%, dysentery 3.23%, dehydration 1.31% and bloat 1.31%. Karim *et al.* (2014) [52] reported 13.4% diarrhoea in cattle. Karim *et al.* (2014) [52] and Samad (2001a) reported 1.10% and 1.76% dysentery in cattle. Smith (2005) [64] studied on clinical signs of dehydration in cattle. Rahman *et al.* (2012) [23] and Karim *et al.* (2014) [52] reported 2.2% and 2.5% bloat in cattle.

## **IV. Conclusion**

This study was conducted to detect the present situation of occurrence of clinical diseases and disorders in the study area. The district has border area as a result disease like FMD frequently outbreaks in cattle. From the above results it could be concluded that viral diseases were the most prevalent in this district therefore recommendation it will be heading following way. Because of the porous borders, a regional FMD control strategy should be developed. Further, animal identification and monitoring animal movements are necessary to identify the cross-border movements and market chain interactions of ruminants, leading to improved border and movement controls. Additionally, a vaccination strategy should be developed with the initial objective of protecting small-scale dairy herds from disease. For any successful FMD control programme, long term Government commitment and adequate resources are necessary. A sustainable programme will also need farmer education, commitment and financial contributions. The knowledge derived from this study will increase our understanding the clinical case of cattle in a particular area and taking necessary preventive measure to disease control at national policy level. Therefore, further studies would be required for the identification and characterization of etiological agents.

### **Conflict of interest**

None to declare.

## References

- [1]. DLS (Department of livestock services). *Yearly updated report for 2015 - 2016*. Government of the People's Republic of Bangladesh, Farmgae, Dhaka, Bangladesh. Accessed in <http://www.dls.gov.bd/>.
- [2]. Kamaruddin K. Controlling Grass Tetany in Livestock. Cooperative Extension Service. *College of Agriculture and Home Economics New Mexico state Uni. Guide B-809*.2003.
- [3]. Bangladesh Economic Review (March, 2014), <https://mof.gov.bd/site/page/44e399b3-d378-41aa-86ff-8c4277eb0990/BangladeshEconomicReview,2014>.
- [4]. Bangladesh Economic Review (2016), <https://mof.gov.bd/site/page/44e399b3-d378-41aa-86ff-8c4277eb0990/BangladeshEconomicReview,2016>.
- [5]. Mia MAR. Final Draft National Livestock Extension Policy7 BIDS (2012). *Barriers to the development of Livestock in Bangladesh*, 2013.
- [6]. Best Practices in Animal Feed Production and Management in SAARC Countries, SAARC Agriculture Centre, [http://www.sac.org.bd/archives/publications/best\\_practices.pdf](http://www.sac.org.bd/archives/publications/best_practices.pdf)
- [7]. Onneshan U. Recent Trends of Growth in Agriculture, Industry and power Bangladesh Economic update, 2014.
- [8]. Sarker MAS, HashimMA, Rahman MB and Begum H. Studies on bovine lymphadenitis syndrome. *Bangladesh Veterinarian*, 10, 2003, 6-8.
- [9]. Boland F, Kelly G, Good MM, More SJ, Bovine tuberculosis and milk production in infected dairy herds in Ireland, *Preventive Veterinary Medicine* 93(2-3), 2009, 153-61.
- [10]. Kitching RP, Global epidemiology and prospects for control of foot-and-mouth disease,pp. 133-148, In B.W.J. Mahy, Eds. Foot & mouth disease virus, *Springer-Verlog, Manitoba, Canada*, 2005, 133-148.
- [11]. Sobocka E, Changes in the iron level in the organs and tissues of wels catfish, *Silurusglanis L. caused by nickel, ActaIchthyologica Et Piscatoria* 31(2), 2001, 127-143.
- [12]. Talukder MAS, Khandoker MAMY, Rahman MGM, Islam MR and Khan MAA, Reproductive problems of cow at Bangladesh Agricultural University Dairy Farm and possible remedies,*Pakistan Journal of Biological Sciences* 8, 2005, 1561-1567.
- [13]. Dhaliwal GS., Murray RD, Dobson H, Montgomery J., and Ellis WA, Effect of Leptospirainterroganasserovarhardjo infection on milk yield in endemically infected dairy herds, 1996.
- [14]. Islam S, Moni SP, Barua SR and Parvez MA, Clinical manifestations and diseases of cattle and goats in Gopalganj, Bangladesh, *Eco-friendly Agril. J.* 8(06), 2015, 81-85.
- [15]. Ali, A. and M. A. Khan, Livestock ownership in ensuring rural household food security in Pakistan,*J. Anim. Plant Sci.*23(1), 2013, 313-318.
- [16]. Rahman MA, Ali KM, Rahman A, Incidence of diseases of cattle in Mymensingh,*Bangladesh Veterinary Journal* 6, 1972, 25-30.
- [17]. Samad MA, Observations of clinical diseases in ruminants at the Bangladesh Agricultural University, *Journal of Bangladesh Agricultural University* 35, 2003, 93-120.
- [18]. Samad MA, Islam MA and Hossain A, Patterns of occurrence of calf diseases in the district of Mymensingh in Bangladesh,*Bangladesh Veterinary Journal*, 36, 2002, 1-5.
- [19]. Sarker MAS, Hashim MA, Rahman MB and Begum H, Studies on bovine lymphadenitis syndrome. *Bangladesh Veterinarian*, 10, 1999, 6-8.
- [20]. Pharo, H.J. Analysis of clinical case records from dairy co-operatives in Bangladesh. *Trop Anim Health Prod* 19, 1987,136-142. doi:10.1007/BF02239707
- [21]. Kabir MH, Reza MA, Razi KMA, Parvez MM, Bag MAS and Mahfuz SU, A report on clinicalprevalence of diseases and disorders in cattle and goat at the Upazilla Veterinary Hospital, Ulipur, Kurigram,*InternatioalJournal of Bio Research* 2, 2010, 17-23.
- [22]. Pallab, M.S., Ullah, S.M, Uddin, M.M. &Miazi, O.F., A cross sectional study of several diseases in cattle at ChandanaishUpazilla of Chittagong district,*Scientific Journal of Veterinary Advances*, 1, 2012, 28-32.
- [23]. Rahman M.A., Islam M.A., Rahman M.A., Talukder, Ak.,Parvin MS, and Islam MT, Clinical diseases of ruminants recorded at the patuakhali science & technology University veterinary clinic, *Bangladesh Journal of Veterinary Medicine*, 10 (1&2), 2012, 63-73.
- [24]. Rosenberger G., Clinical Examination of cattle 2<sup>nd</sup>edn. *VerlagPoulParey*, Germany, 1979.
- [25]. Samad MA, Bari ASM, Bashar SA, Gross and histopathological studies on bovine babesiosis in Bangladesh. *Indian Journal of Animal Science*, 58, 1988, 926-928.
- [26]. Blood DC., Radostits OM., and Arundel H, Diseases caused by bacteria—V. *Veterinary Medicine. A Textbook of the Diseases of Cattle, Sheep, Pigs, Goats and Horses*, 1, 1989, 619-709.
- [27]. Prasad J., Joshi S.V., and Rakib A., Studies on physico-chemical and therapeutic aspects of primary anorexia syndrome in sheep and goat. *Mahavet*, 3(11), 1976, 12-24.
- [28]. Radostits , Gay CC, Hinchcliff KW, Cons PD, *Veterinary Medicine. A Textbook of the Diseases of cattle, Horses, Sheep, Pigs and Goats*. Saunders Flsevier, Spain, 2007.
- [29]. Samad MA., *Animal Husbandry and Veterinary Science 1<sup>st</sup> pub, LEP pub No.11*, BAU campus,Mymensingh, 2008.
- [30]. Zaria L.T.,Dermatophiluscongolensis infection (dermatophilosis) in animals and man! An update. *Comparative immunology, microbiology and infectious diseases*, 16(3), 1993, 179-222.
- [31]. Ambrose, N., Lloyd, D., &Maillard, J. C., Immune responses to Dermatophiluscongolensis infections. *Parasitology Today*, 15(7), 1999, 295-300.
- [32]. Makinde, A. A.,Dermatophilosis in animals and man: recent studies on Dermatophiluscongolensis. *Vom J Vet Sci*, 1(1), 2004, 87-102.
- [33]. Nooruddin, M., &Khaleque, M. A., Prevalence of bovine dermatophilosis in Bangladesh. *Indian Journal of Animal Sciences (India)*. 1986.
- [34]. Nooruddin, M., &Khaleque, M. A., Clinical features of bovine dermatophilosis. *Bangladesh Vet*, 3(1-2), 1986, 3-5.
- [35]. Mannan.M.A., Isolation and characterization of Dermatophilosis bacteria from the skin lesions of cattle in an around BAU campus, Bangladesh Agricultural University, Mymensingh. Bangladesh, 2009.
- [36]. Juli MSB, MF Hoque, ATM Badruzzaman and HM Kawser, Bovine diseases at Dinajpur district of Bangladesh: Epidemiological status with relation to age and season,*Annals of Veterinary and Animal Science*, 2, 2015, 55-63.
- [37]. Nath B.D, Ahsan MS, Rahman MS, FazlulHuque AKM, Prevalence & therapeutic management of bovine dermatophilosis. *Bangladesh Research Publications Journal*,4(3), 2010, 198-207.
- [38]. Badruzzaman, A.T.M., Md. Siddiqui MSI, Faruk O.F, Lucky N.S., Zinnah M.A., Hossain, F.M.A. & Rahman MM., Prevalence of infectious & non-infectious diseases in cattle population in Chittagong district of Bangladesh. *International Journal of Biological Research*, 3(1), 2015,1-4.

- [39]. Radostits, Gay CC, Hinchcliff KW, Cons PD., Veterinary Medicine. A Textbook of the Diseases of cattle, Horses, Sheep, Pigs and Goats. Saunders Elsevier, Spain, 2007.
- [40]. Samad MA., Observations of clinical diseases in ruminants at the Bangladesh Agricultural University, *Journal of Bangladesh Agricultural University* 35, 2001, 93-120.
- [41]. Rahman MA, Ali KM, Rahman A., Incidence of diseases of cattle in Mymensingh, *Bangladesh Veterinary Journal* 6, 1972, 25-30.
- [42]. Haque, M. E., Samad, M. A., & Rahman, A., Epizootiology investigation of Black quarter in cattle of Bangladesh. *Bangladesh Veterinarian*, 5, 1988, 10-13.
- [43]. Hoque, M. S., & Samad, M. A., Prevalence of clinical diseases in dairy cross-bred cows and calves in the urban areas in Dhaka. *Bangladesh Veterinary Journal*, 30, 1996, 118-129.
- [44]. Rycroft AN, Garside LH, Actinobacillus species and their role in animal disease, *Veterinary Journal*, 159, 2000, 18-36.
- [45]. Vadillo S, Pfriz S, Mateos E. Manual de Microbiología Veterinaria. Mc Graw-Hill Interamericana, Madrid; pp 2000, 357-364.
- [46]. Lucky, N. S., Hossain, M. K., Roy, A. C., Haque, M. M., Uddin, A. M., Islam, M. M., & Howlader, M. M. R, A longitudinal study on clinical diseases and disorders of cattle and goats in Sylhet, Bangladesh. *Journal of Advanced Veterinary and Animal Research*, 3(1), 2016, 24-37.
- [47]. John D, Webb Ware Foot rot control and Eradication, *The Mackinnon Project Veterinary Clinical centre*, University of Melbourne 250 Princes Highway, Wernibee, Victoria, 2005, 3030.
- [48]. Pharo, H. J. Analysis of clinical case records from dairy co-operatives in Bangladesh. *Tropical Animal Health and Production*, 19(3), 1987, 136-142.
- [49]. Rweyemamu M, Roeder p, Mackay D, Sumption k, Brownlie J, Leforban Y, Valacher JF, Knowles NJ Saravia V, Epidemiological patterns of Foot-and-mouth disease worldwide, *Transboundary and Emerging Diseases*, 55(1), 2008, 57-72.
- [50]. Mannan, M. A. Isolation and characterization of Dermatophilosis bacteria from the skin lesions of cattle in an around BAU campus, *Bangladesh Agricultural University*, Mymensingh, Bangladesh, 2009.
- [51]. Badruzzaman, A.T.M., Md. Siddiqui MSI, Faruk O.F, Lucky N.S., Zinnah M.A., Hossain, F.M.A. and Rahman MM, Prevalence of infectious & non-infectious diseases in cattle population in Chittagong district of Bangladesh. *International Journal of Biological Research*, 3(1), 2015, 1-4.
- [52]. Karim, M.R., Parvin, M.S., Hossain, M.Z, Islam, M.T. & Hussan MT, A report on clinical prevalence of diseases & disorders in Cattle and goats at the upazilla Veterinary hospital, mohammadpur, magura, *Bangladesh Journal of Veterinary Medicine*, 12(1), 2014, 47-53.
- [53]. Hansen M, Misztal I, Lund MS, Pedersen J Christensen LG, Undesired phenotypic and genetic trend for stillbirth in Danish Holsteins. *Journal of Dairy Science*, 87, 2004, 1477-1486.
- [54]. Hammon DS, Evjen IM, Dhiman TR, Goff JP, Walters JL, Neutrophil function and energy status in Holstein cows with uterine health disorders. *Veterinary Immunology & Immunopathology*, 113, 2006, 21-22.
- [55]. Hiranya K, Bhattacharyya, Mujeeb R, Fazili, Bashir A, Buchoo, Afzal H, Akand, 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, 2012, 11-24.
- [56]. Rony, S.A., Mondal, M.M.H., Begum N., Islam, M.A & Affroze S, Epidemiology of ectoparasite infestations in cattle at Bhawal forest area, Gazipur, *Bangladesh Journal of Veterinary Medicine*, 2010.
- [57]. Ghosh, s. Bansal, G.C., Seitzer U & Ahmed J.S., Status of tick distribution in Bangladesh, *India & Pakistan. Para. Res.* 2, 2007, 207-216.
- [58]. Singh KS, Mukhopadhyay SK, Majumder S, Laha R, Niyogi D, Ganguly S, Study on different aspects of stephanofilarial dermatitis infection in cattle population of west Bengal, *The IIOAB Journal*, 5, 2014, 19-22.
- [59]. Bar, D. and Ezra, E., Effects of common calving diseases on milk production in high-yielding dairy cows. *Israel Journal of Veterinary Medicine*, 60(4), 2005. ([http://www.isruma.org/article/60\\_4\\_2.htm](http://www.isruma.org/article/60_4_2.htm); accessed on 05.06.08)
- [60]. Thirunavukkarasu M, Kathiravan G, Kalai Kannan A, Jebarani W, Quantifying Economic Losses Due to Milk Fever in Dairy Farms. *Agricultural Economics Research Review*, 23, 2010, 77-81.
- [61]. Hutjens M, An Alternate to Metabolic Disorders: Looking at Hypocalcaemia, Dairy Decision Column. University of Illinois, Urbana. 18 Feb. 2003.
- [62]. Duffield T, Subclinical Ketosis in Lactating Dairy Cattle. *Veterinary Clinics of North American Food Animal Practice*, 16, 2000, 231-253.
- [63]. Østergaard, S., & Gröhn, Y. T., Concentrate feeding, dry-matter intake, and metabolic disorders in Danish dairy cows. *Livestock Production Science*, 65(1-2), 2000, 107-118.
- [64]. Smith G, Fluid therapy in adult cattle. *The North American Veterinary Conference- 2005 proceedings*, 2005, 38-39.

Kazi Md. Al-Noman et al. "Study on Status of Cattle Diseases in Relation to Age, Sex and Season at Debidwar, Bangladesh." *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, 13(1), 2020, pp. 55-65.