

Cattle mortality rate due to breed and various diseases in Rajshahi division of Bangladesh

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Abstract

Context: Cattle die due to common diseases is a significant economic loss in livestock sector.

Objectives: Evaluation of the cattle mortality rate due to breed and various diseases in Rajshahi division of Bangladesh.

Materials and Method: The study was conducted in eight districts of Rajshahi division. Four different upazilas of each district were selected randomly. Individual farmers were interviewed directly through a closed structured questionnaire to obtain number of death cattle in different breed, age, sex and occurrence of disease.

Results: Out of 17982, 549 cattle were found to be died by various diseases and an average mortality rate was 3.05%. Breeds were divided into 5 genetic groups according to their genetic composition. Among the breeds, Local (L) × Friesian (F) showed the highest mortality rate (3.80%), followed by L×F×Shahiwal (SL) (3.63%), L×SL (3.51%), L×Jersey (J) (3.50%) and L (2.33%). Cattle mortality occur due to Foot and Mouth Disease (FMD) (0.60%), parasitic disease (0.34%), milk fever (0.07%), pneumonia (0.15%), abortion (0.15%), dystocia (0.11%), bloat (0.32%), accident (0.06%), naval ill (0.07%), diarrhoea (0.35%), hemorrhagic septicemia (0.21%), lack quarter (0.16%), anthrax (0.12%), mastitis (0.13%), malnutrition (0.06%), poisoning (0.13%) and rabies (0.05%). Among 549 dead cattle, the significantly highest ($p<0.05$) number ($n=108$) of cattle died due to FMD and lowest ($n=9$) in rabies.

Conclusion: The overall mortality rate of cattle was found comparatively low in the study area. This might be due to excellent management practices adopted by the farmers and efficient veterinary services as well as awareness among farmers but FMD disease is alarming due to scarcity of vaccine, vaccine failure, susceptible of young cattle etc.

Keywords: Cattle, Mortality rate, Breed and Disease.

Introduction

Bangladesh is one of the densely populated and fourth largest agricultural countries in the world (Habib, 2001). Livestock is an important sector of agriculture which plays a vital role in national economy. At present livestock contributes 6.5% to GDP on the basis of value added through production of milk, meat, hides, skins and eggs. The country earns about 13% of foreign currency through hides and skins export (Alam, 1991). The sector supplies average 42.5% of the animal protein in the form milk, meat, egg (BBS, 2006). The agricultural operations still dependent on livestock. Livestock contributes to the national economy in the form of essential draft power, valuable protein food, manure, fuel, rural transportation and industrial products. Livestock is generating employment opportunities and full time covering source for about 20% and part time for about 50% of the population. Livestock also produces 80 million metric tons of dung per year, which equal to about 20% of the conventional fuel. The rest is used as manure, which again equal to about 10% of the chemical fertilizer consumed in the country (DLS, 2008). On the other hand every year a lot of cattle are died without insufficient veterinary services which estimated take 14000-16000 million are lost due to mortality of cattle (Khan, 2010). The livestock industry success depends on the good health of the livestock that helps to increase the productivity. Whereas any compromise on health ground will shatter the hope of livestock sector. In spite of advancement made in the animal husbandry practices, clinical medicine and diagnostic techniques, the mortality due to various causes continues to be higher in village areas (Bangar, 2013). Shaikh (2009) and Bangar (2013) reported that overall mortality rate of Maharastra state and Pune division in India were 12.48% and 4.42% respectively. Cattle of Bangladesh are an inseparable and integrated part of agricultural operation and it ranks twelfth in cattle population in the world and in Asian countries its position

is third (Sarder and Joarder, 2010). Bangladesh had total 23.12 million cattle population (BER, 2011) and Rajshahi division comprises about 4.87 million cattle population which was 21.06% of total cattle population of Bangladesh (DLS, 2013). Since Rajshahi division contributes a significant amount of cattle production and there is no record of mortality rate of cattle, the study has been undertaken to determine the cattle mortality rate in Rajshahi division of Bangladesh in relation to breeds and various diseases.

Materials and Methods

The study was conducted in the eight districts of Rajshahi Division. Four different upazilas were selected randomly. The districts were Rajshahi, Natore, Chapai Noawabgonj, Naogaon, Bogra, Joypurhat, Pabna and Sirajgonj. The data was collected for one year during the period from July, 2011 to June, 2012.

Data collection procedure: Data was collected from the owners of cattle by direct interview using a closed structured questionnaire. The questionnaire was contain various information such as breed, cattle management system, disease prevalence etc. After collection of data the cattle have been classified according to their genetic composition. The cattle were divided in 5 genetic groups which were Group-I: Local (L), Group-II: Local (L) × Freisian (F), Group-III: Local (L) × Shahiwal (SL), Group-IV: Local (L) × Jersey (J) and Group-V: Local (L) × Freisian (F) × Shahiwal (SL). Tentative diagnosis of causes of death of cattle were confirmed by clinical signs and symptoms of diseases, death certificate, laboratory examinations, veterinarian comments, disease history from owners as well as antemortem and postmortem reports etc.

Management of cattle: The cattle are reared in both conventional and unconventional farming system. There is different shed for different status of animal. There are different types of floor system such as mad floor, semi-concrete floor, concrete floor etc. Surface of the floor is even and generally no

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bedding material is used. There is both natural and artificial air flow in the house. Both roughage and concentrates are offered to them. Some farmers grow green fodders besides the farm area. Concentrates supplied by the farmers are rice polish, wheat bran, anchor bran, rice gruel, broken maize, broken rice, til-oil cake, mustard oil cake, coconut oil cake, pulse husk, molasses, salt, toxin binder etc. They used irregular de-worming and vaccination for their cattle. Artificial and Natural both type of insemination were practiced by the farmers.

Data Analysis: The raw data were structured to calculate the cattle mortality rate due to breed and various diseases by basic descriptive statistical rates from the information obtained and compared to detect the change in disease burden and mortality by using software computer programme (SPSS).

Results and Discussion

Cattle farmers are always lose their cattle by various reason in our country and as a result they face big problem to maintain their cultivation, meat and milk production etc. The overall cattle mortality rate was 3.05% (Table 1). The effect of breeds on cattle mortality rate in Rajshahi Division of Bangladesh is presented in table 1 and figure 1. Breeds had a significant effect ($P<0.05$) on cattle mortality rate. The highest cattle mortality rate was found in Local (L) × Friesian (F) breed (3.80%) and lowest in Local (L) breed (2.33%). The effect of other breeds on cattle mortality rate such as Local (L) × Sahiwal (SL), Local (L) × Jersey (J) and Local (L) × Friesian (F) × Sahiwal (SL) were 3.51%, 3.50% and 3.63% respectively. There is no significant difference ($p>0.05$) between the cattle mortality rate of Local × Sahiwal (3.51%) and Local × Jersey (3.50%) breeds but Local × Sahiwal × Jersey (3.63%) breed has a significant effect ($p<0.05$) on cattle mortality rate than previous two groups.

Table 1. Effect of Breeds on cattle mortality rate in Rajshahi division of Bangladesh.

Breeds	Total number surveyed	Number of dead animals	% of cases based on population	% of cases on based on disease
Local (L)	8593	201	2.33	36.61 ^{ab}
Local(L) × Friesian (F)	5970	227	3.80	41.34 ^a
Local (L) × Sahiwal (SL)	2079	73	3.51	13.29 ^b
Local (L) × Jersey (J)	542	19	3.50	3.46 ^d
Local (L)×Friesian (F)×Sahiwal (SL)	798	29	3.63	5.28 ^c
Grand Total	17982	549	3.05	100

The values are a, b, c and d with different superscript letters in same column differs significantly with each other ($p<0.05$).

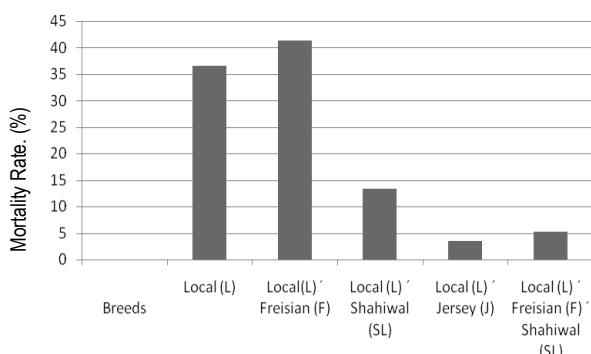


Figure 1. Flow chart showing the cattle mortality rate in relation to breeds died due to different diseases in Rajshahi division, Bangladesh.

Bangar et al. (2013) and Shaikh et al. (2009) reported that overall cattle mortality rate of Maharashtra state and Pune division in India were 4.42% and 12.48% respectively. Maher et al. (2008) stated that the cattle mortality rate in Ireland is 3.2-4.1%. Calf mortality up to 12 months of age has been reported to be 9.0% under rural (Debnath et al., 1990) and 13.4% under farm (Debnath et al., 1995) condition in Bangladesh. The cattle mortality rate was more or less similar to the Bangar (2013) and Maher et al. (2008) but dissimilar to the Shaikh (2009) and Debnath et al. (1990). This result disagreed due to variation of sample size, breed, age, sex, disease prevalence, geographic location, seasons, veterinary care etc.

Cattle mortality rate due to various diseases is shown in table 2 and figure 2. The cattle mortality rate due to different disease such as Foot and Mouth Disease (FMD), Parasitic disease, Milk fever, Pneumonia, Abortion, Dystocia, Bloat, Accidental death, Naval ill, Diarrhoea, Haemorrhagic septicemia (H.S), Black quarter (B.Q), Anthrax, Mastitis, Malnutrition, Poisoning and Rabies were 0.60%, 0.34%, 0.07%, 0.15%, 0.15%, 0.11%, 0.32%, 0.06%, 0.07%, 0.35%, 0.21%, 0.16%, 0.12%, 0.13%, 0.06%, 0.13% and 0.05%, respectively. The significantly ($p<0.05$) highest cattle mortality is due to FMD (0.60%) and lowest is due to Rabies (0.05%) cases. There is no significant ($p>0.05$) difference among the cattle mortality rate due to bloat (0.32%), parasitic disease (0.34%) and diarrhoea (0.35%). High incidence of FMD in study area indicates that cattle were not vaccinated regularly against FMD. A few numbers of farmers were given FMD vaccine but due to scarcity of vaccine, vaccine failure, susceptible of young cattle may increase the high incidence of FMD.

Table 2. Cattle mortality rate due to various diseases in Rajshahi division of Bangladesh.

Name of Diseases	Total number surveyed	Number of dead animals	% of cases based on population	% of cases based on disease
Foot and Mouth Disease (FMD)	17982	108	0.60	19.67 ^a
Parasitic disease	17982	60	0.34	10.93 ^b
Milk fever	17982	12	0.07	2.19 ^{de}
Pneumonia	17982	26	0.15	4.74 ^{cd}
Abortion	17982	27	0.15	4.92 ^{cd}
Dystocia	17982	19	0.11	3.46 ^d
Bloat	17982	58	0.32	10.56 ^b
Accidental death	17982	10	0.06	1.82 ^e
Naval ill	17982	13	0.07	2.37 ^{de}
Diarrhoea	17982	61	0.35	11.11 ^b
Haemorrhagic Septicemia (H.S)	17982	38	0.21	6.92 ^c
Black Quarter (B.Q)	17982	29	0.16	5.28 ^c
Anthrax	17982	21	0.12	3.83 ^d
Mastitis	17982	23	0.13	4.19 ^{cd}
Malnutrition	17982	11	0.06	2.00 ^{de}
Poisoning	17982	24	0.13	4.37 ^{cd}
Rabies	17982	09	0.05	1.64 ^e
Grand total	17982	549	3.05	100

The values are a, b, c, d and e with different superscript letters in the same column differs significantly with each other ($p<0.05$).

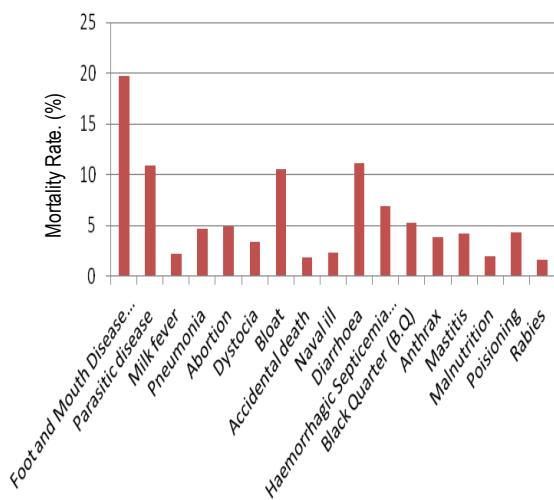


Figure 2. Flow chart showing the cattle mortality rate due to various diseases in Rajshahi division of Bangladesh.

Mushtaq *et al.* (2014) reported that cattle mortality rate due to FMD was 0.98%. About 20% large animals are estimated to die annually to various infectious diseases but recently most of the infectious disease of cattle in Bangladesh is controlled by routine vaccination programme and farmer awareness (Haque, 2002). 6,730 annual cases of animal rabies were notified in USA 1999. The cattle mortality rate in the study area due to FMD (0.60%) was significantly ($p<0.05$) lower than Mushtaq *et al.* (2014) but cattle mortality rate due to rabies (0.05%) is significantly ($p<0.05$) higher in the study area may be due to the presence of large number of dog population, lack of adequate dog vaccination, ignorance of veterinary care after infection, cattle management system, geographic location, sample size etc.

Conclusion

Determination of the risk factors and understanding the common causes of mortality in cattle can help producers implement management practices to reduce these losses. An effective herd-health and production management programme would typically include bio-security practices to prevent the introduction and/or spread of disease agents, nutrition and preventive health programs to improve disease resistance of cattle and optimize reproductive success and reproductive management practices to enable timely assistance for dams and calves during calving season.

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