Prevalence and associated risk factors of Peste des Petits Ruminants (PPR) in goats in Chittagong district, Bangladesh

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INTRODUCTION

Goats participate in a vital position with lasting agricultural farming, employment generation as well as enhance the traditional economy of Bangladesh. Goats husbandry is one of the most important sources of incomes for rural families, marginal farmers, children, landless laborers and distress women who cannot afford to rear cattle; hence, goat is called “The cow of poor people” in Bangladesh. They provide mainly milk, meat, hides and skins as important export item. There are about 20.75 million goats in Bangladesh. Goats acquired second place with regards to meat, milk along with skin manufacturing addressing information about 38.0%, 23.0% in addition to 28.0% respectively around the overall contribution involving livestock in Bangladesh (Devendra, 2007).

PPR is one of the major problems for the development of goats industry in Bangladesh. PPR is usually a severe disease condition frightening the actual income associated with very poor farmers (Diaolo et al., 2007). A Peste des petits ruminants (PPR) is usually extremely contagious as well as infectious disease condition affecting goats the consequence of morbillivirus in addition to transmitted via primary or direct contact (Awa et al., 2000). This particular disease had a course of per acute, acute or may be chronic with very high morbidity as well as fatality rate (Jones et al., 1997). Peste des petits ruminants (PPR) is a extremely febrile, extremely contagious and infectious disease of goats along with high morbidity as well as fatality rate. Present study was carried out to determine the prevalence and risk factors that directly associated with PPR in goats in Chittagong district, Bangladesh. A total of 5485 goats were registered at Shaheedul Alam Quadery Teaching Veterinary Hospital (SAQTHV) in Chittagong Veterinary and Animal Sciences University (CVASU) during the period of two years (2012 & 2013). The complete prevalence associated with PPR in goats was seemed to be 8.99%. The higher prevalence revealed in the year of 2013 (10%) than the year of 2012 (7.99%). Risk factors age, sex, breed and seasonal influence were analyzed and higher prevalence was observed (11.72%) in young goats as compared to kids (6.19%) and adults (7.52%) with the significant p value (P=0.000). Disease prevalence was higher in males in comparison to female but it was not significant. The breed specific susceptibility associated with PPR was higher in the Black Bengal goats (10.11%) as compared with Jamunapari (7.44%) and others cross breeds goats (7.79%). Among of the seasonal variation, disease incidence was higher in the rainy season (11.30%) while it was less in winter (8.25%) and summer (6.40%) season with the significant p value (P=0.000). The research additionally pointed out the particular situation regarding PPR which is currently becoming endemic throughout the Bangladesh.
In Bangladesh, PPR is considered to be prevalent in goats since 1993 (Islam et al., 2001). However, the pattern of PPR disease in goats, prevalence and underlying risk factors in Chittagong district of Bangladesh has not been analyzed before. These kinds of information might be valuable for realizing the economic importance as well as epidemiology of PPR in Chittagong district of Bangladesh. Therefore, the aims of this research were to determine the prevalence of PPR in goats and also to recognize associated risk factors in the goats population maintain within various management systems. Such knowledge is essential in planning control strategies against PPR disease.

MATERIALS AND METHODS
The study was performed over a period of two years (January 2012 to December 2013) at Shahedul Alam Quaderi Teaching Veterinary Hospital (SAQTVH) in Chittagong Veterinary and Animal Sciences University (CVASU), Chittagong district of Bangladesh. A total of 5485 goats were admitted during the period of 2 years with individual case registration number having address of owners, patient identification data, owners complaint, anamnisis, clinical examination, system affected, and different diagnostic test, diagnosis treatments, follow up, advice and prognosis recorded in this clinical investigation records. Diagnosis of each and every clinical case was based on clinical history taking from the owner, physical examination, clinical signs and symptoms. Goats affected with PPR revealed by sudden high rise of body temperature (104–107.5°F), ocule–nasal discharge, stomatitis, profuse diarrhea along with dehydration and feces adhere to hind quarter. Age was categorized as kids (<4 months), young (4–12 month) and adult (>12 month). The entire year was partitioned directly into 3 seasons namely summer (March–June), rainy (July–October) and winter (November–February) according to the climatic condition associated with Bangladesh. Breeds of goats were based on their phenotypic characters as Black Bengal goats, Jamunapari goats and others crossbreed goats.

Statistical Analysis
Data were collected and sorted from previous clinical record to Microsoft Excel 2007® and exported to analytical software STATA 11.2® 2011. Applying 2X2 table along with determined measures of association by using Chi-square test and P values (P ≤ 0.05) were regarded as significant.

RESULTS
The total of 5485 goat populations registered at Teaching Veterinary Hospital (TVH) in CVASU during the period of 2 years (2012–2013). Among them, 493 goats were found to be clinically affected with PPR. Thus the overall prevalence of PPR in goat population was observed to be 8.99% (493/5485). The actual prevalence associated with PPR was increased in the year of 2013, (10.01%) than the year of 2012 (4.99%). In case of monthly observations, highest prevalence was recorded in the month of August (13.75% i.e., 77/560) followed by October (11.51%), February (10.98%), September (10.38%), November (10.37%), July (9.12%),
of age were categorized as kids (<4 month), young (4–12 month) and adult (>13 month). Among of these age groups, the highest prevalence associated with PPR within goats was recorded in the young goats (11.72%) in compare to kids (6.19%) and adult goats (7.52%). The study revealed that the prevalence of PPR was higher in males (9.07%) in comparison with female goats (8.93%). Breed was categorized as Black Bangle goats, Jamunapari goats and others cross breed goats on their phenotypic characters. Among of these breed groups, highest prevalence was recorded in Black Bangle goats (10.11%) in compare to Jamunapari (7.44%) and others cross breed goats (7.79%). Season was taken as summer, rainy and winter season. The highest PPR in goats were recorded in rainy season (11.30%) followed by winter season (8.25%) and summer season (6.40%) (Table–2).

**DISCUSSION**

The reported prevalence of PPR in goats at present study was 8.93%. In contrary with the results higher prevalence reported by Islam et al., (2012), Sarker and Islam (2011), Rahman et al., (2011), Al-Dubaiba (2009), Swai et al., (2009), Ozkul et al., (2002) and Singh et al., (2004) who reported 50.27% in Patuakhali (Bangladesh), 20.57% in Rajasthan (Bangladesh), 55% in Black Bangle goat (BAU), 55.1% seroprevalence in Saudi Arabia, 49.3% seroprevalence in Tanzania, 15.36% seroprevalence in Pakistan, 20% in Turkey and 32.4% in India (Abubakar et al., 2011). This variation might be due to different geographical location, research period, and different management practices.

The prevalence regarding PPR among kid, young and adult goats were found to be 6.19% 11.72% and 7.52% respectively with the significant p value (P < 0.000). Thus the reported prevalence of PPR was higher in young goats over the adults and kids agreed with the results of Islam et al., (2012), Sarker and Islam (2011), Rahman et al., (2011) and Singh et al., (2004) who described that the disease is commonly presence in the young goats under twelve month of age. In contrast with the results of present study Singh et al., (2004), Abubakar et al., (2009) who reported that prevalence of PPR was higher at the age of old goats (12 month). The kids are less susceptible to the disease of PPR might be due to they have maternal derived antibody persist their body before the age of weaning period.

The final results of the existing research revealed that the higher prevalence of PPR was recorded in male goats 9.07% in compare to female goats 8.93% but p value was not significant (P > 0.862). Higher prevalence of PPR is also reported in male goats by Sarker and Islam (2011) and Rahman et al., (2011).

The breeds of the goats divided as Black Bangle, Jamunapari and others cross breed goats. This research also revealed that, the highest prevalence of PPR was recorded in Black Bangle goats 10.11% in compare to Jamunapari goats 7.44% and other cross breed goats with significant p value (P < 0.0005). So that the Black Bangle goats were much more prone to PPR in compare to Jamunapari along with other cross breed goats similarity with the findings of Islam et al., (2012), Sarker and Islam (2011) and Mondal et al., (1995) who observed that Black Bangle goats were more susceptible to the PPR in compared to other breed.

Prevalence of PPR in goats due to seasonal variation revealed that highest prevalence had been seen in rainy season (11.30%) in compare to summer 6.40% as well as winter season (8.25%) with significant p value (p < 0.000). Hence the present study showed that the prevalence of PPR had been increased in rainy season when compared with summer and also winter season disagree with the results of Sarker and Islam (2011) who observed higher prevalence in winter season. This variation might be due to different geographical region and study period.

The highest prevalence of PPR at present study was observed in the month of August (13.75%) and October (11.51%) in contrast with the findings of Sarker and Islam (2011); Abubakar et al., (2009) who recorded highest prevalence in the month of December (31.68%) and January (30.34%); 32.57% in March and 19.43% in April respectively. Results revealed that the lowest occurrence was in May (4.09%) in contrary with this result Abubakar et al., (2009) and Sarker & Islam (2011) who reported lowest prevalence in the month of June, i.e., 17% and 9.32%, respectively.

**CONCLUSION**

The result of present study provided valuable information on the prevalence and associated risk factors directly linked with the PPR throughout the goat population which must be kept in mind while taking the necessary preventive measure against the disease like vaccination and management techniques for the prevention and control of the PPR disease at national as well as international policy level.

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**CONFLICT OF INTEREST**

No conflict of interest.

**REFERENCES**


