

Prevalence of dog bites in different species and their management at Upazila Veterinary Hospital (UVH), Patiya, Chattogram



**A clinical report submitted in partial satisfaction of the requirement for
the Degree of Doctor of Veterinary Medicine (DVM)**

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NOVEMBER 2022

Prevalence of dog bites in different species and their management at Upazila Veterinary Hospital (UVH), Patiya, Chattogram



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NOVEMBER 2022

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Abstract

The study was carried out from 15th February to 30th April 2022 at the Upazila Veterinary Hospital of Patiya under Chattogram district to determine the prevalence of dog bite in different animal species and their management at the UVH. A total of 44 dog bite cases were recorded during this study period among the animals brought to the hospital for treatment. All the dog bite cases were confirmed by the owners' history, clinical signs and physical examination. The overall prevalence of dog bite case was 22.65%. The prevalence was higher in goat (26.51) % followed by dog (25%). Animals of less than one year of age of all species were mostly affected by dog bite. The animals, irrespective of species, Category III dog bite was predominant (82.50% -100%). Among the body sites, the prevalence of dog bite was higher in more than one site, and the distribution of bite was more frequently seen on the hind quarter and on the hind leg. Dressing with antiseptics and post rabies vaccination were used routinely to treat all the Category III dog bite cases, and antibiotic treatment was also practiced.

Keywords: Dog bite category, Management, Prevalence

Chapter 1: INTRODUCTION

Dog bites cause traumatic injuries in domestic and companion animals and frequently result in wounds and scars. Dog bites are the most important risk factors for rabies transmission from the reservoir to other hosts. Domestic animals like cattle, sheep, goats and even pet animals like cats and dogs are affected by dog bites. The occurrence of rabies in animals and humans caused by *Lyssavirus* belonged to the family Rhabdoviridae and it is common in developing countries due to the bite of rabid dog (Hossain et al.,2011).

Rabies is a zoonotic illness that can spread from animals to people .The central nervous systems of mammals, such as dogs, cats, foxes, and humans, are affected by the viral disease rabies. The rabies virus is primarily found in the saliva and brain of infected animals, most frequently dogs, and is spread through biting. In some areas, bats also serve as a significant reservoir. A high prevalence of wildlife species can lead to numerous opportunities for interspecies transmission, which primarily affects domestic animals and people (Rabies-WOAH, 2022).

Globally an unknown number of domestic ruminants and wildlife also die due to rabies; most of the deaths occur in Asia and Africa (Tayler and Nel, 2015). After India and China, Bangladesh ranks the third position in the number of rabies cases in livestock and humans (Hossain et al., 2013). Rabies is almost always fatal once symptoms appear, but is easily preventable with pre- and post-exposure prophylaxis according to the World Health Organization (WHO, 2018). Most important condition for transmission of rabies virus in Bangladesh is a huge number of stray dogs, who can interact with the human population and others species (Samad 2013).

According to WHO there are three categories of contact with suspect rabid animal: Category I -touching or feeding animals ,animals licks on intact skin (no exposure);Category II – nibbling of uncovered skin, minor scratches or abrasion without bleeding (exposure), and Category III-single or multiple transdermal bites or scratches,

contamination of mucous membrane or broken skin with saliva from animal licks, exposure due to direct contact with bats (severe exposure).Post-exposure prophylaxis measured depend on the categories of exposure. For category I exposure only washing washing of exposed skin surfaces is require. Wound washing and immediate vaccination is recommended for category II exposure while wound washing, immediate vaccination and administration of rabies immunoglobulin are required for category III exposure.(Rabies-WHO,2021)

Complications from dog bite wounds might include systemic infections, muscular-skeletal damage, and neurovascular injuries (Abrahamian and F.M, 2000). In addition to being the primary cause of rabies, dog bites can result in significant issues like tetanus, fractures, paralysis, damage to important organs, and even animal death (Morgan and Palmer, 2007).So proper management of dog bites is an essential part to prevent rabies and further complications. But there is a lack of knowledge about the prevalence of different categories of dog bite in animals at rural area in Bangladesh as well as the management practices to control rabies and other complications in domestic animals there.

The main objectives of this study were to know the prevalence of dog bites in different animals recorded at Upazila Veterinary Hospital, Patiya, Chattogram and their managements.

Chapter 2: MATERIALS AND METHODS

The study was conducted at Upazila Veterinary Hospital, Patiya (Fig. 1) during my two and a half month internship period, from (15th February to 30th April 2022). The cases of dog bites were recorded from the UVH daily records on different animals brought to the hospital for treatment.

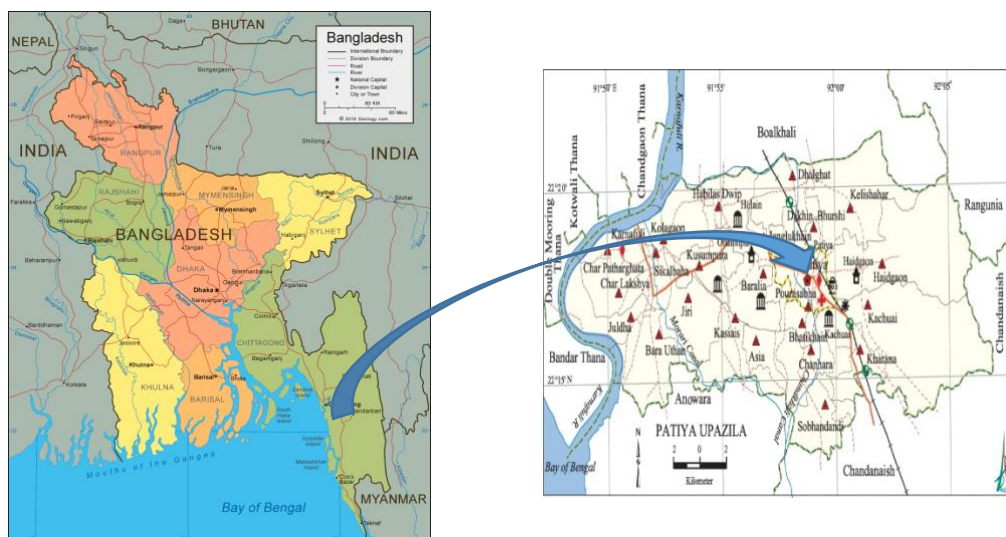


Fig 1: Location of the study area

2.1. Data Collection Process

During this study period, in addition to dog bite cases, other clinical cases of cattle, goat, dog, and cat were also recorded to calculate the proportionate prevalence of dog bites, where the total number of all cases were used as the denominators, and the total number of dog bites cases in an individual species was used as the numerator.

Species, age, sex, site of the bite, category of severity, management, and vaccination status were also recorded.

Category of the severity of dog bite: According to the WHO (Rabies- WHO, 2021)

Category I - touching or feeding animals, animal licking on intact skin

Category II – nibbling of uncovered skin, minor scratches or abrasions without bleeding (severe)

Category III- Single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposure due to direct contact with bats (severe exposure)

2.2. Statistical analysis

Collected data were entered into the MS Excel program 2016 and sorted the data according to category (species, age, sex, biting site, severity, management). Descriptive statistics were performed by using data in MS Excel 2016. The obtained results were expressed as Frequency and Percentage.

Chapter 3: RESULTS

A total of 195 animals were registered to the UVH, Patiya, Chattogram during the study period for treatments and 44 animals (Cattle, goat, dog, and cat) of them were dog bite cases, indicating that the prevalence of dog bite there was 22.56% (Table 1).

3.1. The prevalence of dog bites in cattle, goats, dog and cats at UVH

The estimated proportionate prevalence of dog bites in cattle, goat, dogs and cat was 12.50%, 26.51%, 25%, 14.28% respectively. The proportionate prevalence of dog bite was significantly higher in goat (26.51%) and dog (25%) than cattle and cat.

3.2. Distribution of prevalence of dog bites by factors

In that UVH, according to age, the proportionate prevalence of dog bite was 19% in cattle, 30.76% goat, 33.33% in dog, and 20% in cats of less than one year. On the contrary, the dog bite prevalence was 7.4%, 20.37%, 20%, and 0% respectively, in cattle, goat, dog and cat of more than one year of age. By sex, the proportionate prevalence of dog bite in female were 16.67%, 38.59%, 40%, 0% in cattle, goat, dog, cat respectively. In case of male the proportionate prevalence of dog bite was (11.11% in cattle, (17.33%) in goat, 0% in dog and 33.3% in cat)(Table 2).

3.3. Distribution of dog bite on different body parts

In most of the cases more than one site was bitten. The prevalence of dog bite on more than one body part was 33.33% in cattle, 37.14% in goat and 50% in dog. The distribution of single site dog bite was higher on the hind quarter and the hind leg region. The hind quarter and the hind region were found to be the most vulnerable part for dog bite in the study area (Table 3).

3.4. Status of category of dog bites in studied species

By category, III was higher compared with any other two categories. Proportionately in dog bitten animals than other two category. The prevalence of category III dog bite was 83.33% in cattle, 82.50% in goat, 50% in dog and 100 % in cat (Table 4; Fig 6; Fig 7).

3.5. Management practices of dog bites in animals

Dressing with antiseptic and post exposure vaccination were strictly practiced at the UVH. And antibiotic treatment also given here according to severity of a bite. However, alkaline soap washing was not practiced in all dog bite cases (Table 5). In some cases of category III dog bites wound were sutured. As category III dog bite created punctured wound there was also a need for tetanus prophylaxis, especially for goat, because goats are susceptible to tetanus. But such tetanus prophylaxis was not practiced following a dog bite in that UVH.

Table 1: Proportionate prevalence of dog bite in cattle, goat, dog, cat at UVH, Patiya

Species	N	Dog bite case	%
Cattle	48	6	12.50%
Goat	132	35	26.51%
Dog	8	2	25.00%
cat	7	1	14.28%
Total	195	44	22.56%

Table 2: Frequency distribution and prevalence of dog bite in cattle, goat, dog and cat

Factors	Species								
	Cattle		Goat		Dog		Cat		
Age (year)	cases	Positive	cases	Positive	cases	Positive	cases	Positive	
<1	21	4 (19%)	78	24 30.76%	3	1 (33.3%)	5	1(20%)	
>1	27	2 (7.4%)	54	11 (20.37%)	5	1(20%)	2	0	
Sex	Female	12	2(16.66%)	57	22(38.59 %)	5	2(40%)	4	0
	Male	36	4(11.11%)	75	13(17.33 %)	3	0	3	1(33.3%)

Table 3: Frequency distribution of dog bites by body part

Sites	Species			
	Cattle(N=6)	Goat(N=35)	Dog(N=2)	Cat (N=1)
Neck	0	2(5.71%)	0	0
Fore leg	1(16.67%)	2(5.71%)	0	0
Body	1(16.67%)	4(11.42%)	1(50%)	0
Hind quarter	1(16.67%)	8(22.5%)	0	1(100%)
Hind leg	1(16.67%)	6(17.14%)	0	0
>one site	2(33.33%)	13(37.14%)	1(50%)	0

Table 4: Frequency distribution by category of dog bite

Category	Species			
	Cattle(N=6)	Goat(N=35)	Dog(N=2)	Cat(N=1)
I	0	0	0	0
II	1(16.66%)	6(17.14%)	1 (50%)	0
III	5(83.33%)	29(82.50%)	1(50%)	1(100%)

Table 5: Different management practices for dog bites in animals

Species	Dog bite cases	wash with alkaline soap	Dressing with antiseptic	Post exposure vaccination	Antibiotic treatment
Cattle	6	2	6	6	5
Goat	35	28	35	35	30
Dog	2	1	2	2	1
Cat	1	0	1	1	1
Total	44	31	44	44	37

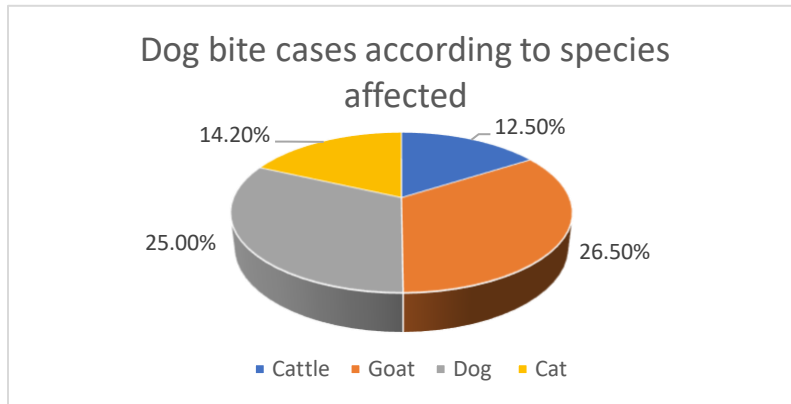


Fig 2: Proportion of dog bite cases according to species

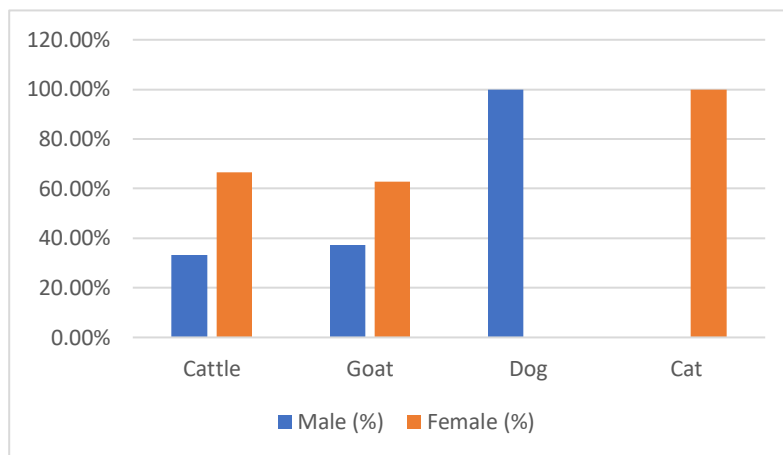


Fig 3: Sex distribution of observed dog bite cases in different species

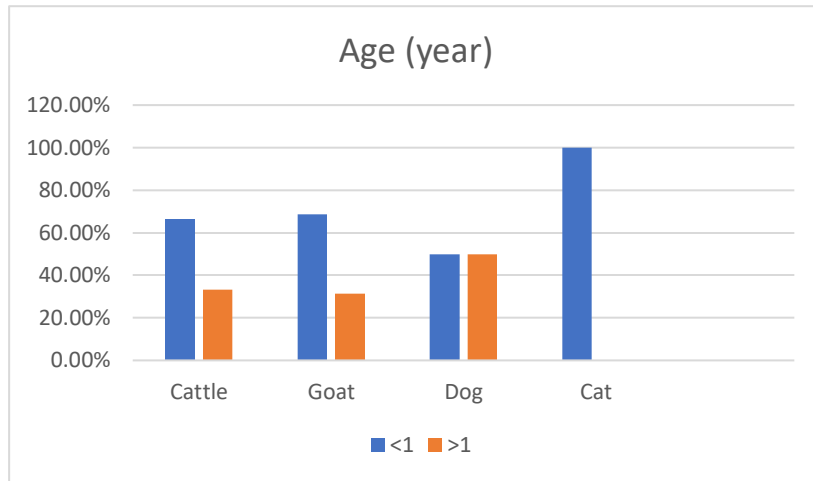


Fig 4: Age distribution of observed dog bite cases in different species

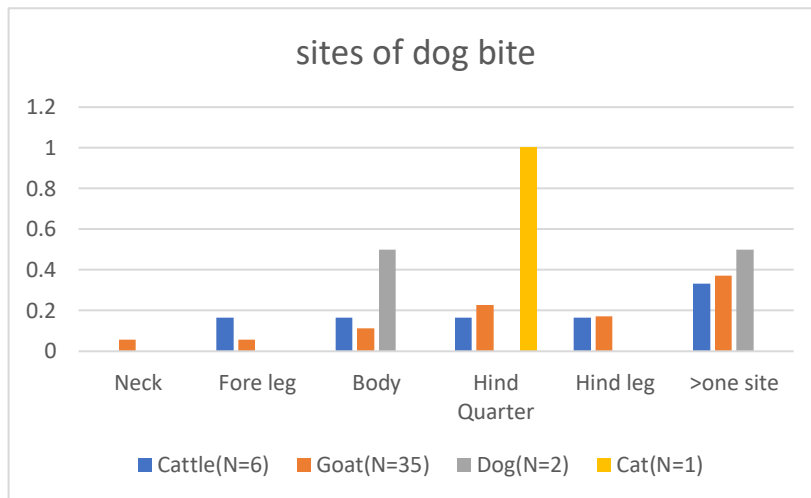


Fig 5: Distribution of dog bite on different body parts

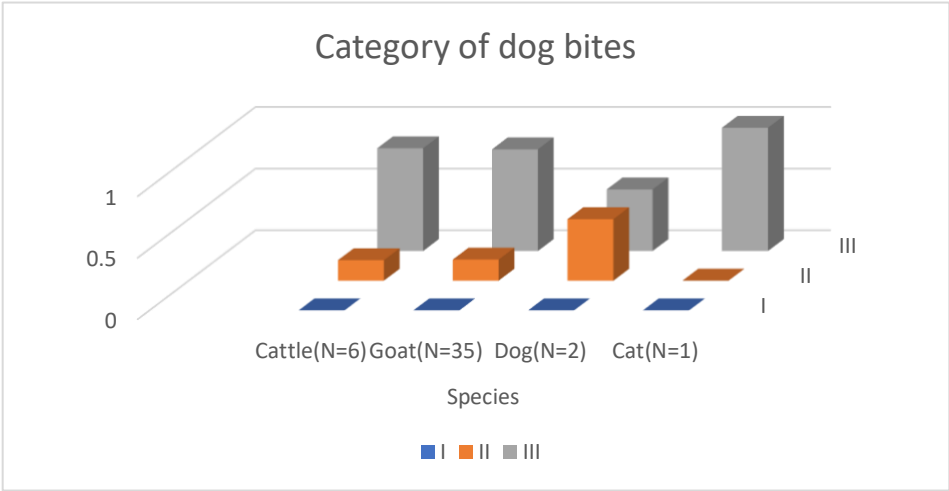


Fig 6: Categories of dog bite by species

Chapter 4: DISCUSSION

Due to the high number of stray dog population and the lack of rabies control methods, dog bites to humans and livestock are quite common. Dog bites usually occurs in different animals due to many reasons as follows: they are being furious while threaten during feeding and feeling afraid at the time while their territory is being invaded. Sometimes they can be jealous in case of new entry to their territory (Hart and Hart, 1985; Appleby et al, 2002). In case of dog they are mostly attacked by another dog due to their dominant nature (Cole, 1991; Gershman et al., 1994; Shewell and Nancarrow, 1999).



Fig : Dog bites category III (A, D) dog bite wound in the hind region of goat, (B) dog bite wound in body and hind region of Calf, (C) dog bite injury in the body of cat (E) dog bite wound in the hind leg of goat (F) dog bite wound in the body of goat. **Dog bites category II** (G, H) dog bite scratches in body & neck of goat.

In this study, the prevalence of dog bites was shown to be greater in goats than in other species, similar result was found in some other reports (Islam et al., 2016; Rumi et al., 2018). Younger animals (less than 1 year) had more dog bites instances than older animals (more than 1 year). Additionally female animals are more victim to dog bites than male animals. Similar findings also found in some previous studies (Ahmed, 2013; Alam et al., 2013; Sudarshan et al., 2006). But this finding are analogue with the previous study (Das et al., 2021). Hind quarter and hind leg were the most vulnerable parts for the dog bites. We had similar findings with that reported by Das et al., (2021); Rumana et al., (2013); Umrigar et al., (2013). Because while animal is moving, it is simpler to approach the hind quarters. According to category of dog bites, category III were found to be higher (Rumi et al., 2018).

According to WHO, in Category I dog bite post-exposure prophylaxis measure is washing of exposed skin surface, in category II measure is wound washing, immediate vaccination and for category III measure is wound washing, immediate vaccination and administration of rabies immunoglobulin (Rabies-WHO, 2021).

In this study, 31 out of the 44 dog bite cases were treated by washing with the alkaline soap, dressing with antiseptic. Post exposure vaccination was given to all the 44 dog bite cases. In order to avoid post bite complication antibiotic was used in 37 cases. Similar management practices were reported previously by others (Goldstein, 1992; Lewis and Stiles, 1995; Smith et al., 2000)

CONCLUSION

Dog bite cases in animals brought to an Upazila Veterinary Hospital seems to be quite high around 23%. The prevalence of dog bite was higher in female goats compared with male goat, and also compared with other species. Young animals of less than one year of age are affected with dog bite at a high prevalence compared with older. The hind quarter and hind leg part were affected at a higher prevalence compared with other body parts. In all species category III dog bite is predominant. The management practices of dog bites could be including washing with alkaline soap, dressing with antiseptics, antibiotic therapy and post exposure vaccination. Washing with alkaline soap was less practiced; however post exposure vaccination is practiced routinely. Tetanus prophylaxis can also be introduced for goats affected with category III dog bite as better dog bite management in goats.

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ACKNOWLEDGEMENTS

All praises are due to Almighty “Allah” who has created everything of the nature and who enable the author to complete this study. The author feel great pleasure to express her deepest sense of gratitude and indebtedness to her supervisor Dr. Paritosh Kumar Biswas, Professor, department of Microbiology and Veterinary Public Health, Chattogram Veterinary and Animal Sciences University for his scholastic guidance, valuable suggestions and encouragement throughout the entire period of her study.

The author also grateful to Professor Dr. Goutam Buddha Das (Vice Chancellor, CVASU) and Professor Dr. Alamgir Hossain (Dean, Faculty of Veterinary Medicine), Professor Dr. A.K.M Saifuddin (Director, External Affairs) of CVASU.

BIOGRAPHY

I am Sayma Sultana, from Chattogram .I passed Secondary School Certificate (SSC) examination from Chattogram Govt. Girls' High School in 2014 and Higher Secondary Certificate (HSC) examination from Chattogram Cantonment Public College in 2016.I am a student of 22nd batch and now I am an intern student under the Faculty of Veterinary Medicine in Chattogram Veterinary and Animal Sciences University.