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Original Article

The emerging disease occurrence of pet animals in Bangladesh

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ABSTRACT

Objectives: The objective of this study was to identify the current status of emerging diseases of pet animals in Bangladesh and to estimate the percentage of disease occurrence in the pet animals.
Materials and methods: A 2-month potential study was conducted to estimate the percentage (%) of disease occurrence and current status of emerging diseases of pet animals in Bangladesh. A total of 550 animals were examined and 358 data were collected from the disease registered book of the Central Veterinary Hospital (CVH), Dhaka and SA Quaderi Teaching Veterinary Hospital, Chittagong Veterinary and Animal Sciences University (CVASU), Bangladesh during June and September, 2014. The data were analysed, and the results on the newly emerging diseases were expressed as percentage (%).
Results: Among the most general pet animals in Bangladesh (dog, cat, rabbit), the mostly occured diseases were scabies (23.07%), feline ascariasis (37.14%) and rabbit mange (34.61%), while the less frequent diseases were canine parvovirus enteritis (2.19%), cat scratch disease (5.71%) and overgrown teeth (7.69%).
Conclusion: The study provides basic information about the current status and the percentage (%) of disease occurrence considering the emerging diseases of pet animals in Bangladesh.

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INTRODUCTION

Pet animals are usually kept for person's enjoyment, companionship and protection rather than sports animals, livestock, and laboratory animals, which are kept primarily for performance, agricultural value, & research. Pets are well-known for their attractiveness and loyal, playful behaviors. Dogs and cats are the most popular pets but people also keep house rabbits, rodents, hamsters, fancy rats, and guinea pigs; avian pets like parakeets, parrots; aquatic pets- tropical fish, frogs; and arthropod pets- tarantulas, crabs. According to this book- Between pets and people: the importance of animal companionship said that, Pets play an important role in our daily life than ever before. This book also explores the benefits of keeping a pet and analyses the correlation between human and pets (Beck and Katcher, 1996).

Diseases and infections those are naturally transmitted between vertebrae animals and man are called zoonoses.'(WHO/FAO expert committee on zoonoses, 1959) Zoonotic diseases may be categorised as emerging, & re-emerging. When the incidence of a disease has increased in a defined time period or location is called emerging or re-emerging infectious disease. If the disease was novel i.e. unknown in the location before, this is an emerging disease. (Samad, 2013) on the other hand re-emerging disease means the disease had been present at the location in the past and was considered exterminated or controlled. The people who have a close contact with animals (veterinarians & massacre workers) are mostly vulnerable to contaminated with the emerging or re-emerging zoonotic diseases. Because animal health is inherently linked to human health.(Haas, 1987).

Pet animals have major psychological value to our modern urbanised society. Dogs, cats, and rabbits are the most common domestic pets. However, a human may be directly or indirectly infected by them with various pathogens, including viruses, bacteria, rickettsial, parasites, and fungi (Plaut et al., 1996; Tan, 1997; Chomel, 2014).

Among emerging or re-emerging zoonoses, bacterial zoonoses include pasteurellosis or cat scratch disease, bacteria transmitted by bites or scratches, cutaneous contamination-tuberculosis and kennel cough, as well as gastrointestinal pathogens such as salmonella or campylobacter also leptospirosis, giardiasis (Thompson et al., 1993; Bolin, 1996; Bugg et al., 1999) viral diseases, like rabies (mainly from infected dog bite), but also canine distemper, infectious canine hepatitis, feline panleuko-penia virus can infect the pets and then transmitted to humans (Decaro et al., 2007; Scott, 1980; van Vuuren et al., 2000). Parasitic and fungal pathogens, such as leishmaniasis, onchocercosis, or sporotrichosis, toxoplas-mosis (*Toxoplasma gondii*), ringworm (microsporum, trichophyton) sarcoptic mange (scabies) (*Sarcoptes scabiei*) are also re-emerging or emerging pet related zoonoses. Knowledge and better hygiene are the key elements to prevent the possibility of zoonotic infection (Plaut et al., 1996; Beugnet and Marie, 2009; Ettinger and Feldman, 2009).

Moreover, all types of these disease occurrences ensued worldwide including Bangladesh. The results on the percentage (%) of disease occurrence and current status of emerging diseases of pet animals in Bangladesh are analysed from the published literature and presented in this study. Numerous factors in our society are responsible for Emerging infectious diseases (EIDs) outbreak, these includes public health, medicine, environmental science, animal health, food safety, and economics.(Mackey et al., 2014) According to literature, there are about 1415 human pathogens of which 61% are zoonotic and nearly half of all human pathogens can be classified as emerging, of which 75% of emerging infectious diseases are caused by zoonotic pathogens. (Newman et al., 2005; Hossain and Kayesh, 2014).

So, in this study, the objectives were to find out the current status of emerging diseases of pet animals in Bangladesh and also see the percentage (%) of disease occurrence. But this done within a short period of time because of study period limitation but the topics is very crucial and important, so it needs further long-term study.

MATERIALS AND METHODS

The study was conducted to determine the percentage (%) of disease occurrence and current status of emerging diseases of pet animals in the central veterinary hospital (CVH), Dhaka and SA Quaderi Teaching Veterinary Hospital, CVASU, Chittagong, Bangladesh in June 2014 and September 2014 respectively. In this period a total number of 550 animals were examined. To perform this work 358 data were collected from the disease registered book of the central veterinary hospital, Dhaka and SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh. Various types of information regarding the objectives of this study were determined by interviewing the owners and data collected from the record book.

All the sick animals brought for treatment to CVH and SA Quaderi Teaching Veterinary Hospital (CVASU) was first registered in the patient registered book of respective institutes. It was also noted that the majority of owners of animals were illiterate, followed by some with a primary

level of education. For this study, it was difficult to collect reliable data. The description of each registered animal and owner's complaint were recorded. In addition to the registered patients of the CVH and SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh cases treated at the different owner's houses and farms were also recorded. The age of each sick animal was determined by asking the owners and or by dentitions. A total of 550 pet animals were available during the study period and the general clinical examination was conducted on the basis of disease history and owners complaint. Materials considered significant for diagnostic purposes were collected and examined at the both hospitals. The final diagnosis was made on the basis of the interpretation of clinical, epidemiological and laboratory findings. 358 diseased animals' data were collected and it was tabulated in different tables for further analysis of the study. Data obtained were entered into Microsoft excel 2007 and the results were expressed in percentage (%).

RESULTS

Among the diseases, the highest percentage (%) of occurrence was scabies (23.07%) while the lowest percentage (%) of occurrence was canine parvovirus enteritis (2.19%), recorded during June at CVH, Dhaka **(Table 1)**.

In SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh the highest percentages (%) of disease occurrence was found is canine salmonellosis (20.53%) while the lowest was infectious canine hepatitis (2.67%), recorded during September 2014 **(Table 2)**.

In the case of cat the highest (%) of disease occurrence was feline ascariasis (37.14%) while the lowest (%) of disease occurrence was cat scratch disease (5.71%), recorded during June at CVH, Dhaka **(Table 3)**. In SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh the highest (%) of disease occurrence was feline ascariasis (34.54%) while the lowest (%) of disease occurrence was cat scratch disease (9.09%), recorded during September 2014 **(Table4)**.

The highest (%) of disease occurrence in case of rabbit was rabbit mange (34.61%) while the lowest (%) of disease occurrence was over grown teeth (7.69%), recorded during June and September, 2014 at CVH, Dhaka & SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh, respectively **(Table 5** and **6)**.

DISCUSSION

In the urbanised countries pet animals often live, eat, and sleep in close proximity to humans and may be the same infectious agents are responsible for causing diseases. As a result usually dogs, cats and rabbits become a source of human infection by various zoonotic pathogens. Zoonotic emerging pathogens are important for understanding the epidemiology and control of many human diseases.(Haas, 1987; Brodie et al., 2002; Glickman et al., 2006;).

The neglected parasite *Sarcoptes scabiei*, causes scabies is an emerging/re-emerging infectious disease affects humans and a wide range of mammalian hosts worldwide.(Daszak et al., 2000; Alasaad et al., 2011;) scabies also was found as the highest percentages (%) of disease occurrence (23.07%) in our study. The incidence of scabies in the children younger than 5-year was 952/1000 per year in the urban slum of Bangladesh, which means that almost all children experienced at least one infestation per year (Stanton et al., 1987). One of the most important zoonotic arthropod in Bangladesh is scabies (Hossain and Kayesh, 2014). 24 scabies affected dogs were found in Dinajpur, Bangladesh, during 2010. (Ali et al., 2011).

Canine salmonellosis is one of the most common gastrointestinal zoonoses with broad economic and public health ramifications, caused by the salmonella bacterium. Main clinical signs are disorders, including gastroenteritis, spontaneous abortions, and septicemia. In our study during September 2014, canine salmonellosis had the highest percentages (%) of disease occurrence (20.53%), which coincides with the previous study of (Hossain and Kayesh, 2014). 25 male and 30 female dogs were found with Salmonellosis during their study.

Infectious canine hepatitis is a worldwide, contagious disease of dogs caused by canine adenovirus type-1 (cav-1). Signs vary from a slight fever to death. The death rate ranges from 10%–30% and is usually highest in very young dogs (Hossain and Kayesh, 2014). In our study disease occurrence (%) was 2.67. Beside that One of the most common intestinal parasites of the cat is ascariasis. 138 cases of ascariasis were found during 2005-2009 in Bangladesh (Parvin et al., 2010).

Cat-scratch disease (CSD) is a newly emerging zoonotic disease caused by the bacterium *Bartonella henselae*, for this bacterium cats are the main reservoir (Chomel et al., 2004). The higher rate of Bartonella infection was found in south central Asia (Bangladesh, India, Afghanistan, and

Table 1: Percentages (%) of disease occurrence of canine (dog) in June 2014 (CVH, Dhaka, Bangladesh)

SL	Name of diseases	No. of affected animals	% of disease occurrence
1	Canine distemper	06	6.59%
2	Rabies	09	9.89%
3	Infectious canine hepatitis	04	4.39%
4	Canine parvovirus enteritis	02	2.19%
5	Canine salmonellosis	12	13.18%
6	Scabies	21	23.07%
7	Ear mites	07	7.69%
8	Ring worm	13	14.28%
9	Hookworm	17	18.68%
	Total	91	

Sources: registered book (CVH, Dhaka, Bangladesh)

Table 2: Percentages (%) of disease occurrence of canine (dog) in September 2014 (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

SL	Name of diseases	No. of affected animals	% of disease occurrence
1	Canine distemper	11	9.82%
2	Rabies	18	16.07%
3	Infectious canine hepatitis	03	2.67%
4	Canine parvovirus enteritis	07	6.25%
5	Canine salmonellosis	23	20.53%
6	Scabies	16	14.28%
7	Ear mites	10	8.92%
8	Ring worm	13	11.60%
9	Hook worm	11	9.82%
	Total	112	

Sources: registered book (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

Table 3: Percentages (%) of disease occurrence of feline in June 2014 (CVH, Dhaka, Bangladesh)

Serial no.	Name of diseases	No. of affected animals	% of disease occurrence
1	Feline panleukopenia	05	14.28%
2	Cat scratch disease	02	5.71%
3	Feline ascariasis	13	37.14%
4	Bladder stones (urolithiasis)	05	14.28%
5	Allergies	10	28.57%
	Total	35	

Sources: registered book (CVH, Dhaka, Bangladesh)

Table 4: Percentages (%) of disease occurrence of feline in September 2014 (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

Serial no.	Name of diseases	No. of affected animals	% of disease occurrence
1	Feline panleukopenia	07	12.72%
2	Cat scratch disease	05	9.09%
3	Feline ascariasis	19	34.54%
4	Bladder stones (urolithiasis)	08	14.54%
5	Allergies	16	29.09%
	Total	55	

Sources: registered book (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

Table 5: Percentages (%) of disease occurrence of rabbit in June 2014 (CVH, Dhaka, Bangladesh)

Serial no.	Name of diseases	No. of affected animals	% of disease occurrence
1	Rabbit pasteurellosis	06	23.07%
2	Over grown teeth	02	7.69%
3	Rabbit syphilis	04	15.38%
4	Rabbit mange	09	34.61%
5	Hairballs	05	19.23%
	Total	26	

Sources: registered book (CVH, Dhaka, Bangladesh)

Table 6: Percentages (%) of disease occurrence of rabbit in September 2014 (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

Serial no.	Name of diseases	No. of affected animals	% of disease occurrence
1	Rabbit pasteurellosis	08	20.51%
2	Over grown teeth	03	7.69%
3	Rabbit syphilis	04	10.25%
4	Rabbit mange	15	34.46%
5	Hairballs	09	23.07%
	Total	39	

Sources: registered book (SA Quaderi Teaching Veterinary Hospital, CVASU, Bangladesh)

Nepal) also found in the USA in recent years (Nelson et al., 2016; Saisongkorh et al., 2009) symptoms of swelling of the lymph nodes nearest to the bitten or scratched site, fever, headache, and a general malaise were reported by the owner.

In India, the incidence of rabbit mange is very high as well as in Bangladesh too because of hot and humid climate. (Jana et al., 2004) .In our study, in the case of rabbit mange, (%) of disease occurrence (34.61%) was higher than other diseases.

Rabbit teeth keep growing throughout the rabbit's whole life. So that teeth problem is the main sign and may, therefore, affect the rabbit health which is difficult to recover. (Van Caelenberg et al., 2008) The most common congenital disease in rabbits is malocclusion and leads to overgrowth of incisors, premolars, and molars, with subsequent difficulty in eating and drinking (Meredith, 2007). In this study over grown teeth (7.69%) found as a newly emerging disease in Bangladesh.

Any diseases or agents those are totally or partially new can trigger emerging and re-emerging infection. Several factors have led to the emergence of these infections, including animal movement, human demographics& behavior, the industrialisation of food production, globalisation, international travel and commerce, land use, microbial alteration, and changes and breakdown in public health actions. (Fèvre et al., 2006)

CONCLUSION

The study provides basic information about the current status and the (%) of disease occurrence of the Emerging diseases of pet animals in Bangladesh. This may be of immense value to researchers for future study. The most common diseases found in pet animals were scabies, canine salmonellosis, ascariasis, infectious canine hepatitis, cat-scratch disease, rabbit mange, over grown teeth etc. Veterinarian and researcher should make concern about these newly emerging diseases. During our study, we saw most of the pet owners were unfamiliar with these diseases and also not well-known about pet care. Raising awareness among the owners about pet care by the proper housing, feeding, and prevention of contamination of pet animals are necessary. However, further studies are required for more investigation.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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