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# Epidemiological profile of Bite Cases Admitted at a 50 bedded Community Health Centre of Himachal Pradesh, India

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## Abstract

Introduction: Animal Bites pose a major public health threat both in developed and developing nations. Death caused by rabies is responsible for 1.74 million Disability Adjusted Life Years (DALY) each year. The estimated annual cost of rabies in Asia is US \$ 563 million. In India, patients pay for nearly half of financial burden attributed to rabies

## Objectives:

To estimate the extent of problem of bite cases in Community Health Centre

To ascertain various epidemiological factors associated with bite cases.

## Material and Methods:

The present study was a hospital based retrospective study conducted at Nagrota Bagwan, a 50 bedded Community Health Centre of Himachal Pradesh, India which is also a field practice area of department of Community Medicine, Dr RP Govt. Medical College, Tanda at Kangra. All the bite cases admitted in the hospital between 1<sup>st</sup> November 2006 to 30<sup>th</sup> October 2007 was taken. Records of all the cases were analyzed. Tests of percentages and proportions were used for statistical analysis.

## Results:

A total of 30 cases of animal bites were admitted in the hospital during the period out of which 56.7 % were females ( $p > 0.05$  on Fisher's exact probability test). Majority (46.6%) of bites was due to wasp/bee bite followed by snakebite and dog-bite (20% each) and bites by unknown insect/reptile (13.4%). Most (66.6%) of dog-bite cases were observed in the age-group of 6-15 years, while 100% snake-bite was observed in higher age-group (>15 years) only. Majority was seen from rural area (76.7 %) as compared to urban. The average length of stay (ALS) of all the bite cases was about 1.8 days.

## Conclusion and Recommendations:

It is recommended that regional strategies should be made for prevention and management of bite cases. The community should be made aware of local home management. The serum and vaccines for rabies should be made available till primary health centre level along with capacity building of medical staff. Municipal Cooperation should also play a sincere role in removing garbage from roads and catch suspected rabid and stray dogs thus controlling stray dog population.

## INTRODUCTION

Man is inhabiting earth with other insects, reptiles and animals. Some are wild, some stray, some pets and some are used purely for commercial purposes. With day-to-day industrialization and increasing population, area under forest is decreasing tremendously and wild animals and insects are moving towards residential area. Because of such proximity to animals, animal bites are also becoming commoner. Not only this, it has been observed that vast majority of bites are by pet animals. There is a sharply increasing trend of bites of animal and insects like dogs, monkey, wasp, snake, scorpion etc, which pose a major challenge for public health authorities. These bites not only cause increase morbidity and mortality but also loss of man-days and money on treatment. Human mortality from endemic canine rabies was estimated to be 55,000 deaths per year with 56% in Asia<sup>1</sup>. India accounts for most of Asian deaths globally<sup>2</sup>. The profile of bites also varies from country to country and region to region within country. In Nepal, large ruminants (Cattle and Buffaloes) represent 56% of bites followed by dogs, pigs and horses, while in Bangladesh, India, Pakistan and Myanmar, dog bites are more common<sup>3</sup>. Therefore, we need to understand local epidemiology of the bites for development of an effective prevention programme at local level. In this context, the present study was carried out to

## OBJECTIVES

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2. To ascertain various epidemiological factors associated with bite cases.

## MATERIAL AND METHODS

The present study was conducted in Nagrota Bagwan, a 50 bedded Community Health Centre of Himachal Pradesh, India which is also a field practice area of department of Community Medicine, Dr RP Govt. Medical College, Tanda at Kangra. It was a hospital based retrospective study in which all the bite cases admitted in the hospital between 1<sup>st</sup> November 2006 to 30<sup>th</sup> October 2007 was taken. Records of all the cases were analyzed. Consent from Block Medical Officer was taken prior to conduction of the study. Tests of percentages and proportions were used for statistical analysis.

## RESULTS

A total of 30 cases of animal bites were admitted in the

hospital during the period from 1<sup>st</sup> November 2006 to 30<sup>th</sup> October 2007. Majority (46.6%) of bites was due to wasp/bee bite followed by snakebite and dog-bite (20% each) and bites by unknown insect/reptile (13.4%). There were more female cases (56.7%) as compared to males in all types of bites except dog-bite where there is high preponderance among males. However the observed difference between males and females was not statistically significant ( $p > 0.05$  on Fisher's exact probability test). The cases were equally distributed in all the age group. However, 66.6% of dog-bite cases were observed in the age-group of 6-15 years, while 100% snake-bite was observed in higher age-group (>15 years) only. There was also a increasing trend of bee/ wasp bites as the age increases. The cases of bites were mostly seen from rural area (76.7 %) as compared to urban locality but the difference was again found to be insignificant ( $p > 0.05$  on Fisher's exact probability test). The average length of stay (ALS) of all the bite cases was about 1.8 days. ALS was more (2.6 days) in case of dog-bite cases as compared to other bites (Table-1).

## Figure 1

Table 1: Distribution of Bites Cases with Different Epidemiological Correlates

Type of Bite	Dog n (%)	Bee/ Wasp n (%)	Snake n (%)	Unknown Insect/ Reptile n (%)	Total n (%)	p value**
Sex						
Male (%)	4 (66.6)	6 (42.8)	2 (33.3)	1 (2.5)	13 (43.3)	
Female (%)	2 (33.3)	8 (57.2)	4 (66.6)	3 (7.5)	17 (56.7)	$p > 0.05$
Age						
< 5 years	0 (0)	0 (0)	0 (0)	1 (2.5)	1 (3.4)	
6-15	4 (66.6)	3 (21.4)	0 (0)	2 (5.0)	9 (30)	
16-30	1 (16.7)	5 (35.7)	3 (5.0)	1 (2.5)	10 (33.3)	
>30	1 (16.7)	6 (42.9)	3 (5.0)	0 (0)	10 (33.3)	$p > 0.05$
Residence						
Rural	3 (5.0)	12 (83.5)	5 (83.3)	3 (7.5)	23 (76.7)	
Urban	3 (5.0)	2 (14.5)	1 (16.7)	1 (2.5)	7 (23.3)	$p > 0.05$
ALS (in days)*	2.6	1.6	2	1	1.8	
Total	6 (20)	14 (46.6)	6 (20)	4 (13.4)	30 (100)	

\*Average Length of Stay (ALS) is average number of day's in-patient services being rendered to a patient

\*\* For calculating p value fisher exact probability test was applied as the expected values of some individual cells were less than 5

## DISCUSSION

Animal Bites pose a major public health threat both in developed and developing nations. Death caused by rabies is responsible for 1.74 million Disability Adjusted Life Years (DALY) each year. The estimated annual cost of rabies in Asia is US \$ 563 million. In India, patients pay for nearly half of financial burden attributed to rabies<sup>4</sup>.

Out of a total of 30 cases admitted in 50 bedded Community Health Centre, Nagrota Bagwan during the period from 1<sup>st</sup> November 2006 to 30<sup>th</sup> October 2007, most were due to

wasp/bee bite followed by snakebite, dog-bite and bite by unknown insect/reptile in descending order. The male female ratio was 1:1.3 suggesting females suffered more from animal/ insect bites as compared to males. However the male female ratio was 2:1 in case of dog-bites which is in conformity with a other studies conducted in different parts of India <sup>5,6,7,8,9</sup>. Sudershan et al in his study reported 64% of dog bites in males. High preponderance of overall bites in females may be attributed to the fact that females work more and for longer periods in a day in the fields in this part of India, thus are prone for bites especially bee/ wasp bites. The high incidence of dog bites in males may be due to high provocation of dogs by males as compared to females.

There was no significant difference of overall bites when different age groups were compared. However, majority of dog-bite cases were observed in the age-group of 6-15 years, while snake-bite was observed in higher age-group (>15 years) only. The results of our study regarding higher incidence of dog bites in 6-15 years are supported by other studies conducted in India and abroad <sup>5,10,11,12</sup>. In a study by Hanspal JS et al in Gujarat, 40% of dog bites occur in age group of less than 10 years followed by 36 % in 10-20 years. Study by Shetty et al in Pune also depicts that more than half of animal bite victims were children of age less than 14 years. In our study, bee/ wasp and snake bites are common as the age advances. No study has been found on the association between snake and bee-wasp bites and the age pattern.

In the present study, all types of bites are more common in rural area as compared to urban. Virtually all studies <sup>5,7,8,9</sup> have demonstrated similar findings. However one study <sup>6</sup> have reported higher proportion of cases from urban locality. The high incidence of bites in rural area as compared to urban may be due to the fact that people in rural area, mainly farmers and labourers, proceed for work in early hours of the day and continue late till dusk, thus more exposed to bites primarily due to poor visibility.

Our study shows that the mean Average Length of Stay (ALS) of all the bite cases was 1.8 days. It was more in case of dog bites. This indicator depicts the direct and indirect cost borne by the patient due to loss of daily wages (of patient and relatives attending patients), expenditure on treatment etc by staying in the hospital. There is insufficient data regarding ALS in bite cases from developing and developed world.

## CONCLUSION

In our study, majority of bites among admitted cases were due to wasp/ bee. Overall incidence of bites was more in females as compared to males and in rural area as compared to urban area. It is recommended that regional strategies should be made for prevention and management of bite cases. The community should be made aware of local home management till the patient gets hospital treatment. For this, NGO along with Governmental bodies should build a strong partnership at local, regional and National level. The serum and vaccines for rabies should be made available till primary health centre level along with capacity building of medical officers, pharmacists and health workers. Municipal Cooperation should also play a sincere role in removing garbage from roads and catch suspected rabid and stray dogs thus controlling stray dog population.

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