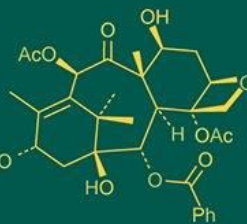
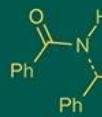
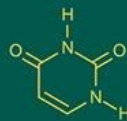
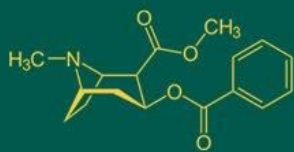


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An epidemiological characteristics and determinants of human dog bite incidents in Puducherry

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Abstract

This study was undertaken to assess the distribution and determinants of human dog bite cases, including the victim's adherence to post-exposure vaccination regimen. A retrospective study of human dog bite incidents which were presented and treated at hospitals in Puducherry, during the year 2022 was conducted and the data was analysed with respect to age, sex, animal species, part of body bitten and vaccination regimen. Out of 370 bite cases 61.62% were males and 38.38% were females. Among different age groups 36.49%, 28.65%, 22.97% and 11.89% of cases belonged to middle age, old age, children and teenagers, respectively. Mostly (96.22%) the bite cases were due to dogs (83.99% stray dogs & 16.01% pet dogs). This was followed by cats (3.24%) and monkeys (0.54%). Most of the cases were bitten on legs [86.5%], followed by hands [13.0%] and on other parts of body [0.5%]. All the victims were treated by inactivated diploid-cell rabies vaccine and no anti rabies serum was used. Maximum cases were reported during the period of January to March [27.03%] and least cases during July to September (22.16%). On the statistical analysis, sex, age, animal species, part of body bitten and period of the year were found significantly related to the dog bite cases in Puducherry ($P < 0.01$). It was also observed that 27.12% victims did not complete the vaccination regimen.

Keywords: Dog Bite incident, Rabies, Human, Vaccination

Introduction

Rabies is one of the oldest recognized diseases affecting humans and one of the most important zoonotic diseases which is endemic in India. Rabies is primarily a disease of mammals, including dogs, cats, monkeys, wolves, bats, jackals and human beings. The dog has been and still is the main source of rabies in India. The number of cases involving monkey bites has been increasing in the last few years (Kole *et al*, 2014) [6]. In India, about 15 million people are bitten by animals, mostly dogs, every year, and need post exposure vaccination. Majority of people who die of rabies are people belonging to low socioeconomic status. This study assesses the influence of age, sex, animal species, part of body bitten and vaccination regimen on the human dog bite cases in Puducherry, India.

Materials and Method

Patients presented to different hospitals in Puducherry during the year 2022 (January – December) with clinical history of animal bite wounds (dogs, cats & monkeys) were included in the study. Observations were made regarding the following:

1. Age of the patients (children, teenagers, middle and old age),
2. Sex of the patients
3. Part of body bitten (hands, legs and other parts of the body),
4. Animal species (canine, feline and monkeys),
5. Vaccination regimen,
6. Month in which bite occurred.

Altogether 370 animal bite cases were reported during the period of study. Epidemiological data were collected and it was analysed by 'Z' test and multivariate analysis to assess the distribution and determinants of human dog bite cases.

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Results and Discussion

Almost all age group of people were bitten by animals. In that, highest percentage of animal bite was noticed in the middle age group of people (36.49%) followed by old age group (28.65%), children (22.97%) and teenagers (11.89%). In the studies by Bedi *et al* (2006) [2] and Behera *et al* (2005) [3], they have found that more than half of the animal bite victims were in children lesser than 10 years of age. This may be due to the fact that middle age group people are more active in work and they tend to move out more often. Data about the age of patients are shown in the table no. 1.

Table 1: Age Group of the Patients

Age groups	No. of Cases	Percentage
Children (0-12 years)	85	22.97
Teenagers (13-19 years)	44	11.89
Middle age (20-49 years)	135	36.49
Old age (above 50 years)	106	28.65
Total	370	100.00

On sex wise classification of the humans who had bitten by animals, more males had animal bite, 61.62 per cent compared to the females 38.38 per cent which included male

and female children. Males were mostly the victims of dog bite because they were more mobile than females. This finding corroborates with other studies by Hanspal *et al* (2007) [5] in Bangalore and Behera *et al* (2005) [3]. Details about the sex wise classification of humans are given in the table no. 2

Table 2: Sex Wise Classification of Patients

Sex of patients	No. of cases	Percentage
Males	228	61.62
Females	142	38.38
Total	370	100.00

Based on the body part bitten by the animals, nearly 86.5 per cent were bitten on legs, 13.0 per cent on hands and 0.5 per cent on the other parts of the body. The most common site of bite was legs (86.5%) as it is the most easily approachable part of body for animals. Hands were the next common site of bite (13%). Sampath (2005) [7], Bedi *et al* (2006) [2], Behera *et al* (2005) [3] and Hanspal *et al* (2007) [5] also found legs (lower extremities) as the most common site of bite in their studies. Details about body part bitten is given in the table no. 3

Table 3: Part of Body Bitten

Parts of body bitten	No. of cases	Percentage
Hands	48	13
Legs	320	86.5
Other parts of body	2	0.5

Almost three animal species were involved in the human bite cases, like dogs, cats and monkeys. Mostly, 96.22 per cent of the bite cases were from the dogs. In that dog bites 83.99 per cent were by strayed dogs and 16.01 per cent were by owned dogs. Followed by the dogs, cats 3.24 per cent

and monkeys 0.54 per cent. This is similar to Study by Bedi *et al* (2006) [2] and Behera *et al* (2005) [3] found that 90.7 per cent of animal bites were due to dogs. As results of animal species involved in human bites is shown in the figure no. 2.

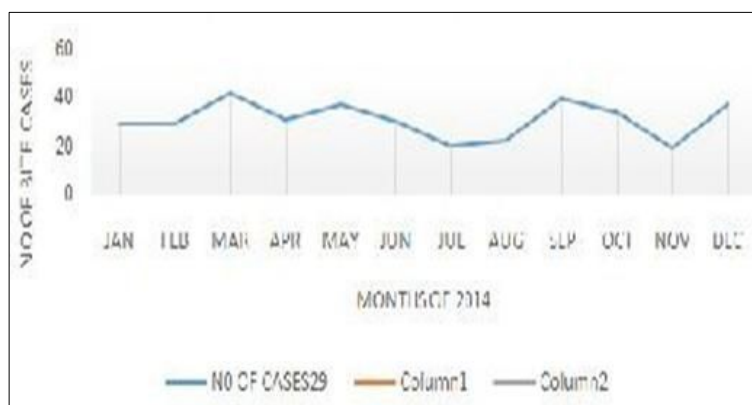


Fig 1: Month-wise distribution of reported cases during the year 2014.

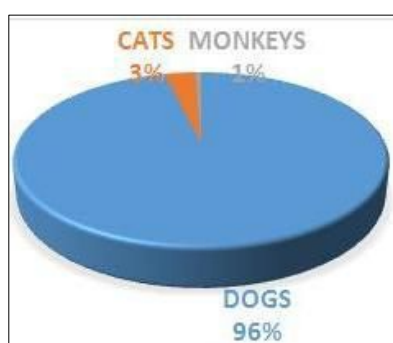


Fig 2: Animal species involved in human dog bite cases

All the victims who are all reported in the different hospitals were treated by using the inactivated diploid cell rabies vaccines but no one was treated with anti-rabies immune serum. In a study by Satapathy *et al* (2002) among general practitioners in Brahmapur they found 94 per cent of victims preferred cell culture vaccines. Based observation of the vaccination register, nearly 27.12 per cent of victims did not complete their full vaccination regimen which indicate probably 72.88 per cent of the victims only completed their post exposure ARV regimen. Bhalla *et al* (2005) also revealed 56 per cent of victims only complete their full vaccination regimen in Jammu.

Highest occurrence of dog bites was noticed in the period of January to March 27.03 per cent, least no of cases were in the period of July to September 22.16 per cent. This finding is in par with the study by Hanspal *et al* (2007) ^[5] who reported higher incidence during winter (December, January, February) and similar with the study by Agarwal *et al* (2004) ^[1] who found higher incidence in summer (May, June and July) and Singh and Choudhary (2005) ^[9]. This may be due to the fact that during winter the female dogs are lactating and in fear of hurting their puppies they might be biting the humans. The abnormal behaviour of biting dogs for which they are even killed is most commonly seen from December to May.

Conclusion

This study reveals the distribution and determinants of the animal bite cases among human beings in Puducherry. Mostly middle aged and old aged people were suffered by dog bite especially by stray dogs on the leg region. The study also underlines the need to educate the people on what they have to do after the dog bite and how to handle the dogs in street as well in home and how to protect themselves from dogs. The issues associated with man days lost and economic loss due to this as well as cost of treatment is a major social concern. As per the theme of Rabies Day, 2025 ("Act now: You, Me, Community") results also underline the need of stray dog control.

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