

Original Article

PROFILE OF DOG BITE CASES IN AN URBAN AREA OF KOLKATA, INDIA

Ayan Ghosh¹, Ranabir Pal²**Financial Support:** None declared**Conflict of interest:** None declared**Copy right:** The Journal retains the copyrights of this article. However, reproduction of this article in the part or total in any form is permissible with due acknowledgement of the source.**How to cite this article:**

Ghosh A, Pal R. Profile of Dog Bite Cases in an Urban Area of Kolkata, India. Natl J Community Med 2014; 5(3):321-4.

Author's Affiliation:¹Demonstrator, Department of Community Medicine, College of medicine and JNM Hospital, Kalyani, West Bengal, India; ²Additional Professor, Department of Community Medicine and Family Medicine, All India Institute of Medical Sciences, Jodhpur Rajasthan, India**Correspondence:**Dr. Ayan Ghosh
Email: dr.ayanghosh@gmail.com**Date of Submission:** 28-02-14**Date of Acceptance:** 24-05-14**Date of Publication:** 30-9-14

ABSTRACT

Background: There is no nationally representative community based data or organized surveillance system to get the actual magnitude of Rabies infection in India.**Objectives:** To estimate the extent of problem & the epidemiological characteristics of animal bite cases in urban field practice area of KPC Medical College and to assess the risk correlates regarding animal bites.**Methods:** The present community based cross sectional study was conducted in the urban field practice area of KPC Medical College; Kolkata during the period from 15th May to 15th June 2013 using classification of exposures as per guidelines lay down by WHO.**Results:** In the present study of the reported animal bite cases affected all the ages and both genders; the incidence of animal bites decreased with increasing age. Majority of the victims were males except in elderly population; children were more vulnerable. Two thirds of animal bite victims were from socioeconomic class IV and V. Dogs were the most common biting animal followed by Cats. Maximum number of study participants reported to health centre within 24 to 48 hours and very few cases within 24 hours after bite. Late reported cases, especially after 5 days, constituted by younger children or illiterate elderly people were forcefully brought to the hospital by their family members or caregivers.**Conclusions:** Dog bite is common in males and children less than ten years among our study population with more of third degree bites though health seeking behaviour is far from expectation.**Key words:** Dog bite, Epidemiology, Rabies, Kolkata, Prophylaxis

INTRODUCTION

About half the world's population is living in countries/territories where dog rabies still exists and are potentially exposed to rabies. Every day 150 people die of rabies; most of these people are children under 15 years of age; in developing countries this equates to one dying every 10 minutes. It is estimated that at least 55 000 human rabies deaths occur yearly in Africa and Asia following contact with rabid dogs. Though data support the feasibility and practicality of dog vaccination strategies, there are very little quantitative data on rabies transmission dynamics and the underlying demographic processes.¹ The public health cost has been estimated to more than 99 percent cases of human rabies transmission via rabies infected dogs.² Recent increases in human rabies deaths in parts of Africa, Asia and Latin America suggest that rabies is re-emerging as a major global public health issue. In spite of being a vaccine-preventable disease it

causes more than half lac of global annual human deaths; 95 percent of these occur in Asia and Africa potentially threatening over 3 billion people.^{3,4,5,6} Rabies is endemic in India where most animal bites (91.5%) are by dogs, of which about 60 percent are strays and 40% pets. In 2005 there were 12,700 symptomatically identifiable furious rabies deaths in India; taken as a whole 1.1 deaths per lac population; mostly in males (62%), in rural areas (91%), and in children below the age of 15 years (50%); one third in Uttar Pradesh, three quarters in seven central and south-eastern states: Chhattisgarh, Uttar Pradesh, Orissa, Andhra Pradesh, Bihar, Assam, and Madhya Pradesh.^{7, 8} Central Bureau of Health Intelligence, Ministry of Health and family Welfare, Government of India reported the total number of rabies deaths as 181 in 2010 and 253 in 2011.^{9, 10} To the horizon of our knowledge there is no such organized surveillance system to get the original data.

OBJECTIVES

In this study, objective was to estimate the extent of problem and epidemiology of dog bite cases and also to know attitude and practice regarding first aid among people in the urban field practice area of KPC Medical College, Kolkata.

METHODS

The present community based cross sectional study was conducted in the urban field practice area of KPC Medical College; Kolkata during the period from 15th May to 15th June 2013.

STUDY INSTRUMENT

The predesigned & pretested questionnaire used for the study was an interview schedule that was developed at the Institute with the assistance from the faculty members and other experts in relation to animal bite. This data collection tool contained questions relating to the information on family characteristics such as residence, type of family etc.

By initial translation, back-translation, re-translation followed by pilot study, the data collection tool and the 'Informed consent form' was custom-made in Bengali from original English version. The pilot study for the data collection tool and Informed consent form was carried out at the institute among general subjects following which the schedule were finalized.

CLASSIFICATION OF EXPOSURES

As per guidelines lay down by the World Health Organization (WHO) the study protocol recorded all the bite cases.²The recall period was 1 year. A bite was considered as provoked, if it resulted from subject initiating interaction with the dog such as playing with the dog or annoying the dog during his meal.

DATA COLLECTION PROCEDURE:

Ethical approval was obtained from the Institution Ethics Committee and official permission was ob-

tained from the Head of the institute before data collection. The area has a population of thirty thousand. We have chosen 5 surveyors in 5 randomly chosen pockets & the paramedical staffs were trained by an expert on rabies through a briefing & debriefings sessions. The work was supervised by the investigators. The health workers informed and motivated the families to participate in the study along with the scope of future intervention, if necessary. All the participants were explained about the purpose of the study and then verbal consent was taken from each of them before the total procedure. The participants were given the options not to participate in the study if they wanted. Data regarding family and personal characteristics were recorded by personal interview.

The whole procedure was well tolerated by all the participants with no reported medical complaint; the time required for the data collection did not exceed 15 minutes that included the counselling times till acquisition of final data. The data were strictly kept confidential and were not disclosed for the assessment, management or intervention.

The principal investigator disseminated information on importance of reporting of animal bites in several behaviour change communication sessions among the students to complement the findings of the study.

STATISTICAL ANALYSIS

The data collected were thoroughly cleaned and entered into MS Excel spreadsheets and analysis was carried out. The statistical analyses were done using Graph Pad In Stat "version 3" software.

RESULTS

The incidence of overall dog bite is around eight percent. In the present study majority of the animal bite cases were males compared to females. Animal bites occurred in all age groups but children were more vulnerable (16.13%). [Table 1]

Table 1: Socio-demographic variables of the dog bite cases

Age group	Male		Female		Total	
	Participant	Cases of dog bite	Participant	Cases of dog bite	Participant	Cases of dog bite
0 to10	52	9	41	6	93	15
11 to 20	130	7	93	4	223	11
21 to 30	180	8	152	4	332	12
31 to 40	63	3	57	5	120	8
41 to 50	45	6	46	5	91	11
51 to 60	32	2	12	5	44	7
>60	34	2	34	1	68	3
Total	436	37	435	30	871	67

Most common site of bite was extremities (62.69%). Unfortunately 48.65 percent received rabies immunoglobulin. Soap water wash of the site of bite was practiced only by one-thirds of them. Maximum subjects

reported to health centre within 24 to 48 hours and none within 24 hours after bite. Most of the person received the anti-rabies treatment from Government outlets. [Table 2]

Table 2: Distribution of bites and health seeking behavior after dog bite

Variables	Cases
Site of bite (n=67)	
Face	9 (13.43)
Trunk	16 (23.88)
extremities	42 (62.69)
RIG (n=37)	
Received	18 (48.65)
Not received	19 (51.35)
Pattern of home management(n=6)	
No management	1 (16.66)
Only water	2 (33.33)
Soap water	2 (33.33)
Chilli paste	0 (0)
Time of reporting to clinic after dog bite (n=61)	
>24 hr	39(63.94)
Between 24to48 hr	19 (31.15)
<48 hr	3(4.91)
Treatment taken from (n=61)	
Private sector	03(4.92)
Public sector	58 (95.08)

Category three bites were much more than other categories though in these bites anti-rabies treatment was administered to only 63.80 percent study population. [Table 3]

Late reported cases especially after 5 days were forcefully brought to the hospital by their family members or close relatives. Late reported cases constituted either younger children or illiterate elderly people.

DISCUSSIONS

In this study we found that most victims were male, explanation of which lies in the fact that men are more likely to go out of their home for work as compared to women. This finding may be due to the fact that men were more likely to go out of their homes for work as compared to females. Khokhar et al (2003), Behera et al (2008) and Hanspal et al (2007) also reported that animal bites were more in males than females.^{11, 12, and 13}

Table 3: Distribution of recipients of Anti-Rabies management

Class of bite	Anti-rabies treatment		Treatments from local doctors		Household treatment or no treatment at all		Total	
	Male	female	Male	female	Male	Female	Male	female
I	4	3	1	0	3	2	8	5
II	5	9	2	0	1	0	8	9
III	21	16	0	0	0	0	21	16
Total	30	28	3	0	4	2	37	30

Animal bites occurred in all age groups and children were vulnerable to it. Tiwari et al (2009) and Jeffery (1996) found that 25.39 percent and 26.4 percent children were bitten by animal bites respectively.^{14, 15}Children’s small size may encourage a dog to act dominantly towards them. Many children’s lack of judgement about how to deal with a dog, and their inability to fend off an attack, may put them at additional risk (Jeffery, 1996).¹⁵

Overall lower limbs (62.69%) were the main site of bite as these are most easily approachable part of the body for an animal. Head and face bites were common in children. Tiwari et al (2009), Hanspal et al (2007) and Maetz (1979) also observed that lower limbs were main site of bite. Most of the animal bites were of category III. Mohanti et al (2009) and Khokhar et al (2003) observed that majority of the animal bite exposure were of category III. Contrary to this finding category II cases reported were 85.94% by Modi (2009) and 60.47% by Tiwari et al (2009).

Local wound treatment that is immediate flushing and washing the wound(s) , scratches and adjoining areas with plenty of soap and water , preferably under a running tap for at least 5 minutes , irrigation with viridical agents can reduce the chances of developing rabies. In the present study more than half of the cases did not receive any kind of first aid treatment those who get only home management. But most of them get proper wound management those get treatment from public sector.

Maximum subjects reported to health centre within 24 to 48 hours and very few cases within 24 hours after bite. Malini et al (2010) observed that 62.0 percent of animal bites reported late after 24 hours of bite because the animal was alive, looking healthy and traceable and 12 percent cases did not regard the bite as so severe.¹⁷

STRENGTHS OF THE STUDY: We are yet to find any publication that reported community based data on the actual magnitude of dog bite and health utilization in this part of India.

LIMITATIONS OF THE STUDY: Firstly, in our resource poor settings we to be limited to a smaller sample size; a larger sample size could have provided more precise information. Secondly, there was scope of recall bias that may have influenced the outcome analysis.

FUTURE DIRECTIONS OF THE STUDY: Future directions of research have to provide regional and demographic mapping of human deaths to formulate a national rabies control programmes and can be used in the futuristic models will be used for evaluation regional elimination though abolition of the canine reservoir.

CONCLUSION

Dog bite is more commonly reported in male gender and in the pediatric age groups in urban Kolkata with

more third degree bites. Regarding health seeking behavior a great majority used public sector. Still full coverage of anti-rabies protocol was not followed.

RECOMMENDATIONS

Based on the observations in our study, it is recommended that multipronged strategies including behavior change communication for the community members should be made on pre-hospital care for optimum management of animal bites. The serum and vaccines for rabies should be made available along with capacity building of health care providers at all levels. Municipal Cooperation should also play a sincere role in removing food wastes from roads and control stray dog population. Populations at large should be taught that if you love dogs as pets, then keep them inside your home with optimum veterinary health care. Otherwise you have no rights to through leftover foods indiscriminately outside the four corners of your home to help stray dogs survive and pose threat to your community.

REFERENCES

1. Dynamics and prospects for the elimination of canine rabies. *PLoS Bio* 2009; 7(3): e1000053
2. World Health Organization. WHO expert consultation on rabies 2013. Second Report, Geneva, Switzerland, WHO Technical Report Series no.982.
3. World Health Organization. Rabies Fact Sheet N°99 Updated March 2013 Available at: <http://www.who.int/mediacentre/factsheets/fs099/en/> Accessed on April 14, 2013.
4. Rabies. Available at: <http://en.wikipedia.org/wiki/Rabies> Accessed on March 04, 2013.
5. World Health Organization. Rabies: A neglected zoonotic disease. Available at: <http://www.who.int/rabies/en/> Accessed on March 04, 2013
6. World Health Organization. Rabies Epidemiology Available at: <http://www.who.int/rabies/epidemiology/en/> Accessed on March 04, 2013
7. Rabies vaccines. *WklyEpidemiol Rec* 2002;77(14):109-19.
8. Suraweera W, Morris SK, Kumar R, Warrell DA, Warrell MJ, Jha P, Million Death Study Collaborators. Deaths from symptomatically identifiable furious rabies in India: a nationally representative mortality survey. *PLoS Negl Trop Dis* 2012; 6(10):e1847.
9. Central Bureau of Health Intelligence, Ministry of Health and Family Welfare, Government of India. National Health Profile of India. 2005. Available at: <http://cbhidghs.nic.in/index2.asp?slid=1208&sublinkid=944> Accessed on March 2013.
10. Sudarshan MK, Madhusudana SN, Mahendra BJ, Rao NS, Ashwath Narayana DH, Abdul Rahman S, Meslin F-, Lobo D, Ravikumar K, Gangabaraiah. Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. *Int J Infect Dis* 2007; 11(1): 29-35
11. Khokhar A, Meena GS, Mehra M. Profile of dog bite cases attending M.C.D. dispensary at Alipur, Delhi 2003. *Indian J Community Med* 2003;28(4): 157-60.
12. Behera TR, Satapathy DM, Tripathy RM, Sahu A. Profile of animal bite cases attending the ARC of M.K.C.G. Medical College, Berhampur (Orissa). *APCRI J [Online]* 2008; 9 (2):56-9
13. Hanspal JS, Bhanderi D and Nagar S. A review of attendance of animal bite cases in the anti-rabies clinic of G.G.S. Hospital, Jamnagar (Gujarat). *APCRI J* 2007; 8 (2):34-8
14. Tiwari R, Marathe N, Srivastava D. A retrospective analysis of the patients attending anti rabies clinic at J.A. Group of Hospitals, Gwalior. *APCRI J* 2009; 11 (1) 24-26.
15. Sacks JJ, Kresnow M, Houston B. Dog bite: how big a problem? *Injury Prevention* 1996; 2: 52-4.
16. Modi BK. A review of attendance trend of animal bite cases in the private antirabies clinic, at Kukarwada town in North Gujarat. *APCRI J* 2009; 10 (2) 27-8.
17. Malini S, Satapathy DM, Tripathy RM. An analysis on late reporting of animal bite victims to the ARC of MKCG Medical College, Berhampur. *APCRI J* 2010; 12 (1) 33-36.