

Study of Dog-bite and Vaccination Status in an Urban Community of Ranchi, Jharkhand

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Abstract: *Background:* Dog bite injury is one of the most common unintentional injuries affecting all age groups worldwide, both in developed and developing countries. Age, gender, and environmental exposure are among the most-cited risk factors. Dog bites and rabies are a major public health issue globally and this is not unconnected with the well known fact that rabies is inevitably fatal. Thus prevention through vaccination is the only way out. *Aims and Objective:* To study the prevalence of dog bite and the management through post exposure prophylaxis thereof among the people residing in an urban community near RIMS, Ranchi. *Method:* Cross sectional study with a house to house survey was done and those with a history of dog bite and willing to participate were interviewed with a pre tested questionnaire. Of the 252 households, 69 dog bite cases were analyzed. *Results:* Around 9% had a history of dog bite of which 60% dog bite victims were at the age of 10-19 years. Free roaming dogs (FRDs) were responsible for 74% dog bites. Post exposure prophylaxis was taken by about 70% of which only 69% were fully immunized. *Conclusion:* When about 30% of the educated urban community is not immunized of a fatal disease it raises concern. Non availability of vaccine and lack of knowledge towards dosage schedule should be dealt with.

Keywords: Rabies, Dog-bite, Post exposure prophylaxis, Urban

1. Introduction

Of the estimated 59,000 people who die from rabies annually [1], the vast majority result from the bite of a rabid dog. Children are at greater risk of suffering dog bites than adults [2] and as a result approximately 40% of all human rabies deaths occur in children aged under 15 years old [3]. Rabies is a zoonotic viral disease that is transmitted through the saliva and nervous tissue of an infected animal. It is listed as one of 18 Neglected Tropical Diseases by the World Health Organization [4]. Rabies is almost always fatal—it has one of the highest case fatality rates of any disease [5]. However, rabies is also 100% preventable, through human post-exposure prophylaxis (PEP), improved educational awareness to prevent exposure, and mass vaccination of dog populations. Prompt post-exposure treatment is effective at preventing rabies, however incomplete adherence to recommended protocols has resulted in many deaths. Dog bites and rabies are a major public health issue globally and this is not unconnected with the well known fact that rabies is inevitably fatal. Thus prevention through vaccination is the only way out. The aim of this study is to know the prevalence of dog bite and the management through post exposure prophylaxis thereof among the people residing in an urban community near RIMS, Ranchi.

2. Methods

The study is a cross sectional and the place of study is urban residential area in the radius of 1km to RIMS, University colony, Bariatu, Ranchi. Study duration was three months from Jan 19 to Mar 19. Universal sampling of all families residing at the locality, available at the time and willing to participate was taken. 252 Houses were surveyed and 713 Participants were involved in the study. A pre-tested, semi-structured questionnaire was used for data collection.

Templates were generated in MS EXCEL sheet and analyzed.

3. Results

Of the total participants, dog bite cases old and new were found to be 69 (9%). Table 1 shows distribution of dog bite victims according to the socio demographic profile. The most vulnerable age group to dog bite were between 10-19 years, (41, 59%). Also the males were more prone to dog bite (48, 69.5%). The class III SES participants had an increased prevalence of dog bite (39, 56.52%). None of the participants were illiterate. Most of them (47, 68%) were higher secondary or above.

Table 1: Distribution of dog bite according to socio demographic profile of the participants (n= 69)

S no	Socio demographic profile	Frequency	Percentage (%)	
1	Age in years	< 10	2	2.89
		10 -19	41	59.42
		20 -40	13	18.84
		> 40	13	18.84
2	Gender	Male	48	69.56
		Female	21	30.44
3	SES*	CLASS I	6	8.69
		CLASS II	19	27.53
		CLASS III	39	56.52
		CLASS IV	5	7.24
4	Educational qualification	Primary	4	5.79
		Secondary	18	26.08
		Higher secondary	47	68.11

* Socio economic status according to BG Prasad classification 2018. None belonged to class V.

Table 2 shows the distribution of cases according to characteristics of dog bite and management thereof. Most of the dog bite were from the free roaming dogs (51, 73.9%). The category of bite was based on the description of wound following dog bite and it was found that most belonged to

category II (44, 63.76%). Yet there were some (4, 5.79%) who could not describe the wound. Most participants washed the wound with soap and water immediately (38, 55%), another 30% consulted the doctor, while 8% did nothing for the wound and another few (4, 5.79%) tied the wound. The post exposure prophylaxis was taken by 48 (70%) participants. Only anti rabies vaccine (ARV) was taken by the majority (45, 65.21%) and a few (3, 4.34%) had taken both ARV+ RIG (rabies immunoglobulin). There were a substantial number of participants (21, 30.43%) who had taken no PEP following dog bite.

Table 2: Distribution of cases according to characteristics of dog bite and management (n=69)

S.No	Characteristics of Dog-bite and management		Frequency	Percentage (%)
1	Category of dog	Free roaming dog (FRD)	51	73.91
		Neighbor's pet dog	10	14.49
		Own pet dog	8	11.59
2	Category of bite	Category I	2	2.89
		Category II	44	63.76
		Category III	19	27.53
		Not sure	4	5.79
3	Immediate wound management	Washed with soap and water	38	55.07
		Consulted doctor	21	30.43
		Tied the wound	4	5.79
		Did nothing	6	8.69
4	Post exposure Prophylaxis (PEP)	Anti rabies vaccine (ARV)	45	65.21
		ARV + RIG(Rabies immunoglobulin)	3	4.34
		No PEP	21	30.43

Of the 21 participants who did not take any PEP following dog bite, 65% believed that it was only a lick and needed no intervention, 30% opined that the dog was vaccinated and another 5% thought that PEP was not required. Of the 48 participants who had taken PEP, only 33 (69%) had completed the full course of immunization. Majority (67%) of the participants who had taken partial immunization said that they had watched the dog and if the dog survived for more than 10 days, they discontinued further vaccines. While for others vaccine was not available in time (12%), they did not know the full schedule (14%) or that the vaccine was very costly (7%). Most of the participants who had taken complete immunization had bought the vaccine from a private source (66%) and only 34% had received vaccines from a government set up.

4. Discussion

In my study the prevalence of dog bite was found to be 9%. The most vulnerable age group to dog bite were between 10-19 years, (41, 59%). Most of the dog bite were from the free roaming dogs (51, 73.9%). The post exposure prophylaxis was taken by 48 (70%) participants. Only anti rabies vaccine (ARV) was taken by the majority (45, 65.21%) and a few (3, 4.34%) had taken both ARV+ RIG (rabies immunoglobulin). There were a substantial number of participants (21, 30.43%) who had taken no PEP following dog bite. Majority (67%) of the participants who had taken partial immunization said that they had watched the dog and if the

dog survived for more than 10 days, they discontinued further vaccines. While for others vaccine was not available in time (12%), they did not know the full schedule (14%) or that the vaccine was very costly (7%). Most of the participants who had taken complete immunization had bought the vaccine from a private source (66%) and only 34% had received vaccines from a government set up. In a study done by Tiwari et al, Knowledge, attitudes and practices (KAP) towards rabies and free-roaming dogs (FRD) in Shirsuphal village in western India: A community based cross-sectional study there is also an improved availability of PEP at local Public Health centres (personal communication, Medical officer at Public health centre at Shirsuphal) which could also have contributed to this improved awareness. In spite of the increased proportion of respondents having heard about the disease, comprehensive understanding about the disease was lacking amongst most participants. Although the majority of the respondents were aware that rabies: could be transmitted through dog-bites, is fatal once clinical signs develop and can be prevented through post-bite anti-rabies vaccination or prophylactic vaccination of dogs, most were unaware it could be transmitted through licks/scratches from a rabid animal or through rabid cats. Furthermore the fact that 29% of the participants were not aware of PEP or prophylactic vaccines is of concern, particularly if they or a family member is bitten by a rabid dog [6].

5. Conclusion

Around 9% had a history of dog bite of which 60% dog bite victims were at the age of 10-19 years. Free roaming dogs (FRDs) were responsible for 74% dog bites. Post exposure prophylaxis was taken by 70% of which only 69% were fully immunized. When 30% of the educated urban community is not immunized of a fatal disease it raises concern.

6. Limitations and Recommendations

It was a short duration study with a limited sample size. The population selected may have had recall bias about the history of dog bite. IEC should be done among the educated urban community about rabies and management of dog bite. Non availability of vaccine and lack of knowledge towards dosage schedule should be dealt with utter concern.

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