



# Non-Compliance of Post Exposure Prophylaxis amongst Dog Bite Cases Attending Antirabies Clinic of a Tertiary Care Hospital - A Record Based Study

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## ABSTRACT

**Introduction:** Rabies, a zoonotic disease transmitted by bite of a rabid animal mostly due to dog bite. Rabies is deadly but can be prevented by post exposure prophylaxis with an effective vaccine available. Though 100% fatal disease, the victims are not regular in treatment resulting in higher defaulter rate.

**Aim and Objective:-** To study the non-compliance of post exposure prophylaxis with antirabies vaccine and factors associated with it.

**Material and Methods:-** The present record based study was conducted at Govt. Medical College, Latur. Dog bite cases from Latur Municipal Corporation area recorded in database during 1<sup>st</sup> November 2013 to 31<sup>st</sup> October 2016 were included in the study.

**Results:-** Out of 7892 dog bite cases 39.64% were less than 18 years of age, 71.39% were males. Non-compliance with antirabies vaccine was 41.81%. There were 79.84% defaulters among class II and III. Non-compliance was high when bite with pet and observable dog. Defaulter rate was almost similar amongst provoked and unprovoked dog bites. In 69.74% cases lower extremity was site of bite.

**Conclusion:-** The non-compliance was quiet high with predominant exposure among males and children.

**Key Words:-** Non-Compliance, Post exposure prophylaxis, dog bite

## INTRODUCTION

Rabies is a zoonotic disease, probably the most feared of all human diseases; transmitted by bite of a rabid animal which is highly dangerous with characteristics long and variable incubation period<sup>1</sup>. Rabies is transmitted to humans through exposure to saliva from infected animals (from bites, scratches, or licks on broken skin and mucous membranes). It has been the 10<sup>th</sup> biggest cause of death amongst the infectious disease in the world<sup>2</sup>. It is responsible for a death toll of 61,000 every year globally of which around one fourth are contributed by India<sup>3</sup>. It is not only endemic in India but fall in high rabies endemic countries<sup>4,5,6</sup>. Rabies is transmitted due to exposure to saliva of in-

fectured animals and dog bite being the responsible in 97% of the cases particularly in urban areas followed by cats and other animals<sup>7,8</sup>.

In India, about 15 million people are bitten by animals, mostly dogs, every year and need PEP. A person is bitten every 2 seconds, and someone dies from rabies every 30 minutes, according to The Association for the Prevention and Control of Rabies in India<sup>9</sup>. Also India has a high proportion of stray (ownerless) dogs<sup>10</sup>. No antiviral or immunomodulating drugs have been found to be effective for treatment thus leading to 100% fatality of the disease. So prevention by postexposure prophylaxis is the only best available strategy.

Anti-rabies vaccine and rabies immunoglobulins are available free of cost in government health facilities. Still the high burden of rabies mortality in India may be due to lack of awareness of the animal bite victims and non-compliance towards post exposure prophylaxis (PEP). Regular and complete PEP may prevent the mortality otherwise it is almost always fatal. Considering all this the present study was aimed to know the compliance towards the PEP among dogbite cases.

**MATERIAL AND METHODS**

The present record based cross sectional study was conducted at Govt. Medical College, Latur with an objective to study the sociodemographic profile of the dog bite cases and factors associated with non-compliance of post exposure prophylaxis with antirabies vaccine. Antirabies clinic of GMC Latur is the only government facility in the Municipal corporation area; providing free management to animal bite cases. Updated Thai Red Cross intradermal schedule is followed in this ARC involving two doses of 0.1 ml of reconstituted (Purified Vero Cell Rabies vaccine) on both the deltoids on days 0, 3, 7 and 28 days.

The period of study was from 1<sup>st</sup> November 2013 to 31<sup>st</sup> October 2016. As the computerized record with the help of HMIS database was started in this institute from 1<sup>st</sup> November 2013; all the new cases of animal bite from the same date were first extracted with the help of HMIS officials. There were 10294 new animal bite cases during the study period. Of these 372 cases of other animal bite were excluded. Out of remaining 9922 dog bite cases 2030 cases were from rural and other urban areas and these cases were also excluded. So, 7892 dog

bite cases residing in Latur Municipal Corporation area were included in the study assuming that these 2030 cases will complete their schedule at the health facility nearest to their residence. Those who missed at least one dose of the prescribed scheduled were considered as defaulter i.e. non-compliance.

Statistical analysis:- Percentages and Chi Square test was used for data analysis. Data was analyzed by using Microsoft excel 2013.

**RESULTS**

Out of 7892 dog bite cases, 3128 (39.63%) were children below 18 years and 556 (7.05%) were aged more than 65 years. Of these total cases, 3300 (41.81%) had not completed the schedule of post-exposure prophylaxis with antirabies vaccine. (Table 1). Of the 3300 defaulters, 2369 (71.79%) were male while 931 (28.21%) females were non-compliant for the post exposure prophylaxis. Chi square revealed no significant difference between the proportion of males and females. (Table 1)

**Table 1: Age and sex wise distribution of defaulters**

Parameters	Defaulter		
	No (n=4592)	Yes (n=3300)	Total (N=7892)
<b>Age Group</b>			
≤ 18 years	1833 (39.92)	1295 (39.24)	3128 (39.63)
19 to 40 yrs	1476 (32.14)	1158 (35.09)	2634 (33.38)
41 to 65 yrs	950 (20.69)	624 (18.91)	1574 (19.94)
> 65 yrs	333 (07.25)	223 (06.76)	556 (7.05)
<b>Sex*</b>			
Female	1327 (28.90)	931 (28.21)	2258 (28.61)
Male	3265 (71.10)	2369 (71.79)	5634 (71.39)

\*P value 0.51

**Table 2: Some factors associated with defaulters**

Parameters	Defaulter			Chi Square	df	'p'
	No (n=4592)	Yes (n=3300)	Total (N=7892)			
<b>Class of bite</b>						
Class I	1005 (21.89)	586 (17.76)	1591 (20.16)	20.08	1	<0.001
Class II	3084 (67.16)	2362 (71.57)	5446 (69.01)			
Class III	503 (10.95)	352 (10.67)	855 (10.83)			
<b>Ownership</b>						
Pet (Owned)	2268 (49.39)	1760 (53.33)	4028 (51.04)	11.95	1	0.0005
Stray (Not owned)	2324 (50.61)	1540 (46.67)	3864 (48.96)			
<b>Provocation status</b>						
Provoked	1045 (22.76)	799 (24.21)	1844 (23.37)	2.27	1	0.13
Unprovoked	3547 (77.24)	2501 (75.79)	6048 (76.63)			
<b>Observable or not</b>						
Not observable	1405 (30.60)	915 (27.72)	2390 (30.28)	7.68	1	0.0058
Observable	3187 (69.40)	2385 (72.27)	5502 (69.72)			
<b>Site of bite</b>						
Abdomen/trunk	205 (4.46)	137 (04.15)	342 (4.33)	-	-	-
Head, neck, face	72 (1.57)	98 (02.97)	170 (2.16)			
Lower extremity	3245 (70.67)	2259 (68.45)	5504 (69.74)			
Multiple sites	151 (3.29)	107 (03.24)	258 (3.27)			
Upper extremity	919 (20.01)	699 (21.18)	1618 (20.50)			

There were 6301 cases class II and class III dog bites while 1591 cases were of class I bite. 586 cases (36.83%) amongst class I didn't complete the schedule of post exposure prophylaxis as compared to 2714 (43.07%) cases of class II and class III. Chi square showed significant difference between defaulters with class II and class III against class I bite ( $p < 0.001$ ). (Table 2).

The proportion of defaulters was significantly higher among the cases bitten with pet (owned) dog i.e. 53.33% as compared to those bitten with stray (not owned) dog ( $X^2 = 11.95$ ,  $p < 0.05$ ). (Table 2)

Out of total 7892 cases, 6048 had unprovoked bite while 1844 had bite due to provocation of the dog. Out of 3300 defaulters, 75.79% had unprovoked bite and 77.24% had unprovoked bite amongst non-defaulters. There was no association between defaulter rate and provocation status. (Table 2)

72.27% had dog bite by an observable dog out of 3300 defaulters while 69.40% had dog bite by observable dog who were not defaulters. Chi square had showed significant number of defaulters when dog was not observable. (Table 2)

The commonest site of bite was the lower extremity in 5504 (69.74%) of cases followed by upper extremity in 1618 (20.5%). (Table 2)

## DISCUSSION

Rabies is a 100% fatal disease posing a major public health problem in children and adults worldwide. Death caused by rabies is responsible for 1.74 million Disability Adjusted Life Years (DALY) each year<sup>11</sup>.

Present study showed maximum proportion of children below 18 years (39.63%) were exposed to dog bite. Sanjay wagh et al<sup>12</sup>, Debashish permar et al<sup>13</sup>, Kirti V. Kinge<sup>14</sup>, Amit Gansava et al<sup>15</sup> and Gadekar et al<sup>16</sup> also found that 29.2%, 37.8%, 39.4%, 32% and 44.7% amongst those less than 20 years respectively suffered from dog bite. This might be due to provocation of dog unknowingly. Children may not be aware that their teasing activities may be responsible for the defensive action from the dog or other animals. The defaulter rate among different age groups ranged from 39.64% to 43.96%.

The overall magnitude of defaulters in the present study was quite high i.e. 41.81%. Kishore S Gudegowda<sup>17</sup> observed 33.81% defaulter in his study which was comparable with the present study. This may be due to asymptomatic presentation of the dog bite victim and low prevalence of disease and lack of awareness in the community about fatality of disease and its preventive aspect.

Males constituted about 71.39% of dog bite cases. Similar finding were observed in studies by Khokhar et al<sup>18</sup>, Domple V. K. et al<sup>19</sup>, Bedi et al<sup>20</sup>, Niraj Bhardva et al<sup>21</sup>, and Behera et al<sup>5</sup> where 69.9%, 65.1%, 71.6%, 69.8%, and 69.9% males were exposed to animal respectively. Some other studies<sup>1, 15, 17, 22-23</sup> also found majority victims as males. This may be due to increased outdoor activity, mobility and hence increased risk of exposure to bite. There was slightly more proportion of males who defaulted but chi square showed no significant difference ( $P = 0.51$ )

Majority of the dog bite were of class II (69.01%) and Class III (10.83) together giving rise to 79.84% of cases which were similar to findings of Debashish Permar et al<sup>13</sup> and Amit Ganasava et al<sup>15</sup> who observed 84.9% and 86.2% of cases class II and class III. The defaulters in class II and III were significantly more than that of class I ( $X^2 = 20.08$ ,  $P < 0.001$ ) which was a surprising fact.

Present study showed that 48.96% cases were due to stray (street) dog bite. Aworh et al<sup>24</sup> also reported that 52.7% of cases were due to stray dogs. But these findings were in contrast to Virendra Wankhede et al<sup>22</sup> and Amit Ganasava et al<sup>15</sup> who observed 97.2% and 95.8% of dog bite due to stray dog. The defaulter rate was significantly higher i.e. 53.33% in cases with pet dog bite as compared to stray 46.67%, ( $P = 0.0005$ ).

Present study found that 6048 (76.63%) cases were due to provocation of dog may be due to natural reaction of the animal to protect himself. Present finding were quite comparable to Sanjay Wagh et al<sup>12</sup>, Khokhar et al<sup>18</sup>, Pradeep Umarigar et al<sup>26</sup> and Mohd Junaid et al<sup>25</sup> who found that 77.8%, 77.7% and 80.4% cases were due to provocation of animal. There was no significant difference between the defaulters of provoked and unprovoked dog bites ( $P=0.13$ ).

In present study 69.72% patients reported that the dog was observable. The cases where dog was observable were having significantly higher defaulter rate as compared to those where dog was not observable.

In 69.74% of cases lower extremity was the site of bite and the findings were comparable to Pavitra R. et al<sup>27</sup>, Debashish permar et al<sup>13</sup> and Virendra Wankhede et al<sup>22</sup>, where 70%, 60.1%, 65.7%, of victims had dog bite on lower limb.

## LIMITATIONS

As this was a record based study some variables like, education, occupation and immunization status of dog could not be studied. Data of some of the factors could not be extracted by HMIS due to

some technical reasons. A follow up study with an appropriate sample would be a better option for it.

## CONCLUSIONS AND RECOMMENDATIONS

Males were predominantly exposed to dog bite affecting mostly children below 18 years followed by middle aged adults. Lower extremity was the most common site of bite with class II exposure more common. It is necessary to reinforce the importance of regular and complete post exposure prophylaxis against rabies in the community.

## REFERENCES

1. Chauhan P, Saini G. Study of profile of animal bite victims attending anti-rabies clinic at Jodhpur. *Int J Med Sci Public Health* 2013; 2:1088-1091.
2. Sajna MV, Culas R. Cost Analysis of Post Exposure Prophylaxis of Rabies in a Tertiary Care Centre - A Cross Sectional Study. *IOSR-JDMS*. 2014; 13(12): 08-12.
3. World Health Organization. WHO expert consultation on rabies-second report [Internet]. 2013 [cited November 17]. Available from: [http://apps.who.int/iris/bitstream/10665/85346/1/9789240690943\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/85346/1/9789240690943_eng.pdf?ua=1)
4. Sudarshan MK, Kodandaram NS, Venkatesh GM, Mahendra BJ, Ashwath Narayana DH, Parasuramalu BG. Evaluation of a new premedication protocol for administration of equine rabies immunoglobulin in patients with hypersensitivity. *Indian J Public Health* 2007;51:91-6.
5. Behera TR, Satapathy DM, Mohapatra HH, Sahu AN, Tripathy RM. Evaluation of clinical safety of a new equine rabies immunoglobulin (Inj. VINRIG). *APCRI J* 2009; 10:19-21.
6. Satapathy DM, Reddy SS, Pratap AK, Behera TR, Malini DS, Tripathy RM *et al*. Drop-out cases in IDRV: A cause of concern. *APCRI J* 2010; 12:40-1.
7. Park K. *Park's Textbook of Preventive and Social Medicine*, 22nd edition, Banarasidas Bhanot Publishers, Jabalpur, India, 2013:252.
8. Ichhpujani RL, Chhabra Mala, Mittal Veena, Singh J, Bhardwaj M, Bhattacharya D, Pattanaik SK, Balakrishnan N, Reddy AK, Sampath G, Gandhi N, Nagar SS, Lal Shiv. Epidemiology of Animal Bites and Rabies cases in India- A Multicentric study. *J. Commun. Dis*. 2008; 40(1): 27-36.
9. Sudarshan MK. Assessing burden of rabies in India. WHO sponsored national multi-centric rabies survey. *Int J Infect Dis*. 2007 Jan;11(1):29-35. Epub 2006 May 4.
10. Reece JF, Chawla SK. 2006, Control of rabies in Jaipur, India, by the sterilization and vaccination of neighbourhood dogs. *Veterinary Record*, 159:379-383.
11. WHO Expert Consultation on Rabies (2005) 1st Report, WHO Technical Report Series No 931. World Health Organization, Geneva:1-5
12. Sanjay Wagh *et al*. Profile of animal bite in Vidarbha region of Maharashtra, India. *Journal of pharmaceutical and biomedical sciences (J Pharm Biomed Sci.)* 2013 July; 32(33): 1381-1385.
13. Debashish Parmar, Deepika Vora, Pragati Rathod, Uday Narlawar. Epidemiological profile of animal bite cases attending Anti rabies clinic and pre-treatment practices adopted by them following animal bite: A cross-sectional study. *International Journal of Medical and Health Research*. April 2016; Volume 2; Issue 4; Page No. 11-13.
14. Kinge KV, Supe AC. Epidemiology of animal bite cases reported to anti-rabies vaccination OPD at a tertiary-care hospital, Nagpur. *Int J Med Sci Public Health* 2016;5:1579-1582.
15. Ganasva A, Bariya B, Modi M, Shringarpure K. Perceptions and treatment seeking behaviour of dog bite patients attending regional tertiary care hospital of central Gujarat, India. *J Res Med Den Sci* 2015; 3(1):60-4.
16. Gadekar Rambhau D, Dhekale Dilip N. Profile of Animal Bite Cases in Nanded District of Maharashtra State, India. *Indian Journal of Fundamental and Applied Life Sciences*. July-September 2011; 1 (3):188-193.
17. Gudegowda KS, Shivalingamurthy RK, Vengatesan S, Sobagiah RT, Krishnappa AK. Compliance to Post Exposure Rabies Vaccination among Patients Attending Anti - Rabies Clinic in a Tertiary Care Hospital, Bengaluru. *Ntl J Community Med* 2016; 7(10):811-815.
18. Khokhar A, Meena GS, Mehra M. Profile of dog bite cases attending M.C.D. dispensary at Alipur, Delhi. *Indian Journal of Community Medicine*. 2003;28(4):157-60.
19. Dimple VK, Doibale MK, Sonkar VK, Aswar NR, Khadilkar HA, Jain SR. Treatment compliance of self-reported dog bite cases attending outpatient department of Tertiary Care Hospital, Maharashtra. *Int J Med Public Health* 2015;5:297-300.
20. Bedi R, Bedi DK, Tankha A, Choudhary V, Matoria RS. Profile of Animal Bite Cases Attending Anti Rabies Clinic of J.L.N. Medical College & Hospital, Ajmer. *APCRI Journal*. 2006; VIII(I):28-30.
21. Niraj Bharadva, Shreyash R. Mehta, Pravin Yerpude, Keerti Jogdand, Kartik N. Trivedi. Epidemiology of animal bite cases attending tertiary health care centre of Bhuj city of India: a cross-Sectional study. *International Journal of Interdisciplinary and Multidisciplinary Studies*. 2015;2(9):98-102.
22. Virendra Wankhede, Prasad Waingankar, Seema Anjenaya, B. T. Telang. Epidemiological study of dog bite cases reported at ARV clinic of rural hospital Panvel in Raigad district of Maharashtra, India. *Intl J Recent Trends in Sci and Technology*. 2013;8(1): 2013:52-55.
23. M. A. Masoodi, S. M. Salim Khan, Mariya Amin Quereshi, Asiya Wali, Yasmeen Jan, Shahnaz Nabi. Profile of animal bite cases attending antirabies clinic of Government Medical College associated S. M. H. S. Hospital, Srinagar. *JK-Practitioner*. January-June 2011;16(1-2):76-79.
24. Aworh MK, Nwosuh CI, Ajumobi OO, Okewole PA, Okolocha EC, Akanbi BO, *et al*. A retrospective study of rabies cases reported at Vom Christian Hospital, Plateau State, Nigeria, 2006-2010. *Niger Vet J* 2011;32:366-70.
25. Mohd Junaid, Tabrez Ahmad, Gumastha R, Deoke A R. Epidemiological study of dog bite victims in antirabies clinic of a tertiary care hospital. *Indian Journal of Biological and Health Science*. October 2012;1(1):12-16.
26. Umarigar P, Parmar G, Patel PB, Bansal RK. Profile of Animal Bite Cases Attending Urban Health Centres in Surat City: A Cross-Sectional Study. *Natl J Community Med* 2012; 3(4):631-5.
27. Pavitra R., Viveki R. G., Halappanwar A. B. Socio Demographic Profile and Management Practices of Animal Bite Cases Attending Anti Rabies Clinic in a Tertiary Care Centre in North Karnataka. *Ind J of Applied Res*. January 2015; 5(1):371-73.