

Original Research Article

Epidemiological Trends and Practices of Animal Bite Victims Presenting to the OPD, District & Medical College Hospital, India

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ABSTRACT

Introduction: Rabies, an invariably fatal viral disease, is transmitted to humans through animal bites, most commonly dogs. The disease is preventable through timely pre-and post-exposure vaccination.

Methods: cross sectional institutional study was conducted in 406 animal bite victims animal bites victims presenting to the tertiary care hospital and district hospital Rewa, Madhya Pradesh. A pretested and structured oral questionnaire was used to elicit the required information regarding socio-demographic profile of animal bite victims, animal bite information & practices done after animal bites for prevention and control of rabies. Data was analyzed using graphpad software.

Results: Among 406 victims 76.3% were males, 56.7% belongs to 15-45 yrs, 61.6% were living in urban area, 77.1% educated upto primary level or more, 31.3% and 21.7% of the victims were agriculture worker and laborers respectively. 95.8% victims bitten by dog, 89.4% had Category III bite, lower extremity was affected in 60.8%, 75.9% bites were unprovoked, fate of the animal was not known in 78.6% and 46% of the victims were affected during evening hours. 55.2% had taken home remedies immediately, 38.7% victims washed the animal bite site with water or soap with water before presenting to the hospital. 9.8% victims had taken ARV within 24 hrs.

Conclusions: Animal bite especially dog bite still continues to be a public health problem affecting urban male of productive age group involved in outdoor activities. Practices for wound care and management and preventive measures for rabies is found to be poor.

Key words: Animal bite, Practices, Rabies, Epidemiology, India.

INTRODUCTION

Rabies, an invariably fatal viral disease, is transmitted to humans through animal bites, most commonly dogs. ^[1] The virus is found in wild and some domestic animals and is transmitted to other animals and humans through their saliva by bites, scratches, licks on broken skin and mucous membrane of infected animal. ^[2] The disease is preventable through timely pre-and post-exposure vaccination. However, once the disease occurs, death is inevitable. ^[1] Rabies occurs in more than

150 countries and territories. Although a number of carnivores and bat species serve as natural reservoir, Rabies in dogs is the source of 99 percent of Human infection and poses a potential threat to more than 3.3 billion people in the world. ^[3] Dog is responsible for about 96% of animal bite cases in urban areas. ^[4] This major source of rabies in humans can be eliminated through ensuring adequate animal vaccination and control, educating those at risk, and enhancing access of those bitten to appropriate medical care. ^[5] In the US,

animal control and vaccination programs have effectively eliminated domestic dogs as reservoirs of rabies. [6] In India the scenario is somewhat different given large number of uncontrolled dog population, poor dog population control measures complying with animal welfare activities and inadequate vaccination of dogs due to limited resources. [7] Although local treatment of wound has been shown to reduce chances of developing rabies by upto 80%, [3] practices of this is highly dependent on existing knowledge and beliefs in the community. There are many myths and false beliefs associated with wound management. These include application of oils, herbs, and red chilies on the wounds inflicted by rabid animals. More faith in indigenous medicines that are of unproven efficacy and not washing the wound properly because of fear that it would get infected. [8] Till date no study has been done to highlight the scenario of animal bite in this region. Therefore this study is undertaken to find out profile of dog bite victims, treatment seeking behavior and practices regarding care of wound and prevention of rabies.

MATERIALS & METHODS

The present cross-sectional study was undertaken among animal bite victims attending outpatient department GMH, SGMH associated with medical college and District Hospital Bicchhia of Rewa city from February 2014 to February 2015. Data collection was done for 406 subjects. The sample size was estimated by taking the average of previous 3 years of animal bite victims attending GMH, SGMH and District hospital, Bicchhia. 10% of the victims fulfill the study purpose hence sample size was determined to be 406 study subjects. Those who are critically injured, not able to respond and who did not give consent were excluded.

Ethical clearance: The study is commenced after approval from institutional ethical committee. Invasive

procedure and active interventions was not done in the study so only informed verbal consent was taken. They were assured that their responses would be kept anonymous and confidentiality maintained.

Data collection method: These health care centers were visited by the interviewer for 2 days in a week for the purpose of data collection. All the cases of animal bite victims visiting at these centers on particular day were contacted and explained about the study purpose. In case of child victim (<15 years) attendees preferably mother or father were explained about study and information collected thereafter. Face to face interview of victims and local examination was done after taking informed verbal consent. A pretested and structured oral questionnaire was used to elicit the required information regarding socio-demographic profile of animal bite victims, animal bite information & practices done after animal bite for prevention and control of rabies.

Study variables: Data was collected regarding gender, residency, age, educational status, occupation, type of animals, site of bite, category of bite, category of bite, fate of animal, locality, time of bite, previous history of animal bite. To assess health-seeking practices following animal bite exposures, participants were asked about preventive measures and action taken by them after animal bite before visiting to the health care facility. Data was analyzed using Graphpad software. Results were presented in percentages and proportion.

RESULTS

Total 406 victims of animal bite were included in the study. Males constituted 310 (76.3%), whereas, females were 96 (23.7%) of the total victims. Majority 226(56.7%) were observed in the age group of 15-45 years. Mean age of the study participants were 33.5 ± 1.3 yrs. 61.6% victims presenting to hospital were residing in urban area. Majority of the

victims (77.1%) were educated upto primary level or more. Regarding occupation 31.3% and 21.7% of the victims were agriculture worker and laborers respectively. (Table-1)

Table 1-Sociodemographic information of Animal bite victims (n=406)

Sociodemographic characteristics	Number	Percentage(%)
Gender		
Male	310	76.3
Female	96	23.7
Residence		
Urban	250	61.6
Rural	156	38.4
Age(in years)		
0-5	17	4.2
6-<15	55	13.5
15-45	226	56.7
>45	108	26.6
Educational status		
Illiterate	93	22.9
Primary (1-5)	123	30.3
Secondary(6-12)	125	30.8
Graduate and above	65	16.0
Occupation		
Student	74	18.2
Unemployed and housewife	42	10.3
Service and business	75	18.5
Agriculture work	127	31.3
Laborer	88	21.7

Majority of the victims (95.8%) were bitten by dog. (Table-2)

Table 2 -Type of animal bitten (n=406)

Animal	Number	Percentage
Dog	389	95.8
Cat	06	1.5
Monkey	03	0.8
Cow	06	1.5
Pig	01	0.2
Horse	01	0.2

Lower extremity & genitals (60.8%) was most commonly affected site followed by upper extremity, fingers, hand and wrist (21%). Most of the victims (89.4%) were of category III, there were (10.6%) victims of category II but no victims has been reported in category I. Unprovoked bites were seen in majority of the victims (75.9%) where as provoked bites were seen in only (24.1%) victims. Most of the victims (78.6%) were not able to observe the biting animal. 19.9%

victims told that biting animal was alive till the time of seeking treatment while 1.5% animals were dead or killed by people and (51.5%) were bitten in Market/street area followed by field/farms/construction areas (37.6%). Most of the victims (46%) were bitten during evening hours followed by (37.7%) during morning hours. 8.4% of victims had previous history of animal bite in last 5years. (Table-3)

Table 3-Profile of animal bite victims (n=406)

Characteristics of Bite	Number	Percentage
Site of Animal bite		
Head and neck	35	8.6
Lower extremity ,genitals	247	60.8
Upper extremity, fingers, hand, wrist	85	21
Abdomen	5	1.2
Back	5	1.2
Bite at multiple sites	29	7.2
Category of bite		
II	43	10.6
III	363	89.4
Type of bite		
provoked	98	24.1
unprovoked	308	75.9
Fate of animal bite		
Observed for 10 days	81	19.9
Killed/Died	6	1.5
Not able to observe/Escaped/Fate not known	319	78.6
Place of animal bite		
Own residence	70	17.2
Neighbour's house	15	3.7
Market/ street	209	51.5
Field/farms/construction areas	112	27.6
Time of bite		
Morning	153	37.7
Noon	20	4.9
Evening	187	46.0
Night	46	11.4
Previous history of animal bite		
Yes	34	8.4
No	372	91.6

Majority of victims 55.2% had taken self medication/home remedies immediately after animal bite, 38.7% victims washed the animal bite site with water or soap with water before presenting to the hospital & 34% victims applied Haldi/chuna/red chilli powder/pan leaf /milk/herbal medication on animal bite site. (Table-4)

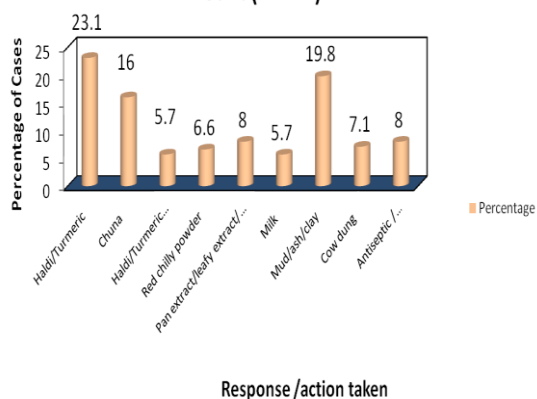
Table 4-Immediate action taken for wound care after animal bite before presenting to health care facility (n=406)

S.No.	Response /action taken*	Frequency	Percentage
1	Nothing done and consulted to health personnel(doctor,ANM,staff nurse)	84	20.7
2	Washed with only water / soap with water	157	38.7
3	Self medication / home remedy	224	55.2
a	Applied antiseptic/ local antibiotic cream	17	4.2
b	Application of haldi/chuna/red chilli powder/ pan leaf/ milk/ herbal medication	138	34.0
c	Tied the wound with cloth	52	12.8
d	Application of mud/ash/cow dung	57	14.0
4	Consulted to quack	37	9.1
5	Consulted to baba, application of holy water	20	4.9
6	Consulted to pharmacist	54	13.3

*Multiple response

Most of the victims 23.1% applied haldi/turmeric on animal bite wound followed by 19.8% subjects applied mud/ash/clay on animal bite wound. (Fig.- 1)

Fig.1-Application of various home remedies/indigenous methods on animal bite wound(n=212)*



11.3% victims washed the wound after animal bite immediately and only 9.8% victims had taken ARV with in 24 hrs. (Table-5)

Table 5-Time interval after Animal bite and washing with soap and water/ only water and initiation of ARV (n=406)

Time interval after Animal bite and washing with soap and water/ only water	Frequency	Percentage
Immediately <1 hr	46	11.3
1 hr-6 hrs	146	36.0
>6 hrs-24 hrs	140	34.5
>24hrs	74	18.2
Time interval For initiation of ARV		
<24 hrs	40	9.8
24 hrs- 1 week	187	46.0
1 week-1 month	145	35.7
>month	34	8.5

DISCUSSION

In present study 76.3 % victims were males while 23.7% victims were females. Sudershan et al (2006), [9] and Tadesse Guadu et al (2014) [10] reported in their study affecting more males as compared to females. In this study 61.6% victims belonged to urban areas while 38.4% victims belonged to rural areas. In a study done by Gadekar et al (2011), [11] urban population was 37.9% while rural population was 62.1%. Majority of victims (56.7%) were in 15-45 year age group, 26.6% victims were above 45 year age group. In this study indicate that 15-45 year age group population affected mostly because 15-45 year age group population were mostly working population and more likely to exposed for animal bite. In a study done by Behera et al (2006) [12] 15-45 year age group constituted 46.4% of total Animal bite victims. In a study by Vinay et al (2008) [13] more than half of the animal bite victims (55.4%) were below 20 year of age.

In this study 22.9% victims were Illiterate while 30.3% victims were educated up to primary level. In a study done by Kumar et al (2008), [14] 56.4% victims were Illiterate while 31.4% victims were educated up to Primary level. In this study 31.3% victims were Agriculture workers, 21.7% victims were Laborers and Student formed 18.2%. agriculture workers and laborers were more likely to have animal bite due to the outdoor activities. In a study done by Kumar et al in (2008), [14] Farmers and Laborers formed 50% of total victims while students

formed 9.6% victims. In the present study many students gave the history that they fell victim to animal bite while going to or coming back from school or coaching. Similar findings were reported by Tenzin et al (2011).^[15] Our study showed that majority 95.8% were victims of dog bites. The finding is similar to the studies done by Sudershan et al (2006),^[9] Gadekar et al (2011)^[11] and Umarigar et al.^[16]

The most common site of bite was lower limb and majority of victims were having category III bite as per WHO classification. This is similar to the other studies done by N.Agarwal et al,^[17] S P Patil et al^[18] and Gadekar et al^[11] in the younger age group most common site involved was head, neck and upper extremity. Similar findings were shown by Singh M K et al.^[19] Children were prone to have bite on head, neck and upper extremities due to the short stature. Almost three- fourth victims had unprovoked bite in our study. Study done by Anita Khokhar^[20] found at Alipur the unprovoked bites were 74.76% the study conducted at M. Juniad et al^[21] has found unprovoked bites in 80.6% of cases. In this study Majority of victims (78.6%) were not able to observe the biting animal & 1.5% biting animal killed or died. Anita Khokhar et al^[20] revealed that 68.05% took no action against such a dog. 29.16% stated that they made them run away and 2.08% mentioned that they tried to kill them. A study done by Gadekar et al^[11] reported that majority (88.2 %) cases biting animal was alive till the time of seeking treatment. Sudarshan et al^[9] reported that majority of dogs (60.8%) & 67.4% cats were reportedly alive after biting the people. In our study majority of the victims were affected by animal in the market followed by farms and construction site. In study done by Virendra Wankhede^[22] majority of dog-bites, (71.9%) have taken place while walking on road. R. Rumana et al^[23] reported that 35.2% victims bitten where they going to market place & 28.9%

victims bitten when they going to field. Most of the bites have taken place in evening hours and morning hours with proportion slightly higher in evening hours. Wankhede et al^[22] and Khokhar et al^[20] reported majority of bites occurring in morning hours. Umarigar et al,^[16] in his study reported that the morning hours was the most common time of bite. Venu shah et al^[24] in her study reported 38.8% of bites between 4 and 8 pm. Only small proportion of cases (8.4%) had previous history of animal bite. This is in contrast with the study done by Subita Patil^[18] in which 28.6% cases had recurrent history of dog bite. Study done by Khokhar et al^[20] described Previous history of dog bite was present in (24.60%) victims.

In present study 55.2% relied on self-medication or applied home remedies. A study done by Anita Khokhar et al^[20] reported that 85.62% had applied chilli paste on the wound before coming to the dispensary. Renu Bedi et al^[25] reported 39.4% applied red chilli paste on wound. Study done by Vyas Sheetal et al^[26] reported that 66.3% had gone for the various types of local applications. This implies that faith on home remedies is still widely prevalent. In present study 4.9% Animal bite victims consulted to Baba or applying holy water. Behara et al (2008)^[12] reported that 30.3% cases had adopted traditional methods like 'Jhar Phoonk' for treating the animal bite cases before reporting to ARC clinic. Present study reported 38.7% victims washed the wound with soap and water. Renu Bedi et al^[25] reported 56.4% wound cleaning by soap and water. Sudarshan et al^[9] revealed that 39.5% victims washed their wound with soap & water. In present study 20.7% victims not cleaned by any means. Study done by Pradeep Umarigar et al^[16] reported that Wound was not cleaned by any means in 24.6% cases. A study Done by Gadekar et al^[11] more than half of the cases did not receive any kind of first aid treatment. In present study only 11.3% victims washed

the wound after animal bite within 1 hour. A study done by Pradeep Umrigar et al [16] reported that 46.5 % victims had wound cleaning history within 1 hour. In present study only 9.8% victims had taken ARV within 24 hrs. The study done by Venu Shah [24] has reported that 68.5% of cases have attended ARV clinic within 24 hrs. Masoodi et al [27] revealed that 52.9% dog bite victims visited on ARV clinic within 24 hour.

CONCLUSIONS

Animal bite especially dog bite still continues to be a public health problem affecting urban male of productive age group involved in outdoor activities. As far as wound care and management is concerned, indigenous treatment/home remedy was quite prevalent. Care of the wound and local treatment soon after a bite is an important step in the management of a case and this was lacking in most of the subjects. Public health educational programs are needed to create awareness in the community regarding the dangers of inadequately managed animal bite wound.

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