

Epidemiological Profile and Practices of Animal Bite Victims Attending the OPD of Rural Health and Training Centre Affiliated to a Tertiary Care Centre in Rewa

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Abstract

Background: In India, over 35% of global human Rabies deaths occur, primarily from dog bites which are responsible for over 95% of cases. Objective of this study was to assess the epidemiological profile and practices regarding animal bite, among animal bite victims attending the OPD of Rural Health and Training Centre affiliated to a Tertiary Care Centre in Rewa.

Methods: This was a facility based cross-sectional study. Sample size was 150. New animal bite victims were interviewed using a semi-structured questionnaire after obtaining informed verbal consent. The questionnaire consisted of demographic profile and questions regarding victims' awareness about rabies, anti-rabies vaccine and their practices following the animal bite.

Conclusion: Younger age group (persons of 0-30 years age group) are more commonly affected. Awareness among participants may be raised by utilising school health programs Major biting animals were dogs. Very few people are aware of the need for observing animals post bite. Wound care practices need to be improved. Pet dog rabies vaccination rate is very low, which needs to be focused upon for achieving rabies control.

Key words: Dog bite, One Health, Pet vaccination, Rabies

Introduction

Effective rabies control requires a coordinated "one health" strategy, especially in countries like India, where over 35% of global human Rabies

deaths occur, primarily from dog bites¹. In India, monkey bites have been identified as the second most common cause of bite injuries, following dog bites and cat bites.^(2,3)

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A multicentric survey revealed that most rabies fatalities affect adult males, with rural areas reporting majority of cases. Also, more than half of victims seek traditional remedies post bite.^(4,5) Most frequently reported animal bite is from dogs, particularly stray ones. Bite incidents predominantly occur during evening hours, with morning hours following closely behind.⁽⁶⁻⁸⁾

In many states, insufficient access to community education on post-exposure rabies prevention and adherence to traditional beliefs may raise the risk of developing rabies after exposure⁽⁹⁻¹³⁾. Objective of this study was to assess the epidemiological profile and practices regarding animal bite among animal bite victims attending the OPD of Rural Health and Training Centre affiliated to a Tertiary Care Centre in Rewa.

Material and Methods

This was a facility based cross-sectional study conducted at the Rural Health and Training Centre affiliated to the Shyam Shah Medical College, Rewa. Study duration was 2 months, (October- November 2023). Sample size was calculated using the formula $4pq/d^2$, taking p as the proportion of patients taking treatment within 24 hrs of animal bite (47.3%) from a previous study¹⁴, q as (1-p) and d as an allowable error of 8%. Calculated sample size was 150. New animal bite victims attending the OPD were included. Old animal bite cases who visited for follow-up and scheduled doses of Antirabies vaccine were excluded from the study. Study was conducted after taking informed verbal consent. In case of victims aged less than 18 years, consent was obtained from the accompanying guardians.

Study Tools and Data Collection Method:

A semi-structured questionnaire was used for interviewing study subjects. The questionnaire consisted of demographic profile, history of animal bite, type of biting animal, category of wound, site of bite, time of bite and also regarding their knowledge about rabies, anti-rabies vaccine and practices of the victims following the animal bite.

Data Analysis: Data collected was entered in excel sheet and analysis was done using Jamovi 2.3.21 software. Results were expressed as simple proportion and mean.

Ethical Approval: The study received ethical clearance from the Institutional Ethics Committee (IEC) at SSMC, Rewa (M.P.). Reference number: S. No./IEC/M.C./2023/31111.

Results

Table 1: Demographic Profile of Animal Bite Victims

DEMOGRAPHIC PROFILE	FREQUENCY N=150	PERCENTAGE (%)
AGE GROUPS(YEARS)		
0-15	69	46.0
16- 30	43	28.7
31- 45	17	11.3
>45	21	14.0
GENDER		
Males	102	68.0
Females	48	32.0
EDUCATION		
No formal education	40	26.7
Primary	35	23.3
Secondary	29	19.3
Higher Secondary	24	16.0
Graduation & above	22	14.7
OCCUPATION		
Unemployed/ Homemakers	91	60.7
Government/ Private/Self employed	11	7.3
Agricultural activities	29	19.3
Daily wage labourers	19	12.8

Table-1 shows that most of the victims belonged to 0-15 years age group (46.0%). Males were predominantly affected (68.0%). Majority had no formal education (26.7%). Occupationally, most were Unemployed / Homemakers (60.7%).

Table 2: Distribution of Cases According to the Site of Bite, Biting Animal, Wound Category and Time of Animal Bite

VARIABLE	FREQUENCY N=150	PERCENTAGE (%)
SITE OF BITE		
Head, face, neck	5	3.3
Upper limb	45	30.0
Abdomen	6	4.0
Lower limb	94	62.7
TYPE OF BITING ANIMAL		
Pet dogs	77	51.3
Stray dog	68	45.3
Monkey	03	2.0
Cow	01	0.7
Consumption of raw milk of a bitten cow who died later on	01	0.7
CATEGORY OF WOUND		
Category I	0	0
Category II	136	90.7
Category III	14	9.3
TIME OF ANIMAL BITE		
Day time (6 am to 6 pm)	74	49.3
Evening and night (6 pm to 6 am)	76	50.7

Commonest site of bite was lower limb (62.7%). Dogs accounted for majority of cases. Most wounds were of Category II (90.7%).

Table 3: Knowledge about Animal Bite

QUESTIONS ASKED	ANSWERED AS	FREQUENCY N=150	PERCENTAGE (%)
Have you ever heard about Rabies?	Yes	127	84.7
	No	23	15.3
Is Rabies fatal?	Yes	122	81.3
	No	28	18.7
Do you know Rabies can be prevented by vaccination	Yes	139	92.7
	No	11	7.3
Bite on which site has highest risk for fatality	Head, neck, face	41	27.3
	Upper limb and abdomen	15	10.0
	Lower limb	22	14.7
	Equal risk of fatality for all sites of bite	72	48.0
Do you know biting animal should be observed for 10 days?	Yes	35	23.3
	No	115	76.7
ARV can be safely administered to everyone	Yes	117	78.0
	No	33	22.0
Anti Rabies Vaccine should not be administered to-	Pregnant & lactating women	27	18.0
	Infants	03	2.0
	Old age	03	2.0

Continue.....

Do you know about any symptoms of rabies in humans?*	Do know at least one symptom	117	78.0
	Do not know	33	22.0
Do you know about any symptoms of rabies in animals?*	Do know at least one symptom	138	92.0
	Do not know	12	8.0

* Following symptoms of human rabies were asked from the participants- Altered behaviour, anxiety, confusion, hallucinations, agitation, insomnia, fear of water.

** Following rabies symptoms in animals were asked from the participants- Excessive salivation, aggression and/or self-mutilation, abnormal behaviour, running amok, bite without provocation, difficulty swallowing.

Respondents' knowledge regarding animal bites was assessed through various questions (Table 3). Majority (84.7%) of participants had heard about Rabies and 81.3% considered it as fatal. Most (92.7%) of the respondents knew that Rabies can

be prevented through vaccination. But only 27.3% correctly identified bite at head, neck, or face as carrying the highest risk for fatality. Majority (76.7%) were unaware about the necessity to observe biting animals for 10 days.

Table 4: Practices Regarding Animal Bite

QUESTIONS ASKED	ANSWERED AS	FREQUENCY N=150	PERCENTAGE (%)
Washed wound with Running water?	Yes	130	86.7
	No	20	13.3
Use of soap for wound washing	Yes	68	45.3
	No	62	41.4
	Wound not washed	20	13.3
Duration of wound washing after animal bite	Less than 15 minutes	75	50.0
	15 to 30minutes	55	36.7
	Wound not washed	20	13.3
Bite wound care	Was kept open, no tight bandage applied	127	84.7
	Covered with bandage	23	15.3
Health facility first reported	Government hospital	133	88.7
	Traditional healers	17	11.3
	Private hospitals	0	0
Time interval between animal bite and coming to hospital for taking Anti rabies vaccine	Within 24 hours of bite	104	69.3
	After 24 hours of bite	46	30.7
Measures taken immediately after animal bite before reaching hospital for ARV	Washed the wound with soap & water	68	45.3
	Application of an antiseptic before washing	40	26.7
	Smear the wound with indigenous substance like chilli, turmeric before washing	22	14.7
	Did not wash the wound	20	13.3
Was the biting pet dog vaccinated? (n = 77)	Yes	13	16.9

Table 4 shows that, following an animal bite, only 36.7% washed wound adequately for 15 to 30 minutes. Most (88.7%) of the victims first reported to a government hospital after the incidence of animal bite. Major proportion of victims (69.3%) reported to have attended hospital for treatment within 24 hours of bite. Among pet dogs that had bitten, only 16.9% were vaccinated.

Discussion

The mean age of cases was 22.1 years ranging from (1 to 68 years) which is almost similar to a previous study.⁸

This study observed that frequency of bites is more in children (0-15 years), as they have more playful interaction with animals, specially dogs, leading to an attack by them. Similarly, 16-30 years age group was also found to be affected by the bites. This may be because people of this age group are either students or working and they mostly go outside their homes, either for study or due to their jobs or they may visit other households and may get bitten by either stray or pet dogs. Similar observations were reflected in other studies^(6,8,14). Present study found that male subjects were more commonly affected than females. This finding may be due to the likelihood of more males going outside their homes for work related reasons. Kinge et al.³, Chaudhary et al.⁸ and Masthi et al.⁷ also found similar results in their respective studies. Lower limb was most commonly affected by bites as it is the most approachable body part for the biting animal. This study showed that major biting animals were dogs. It was observed that pet dogs caused more bites than stray dogs. This finding is contrary to observation by Sachdeva et al.¹⁵ who found that stray animals were responsible for majority of bites (80.5%). In present study, Category II bites were more common than category III bites and most bite cases occurred during evening and night time, similar findings were observed in many other studies.^(3,4,5,6,8,14)

This study shows good knowledge of respondents regarding fatality of rabies(81.3%), prevention of its occurrence by vaccination(92.7%), safety of administration of rabies vaccine in various population subgroups, symptoms of rabies in humans as well as animals. This may be due to increased awareness

among public as a result of improved education level. A study conducted by Sivagurunathan et al.¹⁶ similarly observed that 76% of the subjects had heard of rabies while 63.5% acknowledged its fatality. A study by Krishnamoorthy et al.¹⁷ and Sivagurunathan et al.¹⁶ showed that about 74.8% and 68.7% of the respondents respectively, had knowledge of at least one symptom of rabies in animals (aggressiveness), which is very similar to our results. Herbert et al.¹⁸ found in his study that 67.0% respondents knew about one symptom of rabies in humans. In contrast to findings of present study, Singh et al.¹⁹ found that a significant proportion of respondents (41.4%) did not know about the symptoms of human rabies. It was observed that only 27.3% study subjects correctly knew that animal bite on head, neck and face carries highest risks of fatality, similar to what was observed by Jain et al.²⁰. Only about one fourth respondents knew about the need to observe biting animal for 10 days, which was considerably lower than observed by Sivagurunathan et al.¹⁶(67.2%). This shows that there is a huge necessity of raising awareness about rabies through mass education campaigns.

Panda et al.²¹ reported in their study that more than half (66.9%) of the victims had used water for wound washing, which is comparable to the present study (86.7%). But use of soap for wound toileting was practised by only 45.3% participants contrary to that observed in a study by Naik et al. (66.7%)²². This study found that only about 36.7% victims practised bite wound washing for adequate duration, similar low percentage was also reported by Panda et al.²¹ in their study. This shows lack of awareness regarding correct method of wound care among victims. More than two-thirds of respondents first reported to government facilities for treatment which shows their awareness of the facilities where ARV is available, also this may be due to availability of ARV for free at government facilities. These findings were similar to that observed by Sachdeva et al.¹⁵ About half(45.3%) of bite victims reported immediately to hospital for ARV after washing wound with soap & water. This is considerably higher (6.7%) than an observation made by Kinge et al.³ on wound care using soap and water. About 14.7% study subjects had first smeared the wound with indigenous substances like chilli, turmeric and availed hospital services afterwards. This is a matter of concern because efficacy of these

substances in preventing rabies is not proven and they may actually cause harm. A study by Shah et al.⁵ revealed that about 52.6% respondents applied indigenous products on wound immediately after bite. While more than half study subjects sought hospital care within 24 hours of the bite, which shows good health seeking behaviour, Similar findings were also reported by Ganasva et al.²³ in their study (80%). Although pet dogs were the main biting animals, rate of rabies vaccination amongst them was very less (16.9%). This poses a threat to rabies control measures. This finding is in consonance with the result found in a study by Patel et al.¹⁴, where only 24.4% of the pets were vaccinated.

Conclusion

Younger age group is more commonly affected by animal bites (including children upto 15 years and persons between 16 to 30 years). Children should be taught to remain alert while playing with dogs. This may be done by utilising already existing school health programs. Special educational programs regarding rabies also need to be integrated in regular college level activities. Major biting animals are dogs. Few people are aware of the need for observing animals post bite. Mass awareness campaigns are needed to improve knowledge of public regarding rabies, its preventive measures and wound care practices. Pet dog rabies vaccination rate is very low, which needs to be improved substantially for achieving rabies control. This may be facilitated by organising vaccination campaigns nearby pet supply shops. This requires embracing a 'One Health' strategy, i.e. a transdisciplinary multisectoral collaborative approach²⁴ involving various departments like human health, veterinary health, animal husbandry etc, to achieve the global goal of achieving zero dog mediated human rabies deaths by year 2030.

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