

## Original Research Article

**Epidemiological Profile and Awareness regarding Animal Bite Management in an Urban area of district Datia, Madhya Pradesh, India**Shubhanshu Gupta<sup>1</sup>, Sanjeev Kumar<sup>2</sup>, Piyush D Swami<sup>3</sup>, Rashmi Yadav<sup>4\*</sup><sup>1</sup>Assistant Professor, Department of Community Medicine, GMC, Datia, Madhya Pradesh, India<sup>2</sup>Assistant Professor, Department of Community Medicine, GMC, Datia, Madhya Pradesh, India<sup>3</sup>Demonstrator, Department of Community Medicine, GMC, Datia, Madhya Pradesh, India<sup>4</sup>Assistant Professor, Department of Community Medicine, GMC, Khandwa, Madhya Pradesh, India

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**Abstract**

**Background:** Rabies is a deadly Zoonotic disease most often transmitted to humans through animal bite. Since there is no community-based data to get the actual magnitude of Rabies infection and lack of awareness with misconceptions of patients in Datia region this study was planned. **Objectives:** To estimate the extent of problem & the epidemiological characteristics of animal bite cases. **Methodology:** It was Community Based Cross-sectional analytical study conducted at field practice area (UHTC) under Community Medicine Department of Government Medical College, Datia. The study was conducted for period 1 year. Interview schedule was used, and data was thoroughly cleaned and analysed using Epi info. **Results:** Total 420 cases of animal bites were studied in the present study. Most common biting animal was dog as 97.33% cases gave history of dog bite. Right lower limb was the most common (55%) biting site. The local applications at the site of bite were tobacco snuff, red chilli miscellaneous which were practiced by 69% of cases. **Conclusion:** There is need for creating awareness in public and medical community about proper wound management and judicious use of anti-rabies vaccine.

**Key words:** Animal bites, anti-rabies vaccine, Immunoglobulin, post-exposure prophylaxis.

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**Introduction**

Rabies is a disease engrained in history, courting back to ancient Egypt. Rabies is a deadly Zoonotic disease most often transmitted to humans through animal bite. It is principally a disease of terrestrial and airborne mammals, counting dogs, wolves, foxes, coyotes, jackals, cats, bobcats, lions, mongooses, skunks, badgers, bats, monkeys and humans. In India, the dog is the main reservoir of rabies. It is estimated that atleast 55 000 human rabies deaths occur yearly in Africa and Asia following contact with rabid dogs[1]. Almost 50 000 people die each year from the disease, with India carrying the greatest burden of more than 20, 000 deaths annually[2]. 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 around 12,700 symptomatically recognizable furious rabies deaths in India; taken as a entire 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[3,4]. Prompt and adequate local treatment along with vaccines, Immunoglobulin are the effective way of treatment. Since lack of awareness about the actions to be taken and misconceptions make the patients vulnerable especially at this area of Madhya Pradesh. Keeping this background in mind the rationale will be as there is no nationally representative community-based data or organized surveillance system to get the actual magnitude of Rabies infection and lack of awareness in Datia as it is devoid of quality health management information system this study will be planned.

**Objectives**

1. To estimate the extent of problem & the epidemiological characteristics of animal bite cases in field practice area of Government Medical College, Datia.
2. To determine the extent of awareness regarding animal bite management and its vaccination among lay people.

**Methodology**

**Type of study:** Observational Analytical study.

**Study design:** Facility Based Cross- Sectional study.

**Study place:** The study was conducted at field practice area (UHTC) under Department of Community Medicine, Government Medical College, Datia.

**Study duration:** The duration of study was 1 year (October 2018 to September 2019).

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**Study Population:** Consecutive patients (accompanying attendant) attending the Urban Health training centre were included in the study.

**Sample Size:** Around 420 animal bite cases were recorded in one year under UHTC.

**Sampling Technique:** Purposive Sampling Technique.

**Study Tool:** A pre-designed, pre-tested questionnaire was used for the study using an interview schedule that undergone initial translation, back-translation, re-translation followed by pilot study to check the validity.

Study tool consists of questions related to the information on demographic details, family characteristics such as residence, type of family etc and information about type of management, mis-conceptions, urgency of treatment.

Those not willing to give interview were excluded. The 'Informed consent form' was custom-made in Hindi from original English version which was developed at the Institute with the assistance from the faculty members and other experts in relation to animal bite. 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 and the recall period was of 1 year.

The area has a population of twenty thousand. We have chosen 5 surveyors in 5 randomly chosen pockets of UHTC & the paramedical staffs were trained by an expert on rabies through a briefing & debriefings session. 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.

The whole procedure was well endured by all the participants with no reported medical complaint; the time required for the data collection did not exceed 10 minutes that included the counselling times till achievement of final data. The data were strictly kept confidential and were not disclosed for the assessment, management or intervention.

#### **Ethical clearance**

Before the start of the study permission was taken from Institutional ethics Committee.

#### **Statistical analysis**

The data collected was thoroughly cleaned and was entered in MS Excel spreadsheets and analysed using Epi info 'version 7' software. Chi-Square test was used for analysis. A p-value of <0.05 is considered significant.

## **Results**

**Table 1: Age and Gender wise distribution of the Study participants**

Age groups (years)	Male		Female	
	N	Dog bite cases	N	Dog bite cases
<10 years	39	10	27	7
11 to 20	170	100	96	52
21 to 30	150	96	82	39
31 to 40	77	41	53	21
41 to 50	60	23	37	14
>50 years	27	11	15	6

As per table 1 out of 420 cases nearly 98% cases are of dog bite followed by monkey bite and cat bite. Majority (36%) belonged to the age group between 11 to 20 years both in males and females. Mean age of the cases was  $19.2 \pm 3.2$  years. The study was found to be male preponderance (70%)

and females were 30%. Overall incidence of dog bite cases was higher in adolescent age group which clearly indicates since they spend most of the time outside the home, so the cases were more in this age group. Comparatively less cases belonged to age group >40 years.

**Table 2: Distribution as per site of Bite, Category and Health Seeking Behaviour**

Characteristics	Dog bite cases (N=420)
<b>Site of Bite</b>	
Upper limb	31 (7%)
Trunk	9 (3%)
Head and Neck	8 (2%)
Right lower limb	196 (46%)
Left lower limb	176 (42%)
<b>Category</b>	
I	20 (5%)
II	223 (53%)
III	177 (42%)
<b>Pattern of House Management</b>	
Chilly	82 (19.5%)
Oil	63 (15%)

Turmeric Powder	31 (7%)
Only water	54 (13%)
Soap and Water	24 (5%)
No management	166 (40%)
<b>Time of Reporting</b>	
<24 hours	73 (17%)
24 to 48 hours	189 (45%)
>48 hours	158 (38%)
<b>Treatment Facility</b>	
Private hospital	83 (20%)
Government Hospital	337 (80%)

As per table 2 the most common site of bite was found to be right lower limb (46%) followed by left lower limb (42%) then upper limb. Most of the cases belonged to category II(53%).Local house management showed use of chilly followed by ghee oil is the most common management.

This local application was used as pre-treatment. Around 40% has done no management. Nearly 45% of cases reported between 24 to 48 hours post bite. 38% reported after 2 days. Mostly cases took treatment from government facility which indicates good awareness regarding cost effectiveness towards vaccines

**Table 3: Awareness of Respondents towards dog bite**

Menace of stray dogs	Watch the dog (10 days)	Kill the dog	Let the dog go away	p-value
Yes	134	51	160	<b>0.001*</b>
No	36	21	18	

Around 82% of cases were about the menace of stray dogs. When asked about what should be done after dog bite as per the area where the menace stray dog was present, 32% answered that the dog should be watched for 10 days. 38% answered let the dog go away. And this difference was found to be statistically significant. ( $p < 0.05$ ).

**Table 4: Awareness regarding site of Injection (N=420)**

Site	Number (%)
Arm	45 (10%)
Abdomen	297 (71%)
Leg	28 (7%)
Don't know	50 (12%)

As per table 4 when asked about vaccine administration for dog bite around 65% told it is not affordable. Most shocking awareness was about the site of administration around 71% told abdomen is the site of vaccine. Around 12% don't know the site of injection.

**Table 5: Association of category of bite according to Anti-Rabies Management**

Category	ARV with RIG		p-value
	Male	Female	
<b>I</b>	13	7	<b>0.03*</b>
<b>II</b>	144, 7	22,5	
<b>III</b>	61,19	37,17	

According to table 5 most of the cases belonged to category II. Though category III is the most severe bite but only 55% had taken ARV and 16% had gone for rabies immunoglobulin. This can be due to the fact that the cost of RIG is very high, and their non-availability caused the patients to avoid this. And this difference was found to be statistically significant. ( $p < 0.05$ ).

## Discussion

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 because men were more likely to go out of their homes for work as compared to females. Khokhar et al, Behera et al and Hanspal et al also reported that animal bites were more in males than females[5-7]. Animal bites occurred in all age groups and adolescents were vulnerable to it. Tiwari et al and Jeffery found that 25.39 percent and 26.4 percent children were bitten by animal bites respectively [8,9]. Children's small size may encourage a dog to act dominantly towards them. Many children's and adolescents lack of judgement about how to deal with a dog, and their inability to fend off an attack, may put them at additional risk[9]. Overall lower limbs (88%) were the main site of bites these are most easily approachable part of the body for

an animal. Tiwari et al, Hanspal et al also observed that lower limbs were main site of bite [7,8]. Most of the animal bites were of category II. Khokhar et al observed that majority of the animal bite exposure were of category III [5]. Like our study finding category II cases reported were 85.94% by Modi and 60.47% by Tiwari et al. In the study by Rasanía et al majority of the cases had category II bites [8,10,11]. The practice of washing the wound immediately with soap and water was reported to be poor in the several other studies. Shetty et al reported that the wound was washed with soap and water in only 3.6% of cases [12]. A high proportion of bite victims did not wash their wounds with soap and water (39.5%) as reported by Sudarshan et al [13]. Immediate care like washing of wound with soap and water was practiced by only 23.5% as reported by Sharma et al [14]. Rozario et al reported that in the latest survey, in 2004, only 39.5% of bite victims washed the wounds with soap and water. Other applications at the site of animal bite were mainly chilli and turmeric [1].

Study by Bhargava et al reported different practices including use of traditional remedies such as application of chilli paste, are prevalent for wound treatment [15].

Maximum subjects reported to health centre within 24 to 48 hours and very few cases within 24 hours after bite. Malini et al 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 [16]. In the present study only 55% took ARV and 16% took RIG. 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 viricidal 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.

### Conclusion

Dog bite is more commonly reported in male gender and in adolescents age groups. There is a strong need to initiate and establish national rabies control program as recommended by WHO to fill the broad gap in awareness of rural population. Co-ordinated rabies elimination project must be put on record. Creating awareness at the community level about the control of rabies is the best intervention in addition to the improvement in department likes veterinary, medical and media.

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