

**PROFILE OF CHILDREN BITTEN BY DOGS, REPORTING TO A GOVERNMENT TERTIARY CARE HOSPITAL AND THEIR COMPLIANCE TO POST EXPOSURE PROPHYLAXIS**Sridhar P. V<sup>1</sup>, Shanmukappa<sup>2</sup>, Vinay M<sup>3</sup>, Anil Kumar K<sup>4</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: INTRODUCTION:** Children make up the largest percentage of people bitten by dogs, with the highest incidence in mid-to-late childhood. There is increased severity, necessity for medical treatment and death rates in children.<sup>1</sup> Dog bites not only causes wound, bleeding & pain but also transmits diseases like rabies tetanus, etc. which are fatal. The psychological trauma that a child undergoes is also immense. **OBJECTIVES:** To assess the socio-demographic profile, immediate treatment and compliance to immune globulin and rabies vaccination of dog bite victims aged 15 years or less. **METHODOLOGY:** This cross sectional study is based on records of the year 2013 in a government tertiary care teaching hospital located in south Karnataka. The descriptive statistics have been calculated using Microsoft excel software. **RESULTS:** Of the 5238 animal bite victims, 1773 (33.8%) were aged 15 years or less and 1727 (97.4%) were exposed to dogs. Significantly large proportion of victims was rural boys aged 4 to 7 years belonging to middle & lower class. Most bites were provoked and on the leg. Most reported within the same or next day of bite. Most were category III bites with only a few doing appropriate first aid measures. All took tetanus vaccination. 39% category III victims took rabies immune globulin and 60% were compliant with the rabies vaccination schedule.

**KEYWORDS:** Dog bite, Children, Profile, Compliance.

**INTRODUCTION:** Humans are in close contact with dogs and cases of dog bites are not uncommon in government tertiary care hospitals. In the past few years, dog bites have become the focus of increasing media and public attention. The risk of dog bites is greatly increased by human actions (provoking, etc.) and inactions (dog population control, etc.).

Dog bites account for tens of millions of injuries annually. Dog bite fatality rates are higher in low- and middle-income countries than in high-income countries as rabies is a problem in many of these countries, and there may be a lack of post-exposure treatment and appropriate access to health care. Globally, an estimated 55,000 people die annually from rabies. Bites from rabid dogs account for the vast majority of these deaths.

Children make up the largest percentage of people bitten by dogs, with the highest incidence in mid-to-late childhood. The risk of injury to the head and neck is greater in children than in adults, adding to increased severity, necessity for medical treatment and death rates.<sup>1</sup>

In India, rabies affects mainly people of lower socio-economic status and children between the ages of 5 and 15 years. Indian children often play near stray dogs, which are many and roam freely, and are used to sharing their food with them, which results in frequent bites. Most children attacked by dogs were unaware of having been bitten and their parents often ignored the attacks or

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simply treated the wounds by applying indigenous products such as hot peppers or turmeric. Only a few parents sought medical advice, usually with delay.<sup>2</sup>

Appropriate treatment of dog bite wound includes (a) irrigation and cleansing of bite wound (b) antiseptic application to bite wound (c) administration of tetanus vaccine (d) administration of rabies immune globulin & rabies vaccine.<sup>1</sup>

It is estimated that in India approximately, 17 million animal bites occur annually, the vast majority of which is caused by dogs. 20,000 people die due to rabies each year in India.<sup>3</sup>

Dog bites not only causes wound, bleeding & pain but also transmits diseases like rabies tetanus, etc. which are fatal. The psychological trauma that a child undergoes is also immense. Studying the characteristics of dog bite victims, the first aid that they practice and the compliance to treatment will throw light on the present situation of dog bite management. Based on this plans can be formulated to decrease the incidence of dog bites and increase the correct dog bite management practices.

### OBJECTIVES:

1. To assess the socio-demographic profile of dog bite victims aged 15 years or less who reported to MIMS hospital.
2. To assess the immediate treatment they took after the dog bite.
3. To assess their compliance to rabies immune globulin administration and complete course of intradermal rabies vaccination.

**METHODOLOGY:** This study was conducted in the Anti-Rabies Clinic of Mandya Institute of Medical Sciences, Mandya (ARC-MIMS); a government tertiary care teaching hospital located in south Karnataka. It is a record based study where the records of children who reported to ARC-MIMS, between 1<sup>st</sup> January 2013 and 31<sup>st</sup> December 2013 were entered in Microsoft Excel software. This data was analyzed using descriptive statistics.

**RESULTS:** A total of 5238 animal bite victims reported to ARC-MIMS between 1<sup>st</sup> January 2013 and 31<sup>st</sup> December 2013. Of these 1773 (33.8%) were aged less than 15 years. Of these 1773 victims, 1727 (97.4%) were exposed to dogs.

The largest proportion of dog bite cases was in the age group of 4 to 7 years (34.2%), followed by 8 to 11 years (26.2%). 1235 (71.5%) of the dog bite victims were male while 492 (28.5%) were female children.

1366 (79.1%) of the children were rural residents, while 361 (20.9%) were urban residents. As per modified BG Prasad's classification, 710 (41.1%) belonged to class III and 652 (37.8%) belonged to class IV socio economic status (Table1).

911 (52.8%) were bitten by pet dogs. Of these, 178 (19.5%) dogs had been immunized against rabies. Of those bitten by pet dogs, the dog had been provoked in 746 (81.9%) cases. 816 (47.2%) were bitten by stray dogs. Of these, unprovoked bites accounted for 329 (40.3%) cases.

More number of cases was seen in the months of April (10.2%) & May (10.7%).

753 (43.6%) victims reported on the same day of bite and 576 (33.4%) reported on the next day. 1181 (68.4%) children had 1 wound which meant that the dog had bitten the child only once and 300 (17.4%) had 2 wounds. 909 (52.6%) children were bitten on the lower limb while 652 (37.8%) were bitten on the upper limb (Table 2).

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667 (38.6%) children had received tetanus vaccine before reporting to ARC-MIMS. Tetanus vaccine was administered to children where indicated. As per WHO classification, 1133 (65.6%) children had category III exposure and 594 (34.4%) had category II exposure.

Wound wash was done by 1010 (58.5%) children. The bite wound was washed with water alone in 627 (36.3%) cases. The wound washed with soap and water in 383 (22.2%) cases. All the bite wounds were washed again in ARC-MIMS. 48 (02.8%) had applied anti septic to the bite wound. 64 (3.7%) had applied irritant like turmeric, lime, leaf sap, etc. (Table 3)

All the 1133 children who had category III bites were advised for rabies immune globulin administration. Of these 443 (39.1%) received it. 54 of the bite victims had been exposed before and had received the complete course of rabies vaccination before. They required 2 doses of rabies vaccine. Of these, 47 (87.0%) received both doses while 7 (13.0%) received only 1 dose.

1673 children had to receive the complete course of 4 doses of rabies vaccine injections.

Of these 182 (10.9%) received only 1 dose, 210 (12.6%) received 2 doses, 274 (16.4%) received 3 doses and 1007 (60.2%) completed the full course of rabies vaccination.

<b>No. of dog bite victims aged ≤15 years</b>	<b>1727</b>	<b>100%</b>
<b>Age</b>		
0-3 years	294	17.0%
4-7 years	590	34.2%
8-11 years	452	26.2%
12-15 years	391	22.6%
Male	1235	71.5%
Female	492	28.5%
Rural	1366	79.1%
Urban	361	20.9%
SES I	11	0.6%
SES II	86	5.0%
SES III	710	41.1%
SES IV	652	37.6%
SES V	268	15.5%
Pet Dog	911	52.8%
Stray Dog	816	47.2%
Provoked	1233	71.4%
Unprovoked	494	28.6%
Reported on same day	753	43.6%
Reported next day	576	33.4%
Reported 2 days later	177	10.2%
Reported 3-7 days later	188	10.9%
Reported >7 days later	33	1.9%

**Table 1: Profile of dog bite victims aged 15 years or less reporting to ARC-MIMS in 2013**

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Site of bite	Number of victims	Percentage
Bite on lower limb	909	52.6%
Bite on upper limb	652	37.8%
Bite on chest/ abdomen	99	5.7%
Bite on head/ neck	93	5.3%
Bite on other areas	14	0.8%
Number of bites		
1 bite	1181	68.4%
2 bites	300	17.4%
>2 bites	246	14.2%
Category		
Category II exposure	594	34.4%
Category III exposure	1133	65.5%

**Table 2: Characteristics of dog bite**

	Number of victims	Percentage
Wound washed with water	627	36.3%
Wound washed with soap & water	383	22.2%
Antiseptic application to wound	48	2.8%
Irritant application to wound	64	3.7%
Rabies Immune globulin administered	443	39.1%
1 dose of rabies vaccine	182	10.9%
2 doses of rabies vaccine	210	12.6%
3 doses of rabies vaccine	274	16.4%
4 doses of rabies vaccine	1007	60.2%
2 doses among re-exposure cases	47	87.0%

**Table 3: Immediate care of wound and Compliance to Treatment**

**DISCUSSION & CONCLUSION:** 1727 children aged 15 years or less reported to ARC-MIMS in 2013. Majority were aged 4-7 years, male, middle class (SES III) rural children. Most of them reported on the same day or the next day with single, provoked bites on the lower limb which resulted in bleeding were more frequent.

Bites from pet dogs were as common as bites from stray dogs. The practice of wound wash and antiseptic application was meager. A third had been administered tetanus vaccine before reporting to ARC-MIMS. Acceptance of rabies immune globulin was inadequate. Compliance to 4 doses of intradermal rabies vaccination was about 60%.

In our study we found that 4-7 year olds (34.2%) and 8-11 years (26.2%) were most frequently bitten. Similar results were found in other studies.<sup>4,5,6</sup> WHO reports that rabies cases are more common in the age group of 5-15 years<sup>2</sup>

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In our center 71.5% of victims were male. Other studies show that males are more commonly affected than females.<sup>4,7,8</sup> In our center 79.1% of victims were rural residents. Other studies show similar findings.<sup>4,6,7</sup> It is heartening to know that awareness regarding post exposure prophylaxis for dog bite is high among rural residents.

78.7% of victims in our study belonged to SES III & IV. The observation that victims usually belong to lower socioeconomic classes has been a common observation in many studies and by the WHO.<sup>4</sup>

While our study showed no significant difference among victims who were bitten by pet & stray dogs, other studies including ones done in our center a few years ago show that stray dog bites are more.<sup>2,4,8,9</sup> This may be a result of the awareness programs that have been conducted over the past few years.

The fact that children provoke dogs and get bitten has been reiterated in the present study.<sup>2,4,8,9</sup> The lower limb is the most accessible part for the dog to bite. Our study substantiates this finding as have other studies<sup>4,5,8,9</sup>

65% of the bites in our study were classified as category III bites. This is similar to most studies,<sup>4,5,7,9</sup> while some studies show more number of Category II exposure<sup>8</sup>. In our study, 77% victims reported on the same day or the next day of bite. Most of children has been reported with in 48hrs<sup>4,7,8,9</sup>

Wound toilet was found to be highly inadequate in our study. Similar findings was found in studies,<sup>4,6,7,9</sup> while few studies showed that washing of wound was done<sup>8</sup> in most of the studies some are the other irritants are used to clean wound.<sup>4,6,7,8,9</sup>

39% of the victims received rabies immune globulin despite counseling. This may be due to its high cost. The percentage of victims accepting RIG is improving over the last few years<sup>6</sup>. Other studies indicate that, availability of Rig and its acceptance is very poor<sup>6,7</sup>

Compliance to rabies vaccination in our study was 60%. Other centers show compliance of 53% to 91%.<sup>10,11</sup>

Communities, especially children should be informed about the risks of dog bites and prevention techniques such as avoiding stray dogs and never leaving a child unattended around any dog.

Health-care providers should be educated on the appropriate management of dog bites. Health authorities and policy-makers should ensure rabies control within dog populations, ensure appropriate supplies of rabies vaccines for potential rabies exposure in people, and develop data collection systems to further document the burden of this problem.<sup>1</sup>

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