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# Incidence and Analysis of Animal Bite Cases Among Pediatric Age Group Attending Government Anti-Rabies Clinic at Hyderabad

KEYWORDS: Rabies, animal bite, age& sex of bite victims and preexposure prophylaxis

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**ABSTRACT** *Introduction: India is a Canine Rabies endemic country. In India every 30 minutes a life is lost due to Rabies. The dog is the main reservoir and transmitter of rabies. Dog to human ration is 1:36 . There is an overall rate of 2 dog bites per second in India.In Greater Hyderabad stray dog population is over 3 lakhs , the civic body has been able to vaccinate only 1.69 lakhs. Reports of dogs mauling children comes every day from various parts of the city . In Hyderabad dog population is kept under check by sterilising dogs.*

*Objective: To determine the incidence and analysis of animal bite cases among paediatric age group attending Govt. Anti Rabies Vaccine Clinic- Institute of Preventive Medicine- Hyderabad, Telangana State and to adopt measures to prevent recurrence. Among the victims of animal bites in children , the most vulnerable age group, sex distribution , type of animal, the day which the victims attended the clinic and the most common site of bite on body were analysed.*

*Material Methods: This study is a retrospective record based study . The case records of all the children aged less than or equal to 15 years who had attended Govt. A.R.V. Clinic at IPM, Hyderabad between 20th April 2012 to 3rd July 2012 were analysed(75 days)*

*Results: Total number of 10,254 animal bite cases attended A.R.V. clinic , IPM from 20-4-2012 to 3-7-2012(75 days) . Of these 3249 (31.68%) were animal bite victims aged 15 years and less than 15 years. This group was divided into 3 Groups. Group I 0-5 years, Group II 6-10 years and Group III 11-15 years. 840 (25.85%) were in Group I, of these 560(66.6%) were males 280 (33.33%) were females. 1297(39.9%) were in Group II, of these 888(68.46%) were males and 409(31.53%) were females. 1112(34.22%) were in Group III , of these 857(77.06%) were males and 255(22.93%) were females. 3091(95.13%) were exposed to dogs, 99(3.04%) to cats , 57(1.75%) to monkeys and 2(0.06%) to pigs. Among exposure to dogs 1630(52.73%) were pet dogs, 266(8.60%) were street dogs, 1065(34.45%) were observable street dogs, 56(1.81%) were neighbour's dogs and 74(2.39%) dogs were killed with the apprehension that more persons may fall victim. 309(9.5%) attended clinic on 0 day, 1803 (55.49%) on day 1 ,498(15.32%) on day 2 , 203(6.24%) on day 3 , 133(4.09%) on day 4 , 55(1.69%) on day 5 , 27(0.38%) on day 6 , 80(2.46%) on day 7 and 141 (4.33%) after7 days. 1790(53.7%), suffered animal bite injury on lower limbs, 918(27.54%) on upper limbs, 169(5.07%) on abdomen/ back, 24(0.72%) on chest, 162(4.86%) on head/neck/face and 186(5.58%) on multiple sites.*

*Conclusion: More than 31% animal bite victims in this study are children. There is a need for advocacy of education, awareness, preexposure prophylaxis and booster for children in rabies endemic areas. Research community has to cater information to policy makers enabling them to bring effective legislation.*

## INTRODUCTION

All parts of India are affected by Rabies except islands of Lakshadweep , Andaman and Nicobar[1] . Two epidemiological cycles of Rabies exist i.e. Urban and Sylvatic[2].

In India 20,000 people die of rabies every year. Globally 55000 human rabies death occurs.The annual incidence of animal bite is more in children. India`s share is 36% of total rabies deaths. Some wokers postulated that true incidence of human rabies could be 10 times more than officially reported[1]. The dog population in India is estimated to be 25 millions. A high percentage of dogs are not immunised against rabies and they are ownerless. The incidence of animal bite per year is 17.4 millions , though because of poor surveillance and inadequate legislation for compulsory notification of cases the statistics do not reflect the true incidence.Rabies free area of Lakshadweep are dog free[1]. As per president of the rabies in Asia Foundation, the dog to human ration is 1:36 and there is overall rate of 2 dog bites every second in India[4].As per APCRI WHO survey report 2004, 1.7% of the population of India gets bitten by animals each year.[3] Rabies is most common in people younger than 15 years.On an average 40% of the post exposure prophylaxis given in Asia and Africa are to children aged 5-14 years and majority are male[5] . India contributes less than 5% of global research output on Rabies though it contains half the disease burden[15].

In U.S.A. there are at least 15 deaths per year due to rabies[6] . The incidence of dog bite is 4.5 millions per annum. Of these nearly one millions victims are less than 18 years of age. Among these children , those aged 5-9 years have the highest incidence of reported and treated dog bites[8].In U.S.A. annual mortality is 7.1/ 100 million population with 57% occurring in children under the age of 10 years[6] .

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In U.K. dog bites account 250000 each year. 740 people per 100000 are bitten by dogs.The annual incidence of dog bites in children aged under 15 years is 22/1000[6].In Italy children have a 3.2 fold higher bite rate than adults. The annual incidence of bite in children aged under 15 years is 22/100.

The total stray dog population of Greater Hyderabad is over 3 lakhs, the civic body has been able to vaccinate only 1.69 lakhs. Reports of dogs mauling children and biting people are reported every day from various parts of the city . According to the Veternarians , dogs that are sterilized and vaccinated are less ferocious than those that are not sterilized. On an average 50,000 dog bite cases have been reported every year at the Institute of Preventive Medicine , Hyderabad since 2006-07.In addition a large number of dog bite victims go to private clinics.According to the municipal authorities and an NGO involved in the process , 100-150 dogs are sterilised every day with five operation theatres located in each of the five zones of Greater Hyderabad.[14]

As is evident from statistics paediatric age group is comparatively more vulnerable for animal bites. This has prompted us to take up the present study of incidence and analysis of animal bite cases among paediatric age group at A.R.V. clinic , located at urban health centre , Hyderabad.

**OBJECTIVES**

To determine the incidence and analysis of animal bite cases among paediatric age group attending Government Anti Rabies Vaccine Clinic , Institute Of Preventive Medicine , Hyderabad, Telangana State and to adopt measures to prevent recurrence.Among the victims of animal bites in children , the most vulnerable age group , sex distribution , type of animal, the day which the victim attended the clinic and the most common site of bite on body were analysed.

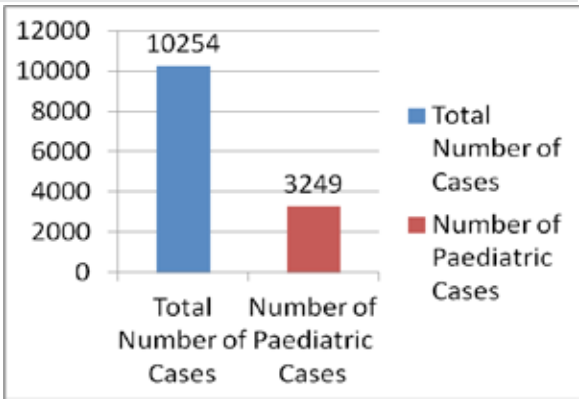
**Material and Methods**

This study is a retrospective record based study. The case records of all the children aged less than or equal to 15 years who attended Government Anti Rabies Clinic at Institute of Preventive Medicine , Hyderabad between 20th April 2012 to 3rd July 2012 were analysed.

In the said period total no. Of cases registered were 10254. Out of this total number of children who were victims of animal bites were 3249(31.68%). Relevant data pertaining to age, sex, animal, type of dog , site of bite , interval between the dog bite and arrival for vaccination , status of dog after bite whether alive, dead or killed were noted.

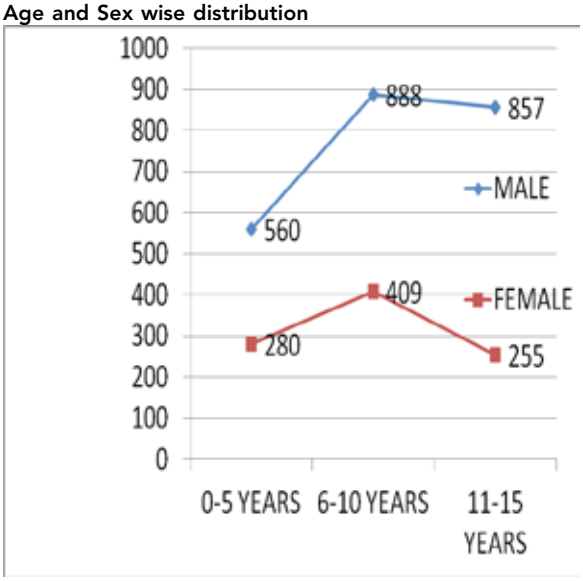
**Results**

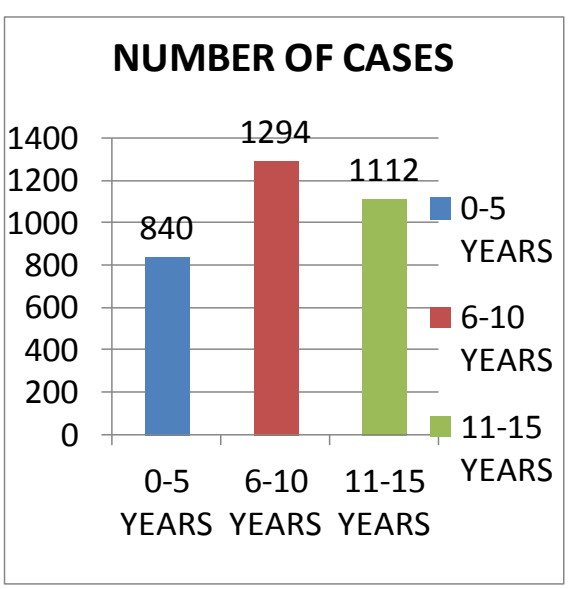
In the study period, in all 3249 children in the age group of 0-15 years attended A.R.V. Clinic. Paediatric age group was divided into three Groups i.e. Group I 0-5 years , Group II 6-10 years and Group III 11-15 years. Of 3249 animal bite cases, 840(25.85%) were under Group I , of these 280 were females and 560 males , 1297(39.91%) were under Group II , of these 409 were females and 888 were males and remaining 1112( 34.22%) were under Group III, of these 255 were females and 857 were males. Total number of cases and number of paediatric animal bite cases, age and sex distribution is reflected in Graph numbers 1 and 2 respectively .




**Graph No.1**

**Age and Sex wise distribution**




**Graph No. 2**

Total no. Of dog bite cases were 3091 (95.13%) , cat bite cases were 99(3.04%), monkey bite cases were57 (1.75%) and pig bite cases 2 (0.06%). Of 3091 dog bite cases , 1630(52.73%) were bitten by pet dogs, 266(8.60%) were

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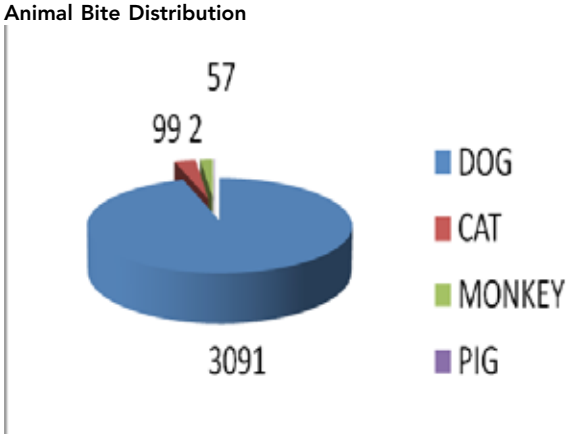
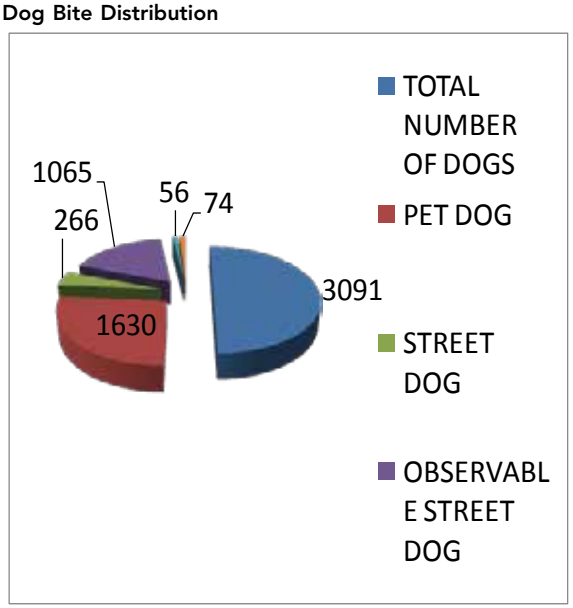
bitten by street dogs, 1065(34.45%) by observable street dogs, 56(1.81%) by neighbour's dog and in 74 cases (2.39%) dog was killed . More than 50% of dog bite cases were by pet dog and in majority of cases the vaccination status of these dogs was not known. Animal bite and type of dog distribution is reflected in Graph No 3

**Animal Bite Distribution**



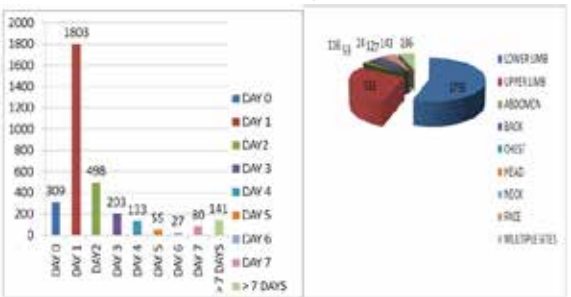

**Dog Bite Distribution**




**Graph No. 3**

309(9.51%) cases of animal bite reported to A.R.V. Clinic on same day. 1803 cases (55.49%) on day 1, 498 cases (15.32%) on day 2 , 203 cases (6.24%) on day 3, 133 cases (4.09%) on day 4 , 55 cases (1.69%) on day 5, 27 cases (0.38%) on day 6, 80 cases (2.46%)on day 7 and 141 cases (4.33%) after 7 days . Reason for not reporting on same day was ignorance and lack of round the clock facility at the centre. Majority of cases had history of animal bite on lower limbs i.e.1790 cases (53.7%), followed by upper limbs 918 cases (27.54%), multiple sites 186 cases (5.58%), Abdomen and back 169 cases (5.07%), head,neck and face 162 cases (4.86%) and chest 24 cases (0.72%).

**Day wise distribution of cases reporting to A.R.V. Clinic and site of bite is reflected in graph No.4**




**Graph No. 4**

**Demographic characteristics of the patients is reflected in Table No. 1**

| Demographics characteristics of patients | | | |
|---|---|---|---|
| Age and Sex | Group Male | Female | |
| | I (0-5 years) 25.85% | 66.6% | 33.3% |
| II (6-10 years) 39.91% | 68.46% | 31.53% | |
| III (11-15 years) 34.22% | 77.06% | 22.93% | |
| Biting animal | Dog 95.13% | Pet dog 52.70% | |
| | | Street dog 8.60% | |
| Observable street dog 34.45% | | | |
| Neighbour's dog 1.81% | | | |
| Dog killed 2.39% | | | |
| | Cat 3.04% | | |
| | Monkey 1.75% | | |
| | Pig 0.06% | | |
| Day attended- | 0 day 9.51% | | |
| A.R.V. clinic | Day 1 55.49% | | |
| | Day 2 15.32% | | |
| | Day 3 6.24% | | |
| Day 4 4.09% | | | |
| Day 5 1.69% | | | |
| Day 6 0.38% | | | |
| | Day 7 2.46% | | |
| Site of bite - | Lowerlimbs 53.7% | | |
| | Upper limbs 27.54% | | |
| | Abdomen/Back 5.07% | | |
| | Chest 0.72% | | |
| | Head/Neck/Face 4.86% | | |
| | Multiple sites 5.58% | | |

**Discussion**

In the present study incidence of animal bite, predominantly dog bite is highest in Group II (39.91%). This finding is nearly similar to other workers from developed and developing countries who reported the peak age range of children bitten by dogs was between 4-9 years.[8,10]Our study reveals that animal bite incidence is more in males in all the three Groups i.e. 66.6%, 68.46% and 77.06% respectively. This finding corroborates with other studies[10]. This is because of inherent nature of male boys to explore environment. In current study , it reflects most bites to children are from pet dogs(52.7%) , this is in parallel to other studies[7]. Young children are vulnerable because of their unintentional provocative behaviour with dogs , such as

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running, screaming , pulling dog's tail, hair or paws. Children are physically and psychologically underdeveloped and have poor judgement of risk.Having dog in the home is another important risk factor for dog bite injury. The victims are mostly male children under the age of 14 years. This phenomenon is worldwide[7] . Thus demographic , cognitive and behavioural factors predict paediatric dog b ite injury risk[7]. Our study reveals the most common vulnerable site of animal bite is lower extremities. This analysis is in consistent with studies in developing countries but is inconsistent with findings in developed countries[10]. In developed countries bites to face and neck are frequent rather than to extremities[7]. Study reveals only 9.51% of animal bite victims took post exposure prophylaxis with in 24 hours(0 day) but majority 55.49% reported to A.R.V. clinic on day 1.It takes a minimum of 7 days for antibodies to develop after starting vaccination and hence delay in treatment favours the virus to get fixed.Thus immediate post exposure prophylaxis is vital[12.] There are multiple factors responsible for delay like low socioeconomic status, poor awareness, living in rural areas and lack of round the clock facility at the centre.

**Conclusion**

The study highlights the incidence of animal bite especially dog bite in paediatric age group. Our result suggests that male gender , Group II , exposure to stray dogs, unvaccinated pet dogs and poor awareness place the children at risk of animal bite injuries. Study reveals that 1.75% of children were victims to monkey bite. Controlling simian (primate) population in certain pockets of twin cities of Hyderabad is highly essential.

Only little over 9% of animal bite victims took treatment from 0 day . Globally the most popular and practised method is to enhance awareness among the general population. The vital tool in enhancing awareness is educational campaigns, highlighting the importance of immunisation in animals and prompt ,appropriate therapeutic measures of human victims of animal bites.The educational campaigns can be demonstrated live or by electronic programmes. Thus society learns more about dog safety , how to interact safely with dogs especially stray dogs which wander free in the streets of India. In some countries educational programmes are in force, in Australia "Prevent a Bite" is an educational programme designed for primary school children[13], American Academy of paediatrics conduct live , and video based dog bite prevention programmes for children[8]. Strict policies of dog registration , vaccination and dog population management have made Rabies Control and Eradication effective in countries like Singapore and Malaysia[16].

In India no such dog bite prevention education programme exists. Research is warranted , enabling to evolve target themes of dog bite prevention in children in India. It is proposed for advocacy for the implementation of pre exposure prophylaxis of children living in endemic areas.[4]

**Acknowledgement**

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**REFERENCE** 1)M.K.Sudarshan, Assessing burden of Rabies in India: WHO Sponsored National Multicentric Rabies Survey,2003. Indian Journal of Community Medicine 2005;30(3),page no. 100,101 | 2)Ananthnarayan & Paniker's, Text Book of Microbiology, 9th edition 2013, Universities press (India) Pvt. Ltd., Hyderabad,Page537 | 3) Editorial, Intradermal Rabies Vaccination in India.APCRI Journal ; 2009 XI (1), page 6 | 4) Amlan Goswami, Fifth meeting of the Asian Rabies Expert Bureau held at Ho Chi Minh City, Vietnam. APCRI Journal ; 2009 XI(1),P. 36 | 5)Manjunath M et al , Factors influencing intra-annual variation in the number of animal bite cases among children aged less than 15 years of age attending Anti Rabies Clinic in Mandya City . APCRI Journal 2012 XIV(1) , page 16 | 6)TWM Walker et al , Dog bite fracture of the mandible in a 9 month old infant : a case report. Cases Journal Bio Med Central 2009, 2:4 | 7)Aaron L. Davis et al , Dog bite risk: An assessment of child temperament and child-dog interactions. International Journal of Environmental Research and Public Health 2012, 9, Page 3003 | 8)Cinnamon A et al , An evaluation of a dog bite prevention intervention in the pediatric emergency department. Journal Trauma Acute Care Surgery 2013,75(403) , Page 2 | 9)Mirko Bertozzi et al , The management of dog bite injuries of genitalia in paediatric age . African Journal of Paediatric Surgery 2013;10(3), Page205 | 10)SI Adeleke , Impact of dog bite in Kano City A Retrospective study . Nigerian Journal of Clinical Practice 2010 , 13(1). Page 67,68 | 11)Jiabin Shen et al , A multi site study on knowledge , attitudes, beliefs and practice of child – dog interactions in rural china .International Journal of Environment Research and Public Health 2013, 10 . Page 951 | 12)R.R.Tiwari et al , Animal bites : Factors for delay in post exposure prophylaxis . Indian Journal of Medical Sciences; 54(6) Page 233 | 13)Simon Chapman et al , Preventing dog bites in children : randomised controlled trial of an educational intervention. British Medical Journal 2000; 320(7248). Page 1512 | 14)Rabies Alert Issue 3,2011, Page 4 | 15)Rabies Alert Issue 18, 2012, Page 1 | 16)Rabies Alert Issue 7,2011, Page 2 |