

**PREVALENCE, EPIDEMIOLOGICAL CHARACTERISTICS OF ANIMAL BITE  
AMONG CHILDREN IN IRAQ, A RETROSPECTIVE STUDY****Dr. Abdul Sattar Sahib Hamed\***

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**ABSTRACT**

Animal bites are critical threats to human and public health since the morbidity and mortality may be caused by it. The aim of this study was to estimate the prevalence and pattern of animal bites among children under 15 years old during the study period. A retrospective cross-sectional study was conducted from the 1st January 2017 up to December 2019. All the information was collected from the records. Sample size was 20861 cases. Data was described by using the descriptive statistics such as frequency, percentage, Chi-square, and p. value. STATA version 14 statistical package was used to analyze the data. The highest frequency 62.3% of studied sample occurred in the age groups 10 to 14 years old; male cases 57.2% were more than 42.8% female cases. 60.7% of them living in rural area and 39.3% in urban area. The percentage 44.2% of animal bites were higher during 2019. Stray animal were the main animal bites than other wild animal. Face and neck was the major site of animal bites and the most of them sought the treatment after 2 hours after exposed to animal bites. There are highly significant relationships between the age groups, gender and residence by the years at the p. value less than 0.05. Knowledge about animal bite is essential because it causes many fatal diseases to human beings.

**KEYWORD:** Animal bite, Stray, Prevalence, Characteristics, retrospective study.**INTRODUCTION**

The number of animal bite injuries has increased recently in some countries, especially from pet breeders inside homes, in addition to the exposure of most of them to stray animals, especially during hunting or camping.<sup>[1]</sup> Bites from wild and domestic animals (such as horses, cows, and sheep) are rare.<sup>[2]</sup> Bites from large animals can cause serious harm to a person, while an infection can be caused by bites from small animals.<sup>[3]</sup> Although many animals may bite, most bites in the United States are caused by dogs and cats as well, but to a lesser extent.<sup>[4]</sup> Due to the widespread use of dogs as pets in homes, the majority of bites from these animals result from defending their owners and their territories, and 10 to 20 people die from dog bites each year, most of them children.<sup>[4,5]</sup> Cats do not defend their territory and bite mainly when people hold them or try to intervene when a fight breaks out between them.<sup>[6]</sup> It is rare for domestic animals such as horses, cows, and sheep to bite, but their size and strength can result in serious injuries.<sup>[7]</sup> Wild animal bites are rare.<sup>[8]</sup> Animal bites cause between two and five million injuries each year, with dogs causing the vast majority of injuries (85-90%), followed by cats (5-10%) and rodents (2-3%), and the list of other animals extends to include Squirrels, rabbits, and other mammals, as well as reptiles, fish and amphibians, are often more likely to be bitten by animals than others and by humans,

as may occur in child fights.<sup>[9,10]</sup> Many studies done it in India, the authors reported that The annual incidence of animal bites was high, 1.7% and it was more in rural areas (1.8%), children (2.6%) and poor/low income group (75%).<sup>[11,12,13,14]</sup> The aim of this study was to estimate the prevalence and pattern of animal bites among children under 15 years old during the study period.

**METHODOLOGY**

This study was conducted at the Statistics Center of the Iraqi Ministry of Health, and this center contains all the information and the data which is related to our study. A retrospective cross-sectional study was conducted from the 1st January 2017 up to December 2019. All the information was collected from the records, which included all the demographic information such as age, sex, residence and also, the animal that had bitten them, the type of animal, site of bite, time taken to seek treatment, first aid given and regarding post exposure prophylaxis. Sample size was 20861 cases and the period of data collection from the records lasted for six months after obtaining the ethical clearance from the Iraqi Ministry of Health. We excluded the cases that do not include all the information required in our study; age over fifteen years old, also were excluded. All the information was entered into the excel sheet and the data

was checked before using the statistical analysis program. Data was described by using the descriptive statistics such as frequency, percentage, Chi-square, and p. value. STATA version 14 statistical package was used to analyze the data.

## RESULTS

Out of 20861 cases, the highest frequency 62.3% of studied sample occurred in the age groups 10 to 14 years old and 23.9% in the age 5 to 9 years and the least frequency 2.9 % occurred in the age less than one year. The male cases 57.2% were more than 42.8% female cases. 60.7% of them living in rural area and 39.3% in urban area [Table1]. During 2017, out of 6800 cases of animal bites, the highest frequency 68.9 % of cases still in the age groups 5 to 9years old, 33% were female

cases; 39.1% living in urban area. While in 2018, the highest frequency 31.6 % of cases still in the age groups 10 to 14 years old ; 26.8% were female cases and 24.1% of them living in rural area. In 2019, 43.9% of studied sample occurred in the age groups 10 to 14 years old and 88.5% in the age less than one year; 46.6% were male cases and 47.5% of them living in rural area [Table2]. Also, in the same table we show that there are highly significant relationships between the age groups, gender and residence by the years at the p. value less than 0.05. The percentage of animal bites cases 44.2% (9150/20861) were higher during 2019 [Figure1]. The type of animal bites 42.6% were stray animal [Figure2]. The site of animal bites 33.8% was higher in the face and neck site [Figure3]. 34.1% of case sought the treatment after 2 hours from the animal bites [Figure4].

**Table 1: Characteristics of studied samples.**

Variables	Frequency (20861)	Percent
Age groups		
Less than 1 years	610	2.9
1-4 years	2257	10.9
5-9 years	4977	23.9
10- 14 years	13017	62.3
Gender		
Male	11925	57.2
Female	8936	42.8
Residence		
Urban	8203	39.3
Rural	12658	60.7

**Table 2: Distribution of studied samples according to years by some variables.**

Age groups	Years						Total		P. Value
	2017		2018		2019		F	%	
	F	%	F	%	F	%			
Less than 1 years	46	7.5	24	4.0	540	88.5	610	100	The p-value is < 0.00001. The result is significant at p < .05
1-4 years	936	41.5	476	21.1	845	37.4	2257	100	
5-9 years	3428	68.9	295	5.9	1254	25.2	4977	100	
10- 14 years	2390	18.4	4116	31.6	6511	50.0	13017	100	
<b>Total</b>	6800	32.6	4911	23.5	9150	43.9	20861	100	
<b>Gender</b>									
Male	3847	32.3	2519	21.1	5559	46.6	11925	100	The p-value is < 0.00001. The result is significant at p < .05
Female	2953	33.0	2392	26.8	3591	40.2	8936	100	
<b>Total</b>	6800	32.6	4911	23.5	9150	43.9	20861	100	
<b>Residence</b>									
Urban	3211	39.1	1859	22.7	3133	38.2	8203	100	The p-value is < 0.00001. The result is significant at p < .05
Rural	3589	28.4	3052	24.1	6017	47.5	12658	100	
<b>Total</b>	6800	32.6	4911	23.5	9150	43.9	20861	100	

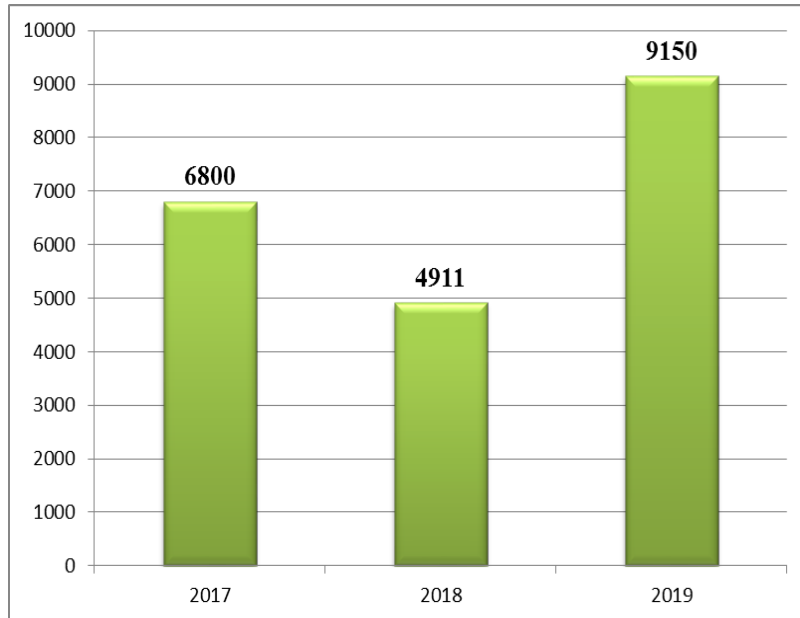


Figure 1: Distribution of studied sample according to frequency by years.

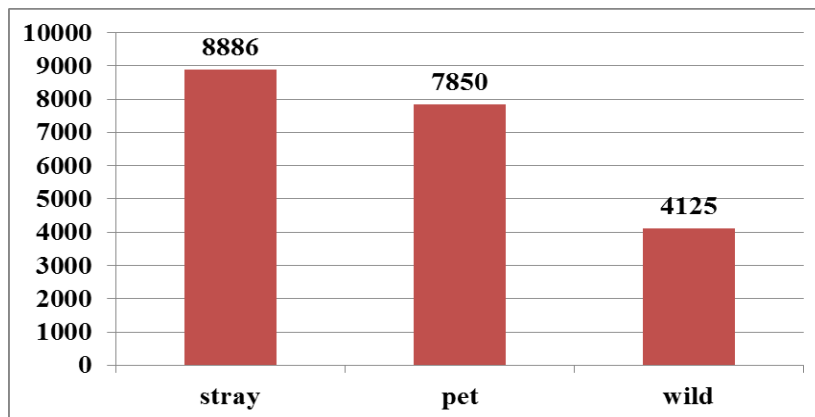


Figure 2: Type of animal bites.

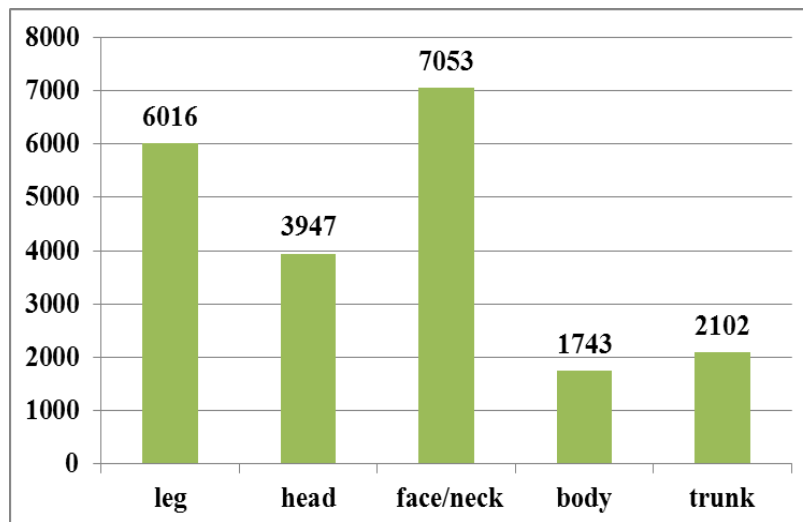


Figure 3: Site of animal bites.

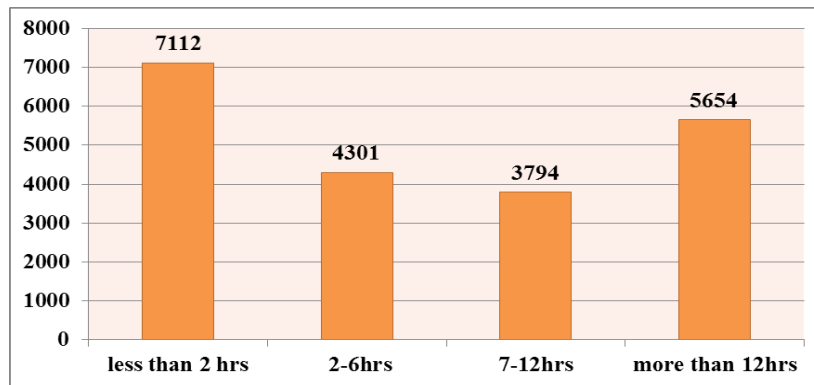


Figure 4: Time taken for treatment after animal bite.

## DISCUSSION

The aim of this study was to estimate the prevalence and pattern of animal bites among children under 15 years old during the study period. In our study we found that the majority of studied cases 62.3% were in the age groups 10 to 14 years old. Compared with other studied done it in Iran,<sup>[3]</sup> Uganda<sup>[5]</sup> and India.<sup>[11,12]</sup> The researchers found the majority of cases were in the age groups above 25 years. These differences because of most of them are living in rural area and most of them deal with animals or hunt in forests and open places and, they are at risk of being bitten by pets and predators. In this study, we found that the male cases 57.2% were more than 43.7% female cases. Other studied in USA,<sup>[4]</sup> India.<sup>[13,14]</sup> and in Turkey,<sup>[15]</sup> they authors found the male cases are more susceptible to animal bites more than others. Because most of them, they are keep the animals at home or when they are out. Also, in our study we found that the 60.7% of them are living in rural area and compared with other studied in India.<sup>[12, 13, 14]</sup> and in Nigeria.<sup>[16,17]</sup> The authors mentioned to the majority of them are living in rural area and they deal with pets and predators or they are living in the outdoor because they don't have a home. The highest frequency 44.2% of studied cases occurred during 2019 and compared with other study in Nigeria,<sup>[16]</sup> the authors reported the highest frequency of rabies occurred during 2020. In our study, found 42.6% of them are exposed to stray animal and compared with other studied in Uganda,<sup>[5]</sup> India<sup>[11]</sup> and in Nigeria,<sup>[17]</sup> the authors reported the stray animal was the main animal bites than other wild animal. Because of these countries contain forests and open areas conducive to the gathering of stray and wild animals. Most of them 33.8% are exposed to animal bites in face and neck more than other site of body. Compared with other studied in USA,<sup>[4]</sup> Nigeria.<sup>[16]</sup> The investigators reported the leg and hand the major site of animal bites. This may be because of they are not paying attention to the animal or by addressing it in the event of attack and self-defense. Also, we found 34.1% of them sought the treatment after 2 hours from animal bites compared with other study in India,<sup>[19]</sup> the authors found 66.7% of them sought the treatment after half to 2 hours after animal bites. This may be the majority of them had a knowledge Most of them have

knowledge about the dangers of animal bites, especially stray animals, and the harm, pain and disability they may cause when exposed to it.

## CONCLUSION

We concluded that the majority of them occurred in the age groups 10 to 14 years old, mostly are male cases and they are living in rural area. The highest frequency of studied sample occurred during 2019. Stray animal were the higher rate than others. Face and neck was the main site of animal bites and the most of them sought the treatment after 2 hours after exposed to animal bites. There are highly significant relationships between the age groups, gender and residence by the years at the p. value less than 0.05.

## RECOMMENDATION

We recommended to all animals must be handled with care; Whether they are domesticated or ferocious, as both carry many different types of bacteria that become more dangerous when the animal is infected. Knowledge about animal bite is essential because it causes many fatal diseases to human beings and the people who are living in the rural areas should be aware of animal bites like dog cat, rat, snake, scorpion bite and it's led to increase the morbidity & mortality among rural population.

## REFERENCES

1. Looke D, Dendle C. Bites (mammalian). Systematic review 914. BMJ Clinical Evidence.
2. Rey J, Mindekem R, Kessely H, Doumagoum Moto D, Naïssengar S, Zinsstag J, et al. Survey of animal bite injuries and their management for an estimate of human rabies deaths in N'Djaména. *Chad Trop Med Int Health.*, 2013; 18(12):1555–62.
3. Kassiri H, Kassiri A, Mosavi R, Jashireh A, Lotfi M. Prevalence rate and epidemiological determinants of animal bite in Ahvaz County, Khuzestan Province. *Southwestern Iran J Acute Dis.*, 2014; 3(1): 51–5.
4. Holzer KJ, Vaughn MG, Murugan V. Dog bite injuries in the USA: prevalence, correlates and recent trends. *Inj Prev.*, 2019; 25(3): 187–90.
5. Wangoda R, Angida T, Kizito S, Nyangoma E, Nakibuuka J. Animal bite injuries in the accident and emergency unit at Mulago Hospital in Kampala, Uganda. *Pan Afr Med J.*, 2019; 33(112): 112.

6. Ghafouri M, Yaghubi M, Nasiri Zarin ghabaee D, Seyed Sharifi S. An Epidemiologic Study of Animal Bites in Bojnurd City 2005- 2011. *J North Khorasan Univ Med Sci.*, 2015; 7(1): 123–31.
7. World Health Organization. *Rabies: Guide for post-exposure prophylaxis*. 2018. [Accessed: May 2018]. Available from: <http://www.who.int/rabies/human/postexp/en/>
8. World Health Organization. Rabies: key facts. Sep 2017. [[Accessed: Feb 2018]]. Available from: <http://www.who.int/mediacentre/factsheets/fs099/en/>
9. Thane Muhsen , Epidemiological characteristics of animal bite cases recorded by case based surveillance in Iraq 2012, *Al-Kindy Coll. Med. J.*, 2020; 16(1): 18-23 .
10. Z. A. Memish, A. M. Assiri, and P. Gautret, “Rabies in Saudi Arabia: a need for epidemiological data,” *International Journal of Infectious Diseases*, 2015; 34: 99-101, /05/01/ 2015.
11. R. C. A Shetty, S Singh. “Profile of animal bite cases in Pune,” *The Journal of communicable diseases*, 2005; 37: 66-72.
12. Pavithra R, Viveki RG, Halappanavar AB. Socio Demographic Profile and Management Practices of Animal Bite Cases Attending Anti Rabies Clinic in a Tertiary Care Centre in North Karnataka. *IJAR.*, 2015; 5(1): 371-378.
13. Minhas A, Singh M, Sood A, Raj D, Bhardwaj AK. Epidemiology of animal bite reported at animal bite clinic during 2015-16 at a tertiary care Centre of Himachal Pradesh. *Indian J Community Health.*, 2018; 30(4): 354–60.
14. Gogtay N, Nagpal A, Mallad A, Patel K, Stimpson S, Belur A, et al. Demographics of animal bite victims & management practices in a tertiary care institute in Mumbai, Maharashtra, India. *Indian J Med Res.*, 2014; 139(3): 459.
15. U. H. Johnson N, Fooks A. R, Freuling C, Muller T, Aylan O, Vos A., “Rabies epidemiology and control in Turkey: past and present,” (in eng), *Epidemiol Infect*, Mar 2010; 138(3): 305-12.
16. Al-Mustapha AI, Tijani AA, Bamidele FO, Muftau O, Ibrahim A, Abdulrahim I, et al. Awareness and knowledge of canine rabies: A state-wide cross-sectional study in Nigeria. *PLoS ONE*, 2021; 16(3): e0247523.
17. Ojo D, Nwadike V, Onyedibe K, Kalu I, Ojide K. Rabies in Nigeria: A review of literature. *African Journal of Clinical and Experimental Microbiology*, 2016; 17(2): 159.
18. Jemberu W, Molla W, Almaw G, Alemu S. Incidence of Rabies in Humans and Domestic Animals and People’s Awareness in North Gondar Zone, Ethiopia. *PLoS Neglected Tropical Diseases*, 2013; 7(5): e2216. Pmid:23675547.
19. Sangeetha S, Sujatha K, William RF. An epidemiological study of animal bites among rural population in Tamil Nadu, India. *Int J Community Med Public Health*, 2016; 3:1413-8.