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RETROSPECTIVE STUDY OF DOG BITE CASES IN FEDERAL MEDICAL CENTRE JALINGO, TARABA STATE, NIGERIA

[1]OBIALIGWE Tochukwu Fortunetus, [2]GARBA Liatu, *[1]NYIFI Ambi Silas, [1]UKO Iranyang Bazon, [1]BILBONGA Garleya, [3]EKECHUKWU Kingsley Chidinma, and [4]TANIMU Elizabeth

[1]Department of Animal Production and Health, Federal University Wukari. Taraba State, Nigeria
[2]Department of Biological Science, Taraba State University, Taraba State, Nigeria
[3]Lagam Foods and Farms, Asaba, Delta State, Nigeria
[4]Department of Animal Health and Production Technology, Federal College of Agricultural Produce Technology, Kano, Kano State, Nigeria

*Corresponding Author Email Address:ambisilas462@gmail.com

ABSTRACT
This retrospective study examined dog bite cases reported at the Federal Medical Centre in Jalingo, Taraba State, Nigeria from 2011 to 2021. Over the 11-year period, 553 dog bite cases were reported, constituting 0.81% of the total consultations at the hospital. The study found that the prevalence of dog bites was highest in individuals over 21 years of age (40.5%), followed by those aged 11-20 years (30.2%) and 0-10 years (29.3%). Males reported a significantly higher number of dog bites (63.7%) compared to females (36.3%). Most of the bite injuries occurred on the lower limbs (83.5%). Seasonally, the highest number of dog bite cases were reported in December, January, and November. This could be due to increased social activities and gatherings during the holiday period, which may lead to more encounters with dogs. The findings highlight the need for targeted preventive measures and public awareness campaigns, particularly focused on high-risk groups like children and young adults. Promoting responsible pet ownership and early medical intervention for dog bite victims are also recommended to address this significant public health concern.

Keywords: Dog bites, Prevalence, Retrospective study, Federal Medical Centre, Jalingo

INTRODUCTION

Dog bites in humans are a serious threat to public health that has been reported worldwide (Dhand *et al.,* 2011). According to the World Health Organization (WHO), each year, millions of people are attacked by dog bites (WHO, 2018). Dog bites inflict on victims a crushing-type wound due to the dog's rounded teeth and strong jaws. In addition to the physical ailments caused by dog bites, victims experience psychological and emotional anguish (Dwyer *et al.,* 2017). In humans, the bite causes open soft-tissue trauma and fractures of various severities (Kreisfeld & Harrison, 2005). This soft-tissue trauma, on the other hand, ranges from injuries like scratches to more severe injuries like avulsion, and these injuries may necessitate repair (Kreisfeld & Harrison, 2005).

The biggest incidence of dog bites occurs in the middle to later years of childhood, and children make up the largest percentage of people who dogs bite. Children are more likely than adults to suffer injuries to their heads and necks, which contributes to more severe injuries, the requirement of medical treatment, and higher death rates (WHO, 2018). In certain regions of the world, the incidence of dog attacks among males is significantly higher than among females. Over half of the injuries sustained by travelers as a result of interactions with animals are caused by dog bites (WHO, 2018). In addition to the physical injuries and the detrimental psychological trauma that they create, dog bites can introduce other pathogens into the body, causing infections such as rabies (Apanga *et al*., 2016).

Rabies is a concern in many of these nations, and there may be a lack of post-exposure treatment and sufficient access to health care (WHO, 2018). As a result, the fatality rate from dog bites is significantly higher in low- and middle-income countries than it is in high-income countries. There are around 59 000 people who lose their lives each year due to rabies, and the vast majority of these deaths are attributed to bites received from infected dogs (WHO, 2018). Dog bite cases at Federal Medical Centre Umuahia, Abia State have been documented by Apeh *et al.* (2021). Iwuozo *et al.* (2022) reported the outcome of dog bite and clinical rabies in a Teaching Hospital in North Central Nigeria.

In Nigeria, as in many other developing nations, there is a high population of dogs that are allowed to wander freely about the streets, which leads to an increased risk of dog attacks. Despite the fact that stray dogs wanders about the street and incidences of dog attacks on humans, yet there are extremely unusual scanty reports on dog bites. Hence, this study aims to conduct an investigation of the previously documented incidents of dog bites that have been reported to Federal Medical Centre Jalingo, Taraba State, Nigeria.

MATERIALS AND METHODS

Study Area

The research was conducted at the Federal Medical Centre in Jalingo, Taraba State, Nigeria. The Federal Medical Centre (FMC) Jalingo is a tertiary health care provider situated in Jalingo, Taraba State, Nigeria. It is frequently used in the state as a recommendation for severe health conditions. It admits patients from every region of Taraba State. Jalingo, the study area, is the capital city of Taraba State in North-Eastern Nigeria. After the 1991 division of Gongola State into Adamawa and Taraba States, Jalingo was designated as the state capital. Jalingo is one of the sixteen local government areas of the state and is located at latitudes 8° 53 37.21" N and longitude 11° 21' 34.56" E. Jalingo lies in the savanna-covered foothills of the Shebshi Mountains, about 25 miles southeast of the Benue River. In the West, it shares borders with Benue, Nassarawa, and Plateau States; on the North, Jalingo shares borders with Bauchi and Gombe States; and to the East and South, Adamawa State and Cameroon, respectively (Taraba State Government; Taraba State at a Glance, 2022). Jalingo has a land area of about 401.2 km2 and a total population of over 187,500 people, according to the 2006 population census, with an annual growth rate of 2.9% per year (National Population Commission, 2006).

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Study Design
The research was an 11-year retrospective study that was carried out at the Accident & Emergency, Pediatric Wards, and Community Medicine Departments of the Federal Medical Centre Jalingo, Taraba State, from January 2011 to December 2021. All the clinically diagnosed dog bite cases during the period of admission to discharge from January 2011 to December 2021 were noted. Purposive sampling was done based on the fact that dog bite cases were handled in this centre.

Data Collection
The clinical records of patients managed for dog bite-related injuries over an 11-year period were identified and extracted. Data extracted include the age and gender of the dog bite victims, the anatomic site of the bite, the date of the dog bite, and the time of presentation at the hospital. The ages of dog bite victims were grouped into 0–10 years, 11–20 years, and > 21 years.

Data Analysis
The collected data was analyzed using descriptive statistics in SPSS IBM version 25 and is presented in frequency and percentage.

RESULTS
A total of 68,072 patients visited the hospital, and their information was registered in the National Health Management Information System: Daily General Attendance Register, from 2011 to 2021. Of these numbers, 553 cases of dog bite-related injuries were seen during the eleven-year study period constituting 0.81% of the total consultations as represented in Table 1. This gives a prevalence of 81 per 10,000 populations.

Table 1: Prevalence of dog bite cases reported at Federal Medical Centre (FMC), Jalingo, Taraba State, Nigeria (2011 – 2021)

Year	Dog bite cases	Total number of patient that visited FMC	Percentage (%)
2011	41	6241	0.66
2012	45	6438	0.69
2013	49	6028	0.81
2014	42	6434	0.65
2015	53	6523	0.81
2016	67	6308	1.06
2017	55	6102	0.90
2018	41	6428	0.64
2019	62	6621	0.94
2020	48	4528	1.06
2021	50	6421	0.78
Total	**553**	**68,072**	**0.81**

A case report of victims at the hospital showed that of the 553 reported cases of dog bite, 162 (29.3%) occurred in victims of 0−10 years of age, 167 (30.2%) were victims of 11–20 years of age, and 224 (40.5%) were victims older than 21 years of age (Table 2), and males reported more dog bites (352, 63.7%) than females 201 (36.3%) as seen in (Table 3).

Table 2: Age-group Distribution of Dog bite Victims presented to Federal Medical Centre (FMC), Jalingo, Taraba State, Nigeria (2011 – 2021)

Year	0 – 10 years (%)	11 – 20 years (%)	≥21 years (%)
2011	12 (29.3)	10 (24.4)	19 (46.3)
2012	13 (28.9)	15 (33.3)	17 (37.8)
2013	15 (30.6)	18 (36.7)	16 (32.7)
2014	8 (19.0)	13 (31.0)	21 (50.0)
2015	12 (22.6)	17 (32.1)	24 (45.3)
2016	17 (25.4)	15 (22.4)	35 (52.2)
2017	22 (40.0)	16 (29.1)	17 (30.9)
2018	11 (26.8)	13 (31.7)	17 (41.5)
2019	15 (24.2)	19 (30.6)	28 (45.2)
2020	20 (41.7)	18 (37.5)	10 (20.8)
2021	17 (34.0)	13 (26.0)	20 (40.0)
Total	**162 (29.3)**	**167 (30.2)**	**224 (40.5)**

Table 3: Distribution based on Gender of Dog bite Victims presented to Federal Medical Centre (FMC), Jalingo, Taraba State, Nigeria (2011 – 2021)

Year	Male	Female
2011	25 (61.0)	16 (39.0)
2012	26 (57.8)	19 (42.2)
2013	28 (57.1)	21 (42.9)
2014	19 (45.2)	23 (54.8)
2015	28 (52.8)	25 (47.2)
2016	45 (67.2)	22 (32.8)
2017	36 (65.5)	19 (34.5)
2018	32 (78.0)	9 (22.0)
2019	46 (74.2)	16 (25.8)
2020	32 (66.7)	16 (33.3)
2021	35 (70.0)	15 (30.0)
Total	**352 (63.7)**	**201 (36.3)**

Furthermore, the results revealed that the pattern observed at the bite site showed the majority (83.5%) had their bite on the lower limbs, (15.7%) presented with the upper limb, and only (0.7%) had their dog bite site at the trunk and buttocks (Figure 1).

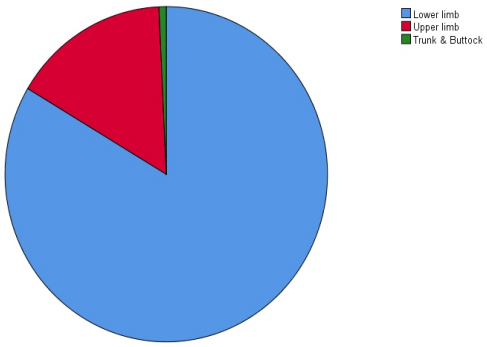

Figure 1: Distribution of site of bite among dog bite cases

presented to Federal Medical Centre (FMC), Jalingo, Taraba State, Nigeria (2011 – 2021).

Our findings show that the seasonal distribution of dog bites was more frequent in December, followed by January and November with 94 (17.0%), 75 (13.6%), and 73 (13.2%) respectively. The lowest number of dog bite cases occurred in June, with only 16 (2.9%) reported cases (Figure 2).

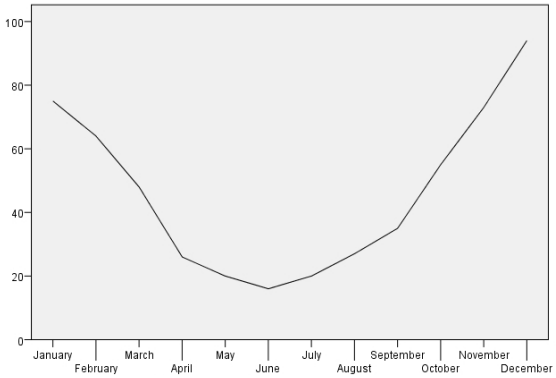

Figure 2: Seasonal distribution of dog bite cases at FMC Jalingo, Taraba State, Nigeria (2011 – 2021).

DISCUSSION

Dog bite cases in this research over the period under consideration reveal a total prevalence of 0.81%. This figure is, however, higher than the 0.04%, 0.44% and 0.60% reported by Asuquo *et al.* (2009) in a 15-year review of dog bite cases in Okoyong, Cross River State, Nigeria; Nwoha & Ugwuoke (2017) in a 5-year retrospective survey of dog bite cases in Umuahia Local Government Area of Abia State, and Apeh *et al.* (2021) in Federal Medical Centre, Umuahia, Abia State, Nigeria in their respective studies. This study's prevalence, on the other hand, is lower than the 1.5% reported by Ezra *et al.* (2017) at the child health unit, Ekiti Teaching Hospital, Ado-Ekiti, Ekiti State, Nigeria. The disparity between these studies of dog bite prevalence might be due to dog bite victims not reporting to hospitals, and another factor could be the dog population of the study area. The number of dogs in a locality can significantly impact the likelihood of dog bites in that area. And also, in areas where there are a high number of irresponsible dog owners, the number of stray dogs tends to increase, increasing the likelihood of a dog bite.

Dog bites were less in children (29.3%) between the ages of 0 and 10, and high in adults over 21 years (40.5%). This high prevalence of dog bites among adults can be explained by the fact that adults are more outgoing, thereby increasing their rate of exposure to bites. It's possible that they'll start seeing dogs more frequently in public places like parks and neighborhoods, as well as in people's homes. The risk of encounters that could result in a bite increases as a result of this increased exposure. Adults may intentionally or unintentionally provoke a dog through their actions, like invading a dog's space, teasing a dog, or startling a dog may increase the likelihood of dog bite. This finding agrees with the reports of Abubakar & Bakari (2012); Hambolu *et al.* (2013); Otolorin *et al.* (2015); and Isek *et al.* (2019). A similar study by Apeh *et al.* (2021) conducted in Umuahia, Nigeria, also demonstrated that the majority of dog bite victims were adults.

Furthermore, reported bite cases were more common in males, with 63.7%, than females, with 36.3%. This is consistent with the results of Abubakar and Bakari (2012); Karshima *et al.* (2013); Otolorin *et al*. (2014); Yibrah & Damtie (2015); and Apeh *et al.* (2021). More often than not, men put themselves in danger by partaking in activities where they might come into contact with dogs and are at greater risk of getting bitten. Activities like rough play and approaching strange dogs without proper precautions fall under this category. This may also be attributed to the inquisitive nature of the males and the activities they are frequently involved in, and more so, living in an urban setting is a risk factor, as people live in crowded conditions where dogs' defensive aggression is likely a major contributing factor to dog bites.

The findings of this study have also shown that most of the dog bite cases occurred around the lower limbs (83.5%). This was similar to what was documented by Iyalohme & Iyalohme (2015) in Auchi, Eke *et al.* (2015) in Enugu, Ezra *et al.* (2017) in Ekiti, and Apeh *et al.* (2021) in Umuahia. The occurrence of dog bites in this study at the lower extremities may be due to the closeness of this part of the body to the dog, and victims who used their legs in an attempt to defend themselves. It is also likely that victims would have used their legs to tease the dogs, which would have resulted in more bites to the lower extremities.

The frequency of dog bites increased significantly during the dry season, from November to January. This could be attributed to the holiday period, when there are frequent visitors. People tend to congregate in greater numbers during these holidays, and there may be an increase in social activities, parties, and gatherings, which might increase the likelihood of encountering unknown dogs and situations that may result in dog attacks. These findings are in accordance with the findings of Isek *et al.* (2019).

Conclusion:

In conclusion, this study sheds light on the occurrence and demography of hospitalized dog bite victims. The data demonstrate that dog bites pose a serious public health risk that affects people of all ages and genders. Children aged 0 to 10 years and teenagers aged 11 to 20 years appear to be particularly vulnerable, accounting for roughly 60% of recorded cases. Furthermore, males had a considerably higher prevalence of dog bites than females.

These findings highlight the significance of implementing targeted preventative measures and educational programs to promote knowledge about the dangers of dog bites, particularly among children and adolescents. Responsible pet ownership and proper dog training can help reduce such situations. Furthermore, advocating early intervention and rapid medical assistance for dog bite victims can aid in the prevention of any complications and long-term repercussions.

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