

RESEARCH ARTICLE

# Dog bites: threat to public health globally

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## Abstract

Dog bite cases pose a major public health threat in Maval. The author conducted a study of the knowledge, attitudes and practices regarding dog bites among residents of a rural community in Maval. Majority of rabies infection in humans are due to bites from rabid dogs which are mainly local breed. Research carried out in maval has established that some apparently healthy dogs excrete rabies viral antigen in their saliva without showing clinical signs.

This study was carried out to evaluate cases of dog bite in Maval and its public health significance. All the cases of dog bites in humans reported in Maval, Pune from 2010 to 2015 were retrieved. Data on cases of dog bites from the Primary Health Center record were extracted using a structured report.

**Keywords:** - Dog, bite, Maval.

## INTRODUCTION

Dog bite injuries are a major public health issue worldwide. Dogs' attacks and consecutive wounds can lead to permanent disfigurement, trauma, and sometimes death by direct traumas or rabies virus inoculation. In spite of the long domestication process, human-canine interaction is not always without friction and dog bite related injuries are considered a public health issue. In the US alone, dog related injuries affect approximately 1.5% of the population annually [1]. Throughout the world, it has been found that children are more at risk of getting bitten by dogs; [2]; [3];[4].

The World Health Organization (WHO) states that 99% of all human rabies cases are caused by infected dog saliva [5]. India accounts for approximately one third of all human rabies cases in the world, with an estimate of more than 20,000 human rabies

fatalities reported annually, of which 96.2% have contracted infection from rabid dogs [3]. Dog bite injuries are a common and important problem in emergency medicine. It is of particular concern for children where it is estimated that close to 50% of children will experience a dog bite at some point in their lives (Harper TK. Rabies virus: Description, vector, mechanism.) The reported incidence of Emergency Department (ED) treated dog bite injuries varies with ranges from less than 0.1% to 1.1% of all ED visits reported (2-6). The true incidence of dog bites is unknown because many do not report to a doctor for treatment.

#### **Dog bites Risks:**

Dog related injuries, most frequently dog bites, are considered a public health issue globally. Not only can dog bites lead to fatalities, they can result in infection, disfigurement, incapacity and thus a loss of income as well as post-traumatic stress syndrome [2];[6]. In a survey of five Asian countries, animal related injuries were amongst the five leading causes of death in children aged 0-17 [7]. The contingency of a dog bite depends on an intricate causal web. Previous research has, however, focused on three main factors: characteristics of the victim, characteristics of the biting dog and environmental circumstances

Other demographical characteristics of dog bite victims have been explained and proven to be conclusive from a global perspective. Coming from a low-income background and rural areas is a well-known risk factor for dog bites [3];[8];[9];[10]. This is believed to depend on a higher density of dogs as well as a higher number of unsupervised free-roaming dogs, and thus increased exposure to dogs for residents in the area.

Lastly, environmental factors influencing dog bite incidence have not been as extensively investigated as the human and canine aspects. Correlations to weekends rather than weekdays as well as seasonal patterns have been documented in the literature [8];[9];[11]. Higher dog bite incidence during holidays and on weekends could be explained by the fact that people spend more time at leisure with a higher rate of outdoor activity and thus are more exposed to dogs. Reece et al. [11] Suggest the seasonal variation in dog bite incidence depends mainly on the reproductive cycle of the free-roaming dogs with an increased likeliness of being bitten during periods when mothers are protective of their young.

#### **Rabies**

Rabies, a feared disease long known to man, is a zoonosis capable of infecting all mammals. The main mode of transmission to humans is through the saliva of an infected dog. Once the virus enters the body and established an infection, death is practically inevitable. Rabies is present on all continents and poses a serious threat to public health worldwide. Asia and Africa are particularly affected by rabies. Although preventable, rabies, As preventive measures WHO recommends proper wound management, rinsing with water and soap for at least 15 minutes followed by application of iodine or ethanol solution to clear the bitten site from virus particles. This is a key procedure and significantly reduces the risk of infection [12]. . In class 2 and 3 rabies exposure cases [5], WHO also recommends receiving post-exposure prophylaxis (PEP) according to adopted regimens. In a population-based approach, WHO recommends mass vaccination campaigns against rabies targeting the entire dog population as well as carrying out animal birth control programs. Mass vaccination of dogs against rabies is thought to be the most cost-effective way of preventing rabies [5]

## **MATERIALS AND METHODS**

A retrospective audit was conducted of the clinical records of all patients attending the emergency department (phc) of Maval with the complaint of dog bite injury between 2010 and 2015. For each case the information collected included age, sex of the patient, the anatomical site of the injury, a description of the injury, the breed of dog, and the relationship to the dog. Information on treatment was also collected including time since bite, antibiotics used, tetanus immunization, suturing, and if the patient received a referral or operating theatre treatment.

## **RESULTS DISSCUTION**

It is difficult to make comparisons. Dog bites represent 3.15 / . of all ED presentations. Females and males were equally likely to attend for dog bite. Young people were more likely to attend for dog bite and more likely to be admitted for further treatment. The most common site of injury was to the hand or arm (49%). Children younger than nine years were most at risk of being bitten on the face or scalp. Most patients received antibiotic treatment

(87%) and 75% of adult patients received tetanus prophylaxis.

The correct management and treatment of dog bites, especially in regards to antibiotic use will ensure better outcomes. The implementation of a protocol for the management and recording of information of all dog bites in PHC would remove inconsistencies and reduce the incidence of treatment failure whilst providing

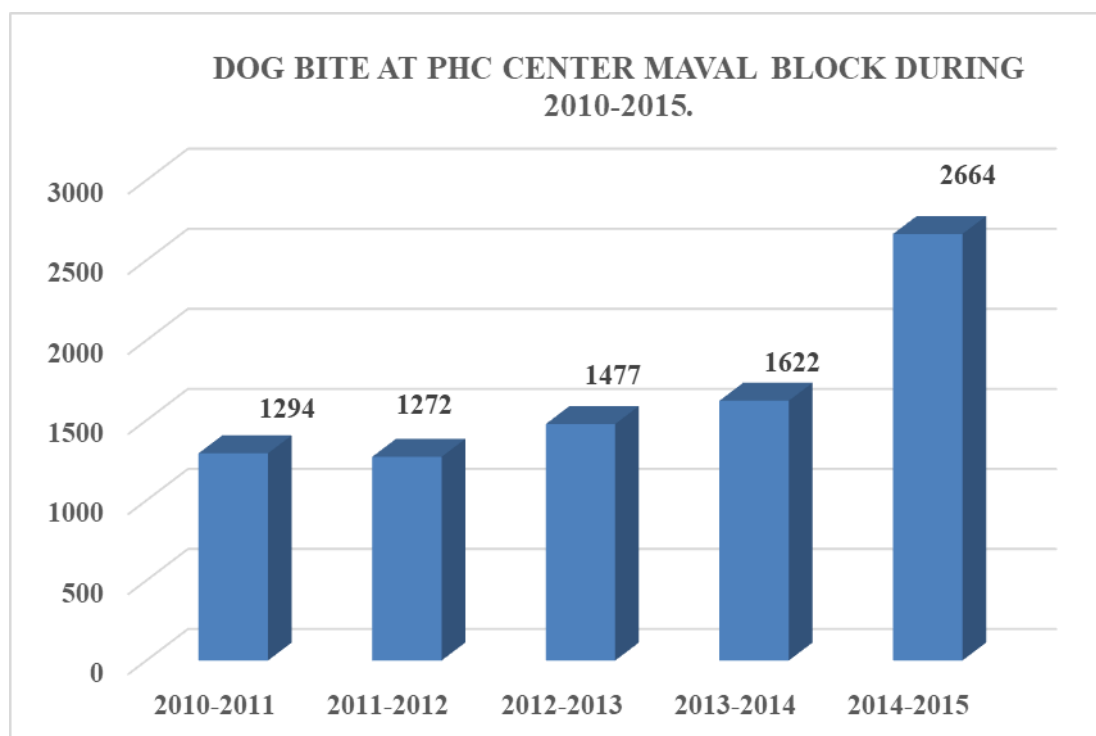
valuable information for the planning of public health directives.

Investigation of animal bite-related incidents.

2010-2011 .....	1294
2011-2012 .....	1272
2012-2013 .....	1477
2013-2014 .....	1622
2014-2015.....	2664

**Table 1: - Dog bite incidents at PHC, Maval.during 2010-15.**

Sr.No.	PHC	2010-11	2011-12	2012-13	2013-14	2014-15
1	Adale	214	185	246	255	478
2	Karla	231	194	218	243	473
3	Khadkala	245	300	305	349	535
4	Takave	195	216	289	326	429
5	Talegaon	253	274	319	278	468
6	Yelase	156	103	100	171	281
	Total	1294	1272	1477	1622	2664



**Fig. 1 Graphical representation of Dog bite data report at various center of Maval region is presented below**

## CONCLUSION

Adapted control policies for prevention education, canine population control and vaccination are urgently needed. Rabies is practically 100% fatal zoonotic disease but easily preventable with timely administration of vaccine to the dog bite victim, but very common myths and practices amongst people prevent them for adequate and appropriate treatment.

Reports of dog bite cases in humans indicate the need from public health enlightenment campaign programs aimed at educating the public on the need to seek proper post-exposure prophylaxis treatment from health care facilities when bitten by dogs and the need for dog owners to vaccinate their dogs yearly against rabies. Local breed of dogs have been involved in most dog bite cases, if a community dog bite prevention program is to gain public acceptance and be effective, community leaders must be cognizant about dog related issues within their community.

Any animal bite or incident must be thoroughly investigated and substantiated by an agent of the empowered investigating authority such as an animal control officer, police officer, or peace officer. Ideally, the investigating authority should be the same authority that enforces related ordinances or laws to give continuity and credibility to all investigations. Investigating officers must be given authority to perform their duties by statute or ordinance. Clear, concise, standardized information concerning the incident must be obtained to ensure its successful resolution and facilitate long-term public officials and community leaders are the people to whom residents look for assistance with social problems. Their influence is important and well recognized..

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