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Factors Influencing Animal Bites in Iran: A Descriptive Study

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Abstract

Objectives: Animal bite is a significant health economic challenge worldwide. In Iran, there has been an increase in the number of animal bites in recent years. This study was performed to investigate the epidemiology of animal bites and their influencing factors in Semirom, Iran, from 2008 to 2012.

Methods: This was a descriptive study conducted for 5 years. The data were based on the information sheets presented in health-care centers concerning how to combat against rabies caused by animal bites. The data obtained were classified and analyzed statistically.

Results: During the 5-year study period, 1,246 animal bite cases were reported; 60% of the victims belonged to rural areas and the remaining 40% to urban areas. Among various aggressive animals, dogs had the highest rate of attacks (63.4%). The highest rate of animal bite (23.19%) was reported in the age group of 10−19 years and the lowest one (2.32%) was reported in the age group of 0−4 years. The animal bite rates among men and women were 76% and 24%; respectively. The highest and lowest rates were found among students (23.5%) and employees (5.5%), respectively. Regarding the commonly injured organ, the highest (67%) and lowest rates (23%) were for lower extremities and head and face, respectively. Regarding the nationality of the victims, 98% were Iranians and the rest were Afghan.

Conclusion: Given the increasing number of animal bites reported, there is a need to implement strategies to prevent bite-related complications, which may have health and financial burden on the country. It is also necessary to increase awareness among target groups and to formulate preventive strategies with the help of various authorities to control animal bites.

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1. Introduction

Besides having serious health consequences, animal bite and animal bite-related diseases can cause serious financial burden on countries; therefore, they are of serious concern for the authorities concerned [1]. The increase in the number of animal bites forces the government to purchase and stock more vaccines and drugs for preventing and treating the bite and its related diseases, which can subsequently increase the expenses of the government [2]. In general, animals bite as a natural, instinctive behavior, especially when they feel threatened or try to get food. An animal bite can cause infection in victims (in both humans and other animals [3]). Reports estimate that more than 10 million victims receive treatment annually due to animal bites [4]. Most animal bites reported from Asia and Africa are dog bites [4]. In the United States, on an average, dog bites are responsible for the death of 15−20 persons, mostly children. The bite force of large dog breeds can be more than 450 psi, and therefore the injuries caused by these dogs are more severe [5]. In Europe and the United States, in addition to dog bites, victims are also bitten by bats and wild animals. Humans, in comparison with other animals, are more prone to bites induced by domestic animals such as dogs and cats and also by carnivorous animals such as foxes, wolves, raccoons, ferrets, and jackals [4,6]. In fact, cats and dogs are responsible for more than 90% of all animal bites reported worldwide [7]. Among animal bites, snake bites have induced serious health consequences in the rural areas of tropical and semitropical regions located in Africa, Latin America, and Australasia. A recent study estimated that at least 421,000 animal bites and 20,000 animal bite-associated mortalities occur annually [8]. Animal bite and associated diseases are considered to be one of the serious health and economic obstacles. In Iran, reports of animal bites are reported from almost all cities. According to the data released by the Center for Disease Management, the highest rates of animal bites (450 in 100,000) are in Ardabil and Golestan provinces [9], followed by Chaharmahal and Bakhtiari province (300−450 in 100,000) and then Booshehr, South Azarbayejan, Isfahan, Fars, Gilan, Kermanshah, Hamedan, Hormozgan, East Azarbayejan, Khorasan, Khoozestan, Kohkilooye va boyerahmmad, Lorestan, Markazi, Mazandaran, Semnan, and Zanjan provinces (100−300 in 100,000). The lowest rates are reported in Tehran, Qom, Kordestan, Ilam, Sistan-baloochestan, and Yazd provinces (< 100 in 100,000). Recent statistics indicate that there has been an increase in animal bites in the past 20 years. During this period, 37,523 cases of animal bites (without considering snake and scorpion bites) have been reported and the victims received care and treatment from more than 180 health centers in Iran [1,10−13]. A majority of these victims were bitten by dogs. The total number of reported cases up to 2011 was 128,874, with an annual prevalence of 5,939/100,000. This number increased to 135,611 the following year, with an annual prevalence of 6,115/100,000, which clearly suggests an increase in the rate of animal bites [11,14,15]. Given the importance of animal bites and the associated diseases, particularly rabies, that the victim may suffer, vaccination is a useful option to prevent the spread of diseases [16−18]. Semirom has a moderate climate and is one of the largest cities in Isfahan province. This city has a high prevalence of animal bites and bite-associated infections, especially rabies, a serious infection that is endemic in animals in this area. Moreover, a rabies epidemic was reported from this area. Considering the geographical extent and ecological features of Semirom, this study was performed to investigate animal bite epidemiology and its influencing factors.

2. Materials and methods

This is a cross-sectional descriptive study that investigated all cases of animal bite in humans from 2008 to 2012 in Semirom, Iran. All victims admitted to health-care and treatment centers were investigated. A questionnaire was used for data collection and the study population included animal bite victims settled in Semirom. The questionnaire was devised by the Ministry of Health, Treatment, and Medical Training of Iran. It encompassed the documents, fulfilled interviews with victims, and reported animal bite cases. The following data were obtained from the questionnaire: special cases of animal bite (if any), the injured organ, geographical status (urban or rural region), age, sex, profession, history of animal bite, and prior vaccination. All data obtained were recorded and then extracted. The data obtained were classified and analyzed statistically.

3. Results

During the 5-year study period (from 2008 to 2012), a total of 1,246 animal bite cases were reported, including 245 cases in 2008 (77 and 168 cases in urban and rural areas, respectively), 258 cases in 2009 (87 and 171 cases in urban and rural areas, respectively), 270 cases in 2010 (111 and 159 cases in urban and rural areas, respectively), 281 cases in 2011 (113 and 168 cases in urban and rural areas, respectively), and 192 cases in 2012 (79 and 113 cases in urban and rural areas, respectively). As much as 60% of victims belonged to rural areas and 40% to urban areas. The victims received treatment in health-care centers. Among aggressive animals, dogs (77.7%), cats (8.7%), jackals (0.56%), foxes (0.88%), wolves (1.6%), boars (1.6%), bears (1%), cows