



Epidemiologic Study of Animal Bites and Rabies Referring to Rabies Prevention and Treatment Center of Jahrom University of Medical Sciences in 2011-2016

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ARTICLE INFO

Article Type:
Original Article

Article history:
Received July 19, 2014
Revised August 27, 2017
Accepted September 3, 2017

Keywords:
Epidemiological Characteristics
Animal Bites
Rabies

ABSTRACT

Background: The aim of this study was to describe the epidemiological characteristics of animal bite during 2011 -2016 years in Jahrom city.

Methods: This cross-sectional study was performed using data from the Jahrom University of Medical Sciences. For analytical statistics, Chi-square test and multiple regression test were used. SPSS software version 21 was used for statistical analysis.

Results: In total, 2010 people with an average age of 31.4 ± 1.7 in the years 2011 to 2016 in the were biting. Of these, 429 were female (21.3%) and 1581 were male (78.7%). The results multiple showed that there was a positive correlation between (animal bites; Beta = 0.05, age; Beta = 0.02, location of ulcer; Beta = 0.01) with animal bites positive and direct correlation with animal bites. Animal type variables (Beta = -0.06), primary measures (Beta = -0.03), gender (Beta = -0.03), nationality (Beta = -0.03), wound size (Beta = -0.02) and location (Beta = 0.05) had a negative correlation with animal bites.

Conclusion: Most cases of biting have been related to dogs, pets and rural areas. Therefore, the vaccination of dogs and cats is essential by preventing dogs from being exposed to humans.

1. Introduction

An animal bite as a scar from a bite or scar from a pet or wildlife causes a lot of outbreaks, especially in rural areas [1]. It is also a public health problem that is ignored and neglected throughout the world [2].

Despite the possibility of preventing this disease with effective and safe vaccines, the disease remains a health problem in many countries of the world, such as Bangladesh, Pakistan and India [3, 4].

To cite: Moghadami M, PourMaghaddam A, Kashfi SM, Rakhshani T, Ebrahimi MR. Epidemiologic Study of Animal Bites and Rabies Referring to Rabies Prevention and Treatment Center of Jahrom University of Medical Sciences in 2011-2016. *J Hum Environ Health Promot.* 2017; 2(4): 226-33.

Unfortunately, the disease in the developing world annually causes 60,000 human deaths, of which more than 95% are reported from both Asia and Africa [5].

In Iran, rabies are endemic and all provinces of the country are more or less infected with rabies, and with the lack of control of the disease in domestic and wild animals, the risk of developing the disease is still high [6, 7]. There is a rabid nature among native wildlife in Iran and domestic animal contamination occurs frequently [8]. In addition to the importance of hygiene in humans, the occurrence of this disease in livestock causes significant economic losses [9]. According to the report of the Center for Disease Control of the Ministry of Health and Medical Services on animal bites, the provinces of Ardebil and Golestan with a rise of 450 percent per thousand people are in the first place, the province of Chaharmahal Bakhtiari with a rate of 300-450 per 100 thousand people in the second rank and the provinces of Mazandaran, Gilan, Fars, Qazvin, East Azarbaijan and West with an incidence of 100 to 300 percent in the third place with average pollution [10]. Studies have shown that rabies control programs have played a significant role in controlling rabies, but designing and implementing it is one of the major challenges for governments in developing countries, including Iran [11, 12]. The success of any control program is to provide extensive and in-depth information on the epidemiological situation and the dynamics of the transmission of disease between humans and livestock so that is implemented with the help of new methods, modeling and successful and appropriate animal control strategies in each region. It should be noted that considering the increasing awareness of the risks of animal bites in recent years and the increasing appetite for receiving needed treatments, analysis of data in responsible organizations can be effective in increasing our knowledge of epidemiology of rabies and planning is essential in health education and reducing the burden of this disease in the health system of the country. On the other hand, the city of Jahrom with a population of two hundred and thirty thousand animals was not a positive bite and a large number of people, after being bled, Refer to the Prevention Center for vaccine and serum, which would cost a lot to Jahrom University of Medical Sciences and Health

Services to provide prevention and treatment services. Therefore, the study of epidemiological information on animal bites can identify endangered individuals and seasonal and timing patterns of animal bites and help to plan for vaccine and serum requirements and implement interventions to prevent and reduce animal bites.

Due to the increase in animal bites, the high mortality rate of rabies, the apparent and hidden damage caused by this disease and animal bites, this study aims to describe and analyze the epidemiological characteristics of animal bite according to the demographic characteristics of the injured, the injuries and the characteristics of biting animals and damage the person was contacted over a 5-year period between 2011-2016.

2. Materials and Methods

This study was a cross-sectional study using data recorded in the Jahrom University of Medical Sciences during the 2011-2016. All people who have been bitten by animals in the city of Jahrom during the 2011-2016 entered the study. Data were collected from the Jahrom University of Medical Sciences at Jahrom University of Medical Sciences. The information includes demographic characteristics (age, gender and occupation), location data of the city (city-village), and the location of the injury (city, village), the type of animal, the condition of the animal (domestic, wild and ferocious), the profile related to the location of the bite from the body, the body of the sting, the extent of the wound, the type of ulcer, the way to bite on the body or clothing, the pattern of injury (hours, days, months, seasons and years), pattern of receiving services and history of bites in this study was studied using university-registered documentation. For analytical statistics, Chi-square test and multiple regression test were used to examine the relationship between qualitative variables of chi-square and multiple regression tests. Significance level in all tests was considered less than 0.05. IBM SPSS Statistics software version 21.0 was used for statistical analysis. IBM SPSS Statistics version 21.0 helps improve decision making and productivity through simulation modeling and augmented integration with other tools.

3. Results and Discussion

In total, 2010 people with an average age of 31.4 and a standard deviation of 1.7 in 2011 to 2016 in the Jahrom city were bitten. Of these, 429 were female (21.3%) and 1581 were male (78.7%). Most of the population who bitten by animals during these years were Iranian (96.6%).

More than half of the participants (52.2%) lived in the village and the rest were in the city. The basic information of the participants in the study is presented in Table 1. The most cases of animal bites were in year 2015 with 423 (21%) and then, respectively, in 2013 with a frequency of 408 (20.3%), in 1991, with a frequency of 402 (20.0%), the year 2014 with an abundance of 399 (19.9%), 2016 years with a frequency of 195 (9.7%) and at the end of 2011 years with an abundance of 183 (9.1%). Of the 2010 people who participated in the study, most of them were 1467 (73.0%) were bitten by dogs and the rest were bitten 415 persons by cat (20.6%), 83 persons by another animals (4.1%), 31 persons by donkey (1.5%), 4 persons by fox (0.2%), 3 persons by wolf (2.6%), 3 persons by horse (0.1%), and 2 persons by cow (0.1%). The first step was to sanitize the wounds 1657 (82.4%) and other measures followed by washing with soap 256 (12.7%), washing with water 92 (4.6%), 4 cases (0.2%) had taken antibiotics and 1 person had also dressing up their wounds.

Independent T-test for determining the difference between men and women in terms of age distribution revealed no significant difference in age distribution between male and female (P -value = 0.700). Chi-square test showed that between male and female who were biting in Jahrom city during these years, it was found that between male and female, occupational variables (P -value less than 0.001), animal type ($P < 0.001$), the location of the wound ($P < 0.001$) and the location of the accident ($P < 0.001$) were significantly different (Table 2).

Linear regression tests were used to determine which variables had a greater impact on animal bites that results showed that there was a positive correlation between the study job variables (Beta = 0.05) and animal bites. Then, the age variables (Beta = 0.02), the location of the wound (Beta =

0.01), showed a positive and direct correlation with animal bites. Animal type variables (Beta = -0.06), primary measures (Beta = -0.03), gender (Beta = -0.03), nationality (Beta = -0.03), wound size (Beta = -0.02) and location (Beta = 0.05) had a negative correlation with animal bites (Table 3). In general, among these variables, the type of animal and the location of the wound had a significant correlation with animal bites. (P -value = 0.00).

The aim of this study was to investigate the epidemiological characteristics of animal bites and rabies referred to the rabies prevention and treatment center of Jahrom University of Medical Sciences in 2011-2016. In this descriptive-analytical study on animal bites in Jahrom city, most cases of male animal were selected and most of the cases were animal bites in the village, which was similar in studie to that of Bahonar et al., in Ilam [13]. In another study by Erfanian et al., in Mashhad, there were more cases of animal bites in men [14] that were consistent with the findings of our study. A study was conducted in Poland on selected animal cases, which showed that the sex ratio of the selected animal was equal in males and females [15]. In general, in justifying this, males can be more likely to work in the outdoors than female, which leads to more men in contact with livestock and dogs.

Our findings showed that most of the affected limbs were upper limbs, in a study in Southern Iran on animal cases, most of the lower limb lesions were not consistent with our findings [16].

The analytical results of our study showed that there was a significant difference between the males and females in the wound. Pendy et al., reported that most cases of animal bites have been reported in the face and head [17]. Most studies in Iran showed that most of the organs affected by animal bites were lower limbs [18-21].

In terms of the location of the animal's bite, our findings showed that most animal bites in rural areas occurred, which was consistent with the findings of a large study and contributors in Islamabad, West of Kermanshah [18]. There was a statistically significant difference between the places of incident occurrence between male and female.

Table 1: Baseline Characteristics of the participants in the study.

	Variable	Frequency (%)
Gender	Male	1581(78.7)
	Female	429(21.3)
Wound	Upper Limbs	1051(52.3)
	Lower Limbs	959(47.7)
Citizenship	Iranian	1942(96.6)
	Afghan	68(3.4)
Citizenship Having a vaccine history	Yes	235(11.7)
	No	1775(88.3)
Job	Employee	80(0.4)
	Student	309(15.4)
	Unemployed	114(5.7)
	Housewife	253(12.6)
	Farmer	155(7.7)
	Animal husbandry	80(3.9)
	Other businesses	1019(50.7)
Scene	City	985(47.7)
	Village	1051(52.2)
The wound extent	Deep	196(9.8)
	Superficial	1814(90.2)
		Mean \pm SD
	Age	34.4 \pm 1.7

Table 2: Analysis of the difference between male and female in bite-trapped animals during the years 2011-2016.

Variable		Female	Male	P-Value
	Age	31.6±2.06	31.3±1.7	0.700
	Employee	12(2.8)	68(4.3)	
	Student	89(20.7)	68(4.3)	
Job	Unemployed	32(7.5)	83(5.3)	< 0.001
	Housewife	253(58.7)	0(0.0)	
	Farmer	3(0.7)	0(0.0)	
	Animal husbandry	3(0.7)	152(9.6)	
	The other	38(8.5)	981(62)	
	Dog	195(45.5)	1272(80.5)	
	Cat	191(44.5)	224(14.2)	
Kind of animal	Horse	0(0.0)	3(0.2)	< 0.001
	Donkey	10(2.3)	21(1.3)	
	Cow	0(0.0)	2(0.1)	
	Fox	2(0.5)	2(0.1)	
	Wolf	2(0.5)	2(0.1)	
	Other things	29(6.8)	55(3.5)	
Wound	Upper	222(51.7)	831(52.5)	< 0.001
	Lower	207(48.3)	50(47.4)	
Scene	City	118(27.5)	840(53.2)	< 0.001
	Village	311(72.5)	740(46.2)	

Table 3: Multiple linear regression analysis of the initial variables of the participants in relation to animal bites.

Variable	Animal bite		
	Beta	T	P- Value
Age	0.02	0.63	0.52°
Gender	-0.03	-1.9	0.27°
Job	0.05	1.49	0.13°
Citizenship	-0.03	-1.17	0.24°
Kind of animal	-0.06	-2.28	0.02°
Wound	0.01	0.43	0.66°
The wound extent	-0.02	-0.81	0.41°
Initial measures	-0.03	-1.33	0.18°
Address	-0.05	-1.9	0.04°

It seems that the high prevalence of animal bites is due to the needs of the inhabitants of these areas as an agricultural and livestock area, with more animal contact.

The findings of this study showed that most of the bites were in dogs in Jahrom. The study of Amiri et al., in Shahrood showed that most bites were related to dogs and then related to cats [22].

Given that most biting cases are related to domestic animals, the need to educate appropriate behavioral skills in dealing with such animals reveals high-risk groups. It is also stressed that stray dogs and vaccination of pets especially dogs are wiped out. The best and only way to treat is to prevent rabies and is the best way to control the disease in domestic and wild animals.

In terms of the job of people in this study, our findings showed that the most cases of animal bites occurred in other occupations, and after that, students had the highest incidence of bites. In a study in Mashhad, the results showed that most of the animal bites in free and post-occupations occurred in the students that were not consistent with the findings of our study [14].

According to the increasing awareness of animal dangers and the growing trend of animal bites in recent years and increased popularity of

people to receive the necessary treatments and provision of vaccine and anti-serum has become difficult in recent years. The rabies required, especially considering that one of the concerns of health officials and planners in the city is to reduce health problems such as physical disability, illness and death, mental health problems, social problems and economic losses. The results of this study can be used for planning and policy-making by the authorities.

4. Conclusion

In conclusion, it can be said that according to the results, most cases of bites have been related to dogs, pets and rural areas. Therefore, by creating barriers to prevent dogs from being exposed to humans, vaccination of dogs and cats, the formation of quantities for the loss of dogs and stray cats, training to raise awareness of the risk of animal bites, especially in villages, and the likelihood of infection becoming rabies if not referred to Health Centers are advised to learn about vaccination. Regarding the irreparable nature of the rabies disease, prevention should be prevented immediately, so educating the general public about referral without delay for receiving prevention services is emphasized.

Limitations

In this research, some limitations such as the incompleteness of filing records, the filing of records by different individuals, and the difference between the quality of filing records, the lack of filing of files for research purposes, which in consultation with the relevant personnel and, if necessary, interviews with exceptional people tried to fix these problems.

Author Conflict

The authors of this article have no contradiction with each other.

Acknowledgment

This article is based on the thesis of the senior researcher of community health number 95-01-04-12297 at Shiraz University of Medical Sciences. In the end, the authors of the article need to acknowledge all the people who made it possible to implement this plan.

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