5 year-analysis of reported dog bites in Baghdad city

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Abstract:

Background: Animal bites in humans are an important public health problem. Most of these bites are dog bites. Dog bites in humans are a complex problem embracing public health and animal welfare, both in developed and developing nations. .

Objectives: in order to estimate the magnitude of the problem and to understand the epidemiological characteristics of dog bite victims registered in Baghdad city regarding their age, sex, number of registered dog bite victims per month and year along the studied period (2006-2010) and also to sniff out any seasonal variation in dog bite attacks .

Methods: A across-sectional study was carried out during January (2011), in the Anti-Rabies clinic of (Pasteur Institute) .Data pertaining to victims was collected from the registered monthly reports from January 1, 2006 and December 31, 2010.

Results: The total number of registered dog bite victims per 5 years of the study was equal to 26795. The studied epidemiological characteristics showed highly significant differences towards male victims with monthly mean number (60.381), the age group (15-45) years as people at risk with monthly mean number (95.167) , the highest total number of registered dog bite victims during the year (2009), with a monthly mean number (56.056), also there was an evident increase in the number of dog bite attacks during the warm months (May and June) with a monthly mean number (50.82) **Conclusion:** The persistence of dog bite as public health problem in Baghdad city.

Key wards: Dog bite/ Rabies

Introduction

In the countries ,where animals especially dogs have poor sanitation, dog bites are the most common animal bites[1], and every day a number of people fall victim to dog bites [2]. According to WHO report, Ten million people are bitten by animals around the world considered for prophylaxis and treatment against rabies and almost 55,000 people die from this disease annually [3].Human rabies is practically a 100% fatal disease [4;] it is endemic in Iraq especially in rural areas [5]. Dogs are the main reservoir; it is caused by a virus that gets into the human-body usually from an animal bite, scratch, or licks on broken skin or mucous membranes [4].

Dog bites are a serious health problem that is not only cause increase morbidity and mortality but also loss of man days and money or treatment [6]. Dogs bite only in self defense, out of anxiety or fear, or as people try to avoid, run away, chase or hit dogs who may then bite [7].With day to day industrialization and increasing populations, area under forest is decreasing tremendously and wild animals are moving towards residential area , because of such proximity to animal , animal bites are also becoming commoner [8].

In Iraq the incidence rate of dog bites during 2007 is (57/ 100.000) ,there is about 17000 dog bites registered and the real number is more [5].

The number of stray dogs is also increasing because of weak killing attacks implemented due to security condition of the country, that's why the researcher aimed through 5 years survey of dog bite cases in Baghdad city as seen over the period(2006-2010) in order to estimate the magnitude of the problem and understand the local epidemiology and characteristics of dog bite victims regarding their age, sex, number of registered dog bite victims per month and year along the studied period in order also to sniff out any seasonal variation in dog bite attacks, the information will be used to plan prevention and enhance management strategies.

Methods

A Cross-sectional study was carried out during January 2011, in the Anti-Rabies clinic (Pasteur Institute), Baghdad city ;where subjects usually received Anti-Rabies post exposure prophylaxis of dog and other animal bite.

The data collected from registered monthly reports between January 1, 2006 and December31, 2010, the data pertaining to victims were studied regarding their gender, sex, number of victims per month and year along the studied period, the researcher choosed 5 years of data analysis that would supply sufficient event number, in order to enable us to sniff out any seasonal variation in dog bite injuries. The data were subsequently stored in a personal computer and analyzed by SPSS program for windows, using:
Statistical Analysis:
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The suitable statistical methods were used in order to assess and analyze our results, they includes:

I – Descriptive Statistics:
a- Statistical tables.
b- Mean value.
c- Standard error.
d- Graphical presentation by Bar charts.

II – Inferential Statistics: These were used in order to accept or reject the statistical hypotheses, they include:

a- General Linear Model (Four – ways ANOVA with fixed effects model)

b- Least Significant Difference (LSD) after the analysis of variance.

c- 95% confidence interval of mean value.

d- Determination coefficient and adjusted coefficient (R- Square)   .

Results:

Table (1): Distribution of dog bite cases per year.

Year	No. males	No. females	Total
2006	2932	635	3567
2007	3144	834	3978
2008	5018	1406	6424
2009	5501	1841	7342
2010	4337	1147	5484
Total	20932	5863	26795

The results show that the total number of dog bite victims was (26795) per 5 year of study (2006-2010), distributed as (20932 males and 5863 females) , with male to female ratio equal to 3.5: 1.

Table (2) : Four – Ways ANOVA with fixed effects of General Linear model for testing the differences of means for the studied effects factors in compact form.

Tests of Between-Subjects Effects					
Dependent Variable: number					
Source of variation	Type III Sum of Squares	d.f.	Mean Square	F	Sig.
gender	347336.9	1	347336.9	320.2	0.000
year	93117.18	4	23279.3	21.5	0.000
age	820232.2	5	164046.4	151.2	0.000
month	17106.5	11	1555.1	1.4	0.153
Error	757162.2	698	1084.8		
Total	3097560	720			

(*) R Squared = .628 (Adjusted R Squared = .617)

The results show that the studied variables (No/year, gender, age, No/month) showed highly significant differences (p value< 0.01) for all variables except no of victims/ month (p value> 0.05).

Table (3): Summary statistics for estimation for dog bite victims distributed by gender per month along the studied period.

Estimates				
Dependent Variable: number				
Gender	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Male	60.381	1.736	56.972	63.789
Female	16.453	1.736	13.045	19.861

The results show that the predominance of male victims compared to females. Mean number per month (60.381) for males versus (19.861) for females along the total studied period.

Table (4) : Summary statistics for estimation of dog bite victims per month along the studied period in a years.

Estimates				
Dependent Variable: number				
year	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
2006	24.771	2.745	19.382	30.16
2007	28.146	2.745	22.757	33.535
2008	45.028	2.745	39.639	50.417
2009	56.056	2.745	50.667	61.444
2010	38.083	2.745	32.695	43.472

The results show that the highest reported number of dog bite victims with a monthly mean of (56.056) during 2009, highly significant differences (p value< 0.01) between the year 2009 compared to other studied years.

Table (5) : Summary statistics for estimation of dog's bites distributed according to different age groups per month.

Estimates				
Dependent Variable: number				
age	**Mean**	**Std. Error**	**95% Confidence Interval**	
			Lower Bound	**Upper Bound**
< 1 yrs.	0.725	3.007	-5.178	6.628
1 - 4 yrs.	13.408	3.007	7.505	19.311
5 - 14 yrs.	68.267	3.007	62.364	74.170
15 - 44 yrs.	95.167	3.007	89.264	101.070
45 - 64 yrs.	40.467	3.007	34.564	46.370
65 > yrs.	12.467	3.007	6.564	18.370

The results show that dog bite victims in the age group (15-45) years were more affected with a monthly mean value of (95.167). The results showed highly significant differences (p value<0.01) compared to other age groups.

Table (6) Summary statistics for estimation of dog's bites distributed according to different months along the studied years

Estimates				
Dependent Variable: number				
month	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Jan.	32.23	4.252	23.885	40.582
Feb.	39.20	4.252	30.852	47.548
March	40.33	4.252	31.985	48.682
April	34.45	4.252	26.102	42.798
May	50.82	4.252	42.468	59.165
Jun.	43.38	4.252	35.035	51.732
July	37.92	4.252	29.568	46.265
Aug.	40.00	4.252	31.652	48.348
Sep.	34.25	4.252	25.902	42.598
Oct.	34.30	4.252	25.952	42.648
Nov.	35.10	4.252	26.752	43.448
Dec.	39.02	4.252	30.668	47.365

Finger (1) : Line chart for mean values estimation of dog bite victims distributed by different months along the studied period per months.
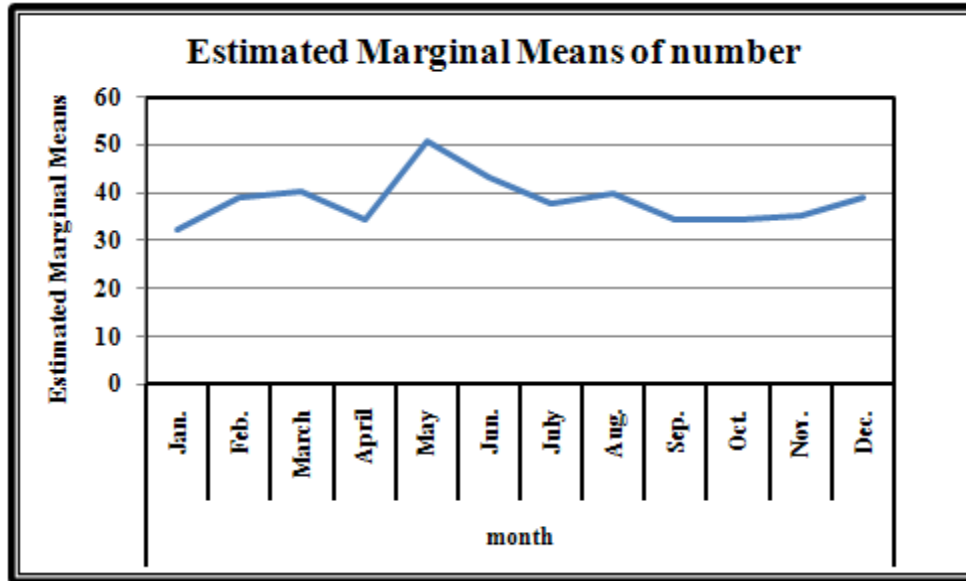
The results in table (6) and figure (1) show that the highest monthly mean value reported of dog bite victims was during May followed by June, although the results showed no statistical differences (p value> 0.05).

Discussion:

Animal bites pose a major public health threat both in developed and developing nations [9]. People of all ages, races and sex are potentially at risk for dog bite, it is unlikely that dogs discriminate [10].

The total number of dog bite victims estimated in Baghdad city during the study period (2006-2010) was equal to 26795 cases and the real number is more because a number of people do not seek medical treatment post- exposure specially regarding small bites also the lack of standard reporting in Iraq makes accurate estimates of the exact incidence of dog bite injuries in our study is difficult" The epidemiological profile of Baghdadian dog bite victims revealed that men were affected more than women this could be explained due to the fact that men are more likely to go out of their homes for work as compared with women , while[10] attributed sex differences that women are more frequently bitten by cats , whereas men are more often bitten by dogs , also many studies [11,12,13,14] showed the predominance of male victims among people living in India, Canada, Khuzestan and Nigeria, respectively ,

People at risk were mainly in the age group (15-45) years, this finding is compatible to[2]. in Florida and was explained as they are the most agile group also in Texas[15]; on average the highest number of humans exposed to rabid skunks were between 36 and 50 years old .while many other authors [16,17,18] revealed that children under 15 years of age were victims of dog bites, the bites appeared to be triggered by an interaction of the child.

The highest reported dog bite victims was during the year(2009) compared to other years, this could be explained due to population density, high number of stray dogs, especially around sewage canals, weak killing attacks implemented due to security condition of the country. In Spain [19], reported that population density did exert a significant effect on the incidence of dog bites. Dogs being warm blood animals with temperature homeostatic mechanism, have activities relatively independant of temperature [20];yet in our study, there was an evident increase of number of dog bite attacks during the warm months

(May and June) ,while in Ethiopia [21],there was no significant peak in the monthly distribution of dog bites and this information suggests that dogs appear to bite people at a constant rate throughout the year. In Australia found at least no positive relation seems to exists between the full moon and dog bite exposure [22], while the profile of patients living in Ghana [23] and Chandigarh, India [24] showed maximum number of patients during summer months .

Conclusion

Having discussed the results of study, the following are concluded:-

1- The persistence of dog bite as public health problem in Baghdad city
2- An accurate estimate of the incidence of dog bite cases in Baghdad city is difficult as many dog bite are under- reported
3- The total number of registered dog bite victims in Baghdad city per 5 years of study (2006-2010) was equal to 26795 cases.
4- The studied epidemiological characteristics showed highly significant differences towards male victims, the age group (15-45) years as people at risk, also regarding the total number of registered dog bite victims during (2009).
5- There was an evident increase in the number of dog bite attacks during the warm months (May and June).

Recommendations

1- All dogs and other animals bites should be registered and informed to the center of disease control (CDC) in Baghdad city
2- Active animal bite surveillance studies as required to determine the true burden of dog bite in Baghdad and other provinces of Iraq.
3- Health education to enhance public awareness regarding the importance of the problem and to avoid proximity to stray dog.
4- Institution of intervention programs targeted at killing stray doges

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