

Dog bites in children: A review of results from a recent European and New Zealand study

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Introduction

Most studies on dog bite incidents are carried out in the United States where dog bite injuries are the childhood public health problem most frequently reported [1]. Injuries from dog bites may cause a number of physical problems (e.g. eyesight, breathing, nutrition) and psychological problems due to the physical scars resulting from such injuries [2]. In the United States, dog bites are estimated to cost over \$1 billion a year, with insurance companies paying out \$250 million in liability claims as well as the cost of euthanasia of dogs that have been given up to shelters or abandoned because of biting accidents. In addition the emotional consequences of pet loss following such incidents should not be underestimated.

Victims

Studies carried in different countries report that children are the most frequent victims of dog bites. The ages at which children are bitten varies but a number of studies agree that children between 5-9 are the most frequent victims [2, 3, 4], although some report that the highest rate of serious injury from dog bites is to children under 5yrs of age [2, 5, 6]. Victims are mostly boys, the most frequently injured areas are the face and legs, and dog owners are more at risk of being bitten [5, 7].

Review of data provided by different European national databases

The Health and consumer Protection Directorate General of the European Commission introduced The European Home and Leisure Accident Surveillance System (EHLASS) in 1986 to foster a consumer protection and product safety policy.

This provides information about victims of home and leisure accidents treated at emergency departments of hospitals in different European countries. The data presented here represents the year 1998 as it the only year in which all the following countries provided data on injuries related to dogs: Austria (AT), Belgium (BE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Greece (GR), Ireland (IE), Island (IS), Italy (IT), Luxemburg (LU), Netherlands (NL), Norway (NO), Portugal (PT), Sweden (SE) and United Kingdom (UK).

Children below 14 years old are the most frequent victims of accidents caused by dogs (Figure 1). Before 45 years, males seem to be slightly most at risk but females over 65 years are more likely to have an accident caused by a dog than men. This could be due to the fact that after 65 women are more likely to own dogs than men.

The location of the injuries varies depending on the age of the victim. Children below 14 are mostly injured on the head and face followed by arms/hands and legs/feet. Victims above 14 are mostly injured and their arms/hands followed by legs/feet and head/face (Figure 2). For all ages the trunk is the least exposed to injury.

There are an estimated 6.5 million dogs in the UK, by dividing the number of dog bite accidents in the UK by the number of pet dogs it results that out of 100 pet dogs on average one has already bitten. If we compare this number to other accidents we see that the chance of being bitten by a dog is only 10 times less than having a car accident in the UK.

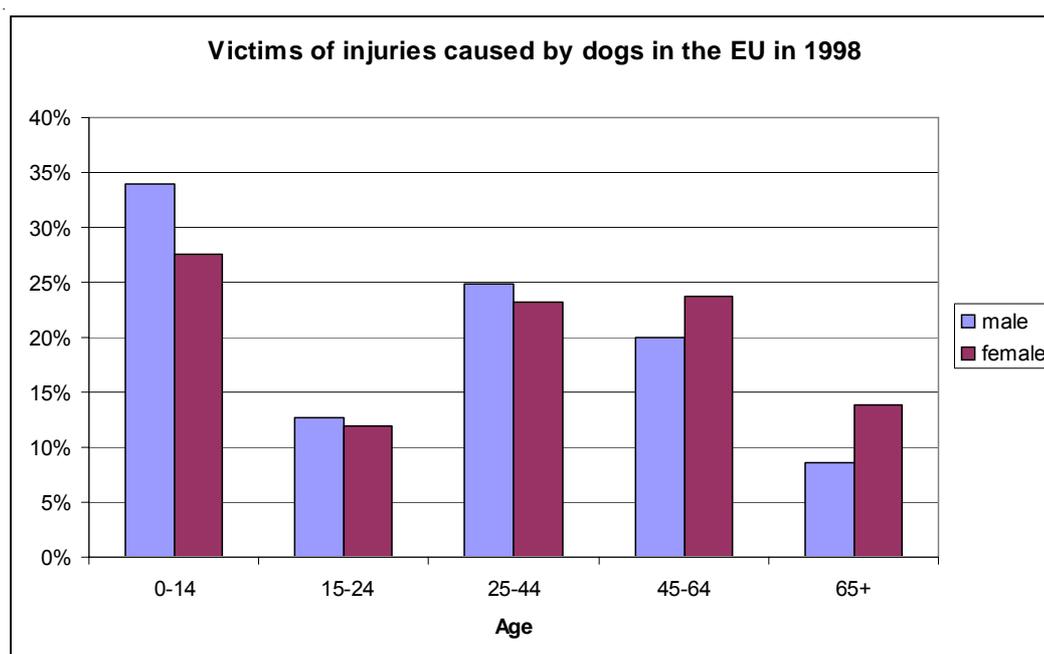


Fig.1. Percentage of victims of injuries caused by dogs for 1998 by summing the data from 16 countries.

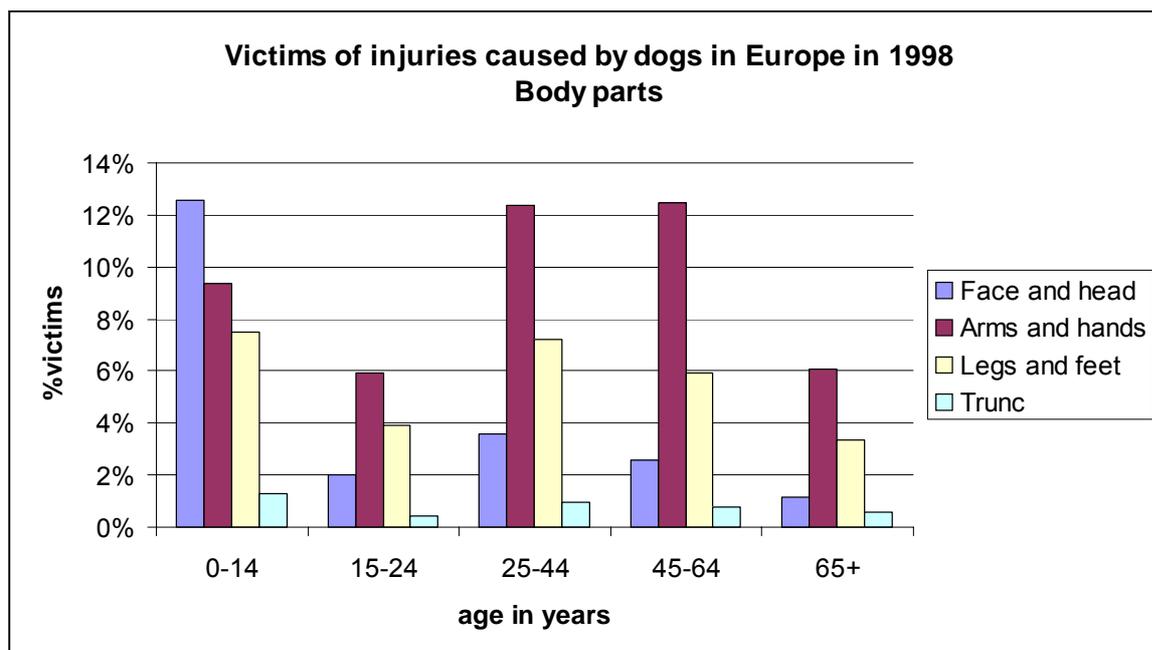


Fig. 2 Body parts injured per age group for 1998 by summing the data from the 16 countries

Limitations

Each country has a different method of collecting the data, and it should be noted that some countries provide the data in the form of real numbers of bite victims whereas others provide national estimates. The main aim of the European EHLASS was to create a common database with quality data collected using a common classification and comparable methods. However they have not yet succeeded and a standard method of collecting information on this type of injury in Europe would be very useful to compare the trends in the different countries. It would be useful if each country had a method for recovering the necessary information on accidents caused by dogs as for currently country has different types of information but none of them has a fully effective database on these injuries with a sufficient number of hospitals to collect the data. Such a database should include the calculation of national estimates and the collection of all the following data: age of victim, body part injured, circumstances of the accident (e.g. location, known/own dog), type of treatment, time spent in hospital, and the distinction between accidents caused by a dog biting a person and other types of accidents caused by dogs.

When looking at this type of data one must always take into consideration the differences in the methods of collection to avoid confusion. Such differences can result into the total number of victims being up to 10 times higher depending on the source of the data.

However independently from the method of collection the majority of sources agree that young children are more at risk and are bitten on face/head in a familiar environment.

Why children

One of the steps to reduce accidents related to dog bites is to try to understand why these happen. It is generally suggested that dog bites are a result of people's misinterpretation, or lack of understanding, of dog's communicative signs. For example, when a dog presses its paws on human's shoulders people often anthropomorphically call this a hug, however in communication between dogs such behaviours are often challenges.

Very little has been done to assess people's understanding of dog behaviour. Millot and Filiatre [8] analysed videos of spontaneous actions between children (2-5 years) and their pet dog. They found that the children were the ones taking the initiative for most of the interactions. There also seems to be a difference between the type of interaction the child has with the dog in children between 2-3 years, who essentially have agonistic type interactions, and children between 3-4 years who show more appeasing and linking behaviour and children between 4-5 years, who also show more non agonistic body contacts with the dog [9].

How do children interpret dog behaviour?

To answer this question the following study was carried as part of a PhD thesis (Lakestani in Edinburgh). The aim was to assess the understanding of children with respect to certain dog behaviours. This study involved interviewing 430 school children between 4 and 10 in Italy, Spain and Scotland. Each child was individually shown short videos made of dogs of different breeds depicting various body postures to investigate how they interpret the behaviour of the various dogs and what they look at to make their decision.

The results showed that children below 4 years were less able at interpreting the behaviour of the dog, especially, friendly and fearful dogs. Children of this age focussed more at the dogs' face in order to make their assessments and concentrated less on the movements and postures of the dogs. Older children seemed to behave in an opposite fashion, and looked more at the movements and less at the dogs' face. This change in focus increased gradually as children get older.

Since the body language of dogs is not the same as humans, facial expression is not an important part of it as it is in humans. By looking more at the face of the dog rather than at its posture children can easily misunderstand what the dog is signalling to them. This is particularly dangerous when a child is confronted by a fearful dog: the child may perceive a friendly looking dog and therefore they want to hug or pet it, but in fact, the dog is scared or anxious and so might respond by biting as a defence mechanism.

Approximately 10% of the 430 school children that were surveyed as part of this study had been bitten by a dog and most of them between the age of 3 and 5 years old. Most of the victims were bitten by a familiar dog. Thus the European data appears to support the US findings cited earlier in this paper.

Can we design effective prevention programs?

In the year 2000 two studies tested a bite prevention program, one in the US [10] and another in Australia [11]. The study in the US looked at 7-9 years old school students with pre- and post-program questionnaires assessing students' interactions, encounters, and relationship with dogs, as well as use of program materials, and changes in understanding about dog behaviour, body language and bite avoidance. The BARK (Be Aware, Responsible, and Kind) Dog Bite Prevention Program was based on written educational materials, video and questionnaires. This program appeared to be highly effective in helping children understand how to prevent or avoid potentially threatening situations involving dogs.

The study in Australia consisted of a 30 minute intervention by a dog handler and a dog demonstrating to 7-8 years children various "dos and don'ts" of behaviour around dogs, such as how to recognise friendly, angry, or frightened dogs. Seven to ten days after participating in the program, children in the intervention schools were let out to play unsupervised in the school grounds, where a docile Labrador dog was tethered. Children who had received the intervention displayed appreciably greater precautionary behaviour than children in the control schools (who had not received any intervention).

In 2003 another prevention program tested in Australia [12] investigated through a questionnaire, parents' beliefs about their children's behaviour around familiar and strange dogs, and evaluated the impact of a brief educational dog safety program on kindergarten children. The data revealed that many children engage in unsafe behaviours around dogs and that parents are largely unaware of the dangers associated with such behaviours. The dog safety program resulted in a significant increase in the ability of children to identify high risk situations for up to eight weeks, with the benefits being even greater in those children whose parents were also given information regarding safe behaviours around dogs.

Conclusion

Various sources have shown children are more likely to be bitten and suffer from more serious injuries. In addition younger children are less good at reading and understanding the behaviour of dogs. All these factors indicate that children, and especially younger ones, need to be educated on how to behave in the presence of dogs. The challenge is now to design effective dog behaviour awareness programmes that take into account cultural and age differences in ability to understand dog signals. Such programmes should be based on research into what children do see and how they interpret it.

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