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# Epidemiology and classification of dog bite injuries to the face: A prospective study of 108 patients

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## KEYWORDS

Dog bites;  
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**Summary** *Background:* Dog bites are considered to be septic injuries, and their location on the face, with its highly symbolic topography and important social functions, is particularly pertinent.

In addition to specific medical aspects, such as their psychological impact, they are also of relevance in terms of child protection measures. In light of the far-reaching importance of this subject, we were prompted to carry out a prospective study, over 13 years, to identify risk factors. Our results highlight specific risk factors, and they may hence assist with the implementation of concrete primary prevention measures against dog bites.

*Methods:* An information sheet was prepared and filled out during the intake of patients who had been bitten on the face. Data analysis was performed using Epi Info Version 6.04dfr software to find a correlation between the factors studied and the dog bite to the face.

*Results:* Dog bites to the face represented 0.83% of the emergency admissions to our service. A considerable majority of these involved children, with 68.5% of patients <16 years of age, and 33.3% of patients aged between 2 and 5 years. The wounds were multiple and of variable severity. The type of dog involved was frequently a German Shepherd. Strikingly, 91.3% of bites had occurred in a single-parent environment.

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**Conclusions:** Our study has determined that the fundamental factors that increase the probability of a dog bite to the face are as follows: the child being 2–5 years old, a single-parent context, and involvement of a German Shepherd-type dog.

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## Introduction

Despite comparable populations of dogs and cats, dogs are responsible for the vast majority of animal bites. Dog bites to the face warrant particular attention in light of the risk of infection and the particular importance of the site of injury. Indeed, the face is exposed to view, and it has a significant social function.<sup>1</sup>

As there are close to nine million dogs in France,<sup>2</sup> the annual incidence of serious dog bites is likely to be substantial. In light of this, and the medical and psychological impact, dog bites to the face present a significant public health issue.

As the majority of bites to the face mainly affect the pediatric population (60–80% of patients), they are also of relevance in the context of child protection measures.<sup>3,4</sup> Of particular concern is the recurrence of dog bites, which remain under-reported and under-recognized, and which may, to a certain degree, reflect aspects of child abuse. Injuries from dog bites are most often multiple and of variable severity, ranging from minor scarring to fatal injuries.<sup>5–8</sup> Most investigations of dog bites are retrospective studies. To improve protection measures, we undertook a prospective study to define the epidemiological factors for dog bites to the face, and to progress toward practical preventive measures.

## Material and methods

A prospective study was conducted from 1997 to 2009, as part of the intake of emergency surgeries at the Villeneuve Saint-Georges Hospital. The principles outlined in the Declaration of Helsinki were followed.

An information sheet was prepared to collect information about the dog involved, the bitten patient, and the injury. We examined the following aspects:

- Patient demographics: age, gender, and number of adults present in the family
- Dog: known or stray dog, relationship with the family, and breed of dog
- Circumstances of the bite
- Injury analysis: time between injury and hospital admission, type, number, and staging according to Lackmann's classification:<sup>9</sup>
  - o I: superficial lesion without muscle involvement
  - o II: deep lesion with muscle involvement
  - o III: deep lesion with muscle involvement and tissue defect
  - o IVa: stage III combined with vascular or nerve injury
  - o IVb: stage III combined with bony involvement or organ defect

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A statistical analysis was performed using Epi Info Version 6.04dfr software to identify any correlation between the factors studied and the dog bite to the face.

## Results

### Patients

#### Frequency

There were 108 incidences of dog bites to the face and neck out of 13,021 hospitalized patients. This represents a frequency of 0.83%.

#### Gender

Forty-nine patients were male (45%) and 59 patients were female (55%), which represents a male to female gender ratio of 0.83.

#### Age

Sixty-nine percent of the patients were under 16 years of age (Table 1).

#### Family context

The bitten child lived in a single-parent family unit in 81% of the cases, and in a two-parent family in 19% of the cases.

### The dog

#### Breed of dog

We determined that 50% of the dogs involved were "pure-bred" and 50% were crossbred or had an unidentified "breed."

Among these 54 "purebred" dogs, we found that 18 (33%) were Shepherds, followed by eight (14%) Rottweilers, five (9%) Dobermans, four (7%) Labradors, and three (5%) Spaniels.

**Table 1** Patient distribution according to age.

Age group	N	%
<2 years	9	8.3%
2–5 years	37	33.3%
6–12 years	26	24.1%
13–15 years	3	2.8%
16–69 years	32	30.6%
>70	1	0.9%

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