

Dog Bite Injuries: A Two-Year Retrospective Study of 120 Cases in a Rural Hospital

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1. Abstract

Dog bites represent a significant public health issue worldwide, leading to soft tissue trauma, infections, and occasionally life-threatening complications such as sepsis or rabies transmission. This retrospective study reviews 120 cases of dog bite injuries managed in the Emergency Department of General Hospital of Xanthi over a two-year period (2023–2025). Demographic data, anatomical distribution, clinical severity, management strategies, and outcomes were analyzed. Most victims were children and young adults, with extremities and the face being the most affected sites. Secondary wound infections occurred in 30% of cases, and 15% required surgical intervention. All patients received appropriate wound care, tetanus prophylaxis, and rabies vaccination when indicated. Our findings underscore the importance of prompt management and standardized protocols, while also emphasizing preventive measures such as community education, responsible pet ownership, and vaccination programs for dogs.

2. Introduction

Dog bites are a prevalent yet often underreported cause of injury worldwide. According to the World Health Organization (WHO), tens of millions of people are bitten by dogs each year, with the majority of victims being children. While most bites result in minor injuries, up to 20% may lead to infections, and a small but significant number result in severe morbidity or even mortality, particularly in rabies-endemic regions. Dog bites pose unique challenges to healthcare providers. They often involve high-risk anatomical sites such as the hands, face, and scalp,

and may cause complex lacerations, fractures, or nerve and vascular injuries. Moreover, the microbiological flora of dog bites is polymicrobial, commonly including *Pasteurella multocida*, *Staphylococcus aureus*, and anaerobes, which can lead to cellulitis, abscess formation, and systemic infections. Despite the global burden, management practices remain heterogeneous, influenced by local resources, vaccination policies, and awareness levels. This study presents a two-year retrospective review of 120 dog bite cases, aiming to highlight epidemiological characteristics, clinical management, and outcomes, while discussing implications for public health and prevention.

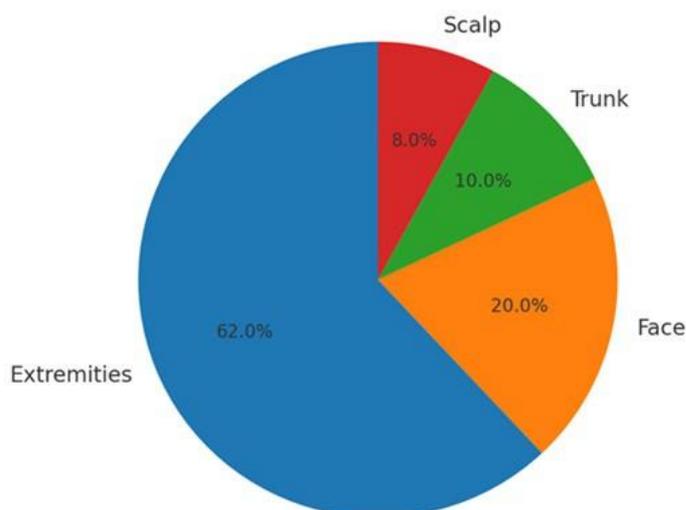
3. Materials and Methods

Study Design and Setting: A retrospective review of medical records was conducted at the Emergency Department of [Hospital Name], a regional referral center serving both urban and rural populations. The study covered the period from January 2023 to December 2025.

3.1. Inclusion and Exclusion Criteria

Inclusion criteria were all patients presenting with dog bite injuries within the study period, age ≥ 2 years, and complete medical records. Exclusion criteria were incomplete documentation or non-dog bite injuries. **Data Collection:** Demographics, injury details (site, severity, single vs. multiple bites), time to presentation, management strategies, and outcomes were collected. **Data Analysis:** Descriptive statistics were used to present frequencies, means, and percentages. Comparative analysis was performed between early (<6 h) and delayed (>24 h) presentation groups regarding infection rates.

Dog bite distribution by anatomical site (n=120)

**Figure 1:** Sample distribution.

4. Results

4.1. Demographics

Of the 120 patients, 65 (54.2%) were male and 55 (45.8%) female. The mean age was 19.6 years (range: 2–68 years). Children under 14 years accounted for 42%.

4.2. Injury Characteristics

Extremities were the most affected regions (62%), followed by the face (20%), trunk (10%), and scalp (8%). Mild superficial wounds accounted for 60%, moderate 25%, and severe/lacerations with tissue loss 15%.

4.3. Time to Presentation

70% presented within 6 hours, 20% within 24 hours, and 10% after 24 hours.

4.4. Complications

Secondary wound infection occurred in 30% overall, but was higher in delayed presenters (>24h: 60% vs. 25% in early presenters). Hospitalization was required in 12%, and 15% needed surgical intervention. No deaths were recorded.

4.5. Treatment

All patients underwent wound cleansing. 82% received prophylactic antibiotics, 100% tetanus prophylaxis, and 40% rabies vaccination.

5. Discussion

This two-year retrospective study, encompassing 120 cases of dog bites, provides valuable insights into the epidemiology, anatomical distribution, and management of these injuries in an urban/semi-urban setting. The findings indicate that extremities are the most frequently affected sites (62%), followed by the face (20%), trunk (10%), and scalp (8%). This distribution aligns with previous studies, suggesting that the upper and lower limbs are more exposed due to natural interaction with animals and defensive attempts during attacks. Management of these injuries ranges from simple local wound care with tetanus

prophylaxis and antibiotics to surgical intervention in more severe cases. Careful wound cleansing and infection prevention remain critical, as infections with *Pasteurella* spp., *Staphylococcus aureus*, or *Streptococcus* spp. are common. Early antibiotic coverage and risk assessment for rabies are also essential for optimal patient outcomes. The review of cases further highlights the importance of prevention through owner and community education. Informing the public about safe ways to approach and handle dogs, using leashes, and timely reporting of aggressive animals are key measures to reduce the incidence of bites. Additionally, developing standardized protocols for dog bite management in small- and medium-sized hospitals can improve clinical outcomes and reduce hospital stay duration. Compared to global data, the incidence of dog bites appears higher in regions with a large population of stray animals and low public awareness about preventive measures. A notable observation from this study is the increased frequency of severe injuries in children and the elderly, which corroborates previous findings [7]. Age-related vulnerability underscores the need for targeted educational campaigns and preventive strategies in schools and community centers. Finally, this study emphasizes the value of systematic data collection and record-keeping in small or regional hospitals. Maintaining a comprehensive database allows monitoring trends, evaluating the effectiveness of interventions, and enhancing treatment protocols, ultimately improving patient care and safety. This study confirms the predominance of dog bite injuries among children and young adults, consistent with international reports. Children are at higher risk due to smaller stature, limited defensive reflexes, and frequent exposure to familiar dogs. The predominance of extremity and facial injuries aligns with other studies, reflecting both defensive mechanisms and vulnerability of exposed body parts. Facial bites, although less frequent, carry significant cosmetic and psychological implications. The infection rate of 30% is comparable with published literature. Delayed presentation was associated with increased infection risk, underscoring the importance of early wound care and prophylaxis. Rabies prophylaxis remains critical. Although Greece is considered low-risk, international guidelines recommend strict adherence depending on exposure risk and dog vaccination status. From a public health perspective, prevention is crucial. Educational campaigns, enforcement of vaccination programs for domestic animals, and improved awareness can substantially reduce the incidence of bites. Rural populations may need targeted interventions, as they represented the majority of cases in our series.

6. Conclusion

This two-year study encompassing 120 cases of dog bites provides valuable insights into the epidemiology, management, and prevention of such injuries. The main conclusions are as follows:

1. Injury distribution: Extremities are the most frequently affected sites, followed by the face and trunk. Children and elderly individuals are particularly vulnerable to severe injuries, highlighting the need for targeted preventive strategies.

2. Injury management: Prompt and proper wound care, tetanus prophylaxis, and appropriate antibiotic therapy remain critical in preventing infections. Severe injuries require surgical intervention and close monitoring, especially in high-risk populations.

3. Prevention and education: Public and pet-owner education, leash use, and timely reporting of aggressive animals can significantly reduce the incidence of dog bites. Preventive programs in schools, community centers, and areas with high stray dog populations are particularly effective.

4. Importance of record-keeping: Systematic documentation of cases in small and regional hospitals allows for trend analysis, evaluation of intervention effectiveness, and improvement of treatment protocols.

5. Public health impact: The study emphasizes the importance of coordinated public health actions, including pet vaccination, stray animal control, and community education on safe animal handling.

6. Future research recommendations: Multicenter and prospective studies could further clarify risk factors, injury severity, and the effectiveness of various preventive strategies.

Overall, the study demonstrates that a holistic approach combining prevention, education, and targeted management can reduce morbidity, improve clinical outcomes, and enhance population safety. Dog bite injuries continue to pose a significant burden on healthcare systems. Our study highlights that children and rural populations are disproportionately affected. Prompt wound care, timely antibiotic therapy, and appropriate vaccination protocols are essential. Delayed presentation is a major risk factor for infection, reinforcing the need for public education and early healthcare seeking. Preventive strategies such as responsible dog ownership, animal vaccination, and public awareness campaigns are key to reducing the frequency and severity of these injuries.

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