



Canine Research

Contexts and consequences of dog bite incidents

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ABSTRACT

Dog bites are a contentious issue within the United Kingdom due to their effect on public health and increasing incidence. Despite multiple expert-led dog bite prevention schemes being available, there is limited evidence regarding the surrounding factors and likely causes of a dog bite (e.g., dog/human behavior). An online convenience sample questionnaire was distributed through social media between December 2015 and February 2016 targeting self-identified dog bite victims within the United Kingdom. A total of 484 responses were received. Victims were aged between 1 and 77 years when bitten. Most dogs (66.1%) were known to the victim. The most common context of a dog bite is related to interacting or attempting to interact with the dog (e.g., stroking, playing, handling, and restraining); however, in many cases, the dog approached the victim (50%). In 27% of cases, the dog was known to have bitten someone previously. If the upper extremities were bitten, it was likely the person approached the dog, whereas for the lower extremities, it was more likely the dog approached the person. Most injuries did not require medical treatment (62.3%), and there was no follow-on consequence for the dog involved (59.9%). Bites to an owner from their own dog were more likely to be seen as “accidental” and “unintentional” than bites from a less familiar dog. This study found contexts in which dog bites occur vary widely, and thus, a number of different prevention measures are required, including addressing repeat biters.

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Introduction

Dog bites have been noted to be increasing in the United Kingdom (HSCIC, 2015) and pose a public health concern as they can result in serious injury to a person or even death. In addition, there may be negative implications for the animal involved (e.g., relinquishment, seizure, euthanasia) (Salman et al., 2000; Diesel et al., 2008; Casey et al., 2014). Previous investigations into the frequency and causes of dog bites have been mainly through hospital/clinical data (e.g., Mannion et al., 2015), newspaper reports (e.g., Winkler, 1977; Kikuchi and Oxley, 2017), or telephone interviews (e.g. Sacks et al., 1996; Guy et al., 2001). Among these sources, much information on dog bites has been gathered, which mainly focuses on factors such as injury caused (most commonly

facial and upper extremities), age of the victim, breed of the dog, and familiarity of dog to the victim (generally known to the victim) (Reisner et al., 2011; Rezac et al., 2015; Golinko et al., 2016). Although these areas are important, there are other key areas that have not been fully addressed in literature but are important to improve our understanding of dog bites: these include the surrounding contexts and circumstances of a bite and consequences for the dog involved.

The factors surrounding dog bites (such as the victim's or dog's behavior preceding a bite) are noted to be complex and tend to not be reported in scientific literature based on clinical and hospital data (Westgarth & Watkins, 2015). Recently, Rezac et al. (2015) investigated behavior before dog bites to the face of victims. Most (76%) victims were reported to be bending over the dog and 80% occurred at the owner's home/property. Similarly, Reisner et al. (2011) interviewed 203 children aged ≤ 17 years who attended a hospital in the United States because of facial injuries as a result of a dog bite and most commonly reported bites as a result of positive intended interactions (e.g., hugging), as opposed to negative intended interactions (e.g., hurting) by the child. Although these

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studies are useful, hospital data are likely to overrepresent more severe cases or younger victims (Lakestani et al., 2014). However, the reporting of dog bites and relevant information within emergency departments may not always be recorded, even when specific training is provided, or may be poorly documented because of time constraints and/or because there is no initial direct impact on a victim's treatment (Bernardo et al., 2002; Mannion and Graham, 2016). Therefore, information about dog bites gathered through hospital data is only part of the picture. To effectively understand dog bites and their causes, research into human-dog interaction before, during, and after a wide range of bites is essential (Westgarth & Watkins, 2015).

Potential causal mechanisms for bites, and thus likely effective prevention mechanisms, will only be elucidated by detailed investigation of factors and contexts surrounding dog bite incidents. Thus, the aim of this study was to investigate the type of contexts in which dog bite incidents occur, and surrounding factors, from a group of self-identified dog bite victims, including bites that did not receive medical treatment.

Method

A questionnaire was designed to elicit information regarding dog bite incidents. The questions were developed based on the authors' experience and review of relevant literature. The final questionnaire was reviewed by 2 dog behavior experts, and a pilot study involving 10 participants was conducted before the final study.

The questionnaire comprised 5 main sections, collecting data on (1) the number of times the respondent had been bitten previously and information about the most recent dog bite (information about the dog [age, size, sex, breed, neutering status, relationship to dog]), victims location, victim behavior and dog behavior just before the bite; (2) the injury incurred and treatment received (location of bite, severity of bite, treatment received, and type of treatment); (3) the victims perception of blame for the bite; (4) the victims definition of a dog bite and views of predefined statements incorporating Dunbar's dog bite scale (APDT, n.d.); and (5) demographic information of the victim and dog (victims age, gender, education, employment sector/status, and dog ownership experience). This study reports on sections 1, 2, 3, and 5. The questionnaire consisted of 40 questions (both open and closed ended) and was completed online using the Qualtrics survey software (www.qualtrics.com).

The questionnaire was available online between December 2015 and February 2016. A link to the questionnaire was distributed through social media (Facebook and Twitter) and a University of Liverpool press release. Information provided via social media outlined the aim of the study and inclusion criteria (e.g., the respondent had to have been previously bitten by a dog, be 18 years of age or over, and live within the United Kingdom to complete the survey).

Data analysis

Once all responses were received, data were exported into SPSS 17.0 for Windows (SPSS Inc., Chicago, IL) for analysis. Descriptive data were summarized as percentages. Qualitative data gathered from open-ended questions regarding the bite context were inductively coded into emerging themes; qualitative data analysis was managed using NVivo 11 software (qualitative data analysis software; QSR International Pty Ltd., version 10, 2012). Chi-square tests were used to test for association between categorical variables, with associations presented using odds ratios (ORs) and confidence intervals (CIs); for example, the anatomic location of a

bite and age of the victim, whether treatment was sought, if the dog approached the victim or vice versa.

Results

In total, 636 responses were received, but 152 were removed for various reasons (e.g., lived outside the United Kingdom, answered less than 25% of questions). This gave a total response of 484 self-reporting dog bite victims who were aged over 18 years and lived in the United Kingdom or Ireland. As this study used a convenience sample, the results should not be interpreted as a reliable reflection of actual prevalence.

Demographics

Most respondents were female (84.8%), aged between 25 and 54 years (70.5%), and lived in England (88.9%). Most (53.6%) had at least an undergraduate degree and were in full-time paid employment (see Table 1).

Dog ownership

Currently, 82.6% (285/345) of respondents owned a dog and most (87.7%; 364/415) had owned dogs at some point in their lifetime. Of those that had ever owned a dog, 39.8% (145/364) stated they had owned dogs all their life, 23.4% (85) more than 15 years, 21.1% (77) between 6 and 15 years, 9.1% (33) stated that they had owned a dog between 0 and 5 years, and 6.6% (24) stated only as a child.

Dog bites

Just under half of the respondents (49%; 237/484) had been previously bitten on only 1 occasion; 22.9% (111) were bitten twice, 12.2% (59) 3 times, and 15.9% (77) were bitten 4 or more times. Respondents were asked to provide further details about the most recent bite, which ranged in year from 1957 to 2016. There were 74.6% (361/484) of most recent bites from over 12 months ago and 23.4% from the last 12 months. When describing this recent bite incident, most (86.0%; 416/484) victims stated that they were only bitten once, with the remaining 14.0% (68/484) being bitten more than once during this single incident.

The average age of the victim when bitten was 29.8 years (range: 1–77 years). Respondents who stated the month the bite occurred showed that bites were most common over summer months (June [13.4%; 31/231], July [15.6%; 36/231]) and the least common months being February (4.8%), March (2.2%), and April (4.8%).

Dog information

Of the dogs involved, 66.1% (320/484) were known to the victim; of those known, 34.7% (111/320) stated it was their own dog, 35.3% (113/320) stated it belonged to a close family member or a friend, and 30% (96/320) stated they were acquainted with it (e.g., seen on a dog walk).

Where dog-related factors were known, most dogs were reportedly male (68.2%; 253/371), aged between 2 and 10 years (76.6%; 328/428), and were medium (34.1%; 165/484), or large (35.7%; 173/484), in size. Regarding neutering status, 36.4% (176/484) of dogs were reportedly neutered (see Table 2 for full details).

Most respondents (73.4%; 353/481) stated they knew the breed of the dog involved. Of these, 95.8% (338/353) provided a breed name. Eighty-two different dog breeds were stated with the most common being the German shepherd/Alsatian (49/338), border

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