

Qualitative analysis of the perception of street dog bite victims and implication for the prevention of dog bites at a teaching hospital anti-rabies Clinic

Sheikh Mohd Saleem¹, Shah Sumaya Jan², S. Muhammad Salim Khan¹

Departments of ¹Community Medicine and ²Anatomy, Government Medical College, Srinagar, Jammu and Kashmir, India

ABSTRACT

Background: Aggression among the dogs has been stated as the most common cause of their biting nature by many dog experts. Most of the dog experts' opinion that many of the dog's bites are preventable. **Objectives of the Study:** Explore the victim's perception regarding dog bite, its circumstances and events that led to the bite and prevention of future bites by dogs. **Methodology:** This study involved one-to-one detailed interviews of dog bite victims to tell their tale and allowed the interviewer to ask questions related to all the circumstances that led to the bite. We included adults aged >20 years living in the Srinagar city who had been bitten by the street dog within last 24 h. Qualitative research protocol was adapted to conduct the study. **Results:** The perception of the victims vary from person to person which makes it difficult for public health practitioners to formulate standardized prevention tools. In our study, the participants had different perceptions regarding what constitute a dog bite. Some discussed a skin contact with piercing and oozing of blood as a dog bite while other perceived a simple jumping of dog over them. Some blamed the society; some blamed the dog; whereas some blamed themselves for the incident. Most of the participants never perceived that they will be bitten by the dog, so they did not use any strategies to prevent themselves. Reaction to the bite and the perception of responsibility and preventability appeared to be more related to the individual experiences of the victim and their belief about dogs in particular, than the actual circumstances which led to the bite and how preventable a bite could have been. **Conclusion:** Our findings suggest that the apparent instantaneous nature of bites and recognized psychological barriers to being receptive to educational intervention may mean bites are not as easily preventable as previously assumed.

Keywords: Dog bite, perception of victims, rabies, qualitative research

Introduction

Dog's especially street dogs have always been living among the human population. Like other developing countries, dogs live in harmony with the people of rural or urban India. Over the years, the population of street dogs has

seen a sudden rise which can be attributed to the availability of more food waste due to the changing socioeconomic status, increased population, urbanization, and lack of proper measures to control their population.^[1] In fact, it is believed that dogs were the first animals to be domesticated due to their loyalty and friendly nature.^[1] The other side of the story is that these street dogs do bite whenever they are provoked or sometimes without any external stimulus. These stories do evoke public outcry and spark highly motivated debates.^[2] Dog bites are common nowadays and they represent

Address for correspondence: Dr. Sheikh Mohd Saleem, Demonstrator, Department of Community Medicine, Government Medical College, Srinagar, Jammu and Kashmir, - 190 010, India.
E-mail: saleem.900@gmail.com

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a significant public health problem in India.^[3] Some bites are not significant (Category I) and require no medical attention while many bites belong to Categories II & III and require immediate medical attention.^[4] Some may require hospitalization also. All these circumstances pose a burden on the health care system, economic status of the victim and usually adds to morbidity rates and loss of work days.^[5] Here the question arises, is our approach to dog bite prevention working in full capacity or it has been compromised. In order to know the answer, we need to ascertain the reasons behind the biting behavior of dogs and the perception of victims at the time of bite for effective prevention in the future.

Aggression among the dogs has been stated as the most common cause of their biting nature by many dog experts.^[6] Sometimes what concerns the public is the bite itself not the reason behind the bite, which adds to more confusion. Most of the dog experts' opinion that many of the dog's bites are preventable.^[7,8] It's the victim who is unable to recognize the fearful behavior of the dog or somehow misinterpret his actions. To understand this phenomenon, we need to educate children, adults, and old about the warning signals that a dog is aggressive and may bite.^[9] Many of the qualitative researches have been conducted and the reason for dog bites and its evidence has been inconclusive. This may be due to different mechanisms and situations involving dog bites. Either some might have considered the mechanism behind a dog bite very simple, but in reality it involved many complex multifactorial events that led that dog to bite.^[10] Most common model adapted by dog experts is socio-ecological model which states that the dog might have genetically motivated behavior to react on minor events, less social exposure or any medical condition of the dog. Some events related to the victim may be a triggering factor for the dog bite like influence of alcohol, inappropriate way of approaching and behaving in front of the dog.

What we believe is that a qualitative approach addressing all the risk factors and events related to dog bites must be addressed. Literature search revealed some data regarding this very aspect of experiences of dog bites.^[6-9] Some suggest the aggression and medical conditions of the dogs as a reason for biting, whereas some suggest the behavior of victims responsible for the bite.^[5-7] They do not address multifactorial causations responsible for dog bites. In order to carry out effective preventive measures and interventions at multi stage level, the focus should be on the perception of the victim's behavior and prevention of injuries resulting from dog bites. We conducted this study at the anti-rabies clinic of a tertiary care hospital with the following aims and objectives: - Explore the victim's perception regarding dog bite, its circumstances and events that led to the bite and prevention of future bites by dogs. The finding of our study will be helpful for the public health policy makers for effective program management and prevention of dog bites through theoretical mechanisms of prevention.

Methodology

The study was conducted in the anti-rabies clinic of Department of Community Medicine, Government Medical College, Srinagar, Jammu & Kashmir. The clinic became functional in the year 2004 and is under the administrative control of the Department of Community Medicine, Government Medical College and associated Hospital, Srinagar. It caters to the needs of the adjoining areas and often patients from all the districts of Kashmir division visit the said clinic whenever required for expert opinions related to animal bite cases. This study involved one-to-one detailed interviews of dog bite victims to tell their tale and allowed the interviewer to ask questions related to all the circumstances that led to the bite. We included adults aged >20 years living in the Srinagar city who had been bitten by the street dog within last 24 h. A total of 12 patients gave consent and were recruited for this study. The participants were interviewed at the anti-rabies clinic of Department of Community Medicine, Government Medical College, Srinagar by a male doctor who has more than 4 years of research experience. The participants included eight males and four females aged between 22 and 58 years with education levels ranged from illiterate to graduate level. Interview schedule of the dog bite victims and sociodemographic characteristics of the participants are described in Tables 1 and 2 respectively. Description of the dog bite incidence as stated by the dog bite victims is described in Table 3. To reduce the recall bias that would have been a major issue in this study, we conducted interviews in only those subjects with history

Table 1: Interview schedule of the dog bite victims

Have you ever been bitten by any dog in the past?
How many times?
Now You have been recently bitten by a dog?
Was it a street Dog or a Pet Dog?
How many hours back were you bitten by a dog?
What do you consider by a dog bite?
When did the dog bite incident happened?
Where were you that time?
What were you doing that time?
Were you familiar with the dog before?
What was the dog doing just before the bite?
What were you doing before the bite?
Can you please explain your whole dog bite incident in detail?
Did you approached the dog or dog approached you?
At what site you suffered the bite?
How many bites and how much deeper?
Why do you think, the dog bite you?
What do you think the bite was intentional or unintentional?
What you did soon after you realized you suffered a bite?
Whom you consider responsible for the incident that happened to you?
Did you ever felt that you would suffer from the dog bite incident ever?
Did your perception about dogs changed after this bite?
Did you ever felt that you past knowledge about dogs was sufficient enough to prevent yourself from the current bite?
What else you will do to prevent future bites?

Table 2: Sociodemographic data of the dog bite victims

Participant	Gender	Age in Years	Education	Employment	Marital Status
Hameed	Male	58	Illiterate	Laborer	Married
Adil Ashraf	Male	45	Graduate	Government Job	Married
Talib	Male	30	Middle School	Hawker	Unmarried
Insha	Female	22	Student	Not Employed	Unmarried
Waheed	Male	35	Higher Secondary	Private Job	Married
Naseema	Female	53	Illiterate	Home Maker	Married
Ghulam Ahmad	Male	49	Higher Secondary	Shop Owner	Married
Gulzar	Male	50	Illiterate	ATM Guard	Married
Mohd Ashraf	Male	47	Graduate	Government Job	Married
Ghulam Hassan	Male	55	Illiterate	Gardner	Married
Shameema	Female	26	Graduate	Private Job	Unmarried
Mehbooba	Female	38	Graduate	Home Maker	Married

Table 3: Description of Dog bite incidence as stated by the dog bite victims

Name of the victim	Context of bite	Reason for bite	No. of bite	Location of bite	Medical treatment sought*	History of previous dog bite	Time between dog bite and interview
Waheed	Fetching vegetables from the market	I remember I was walking on the road holding a carry bag containing some vegetables and meat. The dog started following me, I got afraid and a bit nervous. I stepped faster, so does the dog. When I felt that the dog came much closer to me, I charged towards him. I still hold that my reactions to his behavior was inappropriate.” There was a heap of household waste on the banks of the road. Almost 3-5 dogs were searching the heap for food. I got a bit anxious as I was walking alone and no one seemed to be nearby.	Single	Leg	ARV + RIG	No	6 Hours
Insha	Going for tuition	The dogs were barking and when I reached closer, they barked again. I started running, so does one of the dog. I fell down and lost my consciousness for some seconds.	Single	Leg	ARV + RIG	No	4 Hours
Hameed	Going to offer Prayers	I was just unfortunate to be bitten by a dog. I went for usual prayers in the morning and some dogs came running from the opposite end. I watched them doing so and to my surprise one of the dog jumped over me and caught hold of my arm	Single	Arm	ARV + RIG	No	8 Hours
Adil Ashraf	Distributing bread among dogs	Early morning I started feeding some dogs outside my home and while feeding one of the dog jumped over me to catch hold the piece of bread. In the meantime, he bitted my hand. I feel the dog was aggressive and I could perceive that earlier	Single	Hand	ARV + RIG	Yes	12 Hours

Contd....

Table 3: Contd...

Name of the Victim	Context of Bite	Reason for Bite	No. of Bite	Location of Bite	Medical Treatment Sought*	History of Previous Dog Bite	Time between dog bite & Interview
Gulzar	While going to office	I took a short cut that day. There was an open field with presence of some dogs. I was in hurry to reach the bank. They got scared because of my actions and attacked me. I was unlucky to have received a bite from a dog.	Single	Leg	ARV + RIG	No	1 Hour
Mohd Ashraf	Waiting for a bus at bus stand	There were no dogs around as per my knowledge. Suddenly out of nowhere, I saw a dog running towards me and holding my leg from behind. The dog was not willing to leave my leg. I tried escaping from his jaws but all in vain. My friend kicked him many times, then only I was left free.	Single	Face	ARV + RIG	No	2 Hours
Ghulam Hassan	Fetching vegetables from the market	I was just buying vegetables from the market and suddenly a mad looking dog caught hold my leg. As soon I could react, he jumped over me and caught my hand in his jaws.	Multiple	Hand & Leg	ARV + RIG	No	16 Hours
Shameema	Roaming in and around the market	I was just purchasing some personal items from the market. Usually there are many dogs in the market and nobody cares about their presence. I too did not saw any one in my vicinity. Suddenly I felt someone holding my leg from the behind. May be someone might have hurted him and I came in his way.	Single	Leg	ARV + RIG	Yes	12 Hours
Naseema	Morning Walk	Just like every normal day I was having a walk early morning. Many dogs roam freely on streets and their population is on the rise. When I was walking, they were running and barking. They started running towards me and I was afraid. I too started running and one of the dog caught hold of my leg. I am still in shock.	Single	Leg	ARV + RIG	No	5 Hours
Ghulam Ahmad	Trying to save a child from dog bite	I was heading towards my home and I saw some dogs chasing a little boy. I tried saving the boy. I tried picking up a stone to threaten the dogs while one of the dog caught hold my arm in his jaws. I think I was too late to respond.	Single	Arm	ARV + RIG	No	3 Hours

Contd...

Table 3: Contd...

Name of the Victim	Context of Bite	Reason for Bite	No. of Bite	Location of Bite	Medical Treatment Sought*	History of Previous Dog Bite	Time between dog bite & Interview
Talib	Cycling	I was driving my cycle and a bunch of dogs were present alongside the road. As soon I passed, they barked over me and chased me. One of the dog bite me on my thigh. I could have changed my way. I took pity on myself.	Single	Thigh	ARV + RIG	No	2 Hours
Mehbooba	While throwing away House hold waste	I was about to throw garbage along the road side. Every one stocks their garbage there. There were no dogs at that time but suddenly a dog jumped on me from behind. I turned back and he bite me on my chest.	Single	Chest	ARV + RIG	No	8 Hours

of dog bite within the time period of 24 h. That increased the validity of the recall. Interview protocol guidelines were drafted before the commencement of the study and were used to draw important information from the study participants chronologically in order to capture all the events surrounding the dog bite incident. During the interview, the participants had the full liberty to detail any important event which they considered significant surrounding their dog bite incident. The interviewer made it sure to clarify any point which needed any further elaboration. The interview was audio recorded and lasted for 20-30 min time. The recordings were transcribed and extensive notes were made to draw themes related to dog bite incident. Following the interview, sociodemographic data were collected.

Data analysis: Extensive notes, impression and important discussion points were line listed. Recordings were transcribed maintaining the secrecy of the participants. A thematic framework was used for analysis which enabled the lead researcher to detail every aspect of the circumstances surrounding the dog bite incident. A wide range of themes emerged while transcribing the data representing complex experiences stated by the victims of dog bite. The transcript was entered in Microsoft excel spreadsheet and were given a specific code. Key features of the interview of the dog bite victims were identified and classified into specific themes. Repeated or common perceptions expressed by the participants were ignored. The themes selected were those addressing objectives of this study only.

Results

Can you define what you consider a dog bite?

The understanding of the study participants regarding what they considered a dog bite did not differed much. All participants reported that a bite involved contact between dog's teeth and victim's skin. One of the participant considered jumping of

the dog on the victim as dog bite. Another participant reported scratches by the dog on the skin as dog bite. All the participants agreed upon that bite along with breach of the skin and oozing blood is a serious concern and calls for treatment at the hospital.

Description of the bite incident and why it happened?

The main bite incident of the participants, location of bite, history of previous dog bite, time lapse between dog bite and seeking treatment and number of bites have been described in the Table 2. For 11 of the 12 participants, the primary bite incident discussed was their first bite. The left out 1 participant was bitten 4 times before this bite incident. All the participants discussed being bitten by the street dog. None of the participant was interacting directly with the dog before the dog bite incident happened. All the participants were in the vicinity of the dog but not interacting with it, and three did not even know the presence of dog around them until the bite occurred. For most of the participants, they considered their actions to be normal and acceptable while they were present in the vicinity of dogs except one participant who reported to have aggressively charged towards the dog due to fear of following by the dog.

The participants discussed that the bites resulted in puncture of the skin, pain, and agony. All the participants considered their dog bites incident serious and seek medical advice at the designated anti-rabies clinic where all of them received treatment as per rabies post-exposure prophylaxis protocol.

Whom you blame for the dog bite incident?

For any kind of incident, we either blame ourselves or someone. Similarly, on discussing the bite incident with the participants, they were asked whether they consider someone responsible for the dog bite they suffered. Majority eight participants did not blame the dog for the bite. They discussed the unsanitary conditions of the roads, rising dog population, indiscriminately throwing house hold waste on streets and inefficiency of the municipality department in clearing piles of wastes from the streets as a reason for their dog bite incident. Three participants

directly stated that they blame the dog for the bite incident as they were normally walking on the streets and were unaware of the presence of dog in their vicinity, whereas one participant blamed himself in some way for the bite incident and viewed it as his fault. Those participants who did not blame the dog directly for the bite incident discussed that they should have behaved differently to prevent the bite as in their perception dog was acting on natural instinct and just being an animal.

“I’m to blame for the dog incident. I remember I was walking on the road holding a carry bag containing some vegetables and meat. The dog started following me, I got afraid and a bit nervous. I stepped faster, so does the dog. When I felt that the dog came much closer to me, I charged towards him. I still hold that my reactions to his behavior was inappropriate.”

(Waheed)...bitten by the dog on his arm

“I blame the society and the municipality department for the bite I suffered. I was going for my tuitions like every normal day. There was a heap of household waste on the banks of the road. Almost 3-5 dogs were searching the heap for food. I got a bit anxious as I was walking alone and no one seemed to be nearby. The dogs were barking and when I reached closer, they barked again. I started running, so does one of the dog. I fell down and lost my consciousness for some seconds. I felt a kind of a pain on my leg. Someone reached the spot and helped me to get over. Later I found my pants torn and a bite mark on my leg.”

(Insha)...bitten by dog while running

“If the dog was not present in the vicinity of the victim nor was he provoked by the abnormal behaviors and aggression of the victim. Then we are of the view that the dog had elements to blame for the incident. The same was reported by the participants that they only blame the dog for their bite incident.”

“I was waiting for the bus to get off to my office. That day the bus took some extra time as I was standing and discussing something with my friend. There were no dogs around as per my knowledge. Suddenly out of nowhere, I saw a dog running towards me and holding my leg from behind. The dog was not willing to leave my leg. I tried escaping from his jaws but all in vain. My friend kicked him many times, then only I was left free. One of the bad experiences of my life.”

(Mohd Ashraf)...bitten by dog on his leg

“I am of the belief to feed any animal usually dog when we see any unusual dream. Early morning I started feeding some dogs outside my home and while feeding one of the dog jumped over me to catch hold the piece of bread. In the meantime, he bit my hand. I feel the dog was aggressive and I could perceive that earlier.”

(Adil Ashraf)...Bitten by a dog while feeding

The responsibility of the victims in prevention of bites varied much depending on their situation and knowledge to perceive that they could have predicted the bite at the first instance. These findings suggest that it may be difficult for the victims to

prevent bites if they are not aware about the possibility of bite to occur in advance.

However, in our study some victim’s felt that the dog was responsible for what happened with them while some considered themselves as a reason for the dog bite. These finding varied depending on how well the victim had the experience and knowledge about dogs.

We concluded that it is a simple factual matter who was bitten and who could have prevented the bite. The responsibility and onus of bite are a construction made in hindsight based upon the victim, situation and their level of knowledge about dogs. Those victims who self-blamed themselves can have regret of what happened to them. Feelings of self-blame are constructed when someone makes a poor decision and the outcome is usually severe.^[11] Feelings of self-blame and regret were even higher when the participant considered themselves not adapting an alternative to what they have done while their experience with dogs.

Did you ever feel that you will suffer from dog bite?

All the participants discussed having seen dogs freely roaming on the streets since their childhood. So, they were of the view that they have adequate knowledge about dogs and can perceive any threat from them as they have been taught by their family members, elders, and friends regarding dog bite incidences from time to time. The participants in our study felt that their fundamental knowledge and previous experience should have prepared them and enabled them to take action to avoid the bite. However, they did not avoid it. Most of the participants had a common perception that they would never suffer from a dog bite so they were unprepared to act and prevent the bite using their previous knowledge. Only one of the participants perceived the bite who was followed by a dog and instead of acting smartly, the victim charged on the dog due to anxiety and nervousness resulting in a bite on his arm.

The perception that “I would not suffer from a dog bite” is an example of one’s belief that they are not susceptible to the perceived threat and this directly has an impact on how likely behavior change is to occur.^[12] That means when someone considers less chance of a dog bite, the behavior change is unlikely to occur. One of the participants had history of four bites before this one and he still had the belief “it would not happen to him.” This perception makes it difficult to target interventions. If the people don’t perceive that they may suffer from an incident of dog bite, then there is no perceived need to participate in educational interventions or if they however participate they will have less regard of the same. In nutshell, their behavior will not change at all.

What was your perception before and after the bite incident?

A bite incident did make them think differently about dogs as reported by four of the participants of our study. They initially

believed that they would never suffer a dog bite when they were in the vicinity of the dogs but later contradicted their own statement that they should have sensed the threat beforehand from their fundamental knowledge. Participants did agree upon the fact that the dog bite event has supplemented to their previous theoretical knowledge about the signs of dog aggression. They admitted that the previous knowledge and the current experience will help them assess their potential risk of being bitten by the dog in near future.

"This dog bite incident changed my view regarding dogs. I think I can now sense if a dog is angry and I can change my way to prevent myself from dog bite."

(Shameema)

"I have usually seen dogs playing and fighting with each other and I seldom care about them. But, now I feel that I can sense when they play and when they fight. The knowledge is helpful to safeguard ourselves."

(Ghulam Hassan)

The participants of our study agreed upon that they can use the experience of the current dog bite incident to prevent themselves from future bites by making their own strategies based on the time and situation. Some discussed being cautious from all the dogs while some reported concerns about the same dog who had bitten them in the past. The consensus varied among the participants.

"If you could go back in the time and do anything to prevent this incident, what would you do?"

All the participants wished not being bitten by the dog. Everyone discussed their strategies to prevent this untoward incident.

"I wish I would have sensed the threat before, I would have never been around that dog." (Tabassum)

"I should have changed my way on seeing dogs or I could have taken someone along with me for support." (Insha)

Every dog bite incident is unique and the perception of the victims varies from one person to another which makes it difficult for public health practitioners to formulate standardized prevention tools. In our study, the participants had different perceptions regarding what constitute a dog bite. Some discussed a skin contact with piercing and oozing of blood as a dog bite, whereas other perceived a simple jumping of dog over them as a dog bite. Some blamed the society for the incident, some blamed the dog while some blamed themselves for the dog bite incident. Most of the participants never perceived that they will be bitten by the dog, so they did not use any strategies to prevent themselves from the incident. It seems difficult to formulate a one size fit educational program for the people to assess the risk of

being bitten while in the vicinity of dogs. Reaction to the bite and the perception of responsibility and preventability appeared to be more related to the individual experiences of the victim and their belief about dogs in particular, than the actual circumstances which led to the bite and how preventable a bite could have been.

The results of this study may be helpful for primary care physicians to get an idea about the perception of dog bite victims and impact of these dog bites on the mental status of the victims. Knowing the effective strategies by primary care physicians for the prevention of the dog bites and management of injuries can be an effective tool to advocate the general public. These in turn will help in effective management and reduction of dog bite in future.

Ethical Issues: The study was approved by the institutional ethical committee before the commencement of the study. All the dog bite victims were explained the objectives of the study. Written and audio recorded consents were taken before the interviews. Names used in the manuscript have been changed in order to hide the identity of the victims and to avoid any ethical issues.

Discussion

Strengths and limitations

This is one of the first qualitative researches exploring the perception of street dog bite victims and implication for prevention of dog bites in India as per our knowledge. This preliminary study identifies how experience of victims from the dog incident can help in devising preventive strategies to tackle future dog bites. In this study, we carried out convenient sampling and included a handful of participants to explore their incident. There is a clear need for further studies using participants with more varied background and demographics, including children and parents. We excluded children in our study but they represent a significant number of dog bites cases around the year (Sacks *et al.*, 1996). The incidents discussed by the participants were retrospective but immediate post-incident responses within 24 h. That reduced the recall bias and increased the validity of the interview. The interviewer was able to draw maximum output from the victims and our data revealed different views and perceptions in relation to dog bite incident. Due to the preliminary nature of this research project, any recommendations are made with caution.

Findings of the study and comparison to previous research

The findings of our study suggest that preventing dog bite incidences is not as simple as often described in the literature.^[13,14] The available preventive interventional protocols may be useful for special cases and circumstances.^[9] In our study, most of the victims blamed the rising dog population, unsanitary conditions of the roads, and overall role of society and municipality

department for what happened to them. The interviewer, with a good research experience felt that out of all the participants of this study, realistically only one of these victims could have been expected to behave much differently given the situation (the one who charged upon the dog). Three of the participants were put into this situation without knowing the presence of dogs in their vicinity so they blamed the dog for the incident. All the 12 dog bite victims justified their bites with multiple reasons and available circumstances. All but one never predicted that they will be a victim of dog bite. Three of the victims who were not in the vicinity of the dogs never perceived that such a situation will ever arise. The same evidences were provided by previous research conducted by Cornelissen *et al.*^[15] where they reported that most people bitten in a public place were not interacting with the dog.

All the participants reported having fundamental knowledge about dogs and bite incidences and confirmed behaving almost appropriately around dogs in the past and during the current incident. In each case, the participant was unable to assess the deemed situation risky and prevent himself/herself from happening the bite incident. Furthermore, the participants reported that after this bite incident experience they are now more aware about the situation and they shall look for their actions while around dogs in future. Our findings are supported by prevention theory and demonstrate barriers posed by low levels of perceived danger, low perceived self-efficacy to enact behavior change, and defensive reactions in denying severity or susceptibility of the threat.^[12] The complex perspective participants had about the dog bite is unsurprising due to the generally complex nature of our relationships with companion animals,^[16] and the view of them as animalistic and chaotic.^[17] Our findings agree with previous studies suggesting that animals are less likely to be blamed or punished for their actions than are people,^[18,19] and that bites are a result of external factors.^[20] These views may help us to tackle the prevention of injuries associated with animals in comparison to other causes. The perception that individuals did not feel at risk of being bitten until it happened may be the most significant barrier to educational dog-bite prevention initiatives. If the aim of educational strategies is to increase knowledge to assess risk and therefore change behavior, then this will only work if the potential victims are adequately able to assess a situation and implement a strategy during an incident that could result in a bite. Based on the experiences from our participants, their mostly positive interactions with dogs resulted in their trusting of dogs based on their previous fundamental knowledge and perception that “I won’t suffer a bite” and this may override the belief that the dog might bite them and result in a perceived negligible risk. This also fits with previous evidence that people are more likely to be bitten by dogs familiar to them.^[21]

Our key themes identified surrounding prevention clearly match with 3 common beliefs recognized as impediments to other injury prevention “it will never happen to me, “accidents happen,” and “victim blaming.”^[22] Although participants felt that the dog bite

was unavoidable there is still value in trying to prevent dog bites through similar societal and policy mechanisms as those used for other types of injury prevention.

The study raises the question of what exactly are we trying to prevent? When dog aggression is described by canine experts, play is often excluded.^[6] Our participants appeared to echo these views, discussing the importance of “intention” of the dog when delivering a “bite”. However, any contact between skin and teeth can cause damage and require hospital treatment. In one study, 25% of dog bites to the head and neck of children were from “puppies”;^[23] and puppies may be more likely to inflict such injuries during play than as a learned response to fear inducing stimuli. Prevention initiatives that are designed to educate the public about behavioral signals are not suitable for preventing bites in contexts where these signals will not be displayed.

Summary of the Article

- The study was conducted in the anti-rabies clinic of Department of Community Medicine, Government Medical College, Srinagar, Jammu & Kashmir.
- Our findings suggest that the apparent instantaneous nature of bites and recognized psychological barriers to being receptive to educational intervention may mean bites are not as easily preventable as previously assumed. The perception that “it would not happen to me” until a bite occurred, is a significant barrier to current prevention initiatives. Drawing from experience of other injury prevention contexts, a cultural change in the approach to dog bite prevention may be required. The focus should be on intervention at the population level on creating a primary environment where dog bites are less likely to occur in the first place and minimizing damage caused when dogs do bite.
- The finding of our study will be helpful for the public health policy makers for effective program management and prevention of dog bites through theoretical mechanisms of prevention.

Recommendations

We recommend that the key to dog bite prevention is education regarding dog signaling and appropriate human behavior while in the vicinity of dogs. Our findings suggest that prevention strategies could benefit from a focus on the ability of the victim to assess the risk in the immediacy of any situation with a dog and have clear instructions on what to do at that moment regardless of prior knowledge or experience with dogs. An education campaign portraying realistic and serious consequences, (“**it could happen to me**”), may be more effective than just telling people about dog body language and describing high risk situations. Participants also valued information about dogs gained from social contacts such as family and friends, an example of truth bias, suggesting that improving access to knowledge about dogs through social contacts such as face-to-face interactions with people who have been bitten, or even social media, may be more effective

than more traditional educational programs delivered via media, books, DVD, or training courses. The focus should be on intervention at the population level on creating a primary environment where dog bites are less likely to occur in the first place and minimizing damage caused when dogs do bite.

Conclusions

Our findings suggest that the apparent instantaneous nature of bites and recognized psychological barriers to being receptive to educational intervention may mean bites are not as easily preventable as previously assumed. The perception that “it would not happen to me” until a bite occurred is a significant barrier to current prevention initiatives. Drawing from experience of other injury prevention contexts, a cultural change in the approach to dog bite prevention may be required. The focus should be on intervention at the population level on creating a primary environment where dog bites are less likely to occur in the first place and minimizing damage caused when dogs do bite.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Annexure P-1, in: Revis. Modul. Str. Dog Popul. Manag. Reducing Man-Dog Confl., 2016.
- Westgarth C, Watkins F. A qualitative investigation of the perceptions of female dog-bite victims and implications for the prevention of dog bites. *J Vet Behav Clin Appl Res* 2015;10:479-88.
- Saleem SM, Khan SMS, Rouf A. Rising pattern, seasonal predisposition and trend analysis of animal bite cases attending the anti-rabies clinic of a tertiary care hospital. *Indian J Community Health* 2018;30:3-6.
- Sacks JJ, Kresnow M, Houston B. Dog bites: How big a problem? *Inj Prev* 1996;2:52-4.
- HESonline, 2012. “HES on. Dog Bites and strikes.”. Retrieved 2019 Apr 24, from. <https://catalogue.ic.nhs.uk/publications/hospital/monthly-hes/hes-on-dog-bite/hes-on-dog-bite.pdf>.
- Lockwood R. In: Serpell JA, editor. *The Ethology and Epidemiology of Canine Aggression. The Domestic Dog: Its Evolution, Behaviour and Interactions with People*. Cambridge: Cambridge University Press, Chapter 9; 1995. p. 131-8.
- Mills DS, Levine E. The need for a coordinated scientific approach to the investigation of dog bite injuries. *Vet J* 2006;172:398-9.
- De Keuster T, Lamoureux J, Kahn A. Epidemiology of dog bites: A Belgian experience of canine behavior and public health concerns. *Vet J* 2006;172:482-7.
- Overall KL, Love M. Dog bites to humans-demography, epidemiology, injury, and risk. *J Am Vet Med Assoc* 2001;218:1923-34.
- Westgarth C, Reeve K, Barclay R. Association between prospective owner viewing of the parents of a puppy and later referral for behavioral problems. *Vet Rec* 2012;170:517.
- Connolly T, Zeelenberg M. Regret in decision making. *Curr Dir Psychol Sci* 2002;11:212-6.
- Peters GJ, Ruiter RA, Kok G. Threatening communication: A critical reanalysis and a revised meta-analytic test of fear appeal theory. *Health Psychol Rev* 2013;7(Suppl 1):S8-S31.
- Yin S. Dog bite prevention: Dogs bite when humans greet inappropriately, 2011. Retrieved Feb 27, 2015, from <http://drsophiayin.com/blog/entry/dog-bite-prevention-dogs-bite-when-humans-greet-inappropriately>.
- doggonessafe.com, 2015. Signs of anxiety. Available from: http://www.doggonessafe.com/Signs_of_Anxiety.
- Cornelissen JM, Hopster H. Dog bites in The Netherlands: A study of victims, injuries, circumstances and aggressors to support evaluation of breed specific legislation. *Vet J* 2010;186:292-8.
- Sanders C. *Animal Abilities and Human-animal Interaction. Understanding Dogs: Living and Working with Canine Companions*. Philadelphia: Temple University Press; 1999. p. 111-148.
- Belk RW. Metaphoric relationships with pets. *Soc Anim* 1996;4:121-45.
- Rajecki DW, Rasmussen JL, Conner TJ. Punish and forgive: Causal attribution and positive bias in response to cat and dog misbehavior. *Soc Anim* 2007;15:311-28.
- Rajecki DW, Rasmussen JL, Modlin SJ, Holder AM. Dog bites boy: Judgments of blame and shame. *Anthrozoös* 1998;11:66-73.
- Rajecki DW, Rasmussen JL, Sanders CR, Modlin SJ, Holder AM. Good dog: Aspects of humans' causal attributions for a companion animal's social behaviour. *Soc Anim* 1999;7:17-34.
- Voith VL. The impact of companion animal problems on society and the role of veterinarians. *Vet Clin North Am Small Anim Pract* 2009;39:327-45.
- Hemenway, D., 2013. Three common beliefs that are impediments to injury prevention. *Inj. Prev.* 19, 290-293.
- Kasbekar AV, Garfit H, Duncan C, Mehta B, Davies K, Narasimhan G, *et al.* Dog bites to the head and neck in children; An increasing problem in the UK. *Clin Otolaryngol* 2013;38:259-62