E-ISSN:2349-4166
P-ISSN:2349-4158
RNI:MPENG/2017/74037
Review Article
Dog Bites

Public Health Review - International Journal of Public Health Research

2025 Volume 12 Number 1 Jan-Dec

Publisher
MEDRESEARCH
www.medresearch.in

Aware Today for a Safe Tomorrow: Understanding Dog Bites as a Public Health Concern

Verma M[1], Kumarasamy AP[2], Vada S[3*], Manna R[4]

DOI:https://doi.org/10.17511/ijphr.2025.i01.04

[1] Mamta Verma, PhD, Associate Professor, Nursing College All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India.

[2] Kumarasamy AP, Assistant Professor, Nursing College All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India, PhD Scholar in Saveetha university, Chennai, India.

[3*] Satyam Vada, Nursing Tutor, Amrita College of Nursing, Amrita Vishwa Vidyapeetham, Faridabad, Haryana, India.

[4] Ritu Manna, Nursing Officer, All India Institute of Medical Sciences, Patna, India.

Introduction: Dog bites are a major global health issue, leading to injuries, infections, and rabies, especially in regions with many stray dogs and limited healthcare. Children are particularly at risk, suffering severe trauma. This scoping review examines the public health challenges of dog bites and emphasizes the need for comprehensive strategies, including vaccination, wound care, and community education.

Methods: After an extensive search of PubMed, Google Scholar, Shodhganga, ResearchGate, and Scopus from 2014 to 2024, this article identified and included 30 relevant studies on dog bites, rabies, and preventive measures.

Results: Social, cultural, and public health factors influence dog bite incidents significantly. Effective vaccination campaigns, wound care, and community education are essential. Programs like the "One Health" approach and WHO's "Zero by 30" aim to reduce risks through integrated management and vaccination efforts.

Conclusion: Reducing dog bites requires coordinated efforts across healthcare, veterinary services, and community engagement. Public education, responsible pet ownership, and strong healthcare infrastructure are crucial for minimizing incidents and rabies deaths.

Keywords: Dog Bites, Awareness, Public Health, Rabies, Prevention strategies, and health education

Corresponding Author

Satyam Vada, Nursing Tutor, Amrita College of Nursing, Amrita Vishwa Vidyapeetham, Faridabad, Haryana, India.
Email: Singhsatyam1298@gmail.com

How to Cite this Article

Verma M, Kumarasamy AP, Vada S, Manna R, Aware Today for a Safe Tomorrow: Understanding Dog Bites as a Public Health Concern. Public Health Rev Int J Public Health Res. 2025;12(1):26-34.
Available From
https://publichealth.medresearch.in/index.php/ijphr/article/view/194

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2025-03-25	2025-04-01	2025-04-08	2025-04-18	2025-04-28

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
None	Nil	Yes	12.64	

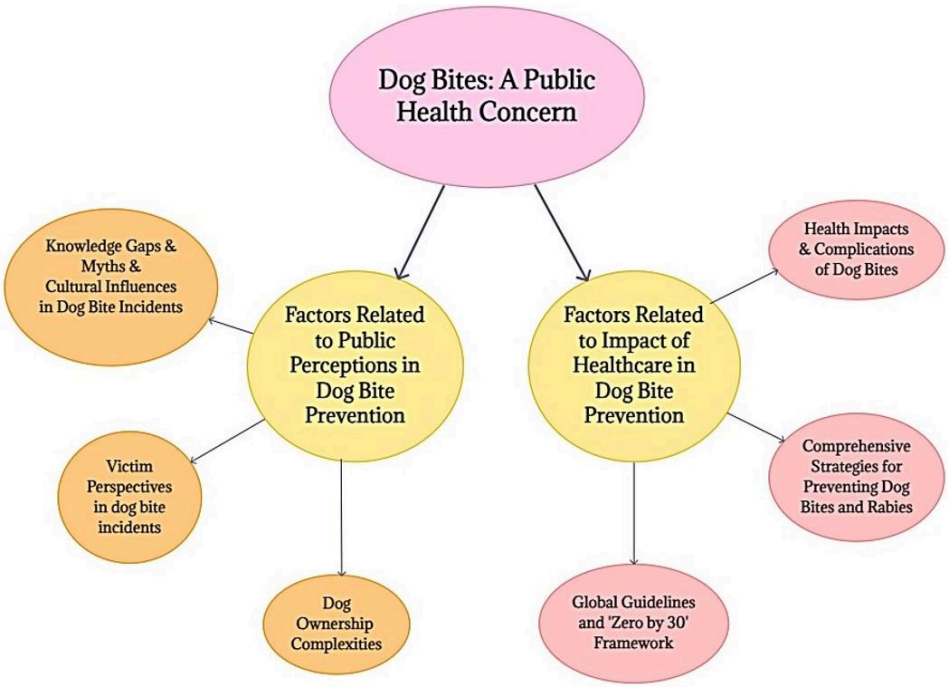
OPEN ACCESS
© 2025 by Verma M, Kumarasamy AP, Vada S, Manna R and Published by Siddharth Health Research and Social Welfare Society. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License https://creativecommons.org/licenses/by/4.0/ unported [CC BY 4.0].

Introduction

Dog bites pose a major global public health challenge, resulting in numerous emergency department visits and significant morbidity. Annually, about ten million dog bite cases are reported worldwide, often due to the prevalence of stray dogs. Dog bite injuries are particularly problematic in regions with large populations of free-roaming dogs.[1],[2] These bites can cause severe physical injuries, frequent hospitalizations, infections, and psychological trauma and pose a significant risk of rabies—a nearly always fatal disease without prompt treatment, particularly in areas with inadequate vaccination coverage.[3],[4] Rabies remains a critical public health concern, particularly in rural and underserved regions of Africa and Asia, resulting in approximately 59,000 deaths each year. Dog bites account for nearly 99% of these cases.[5],[6)] The high mortality associated with rabies is largely attributed to limited access to timely and effective post-exposure prophylaxis (PEP). [7)] In countries like India, where healthcare access may be limited, rabies claims between 18,000 and 20,000 lives annually, with dog bites accounting for the majority of these cases.[8)] The economic impact of rabies is also considerable, resulting in estimated annual losses of about 8.6 billion USD and contributing to 3.7 million disability-adjusted life years (DALYs).[9]

Hospital data indicate that about 1.5% of general population annually suffers dog bites requiring medical attention.[10] Children are highly susceptible to dog bite injuries, comprising approximately 40% of rabies cases. [5],[9],[11] Their smaller size, behaviour, and frequent interactions with dogs significantly increase their risk, often resulting in bites to face and neck that cause severe physical trauma and long-term psychological effects such as anxiety and trauma, particularly in young victims. [5],[12],[13] This vulnerability is compounded by their limited ability to recognize aggressive behavior and frequent interactions that may provoke defensive responses from dogs.[14] Prophylactic measures, such as rabies vaccination and proper wound care, are essential for minimizing risks linked to dog bites. [14],[15] The "One Health" approach is pivotal in addressing these issues, emphasizing comprehensive vaccination campaigns and integrated bite case management to control rabies and prevent dog bites.[11],[16] Mass dog vaccination and accessible PEP are critical in rabies prevention, supported by initiatives like "United Against Rabies" program.[7],[17] This review will examine social and cultural factors influencing dog bites, complexities of dog ownership, and risks of zoonotic diseases. It will highlight health impacts of dog bites, need for prompt medical care, & address knowledge gaps & myths about rabies prevention.

Conceptual Framework of Dog Bite: A Public Health Concern



Objectives

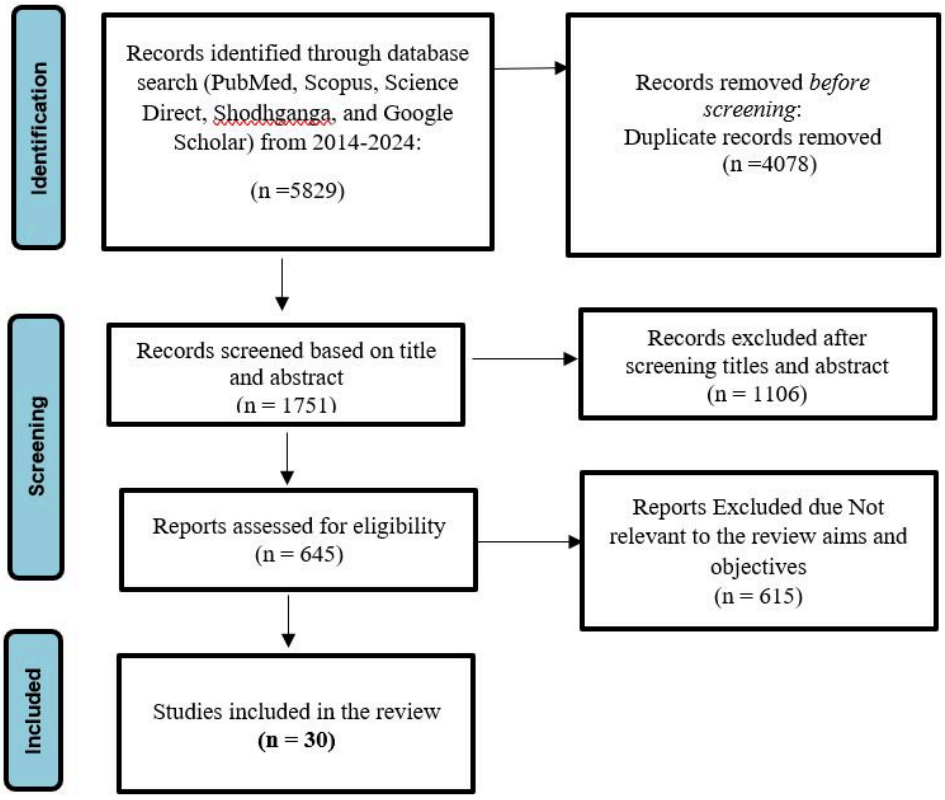
This scoping review aims to comprehensively understand the public health challenges posed by dog bites, emphasizing the importance of preventive measures and raising awareness, particularly among vulnerable populations.

Methods and search strategies

A systematic search of electronic databases, including PubMed, Google Scholar, Shodhganga, ResearchGate, and Scopus (2014–2024), utilized Boolean operators with search strings such as ("rabies" OR "Dog bites") AND ("Paediatrics" OR "Adults") AND ("health literacy" OR "preventive strategies" OR "public awareness programs") to identify relevant studies on dog bites and related interventions.

Only English-language studies with full-text access were included. No ethical clearance was required as this article references and synthesizes previous studies. In total, 30 studies were included.

Schematic representation of search strategy for literature review



Factors Influencing Public Perceptions in Dog Bite Prevention

Influencing factors and victim perspectives in dog bite incidents

Studies on dog behavior have revealed that several factors can cause dogs to view humans as prey. These factors include genetic predisposition for aggression, mistreatment, hunger, past predation, size, and age of the victim, and the absence of other people nearby. Large breeds of dogs, often trained for personal Defense or as watchdogs, are commonly involved in attacks. Most dogs involved in dog bite incidents are male and have been found to display aggressive behavior. [13]

Human-directed aggression in dogs not only affects victims physically and psychologically but also affects the welfare of the dogs, who might end up in the hands of authorities, re-sheltered, or euthanized.[18] The victims' perspectives are equally significant, whose experiences offer a profound understanding of dog bites' physical, emotional, and societal impacts. Studies suggest that victims try to avoid conflicts if someone in the same community owns the dog involved in the incident. The usual care pathway involved the bite victim seeing the dog's owner to determine if the dog had received its vaccinations and whether the owner was ready to pay for them. Only later would the victim consult a health facility.

The entire procedure will probably slow down post-exposure prophylaxis delivery (PEP), which could lower survival rates. [15] Dog bites can have dramatic long-term effects, like permanent scarring and disfigurement, infection, and pain, but other effects are sometimes overlooked. These include post-traumatic stress disorder, nightmares, emotional distress, anxiety (from feeling ashamed of scars, feeling more afraid of dogs or unfamiliar situations), and financial costs (from missing work or school, prescription drugs, medical equipment, etc.). [4]

The most common age group involved in dog bite incidents tends to be children, particularly those between the ages of 5 and 9 years old.[19)] This age group is often more vulnerable to dog bites due to their natural curiosity, lack of understanding of canine behavior, and tendency to approach dogs inappropriately or without caution. Additionally, children may not recognize warning signs of aggression in dogs, such as growling or baring teeth, which can escalate a situation into a bite. [14]

Complexities of dog ownership: risks, behavior, and zoonotic concerns

India is home to around 28 million dogs as pets. While pet dogs can bring immense joy and companionship to households, they can also harbor certain pathogens that can potentially cause illness in humans, like rabies, salmonellosis, ringworm infection, and others. All pet owners should be informed about the significance of registration to improve public health agencies' surveillance efforts to prevent and manage zoonotic diseases.[20)]

While dogs are quite adept at reading human signals, humans do not appear to be as skilled at reading dogs' visual cues. Dogs under stress are likely to exhibit stress and threat avoidance signals (such as licking their noses or turning away). The animal may resort to aggressive behavior if these indications are disregarded or misread. [10] Previous research suggests that dogs dislike being disturbed during mealtimes and resent or feel threatened when their territory is invaded; also, they become envious when other family members receive more attention than they do. [1]

It is important to emphasize that vaccinating a pet protects the pet, the owner, the family, and the community.

Responsible pet ownership involves keeping domesticated animals healthy through regular exercise, socialization, spaying/neutering, always keeping pets on leashes when outside, and preventing pets from soiling public areas. Informing clients about potential zoonotic infections and the necessary preventive steps to be taken is a crucial duty for veterinarians. [20] The national authorities should implement dog ownership regulations and develop dog behavior interpretation programs to help guardians better supervise their pets and prevent dogs from attacking people in the neighbourhood. [1]

Knowledge Gaps, Myths, and Cultural Influences in Dog Bite Incidents and Rabies Prevention

For years, misconceptions, incorrect procedures, and myths have surrounded the treatment of dog bite wounds. The victim's personal experiences and beliefs about dogs seem to have a greater influence on the response to the bite and the impression of blame and preventability than the real circumstances leading up to the bite and the degree to which a bite might have been avoided. Some studies reveal that some people blamed the dog bite incident on society, some on the dog, and still others on themselves, and the majority had never expected that a dog would bite them. Thus, they made no effort to protect themselves. [19]

Following a biting incident in India and worldwide, people often seek assistance from traditional or local healers or use home treatments. [3],[5] Studies have shown that unconventional home remedies such as using red chilli, salt, oils, herbs, and Surma on the dog bite wound are common. [1], [3],[5],[8],[13] The choice of traditional healing modalities may be due to the lack of information, belief, and easy access to traditional healers and medicine. [3],[16] This knowledge gap may lead to most fatalities among humans and put communities at risk of contracting rabies. [16] Additionally, there is unawareness about the anti-rabies treatment centre (ARTC), the importance of timely access to post-exposure prophylaxis (PEP), and the necessity of isolating and monitoring biting dogs for at least 10 days following the incident. [3],[15]

Patients who delayed treatment often mistakenly believed that the Anti-Rabies Vaccine (ARV) causes side effects.

Additionally, the non-availability of ARV at Public Health Centres (PHCs) forces patients to seek higher-level healthcare facilities, further delaying treatment. [3],[15] Additionally, people should be aware that all dogs, not only wild ones, can spread rabies and that the disease can spread even from superficial cuts. [15] Studies also suggest that education level is associated with the knowledge of rabies. A study found that one-third of the participants were unsure how to respond to a dog bite. Some indicated they would not act, while only a few mentioned cleaning the wound with soap and water or water alone. [6] Even though the respondents knew that injections are given after dog bites, they were not sure about the purpose of the vaccine. [14]

Factors Impacting Healthcare in Dog Bite Prevention

Health Impacts and Complications of Dog Bites

Dog bites are a significant public health concern, especially in regions where rabies remains prevalent [1],[5]. Dog bite injuries vary in severity, ranging from scratches to fractures, with fatal attacks often involving injuries to sensitive areas like the throat, neck, or head. [13] Complications from dog bites extend beyond rabies, with severe bacterial infections such as cellulitis, abscess formation, osteomyelitis, and septicemia posing significant risks. [7],[15],[22], [23]

Children are especially susceptible to dog bites, frequently sustaining severe injuries like intracranial trauma when bitten on the head and neck. Facial injuries are particularly alarming due to the region's complex anatomy, making children highly vulnerable. [4],[23],[24] However, adults also suffer from bites, typically to the extremities. Rabies, a disease of both public health and economic importance, accounts for a significant portion of human rabies exposures and fatalities, with the majority resulting from contact with rabid dogs. [11],[25] According to the World Health Organization, dog bites rank among the top causes of non-fatal injuries worldwide.[26],[27] The presence of free-roaming dogs (FRDs) exacerbates these hazards, as they contribute to the spread of rabies and other zoonotic diseases through bites. [2] This burden on healthcare system, coupled with economic strain on victims and increased morbidity rates, directs seriousness of issue. [10],[20]

Indirect costs add to the considerable financial burden of dog bites and rabies, covering medical care, hospitalization, decreased productivity, medical leave, post-traumatic stress treatments, and scarring, particularly from facial wounds. [9], [17

], [28] A significant challenge is the high cost of Human Rabies Immune Globulin (HRIG), which makes it unaffordable for many patients.[29] In India, where dog bites are prevalent, particularly among toddlers and teenagers, timely post-exposure prophylaxis (PEP) is essential to prevent rabies fatalities. [6],[30]

Safeguarding Communities: Comprehensive Strategies for Preventing Dog Bites and Rabies

Preventing dog bites and controlling rabies are key public health challenges requiring a comprehensive approach. Integrating vaccination, awareness programs, and animal control measures can significantly reduce dog bite incidents and rabies spread, improving community safety and health.

Proper wound management is crucial for preventing rabies transmission following a dog bite. The WHO classifies animal bite exposures into three categories: Category I (no exposure), Category II (exposure), and Category III (severe exposure). [9] The World Health Organization (WHO) recommends immediate and thorough wound washing with soap and water for at least 15 minutes, administration of the anti-rabies vaccine, and infiltration of Rabies Immunoglobulin (RIG) for category III bites as part of Post-Exposure Prophylaxis (PEP). Using modern WHO-prequalified cell culture vaccines for intradermal administration, Rabies vaccination is a fundamental component of PEP. This approach ensures vaccine efficacy while optimizing resource utilization by reducing costs and minimizing vaccine wastage. [7],[15],[17],[30]

Risk evaluation is crucial, involving the assessment of wound severity, anatomical location, patient immunodeficiency, and vaccination history. This helps categorize wounds and assess potential rabies exposure, guiding the need for rabies biologicals like rabies immunoglobulin (RIG) or monoclonal antibodies (RmAbs). Prompt administration of RIG or RmAbs into and around wounds neutralizes the rabies virus before it infects neural tissue. Dosage is calculated based on patient weight and wound size to ensure adequate coverage. [7],[11]

Ensuring the availability of rabies immunoglobulins (RIGs) and ARVs at all healthcare levels, especially at PHCs, is essential. This includes maintaining a consistent supply of vaccines and enhancing the infrastructure to support prompt and effective treatment of dog bite injuries. [3]

Public health strategies should target misconceptions, emphasizing that all dogs, not just feral ones, can spread rabies and promote the importance of vaccination. [15] Reducing dog bites requires creating safer environments through better waste management, limiting stray dogs' food sources, implementing effective population control measures, and maintaining clean public spaces. [19] Remember, it is important to recognize and interpret dogs' distress signals accurately to prevent injuries. Dogs commonly exhibit conflict-defusing signals such as nose-licking and eye-blinking when stressed. If these signs are disregarded, dogs may progress to more aggressive behaviors, like growling or biting. The Shepherd's "ladder" of distress signals categorizes these behaviors from appeasement to conflict escalation, showing dogs' different strategies to handle perceived threats. Understanding this ladder can help identify the early signs of distress and intervene before the situation worsens. [10],[23] The American Association for Family Physicians (AAFP) advises preventive measures such as avoiding contact with unfamiliar dogs, not making direct eye contact, not disturbing dogs, and staying calm when encountering stray dogs. Public education on these measures can help reduce dog bite incidents, highlighting the serious consequences of dog bites to counter the belief that "it won't happen to me."[1],[19]

Initiatives like the 'Fearless Against Rabies' campaign by Indian Immunologicals Ltd. aim to raise awareness among the public and medical professionals about rabies prevention, emphasizing the importance of immediate medical attention following a dog bite and the availability of rabies vaccines. [30] Improved veterinary surveillance and quarantine practices are essential. Suspected rabid dogs should be isolated for 10 days, regardless of their vaccination status, to verify if they have rabies. [11] Enforcing leash laws and training methods, such as positive reinforcement or consistent punishment along with positive reinforcement, can reduce the risk of aggression. [18],[20],[27]

Controlling the stray dog population through sterilization can reduce dog bites, with techniques like irreversible ductal occlusion and reversible inhibition of sperm under guidance (RISUG) proposed. [30] Innovative, cost-effective Free-Roaming Dog (FRD) management methods should be tested, such as ultrasonic sound waves, non-surgical fertility control, and oral vaccines. Preventing community feeding around hospital premises through strict guidelines and signage is also crucial. [2] Mass vaccination campaigns are essential for improving herd immunity and reducing human rabies cases, with local municipalities playing a key role in rabies control through comprehensive elimination programs. [17] Making hospital premises 'No Free-Roaming Dog Zones' can be achieved by building boundary walls, installing surveillance and guarded gates, and improving the Capture-Neuter-Vaccinate-Release (CNVR) strategy by placing dogs in holding facilities or adoption homes instead of returning them to hospital areas. [2] Initiatives like the National Bridging Workshop on Rabies (NBW-R) aim to build collaborations across sectors, highlighting the integration of human and animal health strategies in rabies control. [30]

Towards Zero Human Rabies Deaths: Global Guidelines and 'Zero by 30' Framework

The World Health Organization's "Zero by 30" initiative is a crucial public health goal Supported by global organizations like the World Health Organization (WHO), the Food and Agriculture Organization (FAO), the World Organisation for Animal Health (WOAH), and the Global Alliance for Rabies Control (GARC), have launched a collaborative global effort called "United Against Rabies (UAR)" to achieve the goal of "zero human deaths from dog-mediated rabies by 2030." This initiative focuses on regular rabies vaccinations for pets and livestock, starting at three months of age, with annual boosters, accessible post-exposure prophylaxis, and public education. The approach also considers the influence of socioeconomic factors and demographic variables like pet ownership, ethnicity, family size, occupation, education, and income on rabies prevention efforts. [9],[11] Achieving this goal requires a comprehensive approach that addresses medical, socioeconomic, and surveillance factors, all within the "One Health" framework.

This concerted global effort aims to reduce rabies cases and eradicate this preventable disease. [11] The WHO's Strategic Advisory Group of Experts (SAGE) highlights the significant role of regions with high rabies mortality rates in this goal. Improved reporting systems are essential for accurate data and policy-making, addressing the underreporting of rabies cases. [9]

The WHO and its partners have set ambitious targets to eradicate dog-mediated human rabies deaths by 2030, aiming for 92% of countries to achieve this goal while all nations reduce such deaths by 50%. To support this endeavour, the WHO rabies modelling consortium has developed comprehensive epidemiological and economic models spanning 67 rabies-endemic countries from 2020 to 2035. [9], [21] These models emphasize the importance of mass dog vaccination programs, improved access to post-exposure prophylaxis (PEP), and integrated bite case management (IBCM) as cost-effective strategies for rabies elimination. Notably, China anticipates reaching the elimination goal by 2033 with a 70% mass dog vaccination coverage, demonstrating the effectiveness of dog vaccination within the "One Health" framework. Similarly, in India, modest increases in dog vaccination coverage, to either 7% or 13% over the next five years, could result in substantial reductions of 70% or 88% in rabies deaths, respectively, showcasing the significant impact of vaccination coverage enhancements on public health outcomes [16].

Conclusion

Dog bites are a significant public health challenge with far-reaching consequences, particularly in regions where rabies is prevalent. The findings in this review highlight the significant social, cultural, and public health factors influencing dog bite incidents. It emphasizes the importance of effective vaccination campaigns, wound care, and community education. It is supported by initiatives like the "One Health" approach and WHO's "Zero by 30" to mitigate risks through integrated management and vaccination efforts. Findings also direct the complexities of dog ownership, including risks, behavior, and zoonotic concerns, and addressing knowledge gaps, myths, and cultural influences is crucial. By fostering collaboration across healthcare, veterinary services,

And community engagement and applying global guidelines like the "Zero by 30" initiative, future research can effectively reduce the incidence of dog bites and rabies, aiming to eliminate dog-mediated rabies deaths globally.

References

1. Khan UR, Soomar SM, Ghazi SM, Naeem R, Kerai S, Jamali S. Epidemiological pattern and management of dog bite injuries in Karachi, Pakistan: A cross-sectional study. Injury. 2023 Aug;54 Suppl 4:110473. *doi: 10.1016/j.injury.2022.11.016. PMID: 37573070 [Crossref][PubMed][Google Scholar]*

2. Rahi M, Joy S, Bhargava B. Towards dog-free hospital campuses in India. Indian J Med Res. 2022 Oct-Nov;156(4&5):573-578. *doi: 10.4103/ijmr.ijmr_1748_22. PMID: 36510886; PMCID: PMC10231748 [Crossref][PubMed][Google Scholar]*

3. Dhiman AK, Thakur A, Mazta SR. Treatment seeking behavior of the dog bite patients in Himachal Pradesh, India: a qualitative study. Int J Community Med Public Health. 2016 Aug;3(8):2064-9. *[Crossref][PubMed][Google Scholar]*

4. Dhillon J, Hoopes J, Epp T. Scoping decades of dog evidence: a scoping review of dog bite-related sequelae. Can J Public Health. 2019 Jun;110(3):364-375. *doi: 10.17269/s41997-018-0145-3. Epub 2018 Oct 30. PMID: 30378009; PMCID: PMC6964408 [Crossref][PubMed][Google Scholar]*

5. Dutta A, Hiremath RN, Hasure SY. A KAP Study on Dog Bite and Its Management in a Rural Community—Need for Increasing the Awareness. Journal of Medical Sciences. 2022 May;8(2):119. *[Crossref][PubMed][Google Scholar]*

6. Kishore J, Panda M, Boro P, Mandal RK. Health Literacy about Dog Bite among School Going Adolescents in a Semi-Urban Area of Karnataka. Journal of Communicable Diseases (E-ISSN: 2581-351X & P-ISSN: 0019-5138). 2022 Mar 31;54(1):76-83. *[Crossref][PubMed][Google Scholar]*

7. Nadal D, Bote K, Masthi R, Narayana A, Ross Y, Wallace R, Abela B. Rabies post-exposure prophylaxis delivery to ensure treatment efficacy and increase compliance. IJID One Health. 2023 Dec;1:100006. *doi: 10.1016/j.ijidoh.2023.100006. PMID: 38152594; PMCID: PMC10752235 [Crossref] [PubMed][Google Scholar]*

8. Vernekar SP, Desai A. A study of dog bites among children in the rural area of Goa, India. J Prev Med Holist Health. 2018;4(1):20-3. *[Crossref][PubMed] [Google Scholar]*

9. John D, Royal A, Bharti O. Burden of illness of dog-mediated rabies in India: A systematic review. Clinical Epidemiology and Global Health. 2021 Oct 1;12:100804. *[Crossref][PubMed][Google Scholar]*

10. Meints K, Brelsford V, De Keuster T. Teaching Children and Parents to Understand Dog Signaling. Front Vet Sci. 2018 Nov 20;5:257. *doi: 10.3389/fvets.2018.00257. PMID: 30525045; PMCID: PMC6256863 [Crossref][PubMed][Google Scholar]*

11. Dhakal A, Ghimire RP, Regmi S, Kaphle K. Households' Practices towards Rabies Prevention and Control in Rural Nepal. Int J Environ Res Public Health. 2023 Apr 6;20(7):5427. *doi: 10.3390/ijerph20075427. PMID: 37048041; PMCID: PMC10094547 [Crossref][PubMed][Google Scholar]*

12. Meknarit S, Mann AJ, Azar F, Borrego R. Brachial Artery Injury Resulting From a Dog Bite in a Pediatric Patient: A Case Report. Cureus. 2023 Sep 25;15(9):e45889. *doi: 10.7759/cureus.45889. PMID: 37885488; PMCID: PMC10599209 [Crossref] [PubMed][Google Scholar]*

13. Giovannini E, Roccaro M, Peli A, Bianchini S, Bini C, Pelotti S, Fais P. Medico-legal implications of dog bite injuries: A systematic review. Forensic Sci Int. 2023 Nov;352:111849. *doi: 10.1016/j.forsciint.2023.111849. Epub 2023 Sep 27. PMID: 37783138 [Crossref][PubMed][Google Scholar]*

14. Sharma S, Agarwal A, Khan AM, Ingle GK. Prevalence of Dog Bites in Rural and Urban Slums of Delhi: A Community-based Study. Ann Med Health Sci Res. 2016 Mar-Apr;6(2):115-9. *doi: 10.4103/2141-9248.181836. PMID: 27213095; PMCID: PMC4866364 [Crossref][PubMed][Google Scholar]*

15. Leblanc C, Kassié D, Ranaivoharimina M, Rakotomanana EFN, Mangahasimbola RT, Randrianarijaona A, Ramiandrasoa R, Nely AJ, Razafindraibe NP, Andriamandimby SF, Ranoaritiana DB, Rajaonarivony V, Randrianasolo L, Baril L, Mattern C, Ratovoson R, Guis H. Mixed methods to evaluate knowledge, attitudes and practices (KAP) towards rabies in central and remote communities of Moramanga district, Madagascar. PLoS Negl Trop Dis. 2024 Mar 29;18(3):e0012064. *doi: 10.1371/journal.pntd.0012064. PMID: 38551968; PMCID: PMC11006160 [Crossref][PubMed][Google Scholar]*

16. Chen Q, Liu Q, Gong C, Yin W, Mu D, Li Y, Ding S, Liu Y, Yang H, Zhou S, Chen S, Tao Z, Zhang Y, Tang X. Strategies to inTerrupt RAbies Transmission for the Elimination Goal by 2030 In China (STRATEGIC): a modelling study. BMC Med. 2023 Mar 16;21(1):100. *doi: 10.1186/s12916-023-02821-x. PMID: 36927437; PMCID: PMC10022085 [Crossref][PubMed][Google Scholar]*

17. Bashir K, Haq I, Khan SMS, Qurieshi MA. One-year descriptive analysis of patients treated at an anti-rabies clinic-A retrospective study from Kashmir. PLoS Negl Trop Dis. 2020 Aug 25;14(8):e0007477. *doi: 10.1371/journal.pntd.0007477. PMID: 32841227; PMCID: PMC7473535 [Crossref][PubMed][Google Scholar]*

18. Baslington-Davies A, Howell H, Hogue TE, Mills DS. An Assessment of Scientific Evidence Relating to the Effect of Early Experience on the Risk of Human-Directed Aggression by Adult Dogs. Animals (Basel). 2023 Jul 17;13(14):2329. *doi: 10.3390/ani13142329. PMID: 37508106; PMCID: PMC10376210 [Crossref][PubMed][Google Scholar]*

19. Saleem SM, Jan SS, Khan SMS. 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. J Family Med Prim Care. 2020 Aug 25;9(8):4118-4126. *doi: 10.4103/jfmpc.jfmpc_522_20. PMID: 33110819; PMCID: PMC7586553 [Crossref][PubMed][Google Scholar]*

20. Cherian V, Dugg P, Khan AM. Prevalence of Pet Dog Ownership in an Urban Colony of East Delhi and Awareness Regarding Canine Zoonotic Diseases and Responsible Pet Ownership among Dog Owners. Indian J Community Med. 2020 Jan-Mar;45(1):89-91. *doi: 10.4103/ijcm.IJCM_281_19. PMID: 32029991; PMCID: PMC6985952 [Crossref] [PubMed][Google Scholar]*

21. National Centre for Disease Control. National action plan for dog mediated rabies elimination from India by 2030 [Internet]. New Delhi: Ministry of Health and Family Welfare, Government of India; 2024 [cited 2024 Jun 16]. Available from: https://www. *google.com/search [Crossref] [PubMed][Google Scholar]*

22. Li X, Liu L, Yang C, Jiang B, He X, Xiong A, Yan H. Dog bite-induced necrosis of lymph nodes: A case report and literature review. IDCases. 2023 Jul 24;33:e01852. *doi: 10.1016/j.idcr.2023.e01852. PMID: 37559970; PMCID: PMC10407729 [Crossref] [PubMed][Google Scholar]*

23. Maurer M, Schlipköter C, Gottsauner M, Waiss W, Meier JK, Fiedler M, Schuderer JG, Taxis J, Reichert TE, Ettl T. Animal Bite Injuries to the Face: A Retrospective Evaluation of 111 Cases. J Clin Med. 2023 Nov 6;12(21):6942. *doi: 10.3390/jcm12216942. PMID: 37959407; PMCID: PMC10649818 [Crossref][PubMed][Google Scholar]*

24. Miyawaki M, Ogawa K, Kamada K, Karashima T, Abe M, Takumi Y, Hashimoto T, Osoegawa A, Sugio K. Tracheal injury from dog bite in a child. J Cardiothorac Surg. 2023 Jan 16;18(1):26. *doi: 10.1186/s13019-023-02107-6. PMID: 36647124; PMCID: PMC9841626 [Crossref][PubMed][Google Scholar]*

25. Bay V, Shirzadi MR, Jafari Sirizi M, Asl IM. Animal bites management in Northern Iran: Challenges and solutions. Heliyon. 2023 Jul 27;9(8):e18637. *doi: 10.1016/j.heliyon.2023.e18637. PMID: 37554820; PMCID: PMC10404659 [Crossref][PubMed][Google Scholar]*

26. McCain JE, Bridgmon AE, King WD, Monroe K. Children's injury database: development of an injury surveillance system in a pediatric emergency department. Inj Epidemiol. 2023 Jul 31;10(Suppl 1):40. *doi: 10.1186/s40621-023-00443-8. PMID: 37525256; PMCID: PMC10391750 [Crossref] [PubMed][Google Scholar]*

27. Huang D, Jia W, Li K, Liu Z, Liu L. Establishment of an Animal Model of Dog Bite Injuries. Int J Med Sci. 2024 Mar 31;21(5):958-964. *doi: 10.7150/ijms.94432. PMID: 38617003; PMCID: PMC11008484 [Crossref][PubMed][Google Scholar]*

28. Daigle L, Ravel A, Lévesque F, Mokoush KN, Rondenay Y, Simon A, Aenishaenslin C. Barriers and opportunities for improving dog bite prevention and dog management practices in northern Indigenous communities. Front Vet Sci. 2023 Sep 19;10:1199576. *doi: 10.3389/fvets.2023.1199576. PMID: 37795013; PMCID: PMC10546191 [Crossref] [PubMed][Google Scholar]*

29. Gogtay NJ, Nagpal A, Mallad A, Patel K, Stimpson SJ, Belur A, Thatte UM. Demographics of animal bite victims & management practices in a tertiary care institute in Mumbai, Maharashtra, India. Indian J Med Res. 2014 Mar;139(3):459-62. *PMID: 24820842; PMCID: PMC4069742 [Crossref] [PubMed][Google Scholar]*

30. Pattnaik P, Mahal A, Mishra S, Alkhouri A, Mohapatra RK, Kandi V. Alarming Rise in Global Rabies Cases Calls for Urgent Attention: Current Vaccination Status and Suggested Key Countermeasures. Cureus. 2023 Dec 13;15(12):e50424. *doi: 10.7759/cureus.50424. PMID: 38222131; PMCID: PMC10784771 [Crossref] [PubMed][Google Scholar]*

Disclaimer / Publisher's Note The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Journals and/or the editor(s). Journals and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.