

Review Article

Free-Roaming Dog Versus Stray Dog: Which is better terminology for Rabies control?

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DOI: <https://doi.org/10.24321/0019.5138.202523>

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How to cite this article:

Jena P K, Agarwal S J, Kishore J, Sahu L S. Free-Roaming Dog Versus Stray Dog: Which is better terminology for Rabies control?. J Commun Dis. 2025;57(1):185-190.

Date of Submission: 2024-12-26

Date of Acceptance: 2025-03-17

A B S T R A C T

Introduction: Dogs have been an integral part of human life and human settlements. Free-roaming dogs, often lack formal ownership but remain integral to their surroundings. However, inconsistent terms like “stray” or “feral” shape public attitudes, frequently leading to neglect and harmful interventions. This review examines how language plays a role in shaping public health strategies and attitudes toward dogs, focusing on humane rabies control.

Methods: Using a narrative review approach, the study examines research articles, policy documents, and legal frameworks like the Prevention of Cruelty to Animals Act (1960), to assess the definitions, cultural attitudes, and rabies prevention strategies for humane management practices.

Results: Free-roaming dogs are diverse, ranging from independent feral dogs to community dogs cared for informally. Many remain unvaccinated and unmonitored, perpetuating rabies transmission. Achieving 70% vaccination coverage is critical to breaking this cycle. Success stories from Bhutan and Bali illustrate how humane strategies such as mass vaccination and sterilization outperform harmful practices like culling. Shifting from “stray dog” to “free-roaming dog” encourages compassion, redefines public perceptions, and supports effective management.

Conclusion: Aligning societal attitudes with humane legal frameworks fosters safer communities for humans and dogs alike. Adopting compassionate language and strategies promotes coexistence, protects public health, and ensures that free-roaming dogs are treated with dignity and respect. This simple change in terminology inspires a broader cultural shift toward humane treatment and sustainable solutions.

Keywords: Free-Roaming Dogs, Dog Bite, Rabies Control, Humane Management, Animal Cruelty

Introduction

Dogs have a long history of coexisting with humans, not only as companions but also as partners in work, protection, and emotional support. Many free-roaming dogs, especially in rural areas, play important roles in their communities, even if they are not owned by a single person or a family. However, societal attitudes toward these animals often reflect a power imbalance, where humans have control over the lives and welfare of dogs.¹

Feldmann's 1973 definition broadly groups all free-roaming animals, without distinguishing between those dependent on humans and feral ones.² Tiwari's 2019 definition is more precise, separating free-roaming dogs into those reliant on humans and fully independent feral dogs. Tiwari et al observed that the free-roaming dogs fall into two categories: those relying on human settlements for food and shelter, and feral dogs, which have no human association and survive independently.³ This distinction helps guide modern, targeted strategies for animal welfare and management.

While Gill GS et al (2022) defined a stray dog, as any dog in a public space without direct human supervision. This includes both unowned dogs and those cared for by the community, but not dogs on leashes or actively controlled by humans. Stray dogs can either be former pets, abandoned or lost, or feral dogs that have never had human ownership.⁴ Irrespective of ownership, the movements of dogs are either restricted or unrestricted, and the unrestricted movements are of particular importance from the public health point of view.⁵

In pet management programs, free-roaming dogs are those without formal owners. Stray and semi-domiciled dogs often overlap, as both roam freely and are difficult to distinguish.⁶

The terminology used for dog populations - such as owned, unowned, stray, feral, or free-roaming - can often be confusing and inconsistent, making it hard to plan effective dog population management (DPM) programs. The term "stray" is particularly unclear, sometimes referring to unowned dogs and other times to any free-roaming dog, whether owned or not.⁷

Methodology

This manuscript draws on a narrative review approach to explore how terminology impacts our understanding and management of dogs, particularly in the context of rabies control. We examined studies, reports, and policy documents from reliable sources like WHO, PubMed, and legal frameworks such as the Prevention of Cruelty to Animals Act (1960). By focusing on key definitions of "free-roaming" versus "stray," cultural attitudes toward dogs, and rabies prevention strategies we aimed to highlight the importance of humane language and effective public health measures.

Result & Discussions

Dogs and Human Interactions

Free-roaming dogs are not a homogenous group and can be classified into different types based on their relationship with humans.⁸ Feral dogs, for instance, live without human supervision and have reverted to a wild state, relying on their environment for survival. These dogs are particularly difficult to vaccinate due to their lack of human contact. On the other hand, community dogs, though unowned, are informally cared for by groups within a community. They rely on humans for basic needs like food and water, making them more accessible for vaccination and management efforts.⁹

The many categories of free-ranging dogs mostly refer to their lifestyle and the degree of their dependence on and social relationships with humans. Some of them may still have a human boss, their 'owner,' to whom they are attached and keen to return more or less frequently, but most of them have no human companion. This last category is highly heterogeneous and includes dogs that had and lost a human companion, and dogs that never had a social connection with humans. For those of the first group, their dependence on humans is often reduced to a faint image of a former symbiotic relationship; sometimes the loss of a social bond with humans is suffered as an unhealed wound, driving the dog to a never-ending search for a new human companion. But sometimes the loss is fully turned into a new life of canine-only relationships. Those of the second group, the largest majority of free-ranging dogs, never had a social connection to humans. However, no matter how detached they are from humans, they still depend on us for food and shelter. Only a tiny minority of them, the true feral dogs, are back in the woods living, as they can, as intruders into the natural community and the existing balance of predators and prey.¹⁰

Dogs and Rabies

Domestic dogs, including free-roaming, partially owned, and fully owned pets, are the primary contributors to rabies transmission worldwide, particularly in regions where rabies is endemic. They serve as the main reservoir for the rabies virus, with dog-mediated rabies responsible for the vast majority of human cases, especially in areas with inadequate rabies control programs. The burden of rabies is increasing, where over 99% of human rabies deaths, amounting to approximately 59,000 fatalities annually that occur in over 150 countries are caused by dog bites.¹¹ This high mortality rate is exacerbated by limited access to post-exposure prophylaxis (PEP) and insufficient dog vaccination efforts in these regions. Rabies is integrally linked to the ways people live with their dogs. Its control requires an adequate understanding of the dog ecology and dog-keeping practices in a country in locally differing sociocultural contexts (e.g., urban vs rural, among different

economic, religious, or ethnic groups). Factors that can profoundly affect rabies transmission and control are usually not sufficiently understood to design the most appropriate control strategy, and as a result, efforts and resources can be wasted. In most circumstances, almost all dogs can be handled and vaccinated by the parenteral route (Table 1). In rare cases, however, dogs may not be accessible to parenteral vaccination, thus jeopardizing the coverage of vaccination campaigns. The lack in dog movement control has been attributed as responsible for rabies spread in endemic areas and incursion in previously free countries or regions. The elimination of rabies may be feasible by keeping the herd immunity of canines above 70% at all times, especially in the Western Hemisphere.¹²

One of the major challenges in controlling rabies is the management of free-roaming dogs, which often remain unvaccinated and unmonitored. These dogs, including unowned and partially owned dogs, roam freely in both urban and rural settings and play a critical role in maintaining the rabies transmission cycle.¹²

Without effective control, these free-roaming dogs continue to spread the virus, posing a significant public health risk. Mass vaccination of domestic dogs has been identified as the most effective strategy for controlling rabies, with vaccination coverage of at least 70% necessary to disrupt the transmission cycle and prevent outbreaks.⁷

Recognizing the distinctions between these types of free-roaming dogs is crucial for developing targeted and humane rabies control policies. While free-roaming dogs are often perceived as aggressive or diseased, many community dogs are well cared for, and understanding this can lead to more effective public health strategies that address the specific challenges posed by each type of dog. This nuanced approach encourages community-driven efforts to manage dog populations and control the spread of rabies, ultimately protecting both human and animal health.⁷

Public Health Significance: Rabies and Beyond

One of the most pressing public health concerns associated with free-roaming dogs is rabies transmission. Studies indicate that a significant portion of rabies cases in India can be linked to dog bites, particularly from unvaccinated free-roaming dogs.¹³ However, focusing solely on rabies risk without addressing the underlying human-dog interactions can lead to harmful measures like mass culling, which is not only inhumane but also ineffective in controlling rabies.

Different causes of unowned dogs, such as abandonment or street births, require different strategies. Community involvement and attitudes toward dogs are also essential for success. Dog population management programs must consider local views and prioritize strategies that are acceptable to the community to have a lasting impact. Whether through education, regulation, sterilization

programs, or managing street food sources, solutions must be tailored to the specific challenges of each area.⁷

Promoting responsible management, such as sterilization and vaccination programs, offers a far more effective and humane solution. Countries like Bhutan have seen success in controlling rabies through mass sterilization.¹⁴

Dog population management primarily involves culling, long-term sheltering, and fertility control, with additional strategies like public education on responsible ownership and taxation. Objectives vary across countries, focusing on reducing free-roaming dogs, promoting responsible ownership, and improving dog health.^{15,16} Research confirms that fertility control effectively reduces populations, with declines ranging from 14% to 78% over 20 years, depending on neutering coverage.¹⁷ Sheltering alone has minimal impact, reducing populations by only 3% in 10 years.^{18,19} Fertility control surpasses culling, achieving a 75% reduction versus 13%,²⁰ and when combined with rabies vaccination, it is the most effective method for controlling dog populations and eradicating rabies.²¹

For effective disease control and management, two key factors matter: whether the dog is owned or unowned and whether it is confined. Free-roaming dogs, regardless of ownership, are at higher risk of disease, injury, and culling, which can lead to neglect.⁷

The annual crude dog bite incidence was reported between 0.26% and 2.5% with stray dogs as the main biting animal. Therefore, the immunization of pet dogs along with stray dogs could be an important strategy to break the chain of rabies transmission.²² India accounts for 36% of global rabies deaths, with most cases traced to dog bites.²³ More than 97% of the bites were unprovoked and by stray dogs.²⁴ Most animal bites in India (91.5%) are by dogs, of which about 60% are strays and 40% pets.²⁵

In Ethiopia, rabies exposure from dogs was assessed over several years. It has been reported that 19.6% of human rabies exposures were caused by dogs with owners. Also, 96.5% human rabies exposures was caused by unprovoked dogs and 85.9% of these were unvaccinated.²⁶

It has been found that a majority of dogs in Nigeria involved in bite incidents had owners but were not adequately vaccinated or monitored, leading to multiple outbreaks. In rural communities, where roaming behaviour is common, the 70% vaccination threshold necessary for herd immunity is challenging to achieve due to continuous exposure to infected animals.²⁷ In Homa Bay County, 91% of animal bite victims reported being bitten by dogs. A 71% dog ownership was common, wherein only a mere 27% were vaccinated.²⁸ In Kashmir, studies found that 85% of people were bitten by dogs at home and were vaccinated, although the travel time to the hospital was 48 hours.²⁹ These delays directly contributed to an increase in fatalities, as rabies progresses quickly after symptoms appear.

Table I. Categorization of Dogs based on their movement and Vaccination strategy for Rabies control

Dogs	Movement	Who Can Get Them Vaccinated
Owned dogs	Restricted or confined	Owners or Any person from government organisations
Urban-free roaming dogs	Unrestricted	Any person from the community or persons from government organisations
Rural free-roaming-dogs	Partially restricted	Any person from the community or persons from government organisations
Village dogs	Unconfined or unrestricted	Any person from the community or persons from government organisations
Feral dogs	Completely unrestricted	Any person from the community or persons from government organisations
Wild dogs	Completely unrestricted	Any person from the community or persons from government organisations

Legal Framework and Ethical Considerations

The Prevention of Cruelty to Animals Act (1960) emphasizes the need for humane treatment of animals, including prohibitions on cruelty such as abandonment, mistreatment, and neglect. Unfortunately, the term “street dog” often leads to these animals being treated as a nuisance, contributing to cruelty, despite existing laws designed to protect them. Abandoning or allowing a dog to roam freely without providing care is already considered cruelty under Indian law, yet societal attitudes often lag behind legal mandates.³⁰

The Prevention of Cruelty to Animals Act (1960) already provides a legal framework for humane treatment, but

societal perceptions must evolve to ensure these laws are upheld. Reframing dogs as “free-roaming” instead of “stray” is a small but crucial step toward that goal. As we promote this terminology, we encourage a culture of compassion and responsibility, leading to better care for dogs and safer communities for humans.³⁰

The Prevention of Cruelty to Animals, 1960 also uses the word stray to address dogs under different contexts.³⁰

Euthanasia

Ideally, euthanasia should be reserved for animals who are incurably ill, or whose suffering due to behavioural problems or lack of guardianship cannot be alleviated with available resources. Unfortunately, many dogs are euthanized as a means of population control as well. When the decision for euthanasia is made, it must be carried out by qualified veterinary staff with access to the necessary drugs and training in humane handling and euthanasia. Robust euthanasia policies and legislation can prevent the indiscriminate culling of dogs by defining clearly the only circumstances when euthanasia is acceptable, and this can build public trust in DPM programs. However, euthanasia deals only with the symptoms and not the causes of dog population problems and will not solve the underlying causes of overpopulation of free-roaming dogs. Euthanasia can also be distasteful and stressful to professional animal caretakers and this can be a strong driving force for more acceptable DPM tools to be used.⁷

World Rabies Day Themes and Free-Roaming Dogs

The World Rabies Day themes³¹ strongly support a humane approach to rabies control, which aligns with the promotion of the term “free-roaming dogs.” Humane strategies like vaccination and sterilization are proven to be more effective than culling in managing rabies. The 2014 theme, “*Multisectoral Collaborative Approach*”, emphasizes the importance of collaboration among various sectors, such as animal welfare, public health, and local communities, to implement humane rabies management strategies. This collaborative approach ensures that all aspects of rabies control are addressed while treating animals with dignity.

Similarly, the 2019 theme, “*Rabies: Vaccinate to Eliminate*”, emphasizes mass vaccination as a key strategy for controlling rabies, advocating for compassionate treatment of dogs rather than viewing them as a nuisance. The 2020 theme, “*End Rabies: Collaborate and Vaccinate*”, and the 2023 theme, “*One Health for All*”, both highlight the importance of global collaboration and vaccination efforts. These strategies are essential for managing rabies among free-roaming dogs, whose responsible care and management can help reduce the spread of the disease.

Promoting the term “free-roaming dogs” instead of “stray

dogs” fosters a shift in perception that encourages more compassionate treatment. This aligns with the 2016 theme, “*Rabies: Educate. Vaccinate. Eliminate*”, which underscores the need for public education to promote humane treatment and awareness. By reframing the way these animals are viewed, it becomes possible to adopt more effective and ethical strategies for rabies control.

Furthermore, the 2022 theme, “*Rabies: One Health, Zero Deaths*”, reflects the holistic approach of the One Health concept, which integrates human, animal, and environmental health. This theme reinforces the interconnectedness of these aspects and the need for a comprehensive approach to rabies control. Promoting the term “free-roaming dogs” supports this integrated strategy, fostering responsible management and helping to reduce rabies transmission humanely and ethically.

Addressing Rabies Through Humane Management

A critical argument for adopting the term “free-roaming dog” is its impact on rabies management efforts. Free-roaming dogs, particularly those that are not vaccinated, can contribute to rabies transmission. However, research shows that humane management practices, such as mass vaccination and sterilization campaigns, are far more effective than culling.³²

The term “free-roaming dog” can help bridge this gap by encouraging people to view these animals as deserving of care and protection, even if they do not have a traditional “owner.” This simple shift in language can influence the enforcement of anti-cruelty laws, fostering a culture of respect and responsibility toward these dogs.

To effectively advocate for the use of the term “free-roaming dog” instead of “stray dog” in India, it is important to highlight how language shapes perceptions, attitudes, and actions toward these animals. The term “stray dog” often carries negative associations, leading to the marginalization of these dogs. On the other hand, “free-roaming dog” acknowledges their autonomy and potential for positive human-dog interactions, fostering a more humane approach to their treatment.

Conclusion

Language has the power to shape not only public perceptions but also legal and institutional actions. The term “street dog” often evokes images of neglected, dangerous, or disease-ridden animals, which can justify their mistreatment or marginalization. However, these animals are sentient beings deserving of humane treatment. The Prevention of Cruelty to Animals Act (1960) already sets out guidelines for the humane treatment of animals in India, but societal perceptions have a significant impact on whether these laws are fully respected and enforced. By shifting from “street

dog” to “free-roaming dog,” we can change the narrative from neglect to respect. Wild, stray, sylvatic, feral, village, and unrestrained, are just some of the many labels used to define a huge variety of ecotypes of dogs that share a fundamental ecological feature: they are free to wander where they want and follow the occasional lure. They are free, temporarily or permanently, from the control of a human who dictates their times, movements, and lifestyle. The shift from “stray dog” to “free-roaming dog” is not merely a change in terminology, it represents a broader shift in how we view and treat these animals. It encourages us to recognize the dignity and autonomy of dogs, while also addressing public health concerns in a humane and effective manner. By promoting this change, we can foster better relationships between humans and dogs, ensuring that both live harmoniously in shared spaces.

Conflict of Interest: None

Source of Funding: None

Generative AI and AI-Assisted Technologies in the Writing Process: None

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