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Original Research Article

Awareness and perception of stray dogs and rabies in Shimla: an evaluative study

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ABSTRACT

Background: Rabies, a deadly yet preventable disease, continues to pose a grave public health threat. Most rabies cases in India are caused by bites from unvaccinated stray dogs, making the issue of utmost importance and deeply rooted in how society perceives and engages with stray dogs. At the nucleus of this challenge lies public perception, that significantly influences their behaviour towards them, disease. As mandated by the 73rd and 74th Constitutional Amendment Acts of 1992, the responsibility for managing stray dogs lies primarily with local self-governments. Their success in implementing sterilization, vaccination, and awareness programs depends heavily on public perception, cooperation, and trust.

Methods: The study was conducted in MC Shimla of Himachal Pradesh with the population sample of 175 selected from top ten most populous wards of MC Shimla. Primary and secondary data has been used for the purpose of research.

Results: Public opinion on feeding stray dogs is divided, with 27.4% appreciating it and 28.6% expressing annoyance, and 22.3% have a concern for hygienic conditions. About half of the respondents believe regular feeding can result into territorial aggression. Despite of having all these concerns, majority of respondents (86.5%) feel that education is essential for responsible interaction with stray dogs.

Conclusions: This study concluded that public perceptions about stray dogs and rabies significantly influence policies. The findings highlight the importance of integrating community awareness and concerns into policy frameworks to ensure sustainable approaches to stray dog management and rabies control.

Keywords: Community awareness, Community perception, Local government, Stray dogs

INTRODUCTION

Rabies, a deadly zoonotic disease caused by the Lyssa virus, remains one of the sternest yet most neglected tropical disease. Dogs are responsible for nearly 98% of all human rabies deaths, with children under the age of fifteen being particularly vulnerable.[1] Despite the advancement of an effective, rabies continues to claim an estimated 60,000 lives annually, with India alone accounting for around 20,000 of these deaths.[2] The burden of this disease is disproportionately higher in low and middle-income countries, particularly across Asia and Africa, where resources for prevention and treatment are limited.[3]

The World Health Organization (WHO), along with the OIE (Office International des Epizooties, also called as The World Organization for Animal Health), FAO (The Food and Agriculture Organization), and the Global Alliance for Rabies Control (GARC), has set a global target of zero human deaths from dog-mediated rabies by the year 2030.[4] To achieve this, the number of countries reporting zero rabies-related deaths is expected to increase from 80 (47%) in 2020 to 155 (92%) by 2030.[5]

However, a major hurdle to this is the shortfall in resources, lack of awareness including a projected deficit of 7.5 billion doses of dog rabies vaccine and an estimated financial requirement of $6.3 billion for global rabies elimination far exceeding the current spending levels.[6]

In India, the issue is further complex by the massive population of stray dogs, ineffective public policy and lack of awareness which serve as primary cause of the proliferation of disease. Estimates suggest there are over 17.14 million stray dogs in India.[7] These animals often live near human settlements, relying on human waste, leftovers, and other organisms for food and survival. They typically lack caretakers and are often the result of unchecked reproduction.[8] This coexistence frequently leads to human-animal conflicts, particularly in urban spaces, giving rise to issues such as dog bites poor implementation of solid waste management rules, defunct functioning of SPCA, and lack of awareness campaigns.[9]

Controlling the stray dog population is crucial for mitigating these risks. The WHO outlines three primary methods for managing stray dogs: restricting their movement, controlling their habitat, and reducing their reproduction through sterilization.[10] In developed countries, rabies has been largely controlled through systematic vaccination and dog population management. However, in countries like India, these efforts are often hampered by limited resources and inadequate public engagement.[11]

At the local level, governance plays a vital role in implementing effective management policies. The 73rd and 74th Constitutional Amendment Acts (1992) of India assign responsibility for stray dog management and public health to local self-governments. Yet, the growing stray dog population reflects persistent gaps in local administration and society in tackling these pertinent issues.

A serious, yet neglected, component in addressing this challenge is the role of community awareness and perception. Knowledge, attitudes, and behaviours of residents significantly influence the success of stray dog control programs and rabies prevention strategies. Listening to the community, understanding their experiences, and evaluating their awareness about the government policies can provide key insights into the strengths and shortcomings of current efforts.[12]

Dog bite cases in Shimla increased from 3,659 in 2023 to 4,073 in 2024. At IGMC, cases rose sharply from 2,162 to 2,634, while Rippon Hospital recorded a slight decline from 1,497 to 1,439. Overall, there was a net rise of 414 cases, showing an upward trend mainly driven by IGMC.

There is a big number of dog bites cases in last two years. Therefore, it is necessary to investigate it and do some actions by the administration.

Rationale of the study

In the context of Shimla, Himachal Pradesh, a region experiencing increasing human-stray dog conflict, the present study aims to evaluate public perception and nuances regarding the management of stray dogs and rabies. By understanding the local dynamics, the research sought to suggest more effective, community-informed policy outcomes and contribute to national and global efforts for rabies elimination by 2030.

METHODS

It was a descriptive and cross-sectional study which was carried out in Shimla, the capital of the state of Himachal Pradesh, India. The Municipal Corporation of Shimla was chosen as the study area because Shimla is a densely populated city with stray dog's population of approximately 2000-2500.[13] Additionally, it is a hotspot for frequent incidents of dog bites.[14] For selection of collecting data, one adult member from each household was selected and interviewed. Ethical approval was obtained from the respondents, and they were adequately briefed about the purpose and scope of the study. The simple random sampling was used for collection of data from the residents of Shimla. The information was collected using a pre-tested, structured questionnaire that had been validated through a pilot study. The study focused on several variables, including the socio-demographic profile of the respondents, their awareness of rabies (such as its transmission and symptoms), first aid practices for treating animal bites, knowledge about the anti-rabies vaccine, and attitudes toward controlling stray dogs. Respondents from other areas were deliberately excluded to make the study relevant of the present locale. To evaluate the process of management of community dogs, primary information was collected through questionnaires. The theme of focus groups remained on issues ranging from management of community dogs, awareness about the prevalent issue of increasing population and its solution. Data was analyzed by using the percentage. The study was conducted for a period of 7 months i.e. from October to April, 2025.

Sample size and sampling technique

Sample size was calculated using the following formula:

$n = (z)^2 p*q / d^2$

Substituting the values:

Z =1.96 (for 95% confidence level); p =0.687 (prevalence of rabies awareness);

q = 1 - p =0.313 (proportion of people unaware); d =0.0687 (margin of error)

The required sample size for a 95% confidence level and a population of 169,578 was approximately 175.

RESULTS

Interpretation of socio-economic characteristics

The demographic data collected from the respondents provides important context for interpreting the results of this study. A clear trend emerges from the findings: most participants are young, with 70% aged between 18 and 25 years, and over 83% identifying as students. This strong youth presence indicates that the study reflects the perceptions and experiences of a generation currently in transition, academically active, mobile, and engaged with their environment.

Education levels further reinforce this trend. An overwhelming 90% of respondents are either graduates or postgraduates, while no respondents were found to be illiterate. This suggested that the participants were well-informed and more likely to critically assess and respond to issues around them. Such a profile is advantageous in research, as it brings out thoughtful responses, particularly on social or civic matters. However, it also highlights a certain limitation, the study captured a more educated section of society, which may not fully represent the diversity of Shimla's broader population. Another key point is the duration of residence in Shimla. More than half of the respondents (53.7%) have lived in the city for less than five years. This indicates a transitory population, likely students or young professionals, whose engagement with local issues may differ from that of long-term residents. Their relatively short stay might affect their level of familiarity with local systems, their sense of belonging, or their long-term commitment to community affairs.

Table 1: Socio-economic characteristics of the sample population (n=175).

Variables	Frequency n=175	Percentage
Gender		
Male	101	57.5
Female	74	42.5
Age (in years)		
18-25	123	70
26-40	34	19.6
41-60	10	5.6
61 and above	8	4.8
Education		
12th	16	9.3
Graduation	49	27.8
Post Graduation	110	63
Illiterate	00	00
Occupation		
Student	146	83.3
Employed	8	4.6
Self-employed	11	6.5
Retired	3	1.9
Other	7	3.7
Time period in Shimla		
Less than five years	94	53.7
5-10 years	36	20.4
10-15 years	13	7.4
More than 15 years	32	18.5

Table 2 People's perception regarding community dogs' management (n=175).

Variables	Frequency	Percentage
Are you aware of rabies		
Yes	120	68.6
No	55	31.4
Source of information		
Mass media	62	35.4
Friends	43	24.6
Health agencies	15	8.6
Not aware	55	31.4
Is rabies fatal		
Yes	110	63
No	35	20
Do not know	30	17
Awareness of mode of transmission of rabies		
Dog bite	115	65.7
Dog Scratch	35	20
Dog licking	25	14.3
Do not know	00	
What to do after dog bite		
Consult doctor	150	85.7
Take traditional medicines	25	14.3
Aware about anti-rabies vaccine protocol		
Yes	78	44.6
No	97	55.4

Continued.

Variables	Frequency	Percentage
Interaction with community dogs		
Rarely	39	22.2
Occasionally	21	12
Frequently	87	50
Very frequently	28	15.7
View on stray dog population		
Too many stray dogs are a cause for concern	96	54.6
Number of stray dogs is not alarming	37	21.3
Unable to access the number of stray dogs	32	18.5
There are no stray dogs in my neighborhood	10	5.6
Feeling when encountered with stray dog in public places		
Feel safe	74	42.2
Feel unsafe	99	56.6
Concern about stray dogs in public places		
Aggressive behavior	49	28
Spread of disease	42	24.3
Dog bites	54	30.8
Nuisance or Barking	30	16.8
Chased or bitten by stray dogs		
Yes	99	56.6
No	76	43.4
Whose responsibility is the management of stray dogs		
Government agencies	24	14
Animal welfare organizations	41	23.4
Public participation	8	4.7
All of these	102	57.9
Aware of any stray dog sterilization program in your city		
Yes	45	25.7
No	130	74.3
The stray dog's management program you would support		
Catch and euthanize	25	14.2
Sterilize and vaccinate followed by release	76	43.4
Sheltering with chances of adoption	66	37.7
Relocation to remote areas	8	4.7
Awareness regarding stray dog adoption program by MC Shimla		
Yes	51	29
No	124	71
Ever adopted a stray dog		
Yes	21	12
No	154	88
Interested to help in stray dogs' management program		
Yes	121	68.9
No	54	31.1
Reaction on someone feeding stray dogs		
Appreciate	48	27.4
Indifferent	38	21.7
Annoyed as it encourages stray dogs	50	28.6
Worry about unhygienic conditions	39	22.3
Regular feeding leads to aggressive territorial behavior in stray dogs		
Yes	89	50.9
No	86	49.1
Filed a complaint or gave feedback about stray dogs issue to authorities		
Yes	58	33
No	117	67
Mechanisms of MC Shimla for feedback on community dog's issue		
Phone helpline	10	5.7
Dedicated e-mail ID	00	00
Grievance office	15	8.9

Continued.

Variables	Frequency	Percentage
No mechanisms exist	160	91.4
Responsiveness of local bodies about dog-related complaints		
Very Responsive	38	21.7
Somewhat responsive	20	11.4
Not at all responsive	49	28
Have not made any complaint yet	68	38.9
Awareness regarding any NGO working for stray dogs in your area		
Yes	20	11.4
No	155	88.6
Can stray dogs and human co-exist in urban areas		
Yes	40	23.1
No	135	76.9
Need of education for responsible interaction with stray dogs		
Yes	151	86.5
No	24	13.5
Satisfaction regarding the communication between MC Shimla and residents regarding stray dogs' management		
Very satisfied	15	8.7
Satisfied	27	15.4
Neutral	33	19.2
Dissatisfied	99	56.7

DISCUSSION

The data shows a mixed level of awareness and concern among the people regarding rabies and stray dog management. Most respondents (68.6%) were aware of rabies, primarily informed through mass media and friends, while 31.4% remain unaware. Most people (63%) correctly knew that rabies is fatal, and 65.7% identify dog bites as the primary mode of transmission, which is only one of the modes of transmission, many people do not know about dog scratch and dog licking as the mode of transmission of rabies. Interestingly, 85.7% said they would consult a doctor after a dog. More than half (55.4%) were unaware of the anti-rabies vaccine protocol, depicting a gap in health education and awareness. Notably, a similar kind of misconception was also reported in rural populations, which itself validates the overall gap in awareness.[15]

When it comes to interaction with community dogs, 50% of respondents reported frequent interaction, and 56.6% respondents feel unsafe in such situations. The most common feedback and concern included aggressive behavior, disease spread, and dog bites. Over half of the respondents having been chased or bitten by stray dogs. There are 54.6% people who believe that the number of stray dogs is a cause for concern. 43.4% of the respondents support sterilization and vaccination, followed by 37.7% respondents who are in favor of sheltering with adoption options. However, many respondents (74.3%) were unaware of any ongoing sterilization programs, showing a clear communication gap between municipal efforts and public awareness. Similar gaps were reported in Patna, where only 42.6% of participants knew the correct first-aid and vaccination protocols after a dog bite. These gaps suggest that awareness operations have not adequately rendered into correct protective practices.[16]

Adoption rates remain low, with only 12% having adopted a stray dog, but there is a good thing that 68.9% were willing to contribute to stray dog management programs. Public opinion on feeding stray dogs was divided, with 27.4% appreciating it and 28.6% expressing annoyance, and 22.3% have a concern for hygienic conditions. About half of the respondents believe regular feeding can result into territorial aggression. Despite of having all these concerns, majority of respondents (86.5%) feel that education is essential for responsible interaction with stray dogs.

Institutional mechanisms for addressing stray dog issues appears to be weak. A big majority of respondents (91.4%) report no feedback channels provided by MC Shimla, and only one third (33%) of the respondents have ever filed a complaint regarding the stray dog issue to authority. Of those, many found the response unsatisfactory. It is important to note that, 76.9% of respondents do not believe that humans and stray dogs can coexist peacefully in urban areas, indicating to a deeper social tension. Dissatisfaction with communication from the municipal body is high, with 56.7% feeling disconnected from efforts being made. This reflects and corroborates a finding which highlighted that while the animal birth control (ABC) program has been operational for decades, poor implementation and involvement of all stakeholders have prevented meaningful outcomes.[17]

The evaluation of the awareness and perception about stray dogs and rabies brings many concerns in focus. The survey shows that while most people understand the risks of rabies and want to respond the right way, many still do not know enough about vaccination and local efforts to manage stray dogs. There is real concern about safety, especially with frequent encounters and past incidents of dog bites. At the same time, people clearly support kinder solutions like sterilization and adoption over harsh

measures, but at the same time the adoption rate is low. Most of the people were not in the favor of feeding the stray dogs as it leads to dog being aggressive and hygiene concerns. The biggest gap seemed to be in awareness and communication, many are not aware of the programs that exist, and they feel let down by the system.

The results emphasize the urgent need for public relation campaigns, improved awareness of vaccination protocols, capacity building of municipal authorities, and participatory intersectoral strategies for humane dog management. These efforts are essential for India to achieve its target of eliminating dog-mediated rabies by 2030.[18]

The study was conducted over a limited duration of seven months, from October 2024 to April 2025. As opinions and perceptions are an evolving process, this restricted time frame is acknowledged as a limitation of the present study.

CONCLUSION

This study concluded that public perceptions about stray dogs and rabies significantly influence policies. The findings highlight the importance of integrating community awareness and concerns into policy frameworks to ensure sustainable approaches to stray dog management and rabies control.

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