

Short Communication

Mismatches between program components and the community components in the implementation of rabies control programme in an urban context in Kerala: a complaints-based qualitative study

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ABSTRACT

The National Rabies Control Program (NRCP) reported 6,644 clinically suspected Human rabies cases and deaths between 2012 and 2022. The increasing rabies cases and growing stray dog population indicates a potential gap exists in the NRCP implementation that requires immediate attention. In this context, the present study aims to assess the key strengths, weaknesses and constraints in the NRCP implementation at the municipality and veterinary hospital level; document community experiences and perceptions; Identify gaps between program components and community needs; and recommend context specific improvements. This qualitative cross-sectional study was conducted in Varkala municipality and includes purposively selected 16 program staffs and 18 community participants identified through complaints received in the municipality. One focus group discussion with 10 participants was also conducted. Data were analysed using thematic analysis as per the JBI critical appraisal checklist for qualitative study. The study highlights successes and gaps crucial for the ultimate goal of rabies elimination by 2030. While general understanding of rabies transmission and treatment exists, awareness of post-exposure prophylaxis remains limited. Inadequate facilities and stringent rules have hindered the ABC program, fuelling rise in the stray dog population and human-dog conflicts. Additionally, lack of community responsibilities further worsens the situation. The challenges can be tackled through a multi-pronged approach to strengthen community awareness and involvement, infrastructures, and coordination among municipality, veterinary department, health sectors, and the public.

Keywords: Rabies control program, Human-dog conflicts, Community components, Programme components, Mismatches, Urban context

INTRODUCTION

Rabies is one of the oldest diseases and it has been recognized in India since the Vedic period.¹ The domestication of dogs and their adaptation to the wildlife rabies virus, along with the subsequent transmission of the virus back to wild carnivores have contributed to the current distribution and burden of rabies worldwide. The global movement of rabid dogs during the colonization period in the 15th century further exacerbated the problem. Rabies is acknowledged as a priority disease requiring control measures at both global and national

levels. Today, a renewed effort to achieve a "Zero by 30" plan could result in the elimination of human rabies caused by dogs globally.²

Globally, rabies is estimated to cause 59,000 human deaths annually in over 150 countries, with 95% of cases occurring in Africa and Asia. India accounts for 36% of the global deaths due to rabies and 65% of the rabies related deaths in the South-East Asia region.³ The disease is endemic in nine countries: Bangladesh, Bhutan, India, Indonesia, Myanmar, Nepal, North Korea, Sri Lanka, and Thailand.⁴ The rabies control Programme aims at

systematic reduction of rabies through vaccination of high-risk individuals, case surveillance, postexposure prophylaxis following animal bites, managing animal reservoirs and public awareness.⁵ Rabies is widespread in India with 17.4 million animal bites reported annually except in Andaman Nicobar and Lakshadweep.⁶ Approximately 96% of human rabies cases from dog bites. To tackle this, the government launched the NRCP under the 12th five-year plan. Implemented through coordinated human animal health strategies.⁷ The NRCP reported 6644 clinically suspected cases and deaths of human rabies between 2012 and 2022.⁸

Many studies have been conducted worldwide on rabies control. It has been effectively managed or even eliminated in most developed countries. However, in Africa and Asia, the disease continues to persist and over 95% of human victims are from marginalized and impoverished rural and urban communities.⁹ review of current strategies for managing dog populations states that the dog population management is a complex concept that also involves improving the health and well-being of free-roaming dogs and reducing their population.¹⁰

A study in an urban slum of Bangalore, a cross-sectional study in Panchkula district of Haryana and another study across several states of India revealed lack of sufficient knowledge and awareness resulting in ineffective outcomes in rabies control.¹¹⁻¹³ Similarly many studies highlight gaps in rabies control and lack of knowledge, attitude and practices related to animal bites.¹⁴⁻¹⁶

In Kerala, cases of rabies are increasing alongside the growing stray dog population. It has been found that rabies control program is ineffective and requires immediate correction to control the spread of the disease in both animals and humans.¹⁷ Also, recent media reports in Kerala about rabies are alarming especially in the urban areas and highlight the deficiency in the implementation of rabies control programme.¹⁸ Given the available scenario, examining this issue is both relevant and necessary. The major objectives of the study are into two components: The program components and the community components under the program components, study aims to identify the major strengths, weaknesses and constraints in the effective implementation of the NRCP in the municipality and veterinary hospital, as well as to understand their protocols and methods followed under the program. Under the community components study seeks to document the experiences and perceptions of the community regarding the program. The specific objective of the study is to identify possible mismatches between the program components and the community components so that improvements in the program can be recommended.

METHODS

A qualitative cross-sectional study design is adopted to capture the program and community components. Varkala

Municipality in Thiruvananthapuram district of Kerala has been chosen for the study. It is an urban as well as popular tourist destination that also has a high number of dogs, resulting in at least one daily complaint to the municipality.

Population

The universe for studying the organizational component is purposively identified and respondents from the health, municipality, veterinary and private sectors in Varkala were directly contacted. The universe for studying the community component was identified from the list of complaints received at the municipal office. The sample consisted of either the head of the household or the responsible person who submitted the complaint. Through them, other community members (Snowball sampling method) were contacted for in-depth interviews and Focus group discussion. The 16 program staff responsible for the rabies control program were selected to study the program components. Out of the complaints received from the municipality 7 complaints were selected and subjected to content analysis. From the 7 complaints, 7 complainants and using snow ball sampling method, a total of 18 participants were selected till data saturation. In-depth interviews were conducted, for the community components and, 10 participants were included in the focus group discussion which was conducted with the help of the resident association.

Data analysis

The selected complaints were subjected to content analysis and a preliminary assessment regarding community perceptions and experiences could be prepared from the complaints. This also helped in preparing the tools for in-depth interviews and focus group discussions (FGD). Thematic analysis was used for analysing the data obtained from in-depth interviews and the FGDs. The data were recorded and transcribed into verbatim. After transcription, the data were coded and grouped into themes and subthemes. The final themes and subthemes underwent further analysis to achieve the research objectives. We also used the JBI critical appraisal checklist for qualitative studies in order to find out any incongruity between our findings and our objectives.¹⁹

RESULTS

Overview of complaints

Out of all the complaints received on stray dog nuisance, seven cases were selected purposively based on the completeness, comprehensiveness, coverage, and area from where the complaint has been received.

A complaint came from Varkala Sivagiri Railway Station, where large no of stray dogs roams the premises. One of them severely injured a passenger who was boarding a

train. The victim also filed a complaint with the municipality, reporting that he was attacked by a group of stray dogs without any provocation while entering the railway station. One dog jumped on him and bit him.

The government hospital Superintendent forwarded a complaint to the municipality about stray dogs endangering patients, bystanders, visitors and hospital staff.

A complaint from the Government Guest House in Varkala highlights concern over the growing population of stray dogs, which has become a nuisance for tourists visiting this popular south Indian tourist destination, including many foreign travellers. Sreenivasapuram in Varkala, home to numerous educational institutions, with around 3,000 students, is struggling with stray dog issues. In some cases, frequent dog attacks and injury incidents have led the residents' association to file a complaint with the municipality to address these issues.

Another complaint from the Varkala residents' forum highlights stray dog issues across all municipal wards. In one incident, a group of nine people at a social gathering were attacked by stray dogs, leaving one seriously injured. A newspaper report was attached to support the complaint. Dog attacks have become a growing concern for morning walkers, commuters and for school children.

Community responses

Through the complaints, 25 participants are identified, and in-depth interviews and one FGD with 10 community members are conducted.

Knowledge and awareness

All the community participants understood that rabies transmitted to humans through bites or scratches from animals and that if untreated, it can be fatal. They are aware about the importance of cleaning and medical care learned through school education, community outreach, and information from health workers. However, some participants were confused about whether vaccination is necessary regarding if the injury is caused by a vaccinated animal and whether the bitten animal needs to be monitored.

Accessibility and availability of post exposure prophylaxis

The nearest hospitals for rabies treatment are the Government Taluk Hospital in Varkala and the Government Medical College in Kollam. Three participants had dog bites, and one had a cat bite. Of these cases, two people received the complete treatment at the Taluk Hospital. The other two, with deep wounds, were referred to the Government Medical College in Kollam due to the unavailability of immunoglobulin, and later received follow-up care at the Taluk Hospital.

Community perceptions toward stray dogs

Positive perceptions

Throughout the discussions, some participants stated that dogs have depended on and protected humans since ancient times and therefore, we have a social responsibility to safeguard them. They also mentioned that stray dogs typically do not harm those who regularly care for or interact with them, and attacks by stray dogs usually occur only when they are harassed or provoked.

One of the merchants who participated in the interview stated; *"After I close the shop, these stray dogs lie in front of my shop, and when I come to open the shop in the morning, they get up and move away. It seems like a protection for my shop. And they haven't done anything to me yet."*

Negative perceptions

During focus group discussion and in-depth interviews, many community members have reported a significant increase in the number of stray dogs in recent times, leading to difficulties in managing the problems due to them. They stated that these dogs often attack humans, both in groups and individually. They contribute to environmental pollution, cause damage to property and spread diseases such as rabies and ticks. The presence of stray dogs instils fear and anxiety in people of all ages whenever they go out for their daily needs.

Impacts on quality of life

Physical impacts

Individuals who have experienced some form of attacks report that recovery from the deep and serious wounds caused by the dogs takes a long time to heal. Injuries can include fractures, bruises, and other trauma sustained during the incident. Furthermore, these issues tend to be more severe for both adults and children.

A differently-abled participant who also was a victim of a dog bite asks,

"How can I defend myself against a group of dogs?"

Participants shared that they often had to confront these attacks without any provocation. When such incidents happen frequently, pedestrians and morning joggers get affected which can lead to physical inactivity and increase the risk of lifestyle-related diseases.

Psychological impacts

Stray dog attack can cause deep psychological trauma. In some cases, individuals become so fearful that they hesitate to leave their homes, afraid of being attacked again.

A retired person who participated in the survey raises a concern;

"Even when there is a fence, stray dogs can jump over at night, barking and fighting each other which disrupts sleep. What about those who have no fence?"

This situation is particularly difficult for young children, as they are unable to attend school or playing outside which may affect their intellectual development.

Social and environmental impacts

The growing stray dog population limits social activity particularly for the elderly. Stray dogs defecate in public areas, and drag wastes such as used diapers and food scraps which pollute the environment. Additionally, they make loud noises, fight, and cause public disturbances.

Human-animal interaction

Feeding and care practices

Many community participants believe feeding stray dogs is illegal. Yet some still leave food outside the homes, or in public areas, attracting stray dogs.

A driver during an in-depth interview told; *"Many people, both locals and foreigners, are feeding stray dogs. This is why the stray dog population increases and it constantly attacks people"*

From the interviews, it is understood that some foreigners take the initiative to vaccinate and sterilize certain packs of dogs and provide them with food. Upon returning to their home countries, they often pass responsibility for these dogs to someone in the area and offer necessary financial support. However, the quality of care varies among those who take this responsibility for the dogs. If feeding is not done properly, these dogs may become aggressive towards one another.

A household head participant in the interview said: *"Some individuals provide shelter to stray dogs in their homes. This practice which does not adhere to established standards, creates numerous problems for local residents."*

Aggressive encounters

As the number of stray dogs increases, they can become aggressive, barking at commuting two wheelers and attacking people who come to the market.

A participant of the FGD stated: *"Stray dogs are territorial and bite each other. They also attack people who are nearby. They are more aggressive during the reproductive period. Most of the aggressive encounters occur during this period"*

Governance and policies

Awareness of policies

Most participants are familiar only with the ABC method, vaccination, and post-exposure prophylaxis as components of the Rabies Control Program. However, they lack awareness of the legal provisions, and the specific roles and responsibilities of the municipality, NGOs, and the community in implementing the program. This gap in understanding has led many to believe that the management of stray dogs within the local government boundaries is solely the municipality's responsibility and therefore, it is their duty to protect the public from these stray dogs. As a result, there is widespread confusion regarding how to effectively manage, feed and shelter stray dogs.

One merchant in an interview pointed out: *"Many dog lovers are feeding stray dogs, which contributes to the increasing stray population. It is essential for the government to collaborate with dog lovers to build shelters and rehabilitate stray dogs."*

Community perspective towards governance on stray dog menace

Stray dogs inhabit vacant buildings, yards, government offices, bus shelters, and railway station platforms. Two years ago, some stray dogs were vaccinated and sterilised. However, since the process was incomplete and no follow-up actions were taken in the subsequent years, the population of stray dogs increased instead of decreasing. Participants unanimously commented that the municipality did not take any action despite complaints when the attacks and harassment by stray dogs intensified

Waste management systems

The municipality currently collects wastes from institutions and markets only. Household Food waste is managed through compost bin, while dry wastes are collected by Harithakarma Sena. However, the disposal of food waste is inefficient in many locations because after hours, hotel waste, poultry waste, and other food scraps are often dumped in empty lots. As a result, stray dogs gather in areas with more food availability, such as market places, beaches, educational institutions, hospital grounds, and train stations. The information is gathered during in-depth interviews with various participants.

A housewife told in the interview-*"If there is a lot of waste, it is put in the compost or buried. Some are even put under the coconut trees. Dogs even climb over the wall to eat it!"*

Ward member in FGD said: *"Despite the installation of cameras to monitor littering on public roads, trash is still being discarded in vacant plots that are not monitored"*.

Cultural factors in program execution

Discussions with the participants revealed many different views about dogs. Some believe that feeding and caring for dogs are noble acts as dogs live in harmony with humans and provide protection. Conversely, another group in the community prefers to keep dogs away due to fear, annoyance, hatred and religious beliefs.

Some foreign cultural influence is also evident in the area because of tourism.

In an interview, one-beach area resident commented: "Foreigners often show great fondness for dogs, frequently taking care of and feeding the stray dogs that roam around the beach area. As a result, stray dogs show affinity to foreigners and may even follow them".

Community recommendations

They were like-Control stray dog population or relocate them, strengthen rabies control efforts, involve dog lovers to help implement the program, enforce responsible pet ownership guidelines, improve waste disposal practices and discourage improper feeding practices.

Programme components

Sixteen in-depth interviews have been conducted among stakeholders from the health services, municipality, veterinary department and some organizations in the private sector.

Programme implementation in Varkala municipality

The municipality's role in implementing the rabies control program primarily includes ABC, mass vaccination of stray dogs in collaboration with the veterinary department, pet dog registration and vaccination, and monitoring waste management.

Following complaints regarding stray dogs, the municipality started taking actions with the support of Veterinary Department. Until two years ago, the ABC programme and vaccination efforts were halted due to inadequate facilities and stringent regulations. Even now, fully equipped ABC centres are still not operational, resulting in no significant change in the number of stray dog population or rabies cases. Staff involved in waste collection informed that the wastes from hotels, poultry farms, and other institutions running within the municipality, are being collected through contractual agents, only on alternative days due to technical problems. Despite camera surveillance, illegal dumping of food and poultry wastes continues and these wastes affect stray dog behaviour.

During discussions with the municipal authorities, it was revealed that unscientific and erratic feeding practices have been observed in some areas and when food sources

become scarce, the dogs become aggressive. The feeding points are not set up due to local people's opposition because they think that if the feeding points are set up, the dog population will concentrate on the feeding points and cause more trouble to residents nearby. Municipal officials informed that like feeding points the government proposed shelter facilities for stray dogs. However public opposition due to concerns about nuisance in populated areas along with space and budget constraints have delayed the initiative.

Programme implementation in veterinary department

While interviewing the veterinary doctor and other staff in the veterinary hospital under Varkala Municipality, it is understood that rabies control activities are jointly managed with the municipality, focusing on canine population control, vaccination, rabid dog monitoring, and management.

The animal birth control and mass dog anti-rabies vaccinations are implemented with the assistance of a trained team consisting of Kudumbashree workers, veterinary doctors and other support staff. The staff members involved in the ABC program say that lots of challenges are faced at the time of program implementation. As they venture into capturing the dogs for sterilization, many would run away or sometimes try to attack them, but it is said that everyone on the team took all the necessary safety precautions, including vaccinations. In addition, they added that since there is no separate kennel, the dogs would become aggressive and bite each other when they came out of sedation after surgery. Currently, the ABC program is not being implemented due to strict guidelines regarding essential facilities. Interviews with stakeholders revealed that the major challenge from the experience is that most of the rabies cases are in a dumb state, and furious type rabies is very rare. In such cases the surveillance becomes challenging. Previously a dog diagnosed with rabies would have been euthanized. But now the law is not to euthanize, instead, rabid dogs should be observed and cared for. But the facilities required for this are also lacking in the hospital.

Role of the health sector

Rabies awareness initiatives, post-exposure prophylaxis, dog-bite incidents, and rabies case surveillance are being implemented at Government Taluk Hospital. According to data obtained through right to information (Annex: 9) submitted by the researchers, as of October 2024 YTD, a total of 1,882 dog-bite cases has been treated at Varkala Taluk Hospital, with 162 of those cases occurring within the Varkala Municipality limits. Additionally, numerous incidents of cat attacks are also being reported.

Public-private partnership

There are no registered NGOs, but several individuals and

groups independently work for the welfare of stray dogs-providing treatment, shelter, food, vaccinations, and sterilization with the help of private veterinarians.

A participant who is active in dog rescue work stated: *"We face significant challenges, including space constraints, public opposition, and lack of funding. We hope that with cooperation from the municipality in this program, we will achieve excellent results."*

A local vet involved with the stray dog rescue reported numerous rabies cases in the area, many unrecognized or unrecorded, often found in neglected conditions.

Mismatches between the community component and the programme component

The differences of opinions within the community regarding stray dogs negatively affect the implementation of the program. Despite complaints from the public that free-roaming dogs are hindering people's freedom of movement and social interaction, there has been no redressal taken by the municipality due to a lack of facilities as per the ABC guidelines. Community participation plays a major role in the effective implementation of the program. However, the community has little understanding of their role or the program implementation mechanism. This may be due to a communication gap between stakeholders and the community.

Evidently, the increase in stray dogs and associated issues within the municipality highlight significant mismatches between the community component and the program component of the Rabies control program.

DISCUSSION

The community-based study mainly focusing on the important domains relevant for the implementation of rabies control programme in an urban context reveals several critical insights and areas for improvement. The analysis highlights both success and gaps in the implementation of the program which are crucial for the ultimate goal of rabies elimination by 2030.

Our interviews with the complainants regarding the stray dog nuisance within the Municipality limits along with the content analysis of the complaints raised by the residents, suggest a notable increase in the stray dog population and points out the complexity of the program. Surveys of rabies program conducted in India recommend a comprehensive study regarding community perceptions toward free-roaming dogs in India.^{12,16} The current study demonstrates that while there is a general understanding of rabies transmission and the importance of treatment, there remains a significant gap in knowledge regarding post-exposure prophylaxis, especially in cases involving vaccinated pets.

The community's mixed feelings towards stray dogs and their impact on the quality of life and safety are significant findings. Positive perceptions regarding stray dogs contrast sharply with the reported negative experiences of attacks and other nuisances. This dichotomy creates resistance to the implementation of the program. Hence a balanced strategy for addressing this opposition is necessary.

There are several critical issues that need to be addressed to achieve the rabies elimination goal of WHO. The increase in the stray dog population, driven by stalled animal birth control programs and inadequate waste management, poses significant challenges to the community. The mixed perspective of the community about stray dogs complicates the implementation of the program.

CONCLUSION

The lack of facilities and stringent rules has hindered the ABC program, leading to an uncontrolled rise in the stray dog population. It also contributes to the development of human-dog conflicts. Additionally, the community's misinterpretation of feeding practices and lack of understanding of their responsibilities worsens the situation. There is also an absence of clear guidelines and ineffective communication between the community and various stakeholders. The inadequate surveillance and lack of sufficient diagnostic facilities prevent timely interventions and effective rabies control measures.

Recommendations

These challenges could be tackled by a multi-pronged approach which focus on improving community awareness, involvement, developing and maintaining infrastructures, and facilities, and having better coordination involving the municipality, veterinary department, health sectors, and the community. In order to achieve the rabies elimination goal, such multi-pronged approach which gives primacy to the people especially an understanding of community perceptions is necessary.

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