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ORIGINAL ARTICLE

**Community Perception on Rabies Prevention and Control Among the General Population in Puducherry: A Cross-Sectional Study**

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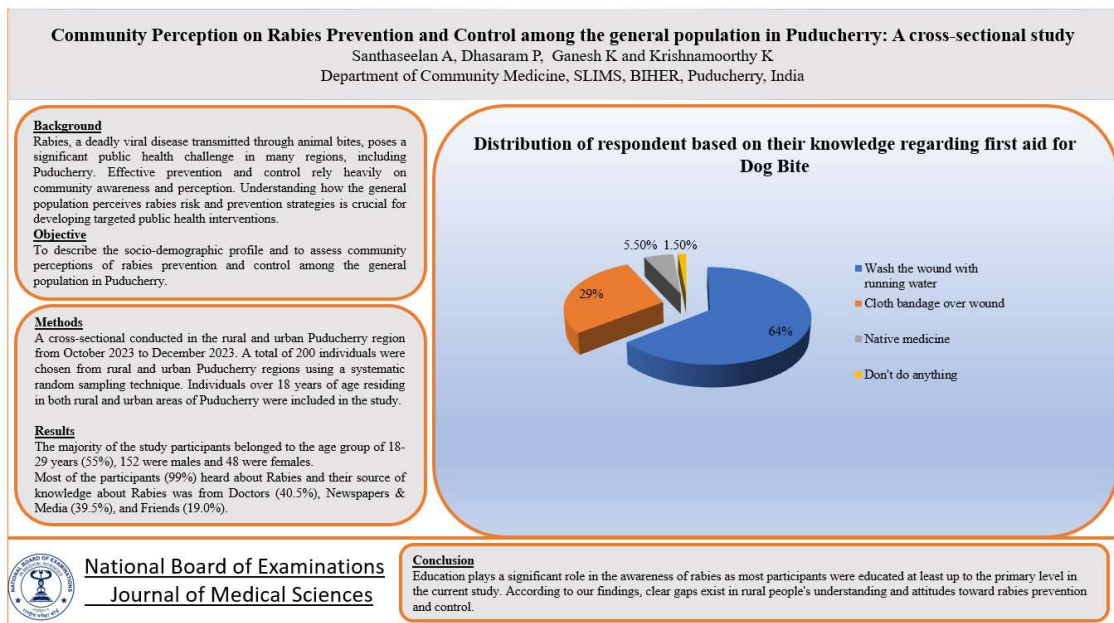
**Abstract**

**Introduction:** Rabies, a deadly viral disease transmitted through animal bites, poses a significant public health challenge in many regions, including Puducherry. Effective prevention and control rely heavily on community awareness and perception. Understanding how the general population perceives rabies risk and prevention strategies is crucial for developing targeted public health interventions. **Objectives:** To describe the socio-demographic profile and to assess community perceptions of rabies prevention and control among the general population in Puducherry. **Methods:** A community-based cross-sectional study, conducted in the rural and urban Puducherry region from October 2023 to December 2023. A total of 200 individuals were chosen from rural and urban Puducherry regions using a systematic random sampling technique. Individuals over 18 years of age residing in both rural and urban areas of Puducherry were included in the study. Semi-structured questionnaire was used to collect the data and entered in MS Excel 2019. Chi-square test was applied to test the difference in knowledge between urban and rural. **Results:** The majority of the study participants belonged to the age group of 18-29 years (55%), 152 were males and 48 were females. Most of the participants (99%) heard about Rabies and their source of knowledge about Rabies was from Doctors (40.5%), Newspapers & Media (39.5%), and Friends (19.0%). Approximately 82.5% of participants were aware of how rabies is transmitted, while 78.5% understood the signs of the disease. **Conclusion:** Education plays a significant role in the awareness of rabies as most participants were educated at least up to the primary level in the current study. According to our findings, clear gaps exist in rural people's understanding and attitudes toward rabies prevention and control.

**Keywords:** Community Perception, Rabies Prevention and Control, General population

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## Graphical Abstract



### Introduction

Rabies is a viral, zoonotic disease that can be prevented with vaccination but remains fatal once clinical symptoms appear. Domestic dogs are the primary source of rabies transmission to humans, responsible for up to 99% of cases. In regions where rabies is endemic, such as parts of Asia and Africa, 30% to 60% of dog bite victims are children under 15 years [1].

Annually, rabies claims the lives of around 55,000 people worldwide, with the majority of deaths occurring in Asia and Africa. The South-East Asian Region (SEAR) alone accounts for 60% of these fatalities. India, a part of SEAR, experiences a significant burden from rabies, reporting approximately 130-210 deaths from rabies each year and 6-7 million animal bites annually [2]. Efforts to eradicate rabies are hindered by challenges such as inadequate coordination, limited data on dog populations, and insufficient funding for vaccination campaigns. Global health organizations have called for intensified efforts to eliminate ‘Dog-

Mediated Rabies’ by 2030, aiming for “Zero by Thirty” [3].

In India, where rabies is widespread, animal bites present a major public health issue with an estimated 17.4 million bites occurring each year, translating to an incidence rate of 1.7%. Nearly 20,000 deaths annually in India are attributed to rabies, making each animal bite a potential rabies case [4]. A significant obstacle in combating rabies is the lack of community awareness, emphasizing the need for community engagement as a crucial element in any successful public health initiative [5].

Simple preventive measures, like washing bite wounds with soap and water, can make a significant difference in reducing the number of rabies fatalities in at-risk human populations. Awareness and education of the public about the epidemiological features of rabies, as well as simple preventive measures will help to prevent and control rabies in India. The objective of the study was to describe the socio-demographic profile of the study

participants and to assess community perceptions of rabies prevention and control.

### **Materials and Methods**

The present study was a community-based cross-sectional study, conducted in the rural and urban Puducherry region. The urban field practice and rural field practice area of our medical college was chosen as the study setting. A total of 200 individuals were chosen from both the regions of Puducherry using a proportionate to size stratified random sampling. Proportionate to size was based on the population distribution of the two regions (urban and rural). Within the strata that is urban and rural areas the participants was selected by simple random sampling from the enumeration list of family folder. The study was conducted from October-December 2023. The sample size was estimated using Cochran's formula  $n = Z^2pq / d^2$  in which the prevalence of awareness of rabies was 68.7% based on the previous study [6] and  $d = 10\%$  of  $p$ , the total sample size calculated was 182, with the addition of 10% non-response rate, the final sample size arrived to be 200. A systematic random sampling was used to select the study participants for the survey. Individuals over 18 years of age residing in both rural and urban areas of Puducherry were included in the study. The following subjects were excluded: 1) those who were less than 18 years of age and 2) those who had a mental illness that would prevent them from completing questionnaires. Written informed consent was obtained from all the study participants in the survey. A pre-designed, semi-structured

questionnaire was used for interviewing the study participants in the survey. The following information obtained includes socio-demographic profile and questions for assessing the knowledge and awareness about rabies prevention and control. The data was entered in MS EXCEL 2019 and analyzed using SPSS Statistics 16.0. Quantitative variables were expressed in mean standard deviation and qualitative variables were expressed in proportions. The differences between proportions were analyzed using the Chi-Square test.

### **Results**

The present study was carried out among 200 participants in the urban and rural Puducherry region. The majority of the study participants belonged to the age group of 18-29 years (55%), 152 were males and 48 were females. The current study found that 39% of them were graduates and above the level of education and 29% of them were employees. Location-wise, 64% of them belonged to the Urban and 36% belonged to the rural region (Table 1). Majority of the study participants (99%) heard about Rabies and their source of knowledge about Rabies was from Doctors (40.5%), Newspapers & Media (39.5%), and Friends (19.0%). Approximately 82.5% of participants were aware of how rabies is transmitted, while 78.5% understood the signs of the disease. Knowledge about the risk of death associated with rabies was held by 73.5% of participants, 66% were informed about the severity of the disease depending on the location of the bite, and 79% were aware of the existence of the anti-rabies vaccine (Table 2).

Table 1. Distribution of study participants based on socio-demographic characteristics (n=200)

Variable		Frequency (n)	Percentage (%)
Age	18-29	110	55
	30-59	80	40
	≥60	10	5
Gender	Male	152	76
	Female	48	24
Educational Level	Illiterate	22	11
	High school	46	23
	Diploma	54	27
	Graduate/ above	78	39
Occupation	Student	18	9
	Farmer	24	12
	Employee	50	29
	Business	44	22
	Dependent/ Housewife	52	26.0
Place of residence	Urban	128	64.0
	Rural	72	36.0

Based on their knowledge of First aid for rabies, 64.0% of participants wash their wounds with running water, 29% apply cloth bandages on the wound, and 5.5% of participants will go for native

medicine (Figure 1). Regarding the vaccination status of pet dogs, 51% of participants vaccinated their pets within one year, 38% were vaccinated for more than a year, and 11.0% never vaccinated their pets.

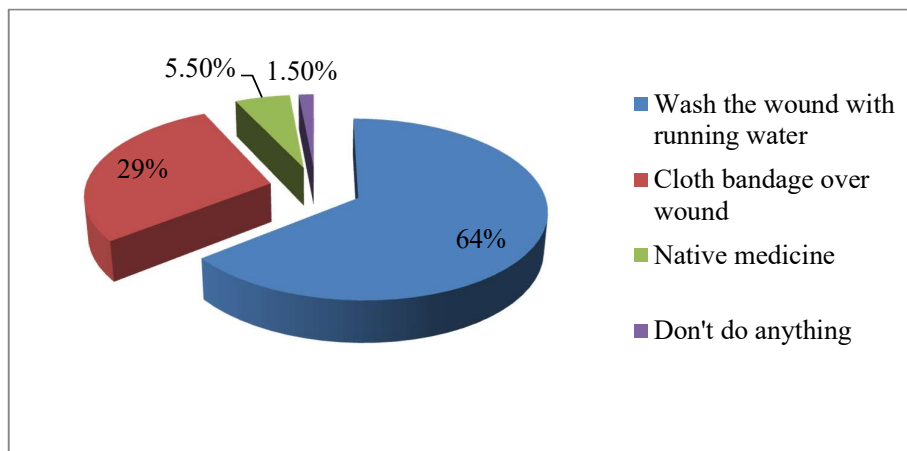


Figure 1. Distribution of respondent based on their knowledge regarding first aid for Dog Bite

Table 2. Respondent knowledge of the prevention of Rabies (n=200)

Variables		Frequency (n)	Percentage (%)
Heard about Rabies	Yes	198	99.0
	No	2	1.0
Source of Knowledge	Doctor	81	40.5
	Newspaper & Media	79	39.5
	Friends	38	19.0
	Don't know	2	1.0
Mode of Transmission	Know	165	82.5
	Don't Know	35	17.5
Sign of identification	Know	157	78.5
	Don't know	43	21.5
Risk of death	Know	147	73.5
	Don't know	53	26.5
Severity based on site of bite	Know	132	66.0
	Don't know	68	34.0
Knowledge on ARV	Know	158	79.0
	Don't know	42	21.0

It was found that awareness of the Mode of transmission of rabies, signs of identification, Severity based on the site of the bite, and knowledge of ARV were more

in the urban region when compared to the rural region. The differences were also found to be statistically significant ( $P < 0.001$ ) (Table 3).

Table 3. Respondent knowledge of the prevention of Rabies (n=200)

Variables		Urban	Rural	P value
Mode of Transmission	Know	120 (93.7)	45 (62.5)	<0.001
	Don't Know	8 (6.3)	27 (37.5)	
Sign of identification	Know	116 (90.6)	41 (56.9)	<0.001
	Don't know	12 (9.4)	31 (43.1)	
Risk of death	Know	109 (85.2)	38 (52.8)	<0.001
	Don't know	19 (14.8)	34 (47.2)	

Severity based on site of bite	Know	99 (77.3)	33 (45.8)	<0.001
	Don't know	29 (22.7)	39 (54.2)	
Knowledge on ARV	Know	118 (89.4)	42 (58.3)	<0.001
	Don't know	14 (10.6)	30 (41.7)	

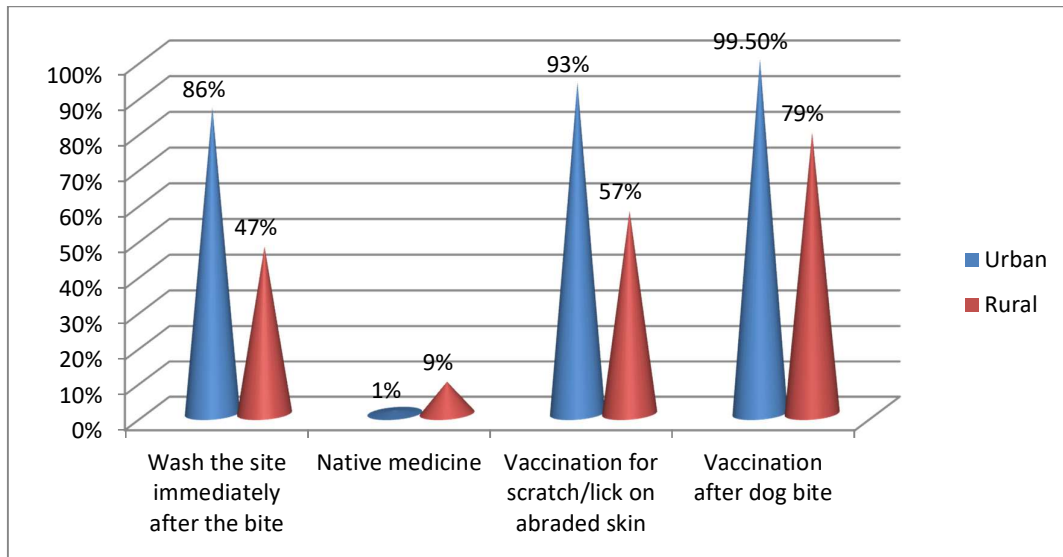


Figure 2. Distribution of the respondent on dog bite management

**Discussion**

The present study was done to assess community perceptions of rabies prevention and control among the general population of the Puducherry region. Community awareness and Knowledge of rabies are very important for its prevention and control. Globally, studies on awareness of rabies have been extensively conducted to gain insight into the disease and its preventive strategies.

In the present study, the percentage of participants who had heard about rabies was 198 (99.0%) similar to the study done in Avadi-Tiruvallur district, Tamilnadu [7] (98.6%). The results were higher compared to other studies which ranged from 60.0% to 80.0% [8,9]. In this study, the study participants reported that the major source

of information about rabies was Doctors (40.5%) followed by Newspapers & Media (39.5%), similar to the study done by Ghosh et al. [12] and Vijayalakshmi et al. [7].

In the present study, the majority of the study participants reported 82.5% knew about the mode of transmission of rabies which is similar to the study by Vijayalakshmi et al. [7] and Herbert et al. [10]. Regarding the sign of identification, the current study reported that 78.5% of participants known about the sign of identification of rabies which is similar to the study by Sivagurunathan et al. [11] (78.6%).

In the present study, the maximum number of participants (73.5%) were known about the risk of death due to rabies, similar to the study by Krishnamoorthy et

al. [12] (74.8%) and Vijayalakshmi et al. [7] (83.7%) but in contrast, the study by Herbert et al. [10] reported only (54.0%) and Herbert et al. [10] (54.1%). Regarding the knowledge of ARV, the current study reported that 79.0% of participants knew about ARV which is similar to the study done by Vijayalakshmi et al. [7] (87.0%).

In the current study, the knowledge regarding First aid reported that 64.0% of participants wash the wound with running water followed by 29.0% of participants with cloth bandage over the wound which is similar to the study done by Muthunuwan et al. [13] in Srilanka shows 90.5% of the participants knew washing the bite wound was an important first aid measure and Vijayalakshmi et al. [7] study reported that 65.8% of subjects wash the wound with water. In contrast, Laishram et al. [14] study observed that 73.8% of participants wash the wound with antiseptics and only 0.6% of them washed with water.

Regarding the vaccination status of pet dogs, the majority of the participants (51.0%) vaccinated their pets within one year followed by 38.0% who were vaccinated for more than a year and 11.0% who never vaccinated their pet dogs in the current study. In similar, a study done by Herbert et al. [10] observed that 58.6% of participants were vaccinated their pet dogs and 43.2% did not vaccinate their pets.

The main limitation of our study was generalizability to other regions as the literacy rate may differ from our study setting to other geographical areas.

## Conclusion

In this study, most participants were familiar with rabies, including its transmission methods, identifying symptoms, the risk of death, and knowledge about Anti-Rabies Vaccines (ARV).

Education significantly influences rabies awareness, as the majority of participants in the study had at least primary education. However, our findings reveal noticeable gaps in the understanding and attitudes of rural communities regarding rabies prevention and control. The rural population lacks sufficient measures for managing rabies on their own. Therefore, implementing community-based health education is crucial in these areas to improve awareness and promote effective rabies prevention and control.

## Statements and Declarations

### Conflicts of interest

The authors declares that they do not have conflict of interest.

### Funding

No funding was received for conducting this study.

## References

1. World Health Organisation. Fact sheet on Rabies. 2023 June 5. Available from: <https://www.who.int/news-room/fact-sheets/detail/rabies>
2. World Health Organization. Rabies in India. 2020. [Last accessed on 2023 Feb 06]. Available from: <https://www.who.int/india/health-topics/rabies>
3. Health Status Indicators: Cbhidghs, MoHFW. National Health Profile (NHP) of India-2019, 14th Issue. New Delhi: Jaina Offset Printers; 2019. p. 112–3. Available from: <http://www.cbhidghs.nic.in/showfile.php?lid=1147>. [Last accessed on 2023 Feb 06].
4. Sudarshan MK, Mahendra BJ, Madhusudana SN, Ashwath

- Narayana DH, Rahman A, Rao NSN. An epidemiological study of animal bites in India: results of a WHO sponsored national multi-centric rabies survey. *Journal of Communicable Diseases*, 2006;38(1):32–9.
5. Dodet B, Goswami A, Gunasekera A, de Guzman F, Jamali S, Montalban C, et al. Rabies awareness in eight Asian countries. *Vaccine*, 2008;26(50):6344–8.
  6. Ichhpujani RL, Chhabra M, Mittal V, Bhattacharya D, Singh J, Lal S. Knowledge, attitude and practices about animal bites and rabies in general community—a multi-centric study. *Journal of Communicable Diseases*, 2006;38(4):355–61.
  7. Vijayalakshmi M, Vijay Chandran M. Awareness of rabies and its prevention among adults in urban slums of Tiruvallur district. *Int J Community Med Public Health*, 2021;8(2):737-742.
  8. Masthi NR, Sanjay TV, Pradeep SB, Anwith HS. Community awareness and risk of rabies associated with exposure to animals in India. *IJPH*, 2019;63(5):15.
  9. Ghosh S, Chowdhury S, Haider N, Bhowmik RK, Rana MS, Prue Marma AS, et al. Awareness of rabies and response to dog bites in a Bangladesh community. *Veterinary Med Sci*, 2016;2(3):161-9.
  10. Herbert M, Basha R, Thangaraj S. Community perception regarding rabies prevention and stray dog control in urban slums in India. *J Infec Pub Heal*, 2012;5(6):374-80.
  11. Sivagurunathan C, Umadevi R, Balaji A, Rama R, Gopalakrishnan S. Knowledge, attitude, and practice study on animal bite, rabies, and its prevention in an urban community. *J Family Med Prim Care*, 2021;10:850-8.
  12. Krishnamoorthy Y, Vijayageetha M, Sarkar S. Awareness about rabies among general population and treatment seeking behaviour following dog-bite in rural Puducherry: A community based cross-sectional study. *Int J Community Med Public Health*, 2018;5:2557-63.
  13. Muthunuwan JT, Ganhewa AGKH, Perera HDSG, Hishaam M, Bandara WMMS, Gunasekera HAKM. Preliminary survey on knowledge, attitudes and practices regarding rabies. *Sri Lankan J Inf Dis*, 2017;7:38-46.
  14. Laishram J, Chaudhuri S, Devi HS, Konjengbam S. Knowledge and practice on rabies in an urban community of Manipur, India. *J Evolution Med Dent Sci*, 2016;5:2234-7.