

Original Research Article

Assessment of rabies awareness and sociodemographic correlates among adults in an urban field practice area of a medical college: a community based cross-sectional study

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ABSTRACT

Background: Rabies, a viral disease with 100% fatality in warm-blooded animals and humans, is underreported in India and nearly 35,000 annual deaths in Asia. With 99% of cases due to dog bites and children heavily affected. Post-exposure prophylaxis is vital yet often unaffordable. Maharashtra alone reports over 423,000 bites yearly. This study is to assess the level of awareness regarding rabies among adults residing in the urban field practice area of a Medical College.

Methods: This cross-sectional survey in an urban field practice area of a medical college included 380 adults (≥ 18 years) using convenience sampling across five zones. Over 18 months, investigators used a validated, multi-language questionnaire to assess rabies awareness. Data were analyzed in SPSS 23 with chi-square tests ($\alpha=0.05$).

Results: Among 148 participants aware of rabies, over half (52 %) demonstrated “poor” awareness, while 48% had “average” awareness. Awareness levels were similar across male, female, and transgender individuals. Socio-demographic findings reveal most participants were aged 31-40, married, with high school education or less, predominantly unemployed women living in overcrowded pucca homes.

Conclusions: These findings align with broader evidence that community-level rabies knowledge and prevention practices are generally inadequate across different regions. Strengthen IEC by hosting regular school, Anganwadi, and health centre sessions to teach proper bite management and rabies basics. Train peer leaders including students, teachers, community influencers, and panchayat members to spread awareness locally.

Keywords: Awareness, Community education, IEC Activities, Rabies

INTRODUCTION

Rabies is a viral disease that affects warm-blooded animals. Despite being a public health emergency in India, rabies remains underreported, and neglected.¹ India is responsible for 59.9% of rabies deaths in Asia and 35% of global rabies fatalities. Dogs are the cause of 99% of human rabies deaths.² Rabies is 100% fatal but entirely preventable. Lack of public awareness about rabies transmission and prevention is one of the primary reasons for the high incidence of the disease.³ Education for both

children and adults about rabies prevention including first-aid following dog bites is a vital element of any effective rabies prevention program.⁴ India contributes disproportionately to the global burden of rabies deaths, a situation driven by limited public awareness, suboptimal health-seeking behavior, and dependence on traditional remedies. To inform rabies control efforts, it is essential to understand the awareness of Rabies.⁵ Despite efforts to control rabies through vaccination of animals and public education, gaps in awareness remain significant, particularly in urban settings where population density

and human-animal interactions are high. Existing literature predominantly focuses on rural areas, overlooking the distinct challenges and opportunities for awareness campaigns in urban environments. Considering this fact, this study was undertaken to address this gap by investigating current levels of rabies awareness among urban residents, identifying sources of information, and exploring demographic factors that may influence awareness levels. This study aimed to assess the level of awareness regarding rabies among adults residing in the urban field practice area of a Medical College. Also, to identify socio-demographic associated with awareness of rabies in this population.

METHODS

Study setting

The study was a cross-sectional survey conducted in the urban field practice area of a Seth GS Medical College & KEM Hospital, Mumbai, Health Post-1 of Malvani, which serves approximately 126,973 residents from diverse socio-cultural backgrounds, including migrants. Adults aged 18 and above who could comprehend and respond to questions were included. A sample size of 380 was calculated using a 55% awareness prevalence, a 5% margin of error, and 95% confidence. Due to resource and time constraints, convenience sampling with proportional allocation across five zones was used. The study conducted for 18 months: 4 months for protocol development and ethics approval, 12 months (June 2023–February 2024) for home-based data collection, and 2 months for data analysis and interpretation. A semi-structured questionnaire validated by experts and informed consent forms in English, Hindi, and Marathi were used. Interviews, conducted privately at participants' homes by the co-investigator, gathered demographic information and data on rabies awareness.

Statistical analysis

Data were entered into MS Excel 2023 and analyzed using IBM SPSS 23; means and standard deviations described numeric variables, while categorical variables were summarized as frequencies and percentages. Chi-square tests at a 5% significance level were applied to examine associations between awareness and influencing factors.

RESULTS

The study sample comprised diverse participants in terms of age, religion, marital status, education, employment, and living conditions. The largest age group was 31–40 years (107 participants, 28.15%), closely followed by those aged 21–30 years (104, 27.36%). Most respondents were Muslim (247, 65%). Regarding marital status, 278 (73.15%) were married, 70 (18.42%) unmarried. In terms of education, 135 (35.52%) had completed high school, while 75 (19.73%) were illiterate. Employment-wise, 229

(60.26%) were unemployed, a majority of whom were women (201, 82.37%), with 60 (15.78%) skilled workers. Most participants lived in nuclear families (222, 58.42%). Housing conditions were predominantly pucca (367, 96.57%), but overcrowding was common (337, 88.68%), with an average family size of 5.34 and monthly incomes ranging from ₹5,000 to ₹100,000. Only 37 participants (9.73%) owned pets primarily cats (19, 48.64%), sheep (9, 24.32%), and dogs (7, 16.21%), with a few owning rabbits or tortoises (3, 8.10%). Awareness about rabies was limited: 232 (61.05%) had never heard of the disease (Figure 1), while among the 148 (38.94%) who had, most learned through neighbours and family (67, 45.27%) or social media (47, 31.76%) (Figure 2). All those aware knew dogs could contract rabies; 136 (91.89%) recognized biting as a transmission mode, though fewer cited wound licking (32, 21.62%) or scratching (23, 5.54%). Among the knowledgeable group, the most commonly identified clinical sign in animals was excessive drooling (56, 37.84%), and 116 (78.38%) described animals as “behaving like a dog.” Awareness of prognosis was also limited: 56 (37.83%) understood that rabid dogs die, and 54 (36.48%) knew that rabies is typically fatal in humans once symptoms manifest. Regarding perceived risk, 142 respondents (37.37%) believed delivery personnel were most likely to be bitten, with a higher proportion of males (58, 43.61%) than females (85, 34.84%) holding this view. Of those concerned about pet dogs transmitting rabies (57, 38.51%), the primary worry was lack of vaccination. Encouragingly, 340 participants (89.47%) were aware of the anti-rabies vaccine, although only 4 (1.17%) knew about rabies immunoglobulin.

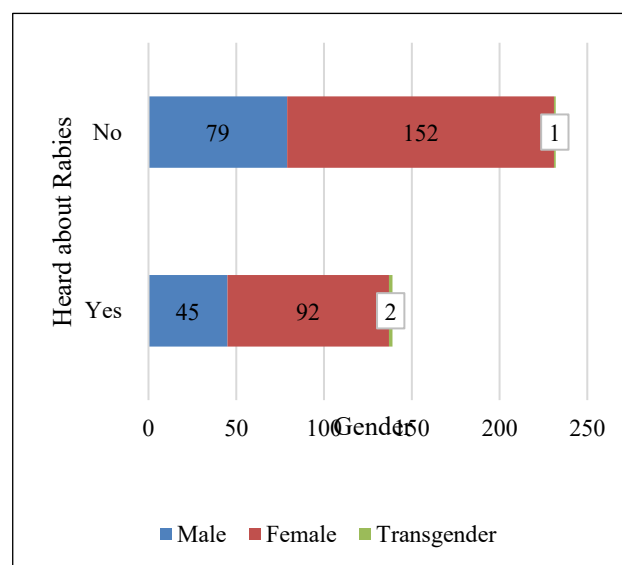


Figure 1: Distribution of study participants who heard about rabies (n=380).

Participants were first asked whether they had ever heard of rabies; only those who said “Yes” moved on to a detailed questionnaire. Each response was assigned a specific weight, resulting in a maximum possible score of

23. Based on their total score, participants were classified into five awareness levels: excellent (21-23), good (17-20), average (12-16), poor (6-11), and very poor (0-5).

The study on rabies awareness among 148 participants reveals that the majority of the respondents fall into the "poor" and "average" awareness categories (Table 1).

Overall, 52.03% of the participants have poor awareness (scoring 6-11), while 47.97% have average awareness (scoring 12-16). Specifically, among the males, 50% (27 individuals) have poor awareness and 50% (27 individuals) have average awareness. Among the females, 53.26% (49 individuals) have poor awareness and 46.74% (43 individuals) have average awareness. For the transgender participants, 50% (1 individual) have poor awareness and 50% (1 individual) have average awareness. Chi-square test shows a significant association between gender and awareness about anti-rabies vaccination ($p=0.006$) suggesting that awareness levels differ significantly between male and female participants.

Table 1: Distribution of study participants according to awareness about rabies (n=148).

Awareness about rabies	Gender						Total	
	Male		Female		Transgender			
	N	%	N	%	N	%	N	%
Poor (6-11)	27	50	49	53.26	1	50	77	52.03
Average (12-16)	27	50	43	46.74	1	50	71	47.97
Total	54	100	92	100.00	2	100	148	100.00

DISCUSSION

In our study, out of 380 participants, 133 (35%) were males, 244 (64.21%) were females, and 3 (0.78%) were transgender individuals. This gender distribution aligns with the findings of Sivagurunathan et al, who observed in an urban community in Tamil Nadu that out of 350 participants, 56.6% were females and 43.4% were males.⁶ Majority of participants (65%) were Muslims, and 31.84% were Hindus. In contrast, the study by Cowshik et al reported that 80% of participants were Hindus, followed by 11.5% Christians.⁷ This difference in religious composition is due to the fact that the majority of the population in our study area is Muslim.

In our study, 35.52% of participants completed high school education, while 19.73% were illiterate. This finding aligns with the study by Singh et al, around 40.4% of participants had completed education from middle to higher secondary levels.⁸

9.73% of participants had pets. In contrast, the study by Tiwari et al found that 53% of participants had pets in their homes.⁹

Only 148 participants (38.94%) had heard about rabies. This is slightly higher than the findings in the study by Roy et al where only 29.38% of participants were aware

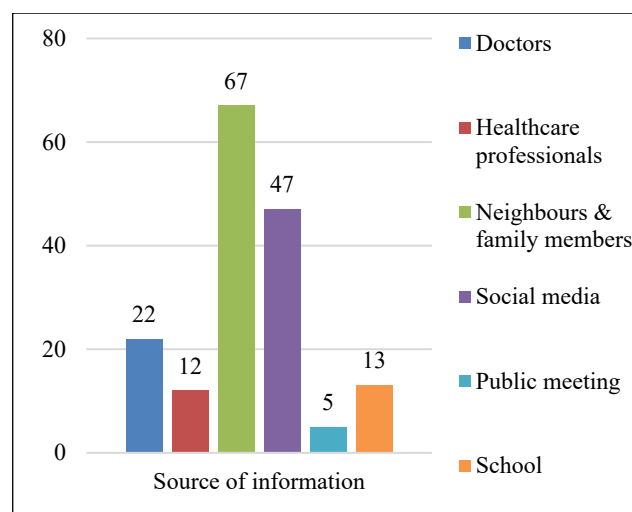


Figure 2: Distribution of study participants according to source of information they got about rabies (n=148).

of rabies.¹⁰ This indicates a generally low level of awareness about rabies in both study populations.

The majority of participants received information from neighbours and family members (45.27%), followed by social media (31.76%) and 22.97% from doctors and healthcare professionals. In another study, Sambo et al, it was also found that 70% of respondents received information about rabies through neighbours, parents, and family members.¹¹

Among the 148 participants who were aware of rabies, all (100%) recognized that dogs are susceptible hosts. In contrast, the study by Roy et al found that only 28.87% of participants were aware that dogs are susceptible hosts.¹⁰

Additionally, in the study by Tiwari et al, 98.4% were aware that rabies could be spread through the bite of an animal.⁹ The most recognized sign of rabies was "excessive drooling," with an overall awareness of 37.84%, while 4.05% mentioned aggressive barking. In contrast, the study by Roy et al found that the majority (37.11%) identified aggressive behavior as a key sign of rabies.¹⁰

Among the 148 participants, 50% of participants correctly identified the clinical features of rabies in humans. In contrast, the study by Tripathy et al reported that only one

percent of participants could identify the symptoms of rabies in animals.¹²

Only 4 participants (1.17%) were aware of rabies immunoglobulin. In similar, Tripathy et al the study reported that 2.97% of participants were aware of anti-rabies immunoglobulin.¹² This indicates that awareness of rabies immunoglobulin is relatively low in both studies.

We found that awareness levels were relatively low, with 52.03% of participants demonstrating poor awareness and 47.97% exhibiting only average awareness of rabies. This contrasts with the findings of the Kapoor et al study, where 22.5% of participants demonstrated a strong understanding of rabies, 56% had a moderate understanding, and only 21.5% had a poor understanding.¹³ These comparisons underscore the concerning low levels of awareness in our study population, highlighting the urgent need for enhanced educational efforts to improve rabies awareness in urban areas.

This study has few limitations. The study was conducted within a specific urban field practice area, which may not fully represent the broader population. This could affect the generalizability of the findings to other urban areas or regions. The study did not fully engage with certain subpopulations, such as homeless individuals, who might have different levels of awareness.

CONCLUSION

None of the participants reached the highest awareness thresholds, all who had heard of rabies scored within the "poor" or "average" range, 52% scored poorly and 48% averaged. These findings align with broader evidence that community-level rabies knowledge and prevention practices are generally inadequate across different regions.

Recommendations

Strengthen IEC activities: Set up regular Information, Education, and Communication (IEC) events at schools, Urban Health Training Centres, Anganwadi centres.

Community education on rabies management: Show people how to handle animal bites the right way.

Start peer leader programs: Train influential community members, like high school and college student leaders, teachers, religious heads, panchayat members to become peer educators. These trained people can share information on rabies prevention in their neighbourhoods helping to start a grassroots push for rabies awareness.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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