

ORIGINAL ARTICLE

Assessment of Knowledge, Attitude and Practice On Animal Bite, Rabies, and Its Prevention In the Rural Community in Western Uttar Pradesh: A Cross Sectional Study

Anurag Verma, Sandip Kumar, Dhiraj Kumar Srivastava, Anshul Kumar, Shivali Singh, Arunima Sharma

Department of Community Medicine, Uttar Pradesh University of Medical Sciences, Saifai, Uttar Pradesh

CORRESPONDING AUTHOR

Dr. Anurag Verma, Department of Community Medicine, Uttar Pradesh University of Medical Sciences, Saifai, Uttar Pradesh 206130

Email: anuragv037@gmail.com

CITATION

Verma A, Kumar S, Srivastava DK, Kumar A, Singh S, Sharma A. Assessment of Knowledge, Attitude, And Practice On Animal Bite, Rabies, And Its Prevention In the Rural Community in Western UP: A Cross Sectional Study. Indian J Comm Health. 2025;37(2):276-281. <https://doi.org/10.47203/IJCH.2025.v37i02.016>

ARTICLE CYCLE

Received: 25/10/2024; Accepted: 03/04/2025; Published: 30/04/2025

This work is licensed under a Creative Commons Attribution 4.0 International License.

©The Author(s). 2025 Open Access

ABSTRACT

Background: Rabies, a fatal zoonotic disease, poses a major public health challenge in rural India, where frequent animal bites and limited preventive measures contribute to high mortality. India reports the highest global rabies-related deaths, particularly among low socio-economic rural populations. Poor awareness, dependence on traditional remedies, and inadequate healthcare response worsen the issue. **Aim & Objective:** To assess the knowledge, attitude, and practices (KAP) regarding animal bites, rabies, and its prevention among rural communities in Western Uttar Pradesh. **Methodology:** A cross-sectional study was conducted in four villages under the field practice area of the Department of Community Medicine, Uttar Pradesh University of Medical Sciences, Saifai. A total of 200 randomly selected adult residents were interviewed using a structured, pre-tested questionnaire covering demographics and KAP related to rabies. Data were analyzed using descriptive statistics and chi-square tests ($p < 0.05$). **Results:** Among participants, 87% knew that animal bites can transmit rabies, but only 26% were aware of correct first aid. Post-exposure, 61.5% received the anti-rabies vaccine, while only 38.5% received rabies immunoglobulin. **Conclusion:** Despite moderate awareness of rabies, significant gaps exist in correct practices and post-exposure care. Strengthening community education and healthcare accessibility is essential to reduce rabies-related morbidity and mortality.

KEYWORDS

Rabies, Animal Bite, Knowledge, Attitude, Practice, Rural Community, Prevention, Uttar Pradesh.

INTRODUCTION

Rabies is a deadly zoonotic disease and a major public health concern, especially in rural areas where animal bites are frequent and access to preventive measures is limited. India records the highest number of rabies deaths from dog bites, with most victims being from low socio-economic backgrounds in rural areas (1, 2). A gross lack of awareness about rabies in rural India is one of the factors that leads to high human mortality from the disease (3). In Western Uttar Pradesh, known for its high population density and a large proportion of human-animal interface (HAI), it is imperative to

study the community knowledge attitudes and practices related to rabies management in order to design effective prevention strategies. In the Indian context, deep rooted cultural and religious beliefs connected with rabies, poorly functioning health and civil registration system, misplaced faith on traditional medicine systems and home remedies hinder the use of appropriate and timely medical interventions to prevent rabies(3-8) Also, a study in medical interns showed that they have poor knowledge about appropriate management of animal bites(9,10) .Despite the availability of vaccines and other preventive measures, rabies

continues to claim lives, largely due to gaps in public awareness and appropriate practices following animal bites.

Aim & Objective(s)

To assess the knowledge, attitude, and practices (KAP) regarding animal bites, rabies, and its prevention among rural communities in Western Uttar Pradesh

MATERIAL & METHODS

Study Type & Study Design: This was a community-based, cross-sectional study aimed at assessing the knowledge, attitude, and practices (KAP) related to animal bites, rabies, and its prevention among adults.

Study Setting: The study was conducted in four randomly selected villages under the rural field practice area of the Department of Community Medicine, Uttar Pradesh University of Medical Sciences, Saifai, Uttar Pradesh.

Study Population: The study population comprised adult residents (aged 18 years and above) of the selected villages.

Study Duration: The study was conducted over a defined period in 2023.

Sample Size Calculation: The sample size was calculated to be 135 based on a previous study by Herbert *et al.*, using a prevalence of 74% for rabies awareness among adults, with 5% absolute precision and 95% confidence level. The final sample size was rounded off to 200 to ensure better representation.

Inclusion Criteria

1. Adult residents aged 18 years and above
2. Permanent residents of the selected villages
3. Individuals who provided informed consent

Exclusion Criteria

1. Temporary residents or visitors
2. Individuals unable or unwilling to give informed consent

Strategy for Data Collection

Sampling Technique: A multistage sampling method was used

Selection of Villages: Four villages were randomly selected from the list of adopted villages under the field practice area.

Household Selection: Within each selected village, households were chosen using systematic random sampling.

Participant Selection: One adult per household was randomly selected for participation.

Data Collection Tool: A structured, pre-tested questionnaire consisting of four sections was used:

1. Sociodemographic Details: Age, gender, education, and income.
2. Knowledge Assessment: 15 questions related to rabies transmission and prevention, each

correct answer scored 1 point (maximum score: 15).

3. Attitude Assessment: 4 items, each correct response scored 1 point.
4. Practice Assessment: 5 items on response to animal bites, each correct response scored 1 point.

Working Definition: Participants scoring above the mean in each section (knowledge, attitude, and practice) were classified as having adequate knowledge, satisfactory attitudes, and good practices, respectively.

Ethical Issues & Informed Consent: The study was approved by the Institutional Review Board (IRB). Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study, and data were stored securely.

Data Analysis Software: Data were analyzed using SPSS version 24.0. Descriptive statistics summarized demographic and KAP data. Chi-square tests were applied to determine associations between demographic variables and KAP levels. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1 reveals that the study sample consisted of 200 participants with a slight majority of males (58.5%) compared to females (41.5%). The majority of participants were under 40 years old (69.5%). Educational attainment was seen in nearly half (48.5%) having completed high school or above, while 19.5% were illiterate and 32.0% had less than high school education. Socioeconomic status (SES) distribution varied, with the largest proportion in CLASS 4 (31.0%), followed by CLASS 2 (25.5%). CLASS 1 constituted the smallest proportion (11.0%). These findings reflect a predominantly younger and better-educated population with a broad range of socioeconomic statuses.

Table 1 Sociodemographic Profile of the study participants

Characteristic	Description	Frequency n=200	Percentage
Gender	Male	117	58.5
	Female	83	41.5
Age group(years)	<40	139	69.5
	≥40	61	30.5
Education	Illiterate	39	19.5
	Below high-school	64	32.0
	High school	97	48.5

Characteristic	Description	Frequency n=200	Percentage
SES(socioeconomic status)	Highest school and above		
	Class 1	22	11.0
	Class 2	51	25.5
	Class 3	35	17.5
	Class 4	62	31.0
	Class 5	30	15.0

In table 2, it is shown that among the 200 participants, a minority owned dogs as pets (14.0%), while the majority did not (86.0%). 39% of participants reported having experienced a dog bite within the past year, indicating a significant incidence of dog bites in the community. Regarding the type of dog involved in bites, 28.0% were attributed to stray dogs, while 11.0% were associated with pet dogs. These findings highlight a substantial issue with dog bites, predominantly involving stray dogs, and underscore the need for improved control measures and public awareness regarding rabies and animal bite prevention.

Table 2: Details of dog bites

Details	n	%
Number of people having dog as pet		
YES	28	14.0%
NO	172	86.0%
History of dog bite (within 1 year)		
Yes	78	39.0%
No	122	61.0%
Type of animal (n=78)		
Stray	56	71.79%
Pet	22	28.20%

Table 3 summarizes the knowledge, awareness, and practices related to rabies among the surveyed population. A high percentage (87%) of respondents were aware that an animal bite can cause rabies, with 78% having heard of the disease. However, knowledge about critical aspects like the causative agent (43%) and the appropriate first aid (26%) is limited. Awareness that 'rabies is curable' was moderate (46.5%), but misconceptions persist, such as the belief that indigenous materials can prevent rabies (40%). In terms of practices, 80.8% visit a doctor after a bite, 61.5% receive the anti-rabies vaccine, and 38.5% receive rabies immunoglobulin. The overall practice score is low (20.5%), indicating significant gaps in the proper management of rabies exposure despite moderate levels of knowledge and awareness.

Table 3: Summary of Knowledge, Attitude, and Practices Regarding Rabies

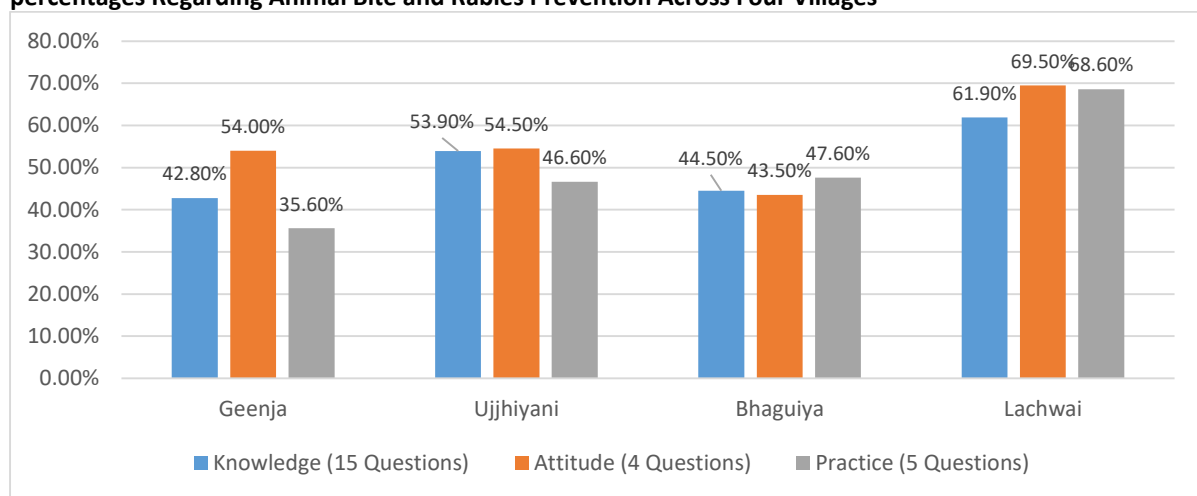
S.No	Correct Knowledge regarding Rabies (n=200)	Correct responses (n)(%)
1	Can an animal bite cause the disease to man	174 (87%)
2	Have you heard of rabies	156 (78%)
3	Is rabies fatal	131 (65.5%)
4	Causative agent	86 (43%)
5	Animals responsible for transmission	60 (30%)
6	Transmission route	101 (50.5%)
7	Knowledge of first aid	52 (26%)
8	Symptoms of a rabid animal	97 (48.5%)
9	Can the anti-rabies vaccine prevent the occurrence of rabies	129 (64.5%)
10	Anti-rabies vaccine doses	129 (64.5%)
11	Safety of anti-rabies vaccine in pregnancy	34 (17%)
12	Anti-rabies vaccine availability	143 (71.5%)
13	Tetanus vaccination following animal bite	82 (41%)
14	What should be done to the biting animal	100 (50%)
15	How many days should the animal be observed	106 (53%)
16	Overall number of participants with adequate knowledge	111 (55.5%)
S.No Attitude regarding Rabies (n=200) N (%)		
1	I believe rabies can be cured if treated promptly	93 (46.5%)
2	Application of indigenous materials can prevent rabies	80 (40%)
3	Completion of anti-rabies vaccine is necessary	137 (68.5%)
4	Kill the biting animal	133 (66.5%)
5	Overall number of participants with satisfactory adequate	82 (41%)
S.no Practices regarding Rabies(n=78) N(%)		
1	First aid done	27(34.6)

S.No	Correct Knowledge regarding Rabies (n=200)	Correct responses (n)(%)
2	doctor visit	63(80.8)
3	Anti-rabies vaccine received	48(61.5)
4	Immunized against Tetanus	35(44.9)
5	Received Rabies Immunoglobulin	30(38.5)
6	Overall number of participants with satisfactory Practices	41(20.5)

The bar graph in Figure 1, compares the knowledge, attitude, and practice percentages across four locations: Geenja, Ujjhiyani, Bhaguiya, and Lachwai. Knowledge, represented by a green line, starts at 42.8% in Geenja and rises to 61.9% in Lachwai. Attitude, shown by a blue line, maintains a high

percentage throughout, peaking at 69.5% in Lachwai. Practice, indicated by a yellow line, starts lower at 35.6% in Geenja but increases to 68.6% in Lachwai. Overall, there is a general upward trend in all three categories across the locations, with Lachwai scoring the highest in all.

Figure 1 Number of Participants with Correct Knowledge, Satisfactory Attitude and Practice Scores percentages Regarding Animal Bite and Rabies Prevention Across Four Villages



DISCUSSION

Our study reveals that while 78% of participants had heard of rabies, significant knowledge gaps persist. Notably, 34.5% were unaware of its fatal nature, and only 49% correctly identified that rabies could be transmitted through a bite, scratch, or lick from a rabid animal. Overall, only 55.5% of participants demonstrated adequate knowledge regarding animal bites and rabies. The mean knowledge score across the four villages was 7.62 out of 15, indicating a mixed level of awareness. Encouragingly, 78% of participants recognized that rabies is preventable and understood the importance of completing the anti-rabies vaccine series. However, gaps in recognizing rabies symptoms and understanding transmission pathways remain concerning.(11)

Despite some awareness, preventive practices were suboptimal. Only 34.6% of participants provided proper first aid after a dog bite, highlighting a disconnect between knowledge and practice. These findings underscore the need for targeted behavioral interventions to improve response actions following animal bites.

Our findings align with prior studies conducted in India. A study by Sivagurunathan et al. (12) in urban Tamil Nadu reported that 76% of participants had heard of rabies, and 36.5% were unaware of its fatal nature, mirroring our results. Similarly, their findings on the use of indigenous materials on bite wounds (26%) and proper wound washing with soap and water (34.7%) were comparable to our study. The prevalence of animal bite history in their study (20.6%) was lower than ours (39%).

A study from Pondicherry (13) reported that 77.5% of participants believed rabies was fatal, and only 6.9% identified a microorganism as its cause, differing from our findings, where 65.5% recognized rabies as fatal and 43% knew it was caused by a microorganism. In contrast, Krishnamoorthy et al. (14) in Puducherry found a higher rate of appropriate first aid practices (62.9%) and a greater percentage of healthcare-seeking behavior (100%) compared to our study, where only 34.6% administered proper first aid and 80.7% sought medical attention.

Chandan et al. (15) reported a higher awareness level (89%) but found similar knowledge regarding

the availability of post-bite vaccination. However, the proportion of participants applying indigenous materials to bite wounds (8%) was considerably lower than in our study (40%). The practice of appropriate first aid (36%) was consistent with our findings. Similarly, Singh *et al.* (16) reported a female participation rate of 55.2%, whereas in our study, only 41.5% of respondents were female. Additionally, pet ownership varied, with 9.1% of their participants having pet dogs compared to 14% in our study. Bharani *et al.* (17) found that 54.5% of respondents were aware of rabies transmission routes, which closely aligns with our findings.

The differences in knowledge and practices across villages in our study may be attributed to variations in educational outreach, healthcare access, and community engagement in public health initiatives. For instance, villages such as Lachwai, which had higher knowledge and practice scores, likely benefited from better access to health education and services compared to others.

Filling the Gap in Literature and Future Directions

This study adds to the existing literature by highlighting persistent challenges in rabies prevention in rural India. It underscores the critical need for targeted educational programs that not only enhance awareness but also translate knowledge into effective preventive practices. Future research should explore the impact of community-based interventions in bridging the gap between awareness and action, ensuring timely and appropriate responses to animal bites.

Potential biases in this study include self-reported data, which may be subject to social desirability bias, leading participants to overstate their knowledge or best practices. Additionally, the random selection of households may not fully capture the diversity of experiences across all villages.

CONCLUSION

Given the findings, there is a need for more intensive educational campaigns tailored to rural communities, focusing on both increasing awareness of rabies prevention and improving first aid practices after animal bites. Collaboration with local health workers to implement these programs could significantly enhance their reach and impact. Implementing sustained animal birth control programs, widespread rabies vaccination, and community awareness initiatives can effectively reduce dog bites and rabies transmission.

RECOMMENDATION

This study highlights the urgent need for community-based health education and improved

access to rabies prevention services in rural areas. Strengthening awareness through schools, frontline health workers, and ensuring availability of vaccines and immunoglobulin at primary health centers can bridge knowledge-practice gaps and reduce rabies-related deaths.

LIMITATION OF THE STUDY

Limitations include its cross-sectional design, which prevents causal inferences, and reliance on self-reported data, which may not always reflect actual behaviors.

RELEVANCE OF THE STUDY

It adds to current knowledge by identifying specific areas of misconception and poor first aid responses following animal bites, thereby emphasizing the urgent need for community-based awareness programs and improved access to rabies prevention services at the grassroots level.

AUTHORS CONTRIBUTION

All authors have contributed equally.

FINANCIAL SUPPORT AND SPONSORSHIP

Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

REFERENCES

1. WHO. WHO Expert Consultation on Rabies. Second report. 2013. (WHO Technical Report Series, No. 982).
2. Acharya AS, Kaur R, Lakra K. Rabies epidemiology and control in India: a review. *J Commun Dis.* 2012;44(2):59-69.
3. Sudarshan MK, Madhusudana SN, Mahendra BJ, Rao NSN, Ashwath Narayana DH, Abdul Rahman S, *et al.* Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. *Int J Infect Dis.* 2007;11(1):29-35.
4. Sharma S, Agarwal A, Khan A, Ingle G. Prevalence of dog bites in rural and urban slums of Delhi: A community based study. *Ann Med Health Sci Res.* 2016;6(2):115-9.
5. Sudarshan MK, Mahendra BJ, Madhusudana SN, Narayana DA, Rahman A, Rao NS, *et al.* An epidemiological study of animal bites in India: Results of a WHO sponsored national multi centric rabies survey. *J Commun Dis.* 2006;38(1):32-9.
6. Gupta M, Rao C, Lakshmi P, Prinja S, Kumar R. Estimating mortality using data from civil registration: A cross sectional study in India. *Bull World Health Organ.* 2016;94(1):10-21.
7. Ntampaka P, Nyaga PN, Niragire F, Gathumbi JK, Tukei M. Knowledge, attitudes and practices regarding rabies and its control among dog owners in Kigali city, Rwanda. *PLoS One.* 2019;14(4):e0210044.

8. Hagos WG, Muchie KF, Gebru GG, Mezgebe GG, Reda KA, Dachew BA. Assessment of knowledge, attitude and practice towards rabies and associated factors among household heads in Mekelle city, Ethiopia. BMC Public Health. 2020;20:1–7.
9. Chowdhury R, Mukherjee A, Naskar S, Lahiri S. A study on knowledge of animal bite management and rabies immunization among interns of a Government Medical College in Kolkata. Int J Med Public Health. 2013;3(1):17–20.
10. Khan A, Ayaz R, Mehtab A, Naz K, Haider W, Gondal MA, et al. Knowledge, attitude and practices (KAPs) regarding rabies endemicity among the community members, Pakistan. Acta Trop. 2019;200:105156.
11. Herbert M, Basha SR, Thangaraj S. Community perception regarding rabies prevention and stray dog control in urban slums in India. J Infect Public Health. 2012;5(5):374–80.
12. 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(2):850–8.
13. Joice YS, Singh Z, Datta SS. Knowledge, attitude and practices regarding dog bite and its management among adults in rural Tamil Nadu. Int J Sci Res. 2016;5(5):586–9.
14. 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(6):2557–63.
15. Chandan N, Kotrabasappa K. Awareness of animal bite and rabies among agricultural workers in rural Dharwad, Karnataka, India. Int J Community Med Public Health. 2016;3(7):1851–5.
16. Singh T, Mahajan S, Dahiya N. A cross-sectional study of awareness and practices regarding animal bites in rural community, North India. J Family Med Prim Care. 2020;9(6):2751–7.
17. Bharani K, Ramachandran K, Kommisetty V, Baalann KP. Knowledge of rabies among rural community in Chengalpet district, India. Bioinformation. 2022;18(3):155–9.