

Original Research Article

Knowledge, attitude, and practice regarding rabies among animal bite patients attending a tertiary care hospital in central India: a cross-sectional study

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Received: 18 July 2025

Accepted: 13 August 2025

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ABSTRACT

Background: Rabies is a 100% fatal but preventable viral zoonotic disease, primarily transmitted through the bite of infected dogs. India accounts for a large share of global rabies deaths, attributed to low awareness, poor healthcare-seeking behavior, and reliance on traditional remedies. Understanding the knowledge, attitude, and practices (KAP) of individuals exposed to animal bites is crucial for rabies control. Objective was to assess the KAP regarding rabies among animal bite patients attending the anti-rabies clinic of a tertiary care hospital in central India.

Methods: A cross-sectional study was conducted among 210 animal bite patients using a pre-tested semi-structured questionnaire during December 2024. Universal sampling was applied. Data on socio-demographic characteristics and KAP were collected through face-to-face interviews and analyzed using descriptive statistics.

Results: Among participants, 64.8% were male and 62.9% resided in rural areas. While 78.6% had heard of rabies and 71.9% knew about transmission via dog bites, only 48.1% were aware of wound washing. Though 68.1% initiated the anti-rabies vaccine (ARV), only 52.4% completed it. Just 30.3% of pet owners had vaccinated their pets.

Conclusions: Despite moderate awareness, significant gaps in rabies-related practices exist. Community-level health education and improved vaccine compliance are vital for rabies elimination.

Keywords: Animal bite, Anti-rabies vaccine, Attitude, India, Knowledge, Practice, Rabies

INTRODUCTION

Rabies is a viral zoonotic disease known since ancient times, with the term derived from the Latin word *rabere*, meaning “to rage” or “go mad”.^{1,2} Although effective vaccines exist for both humans and animals, rabies continues to be a significant public health concern, causing an estimated 59,000 human deaths and 3.7 million disability-adjusted life years (DALYs) globally each year.^{3,4} Once clinical symptoms manifest, rabies is nearly always fatal.⁵

The vast majority of human rabies cases- around 99%-are attributed to dog bites, making canine rabies a major global threat, particularly in developing countries.⁶ Transmission occurs mainly through the bite of an

infected animal, with factors such as the site and severity of the wound, viral load, and immunization status playing a key role in determining the risk of infection.⁷ The incubation period usually ranges from one week to three months, though it can occasionally exceed a year.^{8,9}

Timely administration of post-exposure prophylaxis (PEP) is highly effective, almost always preventing the onset of disease if provided appropriately.^{10,11} In recognition of rabies as a preventable yet deadly disease, organizations such as WHO, FAO, OIE, and GARC have set a global target to eliminate dog-mediated human rabies deaths by the year 2030, aligning with the sustainable development goals (SDGs).^{12,13} Despite progress in some nations, rabies remains endemic in over 150 countries, particularly in Asia and Africa, where

underreporting and poor surveillance hinder effective control.¹⁴

India carries a disproportionately high burden, contributing to around 20,000 rabies-related deaths annually.^{15,16} The disease predominantly affects rural areas, where access to healthcare is limited, and deaths often go unregistered due to weak surveillance and civil registration systems.^{17,18} Traditional beliefs, dependence on non-allopathic remedies, and a lack of awareness about timely treatment further delay appropriate medical care.^{19,20}

Evidence also suggests that even healthcare providers such as medical interns often lack sufficient knowledge regarding proper animal bite management and rabies vaccination protocols.^{21,22} Given the high fatality rate and preventable nature of the disease, it is vital to explore community knowledge, attitudes, and practices (KAP) concerning rabies to design targeted public health strategies.²³

This study was conducted to evaluate the awareness levels, first-aid practices, beliefs, and vaccination-related knowledge among individuals presenting with animal bites at a tertiary care hospital in central India.

METHODS

This hospital-based, cross-sectional observational study was conducted at the anti-rabies clinic of a tertiary care hospital located in central India. The study was carried out over a period of one month and aimed to assess the knowledge, attitude, and practices (KAP) regarding rabies among patients reporting with animal bites.

A universal sampling technique was employed, wherein all eligible patients who attended the anti-rabies clinic during the study period of one month in December 2024 were invited to participate. A total of 210 participants were enrolled in the study based on predefined inclusion and exclusion criteria.

Patients aged above 10 years, of either gender, who presented with a history of animal bite and provided informed consent were included in the study. Those who were critically ill, unable to respond, or refused to participate were excluded. Informed consent was obtained from all adult participants, and in the case of minors, assent was taken along with parental or guardian consent. Ethical clearance was obtained from the institutional ethics committee of the tertiary care center prior to the commencement of the study, ensuring adherence to ethical research standards.

Data were collected using a pre-tested, semi-structured questionnaire specifically designed to capture key aspects of rabies-related KAP. The questionnaire covered three main domains:

Knowledge, including awareness about rabies transmission, clinical severity, prevention strategies, and vaccination protocols;

Attitude, focusing on perceived urgency of treatment, preference between traditional and formal healthcare services, and beliefs regarding the importance of vaccination;

Practice, addressing immediate wound care, time taken to seek medical assistance, and compliance with the anti-rabies vaccination schedule.

The questionnaire was administered through face-to-face interviews conducted in the local language by trained investigators, ensuring clarity and consistency in data collection. Interviews were conducted after the participants completed their clinical consultation, minimizing interference with routine care.

Data collected were entered into Microsoft Excel and analyzed using descriptive statistics. Results were expressed as frequencies and percentages to summarize the socio-demographic characteristics and KAP responses of the study population.

RESULTS

A total of 210 participants who reported to the anti-rabies clinic with a history of animal bite were included in the study. Among them, 136 (64.8%) were male and 74 (35.2%) were female, indicating a higher number of males reporting for post-bite care. The age distribution showed that the majority of participants belonged to the 21–40 years age group (85, 40.5%), followed by 41–60 years (58, 27.6%), ≤20 years (42, 20.0%), and >60 years (25, 11.9%). Most participants were from rural areas (132, 62.9%), while the remaining 78 (37.1%) were from urban localities (Table 1).

In terms of educational status, 60 participants (28.6%) were illiterate, 74 (35.2%) had primary education, 51 (24.3%) had completed secondary schooling, and only 25 (11.9%) were graduates or had higher education. Occupationally, 66 (31.4%) participants were labourers, 48 (22.9%) were students, 36 (17.1%) were housewives, and 60 (28.6%) were engaged in farming, service, or other professions (Table 1).

Assessment of participants' knowledge revealed that a majority, 165 (78.6%), had heard about rabies, while 137 (65.2%) knew that rabies is a fatal disease if left untreated. About 151 participants (71.9%) were aware that rabies is commonly transmitted through dog bites, and 131 (62.4%) knew that timely vaccination can prevent the disease. However, only 101 participants (48.1%) were aware of the importance of washing the wound with soap and water immediately after an animal bite, while the remaining 109 (51.9%) lacked this critical knowledge (Table 2).

Table 1: Socio-demographic profile of participants.

Variables	Number (%)
Gender	
Male	136 (64.8)
Female	74 (35.2)
Age group in years	
≤20	42 (20.0)
21-40	85 (40.5)
41-60	58 (27.6)
>60	25 (11.9)
Residence	
Urban	78 (37.1)
Rural	132 (62.9)
Education	
Illiterate	60 (28.6)
Primary	74 (35.2)
Secondary	51 (24.3)
Graduate and above	25 (11.9)
Occupation	
Labourer	66 (31.4)
Student	48 (22.9)
Housewife	36 (17.1)
Farmer/service/other	60 (28.6)

In terms of attitude, 180 participants (85.7%) expressed willingness to visit a hospital following an animal bite, showing a strong inclination towards formal medical care. A minority, 39 (18.6%), still believed in traditional remedies such as applying turmeric or chilies to the wound. Encouragingly, 149 participants (71.0%) were willing to complete the full course of anti-rabies vaccination (ARV), and 135 (64.3%) supported routine vaccination of pet animals. On the other hand, 50 participants (23.8%) considered animal bites to be minor and not serious, indicating the persistence of misconceptions (Table 2).

Regarding actual practices, 115 participants (54.8%) reported that they washed the wound with soap and water after the bite, while 95 (45.2%) did not follow this basic first-aid step. Only 81 participants (38.6%) visited a healthcare facility promptly (within 24 hours), with the majority delaying medical consultation. The ARV course was initiated by 143 participants (68.1%), but only 110 (52.4%) had completed the full vaccination schedule. Among 56 pet owners, just 17 (30.3%) had vaccinated their pets against rabies in the past year, reflecting a significant gap in preventive practices at the household level (Table 2).

Table 2: Responses to KAP questions on rabies.

Question	Yes (%)	No (%)
Knowledge		
Heard about rabies	165 (78.6)	45 (21.4)
Know rabies is fatal	137 (65.2)	73 (34.8)
Know dog bite transmits rabies	151 (71.9)	59 (28.1)
Know vaccine prevents rabies	131 (62.4)	79 (37.6)
Know importance of washing wound	101 (48.1)	109 (51.9)
Attitude		
Will visit hospital after bite	180 (85.7)	30 (14.3)
Believe in traditional remedies	39 (18.6)	171 (81.4)
Willing to take full ARV course	149 (71.0)	61 (29.0)
Support pet vaccination	135 (64.3)	75 (35.7)
Think bites are not serious	50 (23.8)	160 (76.2)
Practice		
Washed wound after bite	115 (54.8)	95 (45.2)
Visited health facility promptly	81 (38.6)	129 (61.4)
Started ARV course	143 (68.1)	67 (31.9)
Completed full ARV course	110 (52.4)	100 (47.6)
Vaccinated their pet	17 (30.3)	39 (69.7)

DISCUSSION

This study aimed to assess the knowledge, attitude, and practices (KAP) related to rabies among animal bite patients attending a tertiary care hospital in central India. The socio-demographic profile revealed that the majority of participants were males (64.8%) and resided in rural areas (62.9%), which aligns with existing literature that

associates higher dog bite incidence in rural populations with the prevalence of free-roaming dogs and limited access to preventive healthcare services.^{13,14}

In terms of knowledge, 78.6% of respondents had heard about rabies, 65.2% knew it is a fatal disease, and 71.9% were aware that dog bites can transmit rabies. These findings are comparable to those reported by Sudarshan et

al. (2007), where 80% of respondents had heard of rabies and over 70% recognized dogs as a source of transmission.¹³ Similarly, Sharma et al observed slightly lower awareness levels in Delhi slums, with only 68% knowing that rabies was fatal and 63% identifying dogs as vectors.¹⁴ However, only 48.1% of respondents in the present study were aware of the importance of washing the wound after a bite, a critical first-aid measure. This is in line with findings by Chowdhury et al, who reported poor awareness (44%) even among medical interns in Kolkata, indicating that even educated individuals often lack knowledge of basic wound management.¹⁹

Regarding attitudes, 85.7% of participants stated they would visit a hospital following an animal bite, and 71% expressed willingness to complete the full anti-rabies vaccination (ARV) course. These results are slightly better than those reported by Sudarshan et al, where only 63% of patients completed the full ARV schedule.¹⁵ Interestingly, 18.6% of respondents still believed in traditional remedies, a figure lower than the 27% reported by Khan et al in Pakistan, though still concerning, as such beliefs can delay proper medical care and increase the risk of rabies-related mortality.²⁰

In terms of practices, 54.8% of respondents washed the wound after the bite, and 68.1% initiated the ARV course, but only 52.4% completed it- figures that closely resemble those from Sudarshan et al, who reported a completion rate of 53%.¹⁵ Particularly worrisome is that only 30.3% of pet owners in this study had vaccinated their pets against rabies, a proportion significantly below the levels recommended by the World Health Organization.⁶ This finding is also supported by Sharma et al, who noted poor pet vaccination rates in urban slums.¹⁴ These results underscore the persistent gaps in rabies-related knowledge and behavior that must be addressed through robust public health education, awareness campaigns, and community-based interventions.

This study had certain limitations that must be acknowledged. Firstly, as it was conducted in a single tertiary care hospital in central India, the findings may not be generalizable to the entire population, particularly those who do not seek formal healthcare after animal bites, such as individuals in remote rural areas or those relying on traditional healers. Secondly, the responses related to knowledge, attitude, and practices (KAP) were self-reported, which introduces the possibility of recall bias and social desirability bias. Participants may have overreported positive behaviours such as wound washing or ARV completion. Thirdly, the cross-sectional nature of the study captures only a snapshot in time and does not allow for causality or changes in KAP over time.

CONCLUSION

The study highlights moderate awareness and generally positive attitudes towards rabies prevention among

animal bite patients, but significant gaps remain in first-aid practices, ARV completion, and pet vaccination. Strengthening community education, improving access to rabies prophylaxis, and promoting responsible pet ownership are essential steps toward achieving the goal of eliminating human rabies deaths.

Funding: No funding sources

Conflict of interest: None declared

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

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Cite this article as: Jain M, Jangale G, Gawande A, Narlawar U. Knowledge, attitude, and practice regarding rabies among animal bite patients attending a tertiary care hospital in central India: a cross-sectional study. *Int J Community Med Public Health* 2025;12:4143-7.