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Research Article

Assessment of Knowledge Regarding Rabies and its Prevention Among Animal Owners in Bikaner, Rajasthan, India

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A B S T R A C T

Introduction: Rabies is an extremely fatal but preventable disease affecting both animals and humans. Majority of cases of rabies are due to bites of dogs followed by bites of other rabid animals like cat, cow, monkey, horses and pigs etc. Deaths in humans can be prevented with proper awareness, immunization and treatment in case of pre-exposure and post-exposure. It is necessary to have knowledge in animal owners regarding rabies prevention and management. So, the present study was to undertaken with the objective of assessment of knowledge regarding rabies and its prevention among animal owners in Bikaner, Rajasthan, India.

Methods: A cross-sectional study was carried out amongst 72 animal owners in Bikaner during the period of March-April, 2025. Study participants were administered a structured questionnaire, which had questions related to various domains of knowledge about rabies i.e. epidemiology, clinical features, mode of transmission and its prevention. Collected data was analyzed using descriptive statistics.

Results: Most of the study subjects (83.33%) knew hydrophobia (fear from water) as a symptom of rabies, but other symptoms of rabies such as paralysis and pain at wound site were known by 38.89% and 47.22% respectively. Majority (95.83%) of them knew dog as the most common reservoir of rabies, only 43.05% knew that rabies could be transmitted by animals other than dogs. A total of 65.28% animal owners knew about anti-rabies vaccine being preventive for rabies.

Conclusion: The study concluded that majority of animal owners showed their knowledge about rabies as a disease and anti-rabies vaccine being preventive for rabies. By organizing various awareness camps and mass vaccination programmes can be helpful to fill the knowledge gap.

Keywords: Rabies, Animal owners, Knowledge, Prevention

Introduction

Rabies is a deadly yet entirely preventable disease that affects both humans and animals. Most human rabies cases are caused by bites from infected dogs, followed by bites from other animals such as cats, cows, monkeys, horses, and pigs. Despite its near 100% fatality rate once symptoms appear, rabies-related deaths can be avoided through timely awareness, vaccination, and appropriate medical care—both before and after exposure.[1,2]

An animal owner is the person who has legal right, possession or custody of an animal and responsible for its basic needs e.g. food, shelter and veterinary care etc. Raising awareness among animal owners is vital for controlling and preventing rabies. Infectious diseases, including rabies, continue to pose significant challenges to livestock production, often leading to economic losses due to reduced productivity and animal deaths. In India, the Department of Animal Husbandry, Dairying, and Fisheries (DADF), under the Ministry of Agriculture and Farmers Welfare (MoAFW), leads the national rabies control initiative in animals. Their efforts include mass vaccination of dogs, animal birth control measures, and public education campaigns through media platforms such as television and radio. Additionally, World Rabies Day is observed each year to further spread awareness.[3,4]

A major reason for the continued high number of rabies cases is the lack of adequate public knowledge regarding the disease and how it can be prevented. Community-level awareness is critical in reducing the spread of rabies. Knowledge, Attitude, and Practice (KAP) studies have been widely used globally to assess public understanding and behaviour related to health issues like rabies. These studies are instrumental in identifying misinformation, cultural beliefs, and behavioural trends that may hinder disease control efforts. They also provide a foundation for designing targeted health campaigns and help in planning, implementing, and evaluating national programs.[5]

Community-based awareness surveys can also help determine how frequently animal bites occur and how people interact with dogs and wild animals. This can reveal gaps in knowledge and risk perception, enabling authorities to develop better communication strategies and educational tools.[6]

Knowledge, attitudes and practices (KAP) of rabies, dog-bites in humans and animal management are important because of their influence on post-exposure treatment-seeking behaviour and because community support is necessary for a rabies prevention and control programme implementation. Considering these factors, the present study was conducted with the objective of assessing the level of awareness and understanding of rabies and its prevention among animal owners in Bikaner, Rajasthan, India.

Methodology

Study design

This study was a descriptive cross sectional survey design, in which data was collected once from each participant during a defined period (March–April 2025).

The design was suitable for assessing the current level of knowledge, attitudes, and practices related to rabies among animal owners and for describing patterns and simple associations at one point in time.

Study area and study population

The study was conducted in Bikaner district, Rajasthan, among households that own animals such as dogs, cattle, and other domestic species.

The study population was consisting of adult animal owners residing in the selected localities of Bikaner who were available during the study period and provide informed consent.

Sample size calculation and sampling

Sample size calculation

The sample size for this descriptive cross-sectional survey can be presented using the standard single proportion formula: $n=Z^2P(1-P)/d^2$,

where n was the required sample size, Z was the z value for the chosen confidence level (1.96 for 95% confidence), P was the expected proportion of adequate rabies knowledge, and d was the acceptable margin of error.

Assuming no prior local data, P can be set at 0.5 (50%) to yield the maximum sample size, with d=0.12 (12% margin of error);

substituting values gives $n=(1.96)^2\times0.5\times0.5/(0.12)2\approx67$ and after adding about 7–8% to account for possible nonresponse, the final target sample size becomes approximately 72 animal owners.

Data collection tool and procedures

Data was collected at the household level using a structured, pre tested questionnaire developed from rabies and zoonoses guidelines and previous KAP surveys.

The questionnaire was capturing socio demographic information and items on knowledge of rabies causes and transmission, recognition of clinical signs, preventive measures (including vaccination and wound management), and health seeking practices after animal bites; it was pilot tested on a small group of animal owners in a non-study area to ensure clarity, relevance, and approximate duration.

Trained data collectors administered the questionnaire through face-to-face interviews at the participants' homes,

following a standardized script and recording responses on paper forms or electronic devices.

Daily checking of completed questionnaires was done to identify and correct missing or inconsistent entries, thereby improving data quality before entry.

Data management and analysis

All completed questionnaires were coded and entered into a spreadsheet or statistical software package for analysis.

Descriptive statistics such as frequencies and percentages were used to summarize knowledge, attitudes, and practices, and, where appropriate, simple inferential tests (for example, chi square) might be applied to explore associations between knowledge levels and selected socio demographic variables like age, education, or type of animals owned.

Results

Awareness of rabies symptoms

Out of 72 participants, 41 were males and 31 were females. Most participants (83.33%) were aware of hydrophobia (fear of water) as a key symptom of rabies. Other symptoms such as paralysis and pain at the wound site were recognized by fewer respondents, 38.89% and 47.22% respectively, indicating partial awareness of rabies clinical signs beyond the most distinctive symptom.

Understanding of rabies reservoirs and transmission

A majority (95.83%) correctly identified dogs as the primary reservoir of the rabies virus. However, less than half (43.05%) recognized that animals other than dogs could also carry and transmit rabies, suggesting limited understanding of the full range of rabies reservoirs.

Knowledge of rabies prevention

About 65.28% of the animal owners knew that rabies can be prevented by vaccination with the anti-rabies vaccine. This illustrates a moderate awareness level of preventive measures, with room to improve knowledge of vaccination benefits among animal owners.

Table 1.Table showing different data of KAP regarding Rabies in animal owners

Component	Indicator	n (%)
Awareness of rabies symptoms	Hydrophobia (fear from water)	60 (83.33%)
	Paralysis	28 (38.89%)
	Pain at wound site	34 (47.22%)
Understanding of rabies reservoirs & transmission	Dog as reservoir	69 (95.83%)
	Reservoirs other than dogs	31 (43.05%)
Knowledge of rabies prevention	Awareness of anti-rabies vaccine	47 (65.28%)

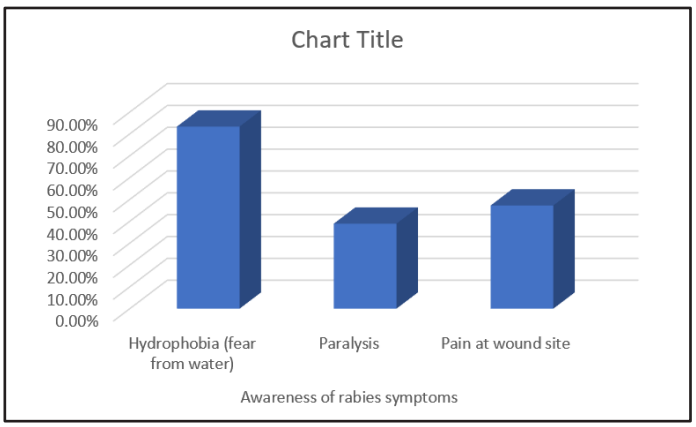

Figure 1.Graphical representation of awareness of rabies symptoms

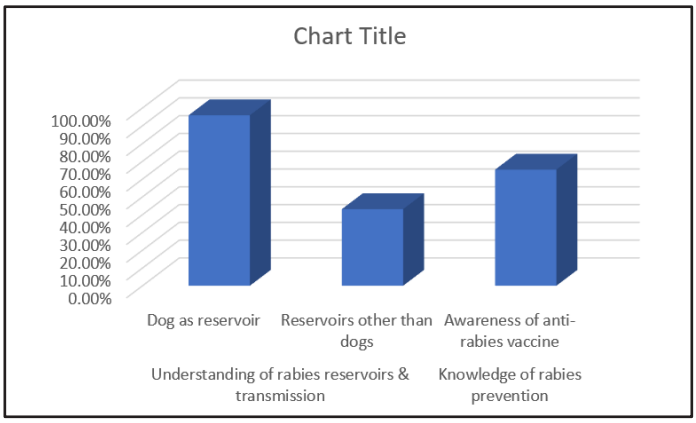

Figure 2.Graphical representation of understanding of rabies reservoirs & transmission and knowledge of rabies prevention

Discussion

The present study aimed to assess the knowledge of animal owners in Bikaner, Rajasthan, regarding rabies and its prevention. The findings indicate that while general awareness about certain aspects of rabies is relatively high, significant gaps still exist in understanding the full clinical picture and transmission routes.

Symptom recognition

High hydrophobia awareness (83.33%) exceeds rural baselines from Singh D *et al*. (71-88% across symptoms including hydrophobia) and lowers from Pal P *et al*. (36-48%), but aligns with Dutta A *et al*. KAP surveys emphasizing this hallmark sign. [7,8,9] Paralysis (38.89%) and wound pain (47.22%) recognition remains low, comparable to Mapatse M *et al*. (14-50%) and findings of Jain M *et al*. (30-50%), were knowledge skews toward hydrophobia alone, risking delayed care.[10,11]

Reservoir knowledge

Dog reservoir identification (95.83%) matches high levels with Dutta A *et al*. and Mapatse M *et al*. (85-98%) and Dubie T *et al*. (71-88%), reflecting NAPRE focus on dog-mediated cases causing 96% of 18,000+ annual deaths.[9,10,12,13]

Non-dog reservoir awareness (43.05%) is similar to urban school children study done by Dzikwi AA *et al*. (25.6%) and rural gaps in Tiwari HK *et al*. (30-50%), lower than urban adults in Iddi S *et al*. (60-70%), indicating need for multi-vector education in Bikaner.[14,15,16]

Prevention knowledge

ARV awareness (65.28%) surpasses some rural reports of Jain M *et al*. and Tiwari HK *et al*. (48-60%) but trails urban levels (72-85%), consistent with Shashikantha SK *et al*. and Pandey, V. *et al*. in animal-owning communities.[11,15,17,18] These patterns highlight targeted gaps addressable via NAPRE-integrated campaigns and Gibson AD *et al*., as demonstrated in Goa where mass dog vaccination reduced cases.[13,19]

Overall, the findings underscore the importance of enhancing community-level education about rabies. Although basic knowledge exists, there is a critical need to expand understanding beyond the most obvious symptoms and transmission pathways. Public health interventions should include detailed, culturally appropriate messaging about all potential symptoms, the variety of transmitting animals, and the importance of both pre- and post-exposure prophylaxis.

Conclusion: The study revealed that while the majority of animal owners in Bikaner possess basic knowledge about rabies, particularly its association with dog bites and the classic symptom of hydrophobia, there are significant gaps in awareness regarding other symptoms, potential animal reservoirs, and preventive measures. Knowledge about the role of animals other than dogs in rabies transmission, as well as understanding of symptoms like paralysis and wound site pain, was found to be inadequate in many respondents. Improving awareness about the broader clinical features of rabies, the importance of timely vaccination, and the role of various animals in transmission is essential. Targeted health education and community-level awareness programs are recommended to bridge these knowledge gaps and support effective rabies prevention and control efforts in the region.

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