Original Article

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Community Section

Knowledge, Attitude, and Practice Regarding Rabies Prevention and Post Exposure Prophylaxis among Adults in Anakaputhur, Chengalpattu District, Tamil Nadu: A Community-based Cross-sectional Study

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ABSTRACT

Introduction: Rabies is a fatal but preventable zoonotic disease in India, with dog bites being the primary mode of transmission. Despite vaccine availability, human deaths continue due to gaps in awareness and preventive practices related to rabies. Assessing community knowledge, attitudes, and practices is essential for improving rabies prevention.

Aim: To assess knowledge, attitude, and practices related to rabies prevention and post-exposure care among adults.

Materials and Methods: A community-based cross-sectional study was conducted from November 2024 to January 2025 in Anakaputhur, Chengalpattu District, Tamil Nadu, India. Using multistage random sampling, 300 adults aged ≥18 years were interviewed using a structured, pretested questionnaire assessing knowledge, attitudes, and practices related to rabies prevention. Data were analysed using descriptive statistics, Chi-square tests, and multivariable logistic regression. Knowledge, attitude, and practice scores were categorised using mean values, and Adjusted Odds Ratios (AORs) with 95% Confidence Intervals (CIs) were reported.

Results: Among the 300 participants, the majority were aged 18-30 years (115, 38.3%), and 162 (54.0%) were women. Based on mean-based categorisation, 179 (59.7%) participants demonstrated adequate knowledge, 161 (53.7%) had a favourable attitude, and 147 (49.0%) exhibited good practice. Knowledge levels were significantly associated with gender (p=0.023), education level (p=0.019), occupation (p<0.001), and pet ownership (p=0.002). Attitude and practice levels were not significantly associated with sociodemographic variables. Multivariable logistic regression analysis showed that employment in the public (AOR=16.38; 95% CI: 4.73-56.71) and private (AOR=3.37; 95% CI: 1.07-10.63) sectors was associated with adequate knowledge, while non-pet ownership was associated with lower odds of adequate knowledge (AOR=0.34; 95% CI: 0.17-0.68).

Conclusion: Awareness and attitudes towards rabies were adequate; preventive practices remained suboptimal among half of the participants. Occupation and pet ownership were significant determinants of adequate knowledge. Strengthening practice-focused health education on rabies prevention and appropriate preventive practices through primary healthcare services is essential.

Keywords: Animal bites, Community health surveys, Health behaviour, Risk assessment, Vaccination, Zoonoses

INTRODUCTION

Rabies continues to cause a high number of deaths worldwide with Asia and Africa having the highest number of deaths. The disease is highly reported in low and middle-income countries worldwide, which comprise more than 150 countries. In humans, rabies infection is mostly caused by dog bites, which makes domestic and stray dogs the primary source of transmission. Even though effective vaccines are available for both humans and animals, rabies remains a public health problem due to poor knowledge, late treatment-seeking behaviour, and uneven access to preventive services in endemic regions [1,2].

One of the main reasons for rabies-related deaths is the failure to obtain immediate medical care after animal bites. Many affected individuals either do not attend treatment or do not complete the full course of post-exposure prophylaxis [3]. These delays and interruptions in care lead to deaths that could have been prevented through timely interventions. Tens of thousands of people continue to die from rabies every year, even after the availability of effective preventive measures [2]. India bears a large part of the global rabies burden and contributes to more than one-third of rabies-related deaths worldwide. This problem is difficult to determine because of underreporting and limitations of disease surveillance systems. However, available reports indicate that between 18,000 and 20,000 human deaths occur annually [1]. Children <15 years of age are especially vulnerable, as bite incidents in this age group are often ignored or not reported early [2]. Vaccination of dogs remains the most practical and cost-effective method for reducing human rabies cases [3,4].

Even with national rabies control programs, rabies continues to occur in many parts of India [5]. States differ in reporting, vaccine supply, and access to post-exposure treatment. In rural and peri-urban areas, delayed wound care, incomplete vaccination, and the use of traditional remedies remains common, which increases the risk of death [6]. In South India, especially in Tamil Nadu, rabies continues to be a public health concern, as reported by government health facilities [7]. In cases of dog bites, the completion of post-exposure treatment is often inconsistent. Rapid urban growth, rising

stray dog populations, and close contact between people and animals continue to increase the risk of transmission [8].

Rabies is an acute zoonotic disease that is fatal when symptoms develop. Long-term control depends on sustained dog vaccination, effective population management, and improved public awareness to reduce human exposure [9]. Several studies have assessed knowledge, attitudes, and practices related to rabies prevention and reported poor awareness, inadequate first aid practices, and incomplete post-exposure prophylaxis [10,11]. However, there is limited community-level information on how people manage wounds and seek care after exposure. Therefore, the current study aimed to assess the knowledge, attitudes, and practices related to rabies prevention among adults in Anakaputhur, Chengalpattu District, Tamil Nadu, India.

MATERIALS AND METHODS

The present cross-sectional study was conducted among adults aged ≥18 years in the Anakaputhur area of the Chengalpattu district of Tamil Nadu, India from November 2024 to January 2025. The Institutional Ethics Committee (Ref No: 002/SBMCH/IHEC/2024/2333) of Sree Balaji Medical College and Hospital approved the study, and written informed consent was obtained from all participants.

Inclusion criteria: Adults aged ≥18 years who had lived in the study area for at least one year and provided informed consent were eligible for inclusion in the study.

Exclusion criteria: Individuals with mental or cognitive conditions that could affect their ability to respond accurately to the questionnaire, as well as non-residents and those visiting the area temporarily during the data collection period were excluded.

Sample size calculation: The sample size was calculated using an assumed prevalence of knowledge on rabies of 76%, derived from the study by Verma A et al., on rabies conducted in comparable community settings [11]. The calculation was based on a 95% confidence level and a 5% absolute precision, using the formula:

$$N=(Z^2\times p\times q)/L^2,$$

Where, N is the required sample size, Z=1.96 for 95% CI, p=0.76, q=0.24 (1-p), and L=0.05.

Substituting these values:

$N=(1.96^2\times0.76\times0.24)/(0.05^2)$

$=(3.8416\times0.1824)/0.0025$

$=0.701/0.0025$

$=280.4$

The sample size was increased to 300 to account for potential non-response and to ensure adequate representation across selected wards.

A multistage random sampling technique was used. In the first stage, 10 wards were randomly selected from the 18 wards in Anakaputhur. In the second stage, 30 eligible adults were selected from each ward using simple random sampling. Eligible households within each selected ward were listed, and one adult participant was selected from each household. If more than one eligible individual was present, one participant was chosen using a lottery method.

Study Procedure

Participants who met the eligibility criteria were approached, and the study objectives were explained to them. Written informed consent was obtained prior to the interview. Data were collected using a structured, pretested questionnaire developed after reviewing previous rabies Knowledge, Attitudes, and Practices (KAP) studies [11,12].

The questionnaire consisted of 37 items divided into four sections. The first section included sociodemographic variables such as age, gender, education, occupation, marital status, and pet ownership. The second section comprised 10 knowledge-related items assessing awareness of rabies transmission, symptoms, prevention, and treatment. The third section included 10 attitude-related items evaluating perceptions regarding severity, prevention, and healthcare-seeking behaviour. The fourth section contained 10 practice-related items assessing wound care, healthcare-seeking following animal bites, vaccination practices, and intended responses to exposure scenarios. The questionnaire was pretested to assess clarity and feasibility, and necessary modifications were made. Content validity was established through expert review by public health specialists, ensuring relevance and appropriateness of the items.

The interviews were conducted face-to-face in the local language. Trained health workers administered the questionnaires to ensure consistency and clarity. Responses were recorded during the interview to reduce recall and recording error. After collection, the data were reviewed for completeness before being analysed. Practice-related questions were designed to include both actual experiences (such as history of animal bite) and hypothetical responses (such as intended actions following a bite), ensuring applicability to all participants regardless of prior exposure or pet ownership.

Knowledge, attitude and practice based questions were scored using a Likert scale (1-5). Domain scores were summed, converted to percentages (0-100), and categorised into binary outcomes using the mean score as the cut-off, with higher scores indicating better knowledge, more favourable attitudes, and safer practices.

The questionnaire used in the study is included as a supplementary appendix [Appendix-1].

STATISTICAL ANALYSIS

Data were analysed using IBM Statistical Package for Social Sciences (SPSS) statistics version 25. Categorical variables were summarised as frequencies and percentages. The associations between categorical variables were assessed using the Chi-square test. Fisher's-exact test was applied where expected cell counts were less than 5. Variables with $p<0.20$ in the bivariate analysis were included in the multivariable logistic regression models to identify independent predictors of knowledge. Due to the small number of participants in the "Others" gender category, this group was not included in the regression analysis to avoid unstable estimates. The AORs with 95% CIs were reported. Statistical significance was set at $p<0.05$.

RESULTS

A total of 300 participants were in the final analysis. The majority of participants were aged 18-30 years (115, 38.3%), followed by those aged 31-40 years (87, 29.0%). Females constituted 162 (54.0%), while males accounted for 131 (43.7%). Most participants had attained an undergraduate level of education (116, 38.7%), followed by postgraduate education (81, 27.0%). Employment in the private sector was the most common occupation (103, 34.3%), followed by public sector employment (87, 29.0%). Half of the participants were married (164, 54.7%), and the majority did not own a pet (230, 76.7%) [Table/Fig-1].

Variables	Category	n	%
Age (years)	18-30	115	38.3%
	31-40	87	29.0%
	41-50	48	16.0%
	51-60	35	11.7%
	≥61	15	5.0%
Gender	Female	162	54.0%
	Male	131	43.7%
	Others	7	2.3%

Education level	No schooling	12	4.0%
	Primary	57	19.0%
	Secondary	34	11.3%
	Undergraduate	116	38.7%
	Postgraduate	81	27.0%
Occupation	Unemployed	19	6.3%
	Self-employed	45	15.0%
	Public sector	87	29.0%
	Private sector	103	34.3%
	Student	34	11.3%
	Retired	12	4.0%
Marital status	Single	125	41.7%
	Married	164	54.7%
	Widowed	0	0.0%
	Divorced	7	2.3%
	Separated	4	1.3%
Pets	Yes	70	23.3%
	No	230	76.7%

[Table/Fig-1]: Sociodemographic characteristics (n=300).

The scores were categorised according to mean value based on a prior KAP study carried out in an urban population [11].

The mean knowledge score was 81.73±8.63, and participants who scored at or above the mean were categorised as having adequate knowledge. Based on this criterion, 179 (59.7%) participants had adequate knowledge and 121 (40.3%) had inadequate knowledge.

The mean attitude score was 80.87±8.81, with 161 (53.7%) participants demonstrating a favourable attitude and 139 (46.3%) an unfavourable attitude. The mean practice score was 81.96±9.53. Of the participants, 147 (49.0%) were classified as having good practice, while 153 (51.0%) had poor practices [Table/Fig-2].

Domain	Mean±SD (%)	Category	n (%)
Knowledge	81.73±8.63	Adequate	179 (59.7%)
		Inadequate	121 (40.3%)
Attitude	80.87±8.81	Favourable	161 (53.7%)
		Unfavourable	139 (46.3%)
Practice	81.96±9.53	Good	147 (49%)
		Poor	153 (51%)

[Table/Fig-2]: Knowledge, attitude, and practice categorisation.
Note: Values are expressed as mean±SD and n (%). mean score was used as the cut-off to categorise levels

Knowledge, attitude, and practice scores were calculated by assigning one mark for each correct or appropriate response and zero for incorrect or 'do not know' responses, with a maximum score of 10 for each domain. For ease of interpretation and comparability, raw scores were converted to a percentage scale (0-100) by multiplying by 10. Mean scores were calculated on this transformed scale, and categorisation into adequate/favourable/good was performed using mean score cut-offs. The corresponding mean raw scores were 8.17±0.86 for knowledge, 8.09±0.88 for attitude, and 8.20±0.95 for practice. Knowledge levels did not vary significantly according to age (p=0.44) or marital status (p=0.759). A significant association was observed between knowledge and gender (p=0.023), with females having a higher proportion of adequate knowledge (102, 63.0%) compared to males (70, 53.4%).

Educational status was also significantly associated with knowledge (p=0.019), with higher proportions of adequate knowledge observed among participants with formal education for example, primary education (43, 75.4%) compared to undergraduate (62, 53.4%) and postgraduate (42, 51.9%) participants. Occupation was associated with knowledge (p<0.001), with public sector employees having the highest proportion of adequate knowledge (72, 82.8%) compared to unemployed participants (6, 31.6%).

Pet ownership was significantly associated with knowledge levels, with participants who owned pets showing higher adequate knowledge (53, 75.7%) than non-pet owners (126, 54.8%) (p=0.002) [Table/Fig-3].

Variables	Category	Inadequate knowledge n=121 (%)	Adequate knowledge n=179 (%)	p-value
Age (years)	18-30	45 (39.1%)	70 (60.9%)	0.44
	31-40	39 (44.8%)	48 (55.2%)	
	41-50	21 (43.8%)	27 (56.3%)	
	51-60	13 (37.1%)	22 (62.9%)	
	≥61	3 (20.0%)	12 (80.0%)	
Gender	Female	60 (37.0%)	102 (63.0%)	0.023
	Male	61 (46.6%)	70 (53.4%)	
	Others	0 (0.0%)	7 (100.0%)	
Education level	No schooling	4 (33.3%)	8 (66.7%)	0.019
	Primary	14 (24.6%)	43 (75.4%)	
	Secondary	10 (29.4%)	24 (70.6%)	
	Undergraduate	54 (46.6%)	62 (53.4%)	
	Postgraduate	39 (48.1%)	42 (51.9%)	
Occupation	Unemployed	13 (68.4%)	6 (31.6%)	<0.001
	Self-employed	21 (46.7%)	24 (53.3%)	
	Public sector	15 (17.2%)	72 (82.8%)	
	Private sector	49 (47.6%)	54 (52.4%)	
	Student	17 (50.0%)	17 (50.0%)	
	Retired	6 (50.0%)	6 (50.0%)	
Marital status	Single	47 (37.6%)	78 (62.4%)	0.759
	Married	70 (42.7%)	94 (57.3%)	
	Widowed	0 (0.0%)	0 (0.0%)	
	Divorced	3 (42.9%)	4 (57.1%)	
	Separated	1 (25.0%)	3 (75.0%)	
Pets	Yes	17 (24.3%)	53 (75.7%)	0.002
	No	104 (45.2%)	126 (54.8%)	

[Table/Fig-3]: Association between socio-demographic variables and knowledge.
Note: Values are expressed as n (%). Percentages are row percentages. Chi-square test/Fisher's-exact test applied wherever appropriate

Attitude towards rabies did not differ significantly across age groups (p=0.382), gender (p=0.515), education level (p=0.205), occupation (p=0.075), marital status (p=0.129), or pet ownership (p=0.225). For example, favourable attitude was observed among females (89, 54.9%) and males (67, 51.1%) [Table/Fig-4].

Variables	Category	Unfavourable attitude n=139 (%)	Favourable attitude n=161 (%)	p-value
Age (years)	18-30	47 (40.9%)	68 (59.1%)	0.382
	31-40	41 (47.1%)	46 (52.9%)	
	41-50	22 (45.8%)	26 (54.2%)	
	51-60	20 (57.1%)	15 (42.9%)	
	≥61	9 (60.0%)	6 (40.0%)	
Gender	Female	73 (45.1%)	89 (54.9%)	0.515
	Male	64 (48.9%)	67 (51.1%)	
	Others	2 (28.6%)	5 (71.4%)	
Education level	No schooling	4 (33.3%)	8 (66.7%)	0.205
	Primary	27 (47.4%)	30 (52.6%)	
	Secondary	10 (29.4%)	24 (70.6%)	
	Undergraduate	56 (48.3%)	60 (51.7%)	
	Postgraduate	42 (51.9%)	39 (48.1%)	

Occupation	Unemployed	9 (47.4%)	10 (52.6%)	0.075
	Self-employed	20 (44.4%)	25 (55.6%)	
	Public sector	37 (42.5%)	50 (57.5%)	
	Private sector	54 (52.4%)	49 (47.6%)	
	Student	10 (29.4%)	24 (70.6%)	
	Retired	9 (75.0%)	3 (25.0%)	
Marital status	Single	53 (42.4%)	72 (57.6%)	0.129
	Married	79 (48.2%)	85 (51.8%)	
	Widowed	0 (0.0%)	0 (0.0%)	
	Divorced	3 (42.9%)	4 (57.1%)	
	Separated	4 (100.0%)	0 (0.0%)	
Pets	Yes	28 (40.0%)	42 (60.0%)	0.225
	No	111 (48.3%)	119 (51.7%)	

[Table/Fig-4]: Association between socio-demographic variables and attitude.
Note: Values are expressed as n (%). Percentages are row percentages. Chi-square test/Fisher's-exact test applied wherever appropriate

Practice levels were comparable across age groups (p=0.59), gender (p=0.152), education level (p=0.456), occupation (p=0.202), and marital status (p=0.663). Participants who owned pets demonstrated higher levels of good practice (41, 58%) compared to non-pet owners (106, 46.1%), but the difference was not significant (p=0.067) [Table/Fig-5].

Variable	Category	Poor practice n=153 (%)	Good practice n=147 (%)	p-value
Age (years)	18-30	65 (56.5%)	50 (43.5%)	0.59
	31-40	43 (49.4%)	44 (50.6%)	
	41-50	22 (45.8%)	26 (54.2%)	
	51-60	17 (48.6%)	18 (51.4%)	
	≥61	6 (40.0%)	9 (60.0%)	
Gender	Female	77 (47.5%)	85 (52.5%)	0.152
	Male	74 (56.5%)	57 (43.5%)	
	Others	2 (28.6%)	5 (71.4%)	
Education level	No schooling	6 (50.0%)	6 (50.0%)	0.456
	Primary	25 (43.9%)	32 (56.1%)	
	Secondary	14 (41.2%)	20 (58.8%)	
	UG	64 (55.2%)	52 (44.8%)	
	PG	44 (54.3%)	37 (45.7%)	
Occupation	Unemployed	14 (73.7%)	5 (26.3%)	0.202
	Self-employed	21 (46.7%)	24 (53.3%)	
	Public sector	41 (47.1%)	46 (52.9%)	
	Private sector	57 (55.3%)	46 (44.7%)	
	Student	16 (47.1%)	18 (52.9%)	
	Retired	4 (33.3%)	8 (66.7%)	
Marital status	Single	66 (52.8%)	59 (47.2%)	0.663
	Married	83 (50.6%)	81 (49.4%)	
	Widowed	0 (0.0%)	0 (0.0%)	
	Divorced	2 (28.6%)	5 (71.4%)	
	Separated	2 (50.0%)	2 (50.0%)	
Pets	Yes	29 (41.4%)	41 (58.6%)	0.067
	No	124 (53.9%)	106 (46.1%)	

[Table/Fig-5]: Association between socio-demographic variables and practice.
Note: Values are expressed as n (%). Percentages are row percentages. Chi-square test/Fisher's-exact test applied wherever appropriate

On multivariable logistic regression analysis, occupation and pet ownership were independent predictors of knowledge. Compared with unemployed participants, those employed in the public sector had significantly higher odds of having adequate knowledge (AOR=16.38; 95% CI: 4.73-56.71; p<0.001), and those employed in the private sector also had increased odds (AOR=3.37; 95% CI: 1.07-10.63; p=0.038). Participants who did not own pets had significantly lower odds of having adequate knowledge than pet owners (AOR=0.34; 95% CI: 0.17-0.68; p=0.002). No sociodemographic variables were associated with attitude or practice in the adjusted analysis [Table/Fig-6].

DISCUSSION

Adults demonstrated adequate knowledge and favourable attitudes towards rabies however, preventive practices remained suboptimal. Occupation and pet ownership were important determinants of knowledge. The present study demonstrated adequate knowledge (59.7%) and favourable attitudes (53.7%), while preventive practices were suboptimal (49.0%), consistent with patterns reported in previous studies.

In the present study, knowledge regarding rabies was moderate to adequate but varied significantly across gender, education, occupation, and pet ownership. In contrast, a study by Rathod S et al., (n=135) reported lower awareness, with only 48.14% having heard of rabies and 18.51% correctly identifying the causative organism, although knowledge of transmission (65.18%), fatality (71%), and vaccination (64%) was relatively better, and 90% sought medical care after animal bites [12]. This finding indicates moderate awareness but poor preventive practices, which is consistent with the findings of the present study.

In comparison with the present study, Sivagurunathan C et al., found that 88% of respondents recognised animal bites as the cause of rabies, 63.5% knew rabies is fatal, 60.9% identified dogs as the main source of rabies, 36.2% knew correct wound washing, and only 3.1% were aware of rabies immunoglobulin [10]. In the present district-level study, Bharani K et al., reported from Paranur village, Chengalpattu district (n=361), that 60.7% identified dogs as transmitters, 68.1% knew rabies was preventable, 63.7% were aware of post-bite vaccination, but only 33.5% knew correct wound washing with soap and water [13]. General awareness exists; however, gaps remain in specific areas such as wound care and post-exposure management. These findings are comparable to the present study, where knowledge was adequate but varied across sociodemographic factors.

Attitudes towards rabies prevention were generally favourable in the present study and did not show significant association with sociodemographic variables. In contrast, Verma A et al., conducted a study among 200 participants and reported lower overall satisfactory attitude levels (41%), with only 46.5% believing that rabies can be cured if treated promptly and 68.5% recognising the need to complete anti-rabies vaccination, while misconceptions persisted as 40% believed in indigenous preventive methods and 66.5% supported killing the biting animal [11]. Vattakuzhy AA et al., found that attitudes towards rabies prevention were favourable at a tertiary care centre in Kerala. 82.1% reported that they would take post-exposure prophylaxis

Variable	Category	Knowledge AOR (95% CI)	p-value	Attitude AOR (95% CI)	p-value	Practice AOR (95% CI)	p-value
Age (years)	18-30	Reference	—	Reference	—	Reference	—
	31-40	0.48 (0.23-1.00)	0.051	0.84 (0.44-1.61)	0.602	1.32 (0.69-2.51)	0.408
	41-50	0.53 (0.22-1.29)	0.162	0.99 (0.45-2.19)	0.978	1.77 (0.79-3.93)	0.165
	51-60	0.75 (0.27-2.12)	0.593	0.69 (0.28-1.74)	0.435	1.38 (0.55-3.42)	0.492
	≥61	2.71 (0.46-15.90)	0.27	0.92 (0.23-3.69)	0.902	1.55 (0.41-5.96)	0.521

Gender	Female	Reference	—	Reference	—	Reference	—
	Male	0.67 (0.39-1.14)	0.137	0.83 (0.51-1.36)	0.469	0.71 (0.43-1.15)	0.159
Education level	No schooling	Reference	—	Reference	—	Reference	—
	Primary	0.85 (0.18-4.05)	0.838	0.37 (0.09-1.57)	0.177	1.42 (0.38-5.31)	0.605
	Secondary	0.87 (0.16-4.56)	0.865	0.67 (0.14-3.20)	0.612	1.75 (0.42-7.36)	0.445
	UG	0.40 (0.09-1.81)	0.232	0.33 (0.08-1.36)	0.125	1.09 (0.30-3.97)	0.899
	PG	0.36 (0.08-1.66)	0.188	0.26 (0.06-1.10)	0.067	1.02 (0.27-3.82)	0.976
Occupation	Unemployed	Reference	—	Reference	—	Reference	—
	Self-employed	3.11 (0.88-10.92)	0.077	1.20 (0.38-3.73)	0.757	2.74 (0.80-9.38)	0.109
	Public sector	16.38 (4.73-56.71)	<0.001	1.41 (0.49-4.04)	0.52	2.73 (0.87-8.63)	0.087
	Private sector	3.37 (1.07-10.63)	0.038	0.86 (0.31-2.40)	0.768	1.93 (0.62-6.02)	0.258
	Student	2.19 (0.61-7.86)	0.23	2.18 (0.66-7.22)	0.204	3.21 (0.91-11.33)	0.07
	Retired	0.96 (0.15-6.29)	0.969	0.28 (0.05-1.70)	0.165	4.29 (0.75-24.62)	0.103
Marital status	Single	Reference	—	Reference	—	Reference	—
	Married	0.91 (0.49-1.68)	0.754	0.96 (0.55-1.66)	0.878	0.88 (0.51-1.52)	0.644
	Divorced	1.87 (0.35-10.14)	0.468	1.56 (0.31-7.70)	0.588	3.13 (0.55-17.75)	0.199
	Separated	1.20 (0.07-19.52)	0.9	—	—	0.74 (0.08-6.75)	0.793
Pets	Yes	Reference	—	Reference	—	Reference	—
	No	0.34 (0.17-0.68)	0.002	0.75 (0.42-1.33)	0.328	0.59 (0.34-1.05)	0.071

[Table/Fig-6]: Multivariable logistic regression analysis of factors associated with knowledge, attitude, and practice.
"—" indicates estimates could not be computed due to small sample size or lack of variability in the category

if bitten, and 93% supported a national law for responsible pet ownership and stray dog control. About half favoured sterilisation and sheltering while a smaller proportion supported culling [14]. This aligns with the present study, where favourable attitudes were observed but did not translate into appropriate practices. Similarly, Amit K et al., among 330 participants reported that 76.05% recognised the importance of washing wounds with soap and water after a dog bite, 55.81% supported reporting dog bites to local authorities, and 53.25% acknowledged the need for vaccination following exposure [15]. This is consistent with the present study, where favourable attitudes were observed without significant sociodemographic variation.

Preventive practices related to rabies were suboptimal and evenly distributed between good and poor categories. Verma A et al., in a cross-sectional study from four villages in Uttar Pradesh (n=200), found that rabies practices were moderate; 80.8% visited a doctor, 61.5% received anti-rabies vaccine, 34.6% practiced first aid, and only 20.5% had satisfactory overall practices [11]. This study shows that rabies-related practices are generally minimal, influenced by occupation, and poor first aid and incomplete vaccination. This aligns with the present study, where preventive practices remained suboptimal despite adequate knowledge and favourable attitudes. In the present study, rabies-related practices were suboptimal and did not show significant variation across sociodemographic characteristics. Similarly, Wolelaw GA et al., in a community-based cross-sectional study in the Bure Zuria district of North-west Ethiopia, reported poor rabies prevention practices in half of the households, with low wound washing and dog vaccination coverage [16]. Similarly, Amit K et al., (n=330) reported that 54.29% knew where to access vaccination, 51.92% practiced wound washing, 71.90% maintained a safe distance from unfamiliar dogs, and 49.52% were aware of observing a suspected rabid animal, indicating variable but overall suboptimal practice levels across both studies [15]. Favourable attitudes and adequate knowledge were observed, but preventive practices remained suboptimal, suggesting a gap between awareness and appropriate action. Similarly, Bonaparte SC et al., in a rabies KAP survey across 24 sites in Uganda, reported very low wound washing and PEP uptake among bite victims [17]. This highlights a persistent gap between knowledge and actual practice, which has been consistently reported across both national and international studies. Comparison of KAP findings of present study with previous studies have been showed in [Table/Fig-7] [10-17].

The findings of the present study are consistent with both national and international studies, demonstrating adequate knowledge and favourable attitudes but persistently poor preventive practices. Findings from different geographic regions indicate that the gap between knowledge and practice is a consistent public health challenge, irrespective of setting.

The strengths of this study include community-based sampling across multiple wards. The analysis demonstrated suboptimal preventive practices despite reasonable knowledge and favourable attitudes toward prevention. The findings highlight the need for public health programs to move beyond awareness towards supporting correct preventive practices, particularly immediate wound washing and completion of post-exposure prophylaxis, through primary healthcare and community outreach. Future studies should explore the barriers to appropriate preventive practices and evaluate the effectiveness of targeted behavioural interventions in improving rabies-related practices.

S. No.	Study	Place of study	Sample size	Objective	Parameters assessed	Conclusion
1	Rathod S et al., [12] (2022)	Central India (tertiary health care centre, ARV clinics)	135	To assess knowledge, attitude, and practices on rabies prevention among patients attending ARV clinics	KAP on rabies (awareness, transmission, causative organism, fatality, vaccination, post-bite care)	Lower awareness overall (48.14% heard of rabies, 18.51% knew causative organism), but better on transmission (65.18%), fatality (71%), vaccination (64%); 90% sought medical care post-bite; moderate awareness but poor preventive practices.
2	Sivagurunathan C et al., [10] (2021)	Urban community, Kancheepuram district, Tamil Nadu, India	350	To assess knowledge, attitude, and practice related to animal bites, rabies, and its prevention in an urban community	KAP on animal bites, rabies transmission, fatality, wound washing, immunoglobulin, post-exposure care	High recognition of animal bites as cause (88%), fatality (63.5%), dogs as source (60.9%); low on correct wound washing (36.2%) and immunoglobulin (3.1%); general awareness exists but gaps in specific prevention areas.

3	Bharani K et al., [13] (2022)	Rural community, Paranur village, Chengalpattu district, Tamil Nadu, India	361	To assess knowledge of rabies among the rural community	Knowledge on rabies (transmission by dogs, preventability, post-bite vaccination, wound washing)	60.7% identified dogs as transmitters, 68.1% knew preventable, 63.7% aware of post-bite vaccination; only 33.5% knew correct wound washing; general awareness with gaps in wound care and post-exposure management.
4	Verma A et al., [11] (2025)	Rural Western Uttar Pradesh, India (four villages)	200	To assess knowledge, attitude, and practice on animal bite, rabies, and its prevention in rural community	KAP on rabies (curability, vaccination completion, indigenous methods, killing biting animal, post-bite actions, first aid, vaccine uptake)	Lower satisfactory attitudes (41%); misconceptions (40% believed in indigenous methods, 66.5% supported killing animal); moderate practices (80.8% visited doctor, 61.5% received vaccine, 34.6% first aid); overall minimal practices influenced by occupation; poor first aid and incomplete vaccination.
5	Vattakuzhy AA et al., [14] (2025)	Tertiary care centre, Kerala, India	201	To assess knowledge, attitudes, and practices regarding rabies among patients and bystanders	KAP on rabies prevention (post-exposure prophylaxis, pet ownership law, stray dog control, sterilisation, culling)	Favourable attitudes (82.1% would take PEP if bitten, 93% supported national law for pet ownership/stray control); half favoured sterilisation/sheltering, smaller proportion culling; favourable attitudes observed.
6	Amit K et al., [15] (2024)	Rural field practice area, IGIMS, Patna, Bihar, India	330	To assess knowledge, attitudes, and practices regarding dog bite and its management in rural community	KAP on dog bites (wound washing, reporting, vaccination, safe distance, observing rabid animal, access to vaccination)	Favourable attitudes (76.05% importance of wound washing, 55.81% reporting bites, 53.25% vaccination need); variable suboptimal practices (54.29% knew vaccination access, 51.92% wound washing, 71.90% safe distance, 49.52% observing animal).
7	Wolelaw GA et al., [16] (2022)	Bure Zuria district, North-west Ethiopia (community-based, household heads)	609	To determine rabies prevention practices and associated factors among household heads	Practices on rabies prevention (wound washing, dog vaccination coverage)	Poor prevention practices in half of households; low wound washing and dog vaccination coverage.
8	Bonaparte SC et al., [17] (2021)	24 sites across Uganda (community-based KAP survey)	798	To assess rabies post-exposure healthcare-seeking behaviours and perceptions	Behaviours/perceptions on post-exposure care (wound washing, PEP uptake among bite victims)	Very low wound washing and PEP uptake among bite victims; persistent gap between knowledge and actual practice.
9	Present study (2025)	Anakaputhur, Chengalpattu district, Tamil Nadu, India (community-based)	300	To assess knowledge, attitude, and practices regarding rabies prevention and post-exposure care among adults	Knowledge, attitude, and practices on rabies (transmission, prevention, wound care, post-exposure prophylaxis, healthcare-seeking behaviour)	Adequate knowledge (59.7%) and favourable attitudes (53.7%) were observed; however, preventive practices were suboptimal (49.0%). Occupation and pet ownership were significant determinants of knowledge. A gap exists between awareness and appropriate preventive practices.

[Table/Fig-7]: Comparison of KAP findings with previous studies [10-17].

Limitation(s)

As the current study was a cross-sectional study, causal relationships could not be inferred. Self-reported data may be subject to recall and social desirability biases. The findings are limited to a single urban setting and may not be generalisable. The questionnaire was not formally validated, and reliability was not assessed, which may affect consistency. Mean-based cut-offs used for categorising knowledge, attitude, and practice may be arbitrary. Regression estimates may be unstable due to small cell sizes. Multivariable logistic regression analysis was performed for knowledge, attitude, and practice outcomes. However, no significant independent predictors were identified for attitude and practice, which may be due to limited variability in responses and small subgroup sizes affecting statistical power. Future research should include larger, multi-centre studies using validated tools and explore barriers to rabies prevention practices.

CONCLUSION(S)

Adults showed moderate knowledge and generally positive attitudes towards rabies prevention. Preventive practices were suboptimal among half of the participants, despite their generally adequate knowledge and favourable attitudes. The findings highlight the need to strengthen practice-focused health education on rabies prevention and appropriate preventive practices through primary health care and community-based interventions. Primary healthcare workers play a key role in translating awareness into appropriate preventive practices.

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[APPENDIX 1]

Questionnaire

Demographic Information

1. Age*

Mark only one oval.

- ◯ 18-30
- ◯ 31-40
- ◯ 41-50
- ◯ 51-60
- ◯ 61 and above

2. Gender*

Mark only one oval.

- ◯ Male
- ◯ Female
- ◯ Other

3. Education level*

Mark only one oval.

- ◯ No schooling
- ◯ Primary
- ◯ Secondary
- ◯ Undergraduate
- ◯ Postgraduate

4. Occupation*

Mark only one oval.

- ◯ Unemployed
- ◯ Self-employed
- ◯ Public Sector
- ◯ Private Sector
- ◯ Student
- ◯ Retired

5. Marital status*

Mark only one oval.

- ◯ Single
- ◯ Married
- ◯ Widowed
- ◯ Divorced
- ◯ Separated

6. Do you own pets (e.g., dogs or cats)?*

Mark only one oval.

- ◯ Yes
- ◯ No

7. If yes, please mention your pets name _____.

Section 1: Knowledge about Rabies

Please choose the number that best represents your answer.

- Strongly disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly agree (5)

8. I am aware that rabies is a viral disease transmitted through animal bites.

Mark only one oval.

1 2 3 4 5
◯ ◯ ◯ ◯ ◯

9. I know that rabies can also be transmitted through scratches or open wounds.

Mark only one oval.

1 2 3 4 5
◯ ◯ ◯ ◯ ◯

10. I understand the common symptoms of rabies in humans (e.g., fever, confusion, hydrophobia).

Mark only one oval.

1 2 3 4 5
◯ ◯ ◯ ◯ ◯

11. I know that rabies can be fatal if not treated promptly after exposure.

Mark only one oval.

1 2 3 4 5
◯ ◯ ◯ ◯ ◯

12. I know that rabies transmission can occur even before an infected animal shows visible symptoms.

Mark only one oval.

1 2 3 4 5

13. I know that animals such as dogs and bats are common carriers of rabies.

Mark only one oval.

1 2 3 4 5

14. I know that rabies is a concern in my community due to local wildlife or stray animals.

Mark only one oval.

1 2 3 4 5

15. I am aware that post-exposure vaccination is effective in preventing rabies after an animal bite.

Mark only one oval.

1 2 3 4 5

16. I understand the importance of seeking medical help as soon as possible after an animal bite.

Mark only one oval.

1 2 3 4 5

17. I am aware of local health facilities or clinics where I can seek treatment for rabies exposure.

Mark only one oval.

1 2 3 4 5

Section 2: Attitudes towards Rabies

Please choose the number that best represents your answer.

- Strongly disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly agree (5)

18. I believe that rabies is a serious and significant health threat in my community.

Mark only one oval.

1 2 3 4 5

19. I believe that vaccinating pets against rabies is essential for preventing the disease.

Mark only one oval.

1 2 3 4 5

20. I feel that public health campaigns on rabies are necessary in my community.

Mark only one oval.

1 2 3 4 5

21. I believe that educating the public about rabies can help reduce its incidence.

Mark only one oval.

1 2 3 4 5

22. I believe that community vaccination programs for stray animals are important for rabies prevention.

Mark only one oval.

1 2 3 4 5

23. I think that controlling stray animal populations is important to prevent rabies.

Mark only one oval.

1 2 3 4 5

24. I believe that keeping pets on leashes in public places can reduce the risk of rabies transmission.

Mark only one oval.

1 2 3 4 5

25. I feel that individuals should take personal responsibility for preventing rabies in their households.

Mark only one oval.

1 2 3 4 5

26. I believe that awareness about rabies treatment options is crucial for the community.

Mark only one oval.

1 2 3 4 5

27. I feel that educating people about rabies prevention is as important as treating the disease.

Mark only one oval.

1 2 3 4 5

Section 3: Practice Related to Rabies

Please choose the number that best represents your answer.

- Strongly disagree (1)
- Disagree (2)
- Neutral (3)
- Agree (4)
- Strongly agree (5)

28. I ensure that my pets are vaccinated regularly against rabies.

Mark only one oval.

1 2 3 4 5

29. I keep records of my pets' rabies vaccinations to ensure they are up to date.

Mark only one oval.

1 2 3 4 5

30. I avoid contact with wild or stray animals to reduce the risk of rabies exposure.

Mark only one oval.

1 2 3 4 5

31. I have sought medical advice after being bitten or scratched by an animal.

Mark only one oval.

1 2 3 4 5

32. I would seek medical care immediately if bitten by an unknown or stray animal.

Mark only one oval.

1 2 3 4 5

33. I know and follow the correct steps to be taken immediately after an animal bite.

Mark only one oval.

1 2 3 4 5

34. I would report a stray or potentially rabid animal to local health or municipal authorities.

Mark only one oval.

1 2 3 4 5

35. I encourage my friends and family to vaccinate their pets against rabies.

Mark only one oval.

1 2 3 4 5

36. I actively seek information regarding rabies prevention and vaccination for pets.

Mark only one oval.

1 2 3 4 5

37. I would participate in community-based vaccination or rabies prevention programs if available.

Mark only one oval.

1 2 3 4 5