

A STUDY TO ASSESS THE KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING DOG BITE AND ITS MANAGEMENT AMONG ADULT POPULATION ATTENDING PRIMARY HEALTH CENTER, SHIVPUR, GORAKHPUR, U.P.

Community Medicine

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ABSTRACT

Background: Dog bites are a major public health concern and the leading cause of human rabies, a nearly 100% fatal but vaccine-preventable disease. India reports a substantial burden of dog bites and rabies, with Uttar Pradesh contributing a large share of cases. Gaps in community knowledge, attitude and practice (KAP) regarding dog bite prevention and appropriate post-exposure management contribute to delayed care, continued myths and preventable deaths. **Methods:** A non-experimental quantitative cross-sectional study was carried out among adults aged 18–60 years attending Primary Health Center (PHC) Shivpur, Gorakhpur, Uttar Pradesh. A total of 286 participants were selected using non-probability purposive sampling, based on a sample size calculated from a previous prevalence of good knowledge of 22.5% and adjusted for 10% non-response. Data were collected using a structured tool comprising: (i) demographic proforma; (ii) 20-item multiple-choice knowledge questionnaire; (iii) 14-item Likert attitude scale; and (iv) 16-item practice checklist. Scoring procedures categorized KAP into graded levels. Data were analysed using descriptive statistics, Spearman's rank correlation and chi-square test at 0.05 level of significance. **Results:** The mean knowledge score was 12.24 ± 3.02 ; 43.4% of participants had average knowledge, 41.6% good, 5.9% excellent and 9.1% poor knowledge. The mean attitude score was 53.74 ± 4.07 , with 76.6% having a positive attitude and 22.4% a very positive attitude. The mean practice score was 13.23 ± 1.54 ; 49.7% had good practice and 45.5% excellent practice, with only 4.9% showing average practice. Spearman's correlation showed weak, non-significant relationships between knowledge and attitude ($p=0.045$, $p=0.447$), knowledge and practice ($p=0.103$, $p=0.082$), and attitude and practice ($p=-0.075$, $p=0.209$). Knowledge was significantly associated with gender, religion, education and occupation, while practice was significantly associated with previous knowledge of rabies. **Conclusions:** Most adults attending PHC Shivpur demonstrated average to good knowledge, positive attitudes and good to excellent practices regarding dog bite management, yet important gaps remain, particularly in first-aid measures and timely post-exposure prophylaxis. Targeted health education and sustained community awareness at PHC level are needed to strengthen appropriate practices and support national rabies elimination efforts.

KEYWORDS

Dog bite; Rabies; Knowledge; Attitude; Practice; Adult population; Primary Health Center.

INTRODUCTION

Dog bites are painful, frightening and potentially dangerous injuries that can lead to serious complications, including infection and extensive tissue damage to skin, muscles, tendons, vessels and bones.¹ Dogs are responsible for the majority of animal bites worldwide and account for about 95% of human rabies cases in India.² Rabies is a fatal viral zoonotic disease-causing acute encephalitis, mainly transmitted through the bite, lick or scratch of an infected dog, and once clinical symptoms appear, death is almost inevitable.³

Globally, rabies causes an estimated 59,000 deaths annually, with a large proportion occurring in low- and middle-income countries, and children under 15 years being disproportionately affected.⁴ India contributes substantially to this burden and is considered endemic for rabies, with an estimated 18,000–20,000 deaths annually and 30–60% of reported cases in children under 15 years.⁵ Dog bites in India are frequent, particularly in rural and peri-urban areas, and many cases are under-reported.⁶

Effective rabies prevention relies on timely and appropriate management of dog bites, including immediate wound washing and administration of post-exposure prophylaxis (PEP) with potent cell-culture vaccines and rabies immunoglobulin where indicated.⁷ Despite availability of safe vaccines and national programmes such as the National Rabies Control Programme (NRCP) and the National Action Plan for Dog Mediated Rabies Elimination (NAPRE) by 2030, gaps in community awareness, misconceptions and harmful practices persist.⁸ Several Indian studies have documented inadequate knowledge and inappropriate first-aid practices after dog bites, including the application of chilli, lime, tobacco or visiting faith healers instead of seeking prompt medical care.⁹ KAP studies from different settings report that while some respondents have fair knowledge, a considerable proportion continue to follow myths and do not complete vaccination schedules.¹⁰ In Uttar Pradesh, dog bites and rabies remain important public health concerns. There is a need to understand the current status of knowledge, attitude and practice regarding dog bite management among adults attending primary health facilities so that focused awareness and behaviour change communication can be planned. Against this background, the present study was undertaken among adults attending PHC Shivpur, Gorakhpur, to assess KAP

regarding dog bites and their management and to identify factors associated with these domains.¹¹

METHODS

Study Design And Approach

A quantitative, non-experimental cross-sectional research approach was used to assess the knowledge, attitude and practice regarding dog bite and its management among the adult population. This design was considered appropriate for describing the current status of KAP without manipulating variables.

Setting

The study was conducted at Primary Health Center (PHC) Shivpur, Gorakhpur, Uttar Pradesh. This setting was chosen because adults regularly attend the PHC for various health services and represent a typical population with potential exposure to dog bites and related health risks.

Population, Sample Size And Sampling Technique

The target population consisted of adults aged 18–60 years attending PHC Shivpur. The sample size was calculated using the formula for prevalence studies, based on an expected proportion of good knowledge of 22.5% from previous research, a 95% confidence level ($Z=1.96$) and 5% margin of error. This yielded an initial sample size of 260, which was increased to 286 after adding 10% for non-response.

A non-probability purposive sampling technique was used. Every eligible adult attending PHC Shivpur during the data collection period and meeting inclusion criteria was approached until the sample size was achieved.

Inclusion Criteria:

- Adults 18–60 years of age
- Attending PHC Shivpur during the study period

Exclusion Criteria:

- Individuals who did not understand Hindi or English
- Individuals unwilling to participate

Tools And Measurements

Data were collected using a structured, self-developed tool comprising

four parts:

1. Tool I – Demographic proforma: Collected data on age, gender, religion, occupation, educational qualification, marital status, history of dog bite, source of information related to rabies and pet dog ownership.

2. Tool II – Knowledge questionnaire: A 20-item multiple-choice questionnaire on dog bite and its management. Each item had four options with one correct answer. One mark was given for each correct response, 0 for incorrect; thus, scores ranged from 0–20. Levels of knowledge were categorized using a pre-defined scoring procedure (very poor, poor, average, good, excellent).

3. Tool III – Attitude scale: A 14-item Likert scale measuring attitudes regarding dog bite and its management, with responses from “strongly disagree” to “strongly agree”. Scores were categorized as very negative, negative, neutral, positive and very positive.

4. Tool IV – Practice checklist: A 16-item yes/no checklist on practices related to dog bite prevention and management. Each appropriate practice received 1 mark; maximum score was 16, minimum 0. Practice levels were categorized as very poor, poor, average, good and excellent.

Validity and reliability

Content validity of the tools was established by a panel of experts from community health nursing, obstetric nursing and medical-surgical nursing. Tools were translated into Hindi and validated by language experts. Reliability was assessed using Cronbach's alpha, which yielded $r = 0.83$ for knowledge, 0.74 for attitude and 0.79 for practice, indicating good internal consistency.

Pilot Study

A pilot study was conducted among 28 adults at PHC Dumrikhas from 29 December 2023 to 10 January 2024 using the same sampling technique and tools. The feasibility of the tools and data collection procedure was tested and found appropriate; no major modifications were required.

Data Collection Procedure

Final data collection was carried out from 22 July 2024 to 14 August 2024 at PHC Shivpur. Participants meeting eligibility criteria were approached, informed about the study and written informed consent was obtained. The structured questionnaires were administered, and completed forms were checked for completeness. The procedure followed the planned phases depicted in the data collection flow diagram in the thesis.

Data Analysis

Data were analysed according to the study objectives. Descriptive statistics (frequency, percentage, mean and standard deviation) were used to describe socio-demographic variables and KAP levels. Inferential statistics included:

- Spearman's rank correlation coefficient** to assess correlation between knowledge, attitude and practice scores.
- Chi-square test** to determine association between socio-demographic variables and knowledge, attitude and practice levels at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the Institutional Human Ethics Committee, AIIMS Gorakhpur (IHEC/AIIM-GKP/BMR/195/2023). Necessary permissions were obtained from the Principal, Head of Department of Community Medicine and PHC in-charge. Informed consent was taken from all participants, and anonymity and confidentiality were maintained.

RESULTS

Socio-demographic Characteristics

Table 1: Sociodemographic Characteristics Of Adult Population Attending PHC Shivpur (N = 286)

Variable	Category	Frequency (f)	Percentage (%)
Age (years)	18–32	135	47.2
	33–47	89	31.1
	48–60	62	21.7
Gender	Male	190	66.4
	Female	96	33.6
Religion	Hindu	263	92.0
	Muslim	17	5.9

	Christian	3	1.0
	Other	3	1.0
Educational Status	Illiterate	9	3.1
	Primary school	9	3.1
	Middle school	14	4.9
	High school	52	18.2
	Intermediate	130	45.5
	Graduate	69	24.1
	Post-graduate	3	1.0
Occupation	Self-employed	215	75.2
	Private employed	52	18.2
	Government employed	19	6.6
Marital Status	Married	140	49.0
	Unmarried	146	51.0
Previous knowledge related to rabies	Yes	102	35.7
	No	184	64.3
History of dog bite	Yes	96	33.6
	No	190	66.4
Pet dog ownership	Yes	32	11.2
	No	254	88.8

A total of 286 adults participated. As shown in Table 1, 47.2% were aged 18–32 years, 31.1% were 33–47 years and 21.7% were 48–60 years. Males constituted 66.4% and females 33.6%. The majority (92.0%) were Hindu; most participants had intermediate or graduate education, and a large proportion were self-employed.

Knowledge, Attitude And Practice Levels

Table 2: Frequency, Percentage, Mean And SD Of Knowledge, Attitude And Practice Regarding Dog Bite And Its Management Among Adults Attending PHC Shivpur (N = 286)

Category	Sub-category	Frequency (f)	Percentage (%)	Mean $\pm$ SD
Knowledge	Very Poor	0	0.0	12.24 $\pm$ 3.024
	Poor	26	9.1	
	Average	124	43.4	
	Good	119	41.6	
	Excellent	17	5.9	
Attitude	Very Negative	0	0.0	53.74 $\pm$ 4.07
	Negative	0	0.0	
	Neutral	3	1.0	
	Positive	219	76.6	
	Very Positive	64	22.4	
Practice	Very Poor	0	0.0	13.23 $\pm$ 1.543
	Poor	0	0.0	
	Average	14	4.9	
	Good	142	49.7	
	Excellent	130	45.5	

Table 2: summarizes KAP scores. The mean knowledge score was 12.24 ± 3.02 . None of the participants were in the very poor category; 9.1% had poor knowledge, 43.4% average, 41.6% good and 5.9% excellent knowledge regarding dog bite and its management.

The mean attitude score was 53.74 ± 4.07 . No participant had very negative or negative attitude; 1.0% had neutral attitude, 76.6% positive and 22.4% very positive attitude toward dog bite prevention and rabies control.

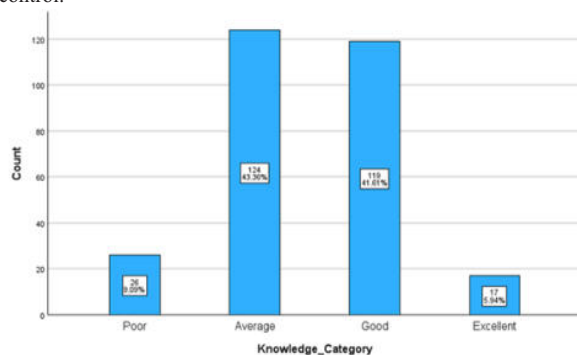


Figure 1.a

The mean practice score was 13.23 ± 1.54 . No participants had very poor or poor practices; 4.9% had average practice, 49.7% good and 45.5% excellent practice regarding dog bite management.

Figure 1.a: Bar chart depicting categories of Knowledge regarding dog bite and its management among the adult population attending Primary Health Centre Shivpur.

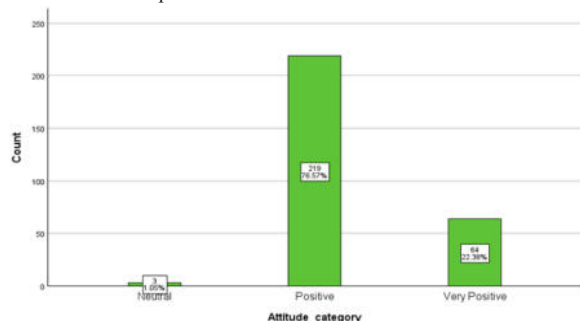


Figure 2.b

Figure 1.b: Bar chart depicting categories of Attitude regarding dog bite and its management among the adult population attending Primary Health Centre Shivpur.

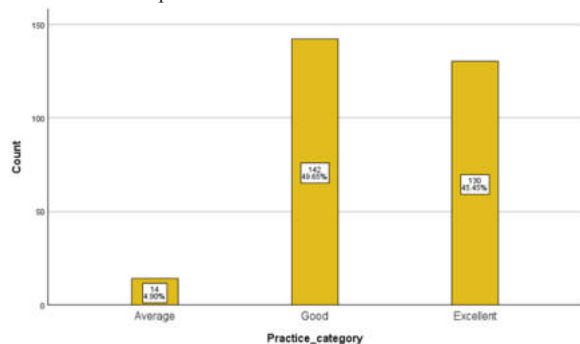


Figure 2.c

Figure 1.c: Bar chart depicting categories of Practice regarding dog bite and its management among the adult population attending Primary Health Centre Shivpur.

Correlation between knowledge, attitude and practice

Table 3: Spearman's Rank Correlation Between Knowledge, Attitude And Practice Regarding Dog Bite And Its Management Among Adults Attending PHC Shivpur (N = 286)

Variables	Spearman's rho (p)	p-value
Knowledge ↔ Attitude	0.045	0.447
Knowledge ↔ Practice	0.103	0.082
Attitude ↔ Practice	-0.075	0.209

Spearman's rank correlation analysis (Table 3,) showed:

- **Knowledge and attitude:** $\rho = 0.045$, $p = 0.447$
- **Knowledge and practice:** $\rho = 0.103$, $p = 0.082$
- **Attitude and practice:** $\rho = -0.075$, $p = 0.209$

These coefficients indicate weak, non-significant correlations between the three domains.

Figure 2: Scatterplot depicting the correlation between Knowledge, attitude, and practice regarding dog bite and its management among the adult population attending primary health center Shivpur.

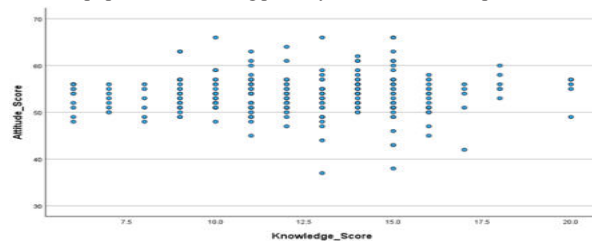


Figure 2.1 (Attitude vs Knowledge)

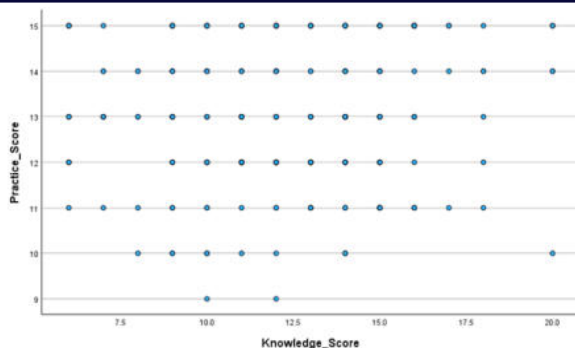


Figure 2.2 (Knowledge vs Practice)

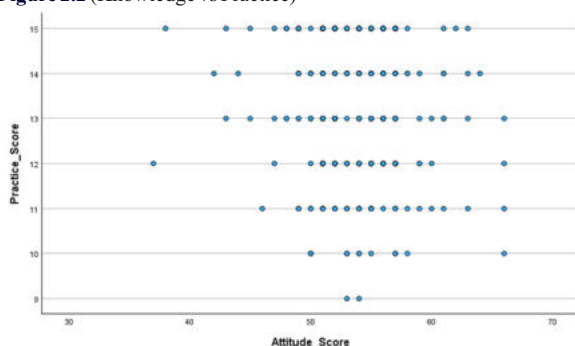


Figure 2.3 (Attitude vs Practice)

Association between socio-demographic variables and knowledge

Chi-square analysis revealed:

Age: No significant association with knowledge category ($p = 0.116$).

Gender: Significant association ($\chi^2 = 14.079$, $p = 0.003$); males were more represented in poor/average knowledge categories, while females were more represented in good/excellent categories.

Religion: Significant association ($\chi^2 = 37.170$, $p < 0.001$); Hindus more often had higher knowledge levels than other religious groups.

Educational status: Significant association ($p = 0.017$); participants with intermediate and higher education had better knowledge than those with lower education.

Occupation: Significant association ($p < 0.001$); government-employed participants tended to have higher knowledge scores.

Marital status, previous knowledge of rabies, history of dog bite and dog ownership: No statistically significant association with knowledge levels.

Association Between Socio-demographic Variables And Attitude

There is no statistically significant association between attitude categories and age, gender, religion, education, occupation, marital status, previous knowledge of rabies, history of dog bite or dog ownership (all $p > 0.05$).

Association between socio-demographic variables and practice

As presented practice categories did not differ significantly by age, gender, religion, educational status, occupation or marital status ($p > 0.05$). However, previous knowledge of rabies showed a significant association with practice ($\chi^2 = 6.954$, $p = 0.031$); participants with prior knowledge demonstrated better practices.

DISCUSSION

This study assessed knowledge, attitude and practice regarding dog bite and its management among adults attending PHC Shivpur. Overall, participants had average to good knowledge, predominantly positive attitudes and good to excellent practices, yet notable gaps persist.

The mean knowledge score and the finding that over half of the participants had good or excellent knowledge indicate a reasonably informed population, but the presence of poor and average knowledge

categories shows room for improvement. Similar patterns of partial awareness and specific gaps in knowledge, especially about first-aid measures and the need for timely PEP, have been reported in previous Indian studies referenced in the thesis, where only a minority of respondents had good knowledge, and myths about wound management were common.

Attitude scores suggest that most adults recognize the seriousness of dog bites and the importance of prevention and treatment, as reflected by the majority having positive or very positive attitudes. However, the weak correlation between attitude and practice implies that favourable attitudes do not always translate into correct behaviours. This is consistent with the thesis discussion, which highlights that despite awareness of vaccination, only a smaller proportion of people seek immediate medical care after a bite, echoing findings from other KAP studies where moderate knowledge did not ensure proper practice.

The high proportion of participants with good and excellent practice scores is encouraging, indicating that many respondents follow appropriate actions such as washing the wound and seeking health-care services. Yet, the study also notes persistent misconceptions and delays in care in some segments of the population, pointing to the need for continuous behavioural reinforcement through IEC and community-based education.

The weak, non-significant correlations among knowledge, attitude and practice scores suggest that improving one domain alone may not automatically improve the others. This supports the application of the Health Belief Model used as the conceptual framework in the thesis, in which perceived susceptibility, severity, benefits, barriers, cues to action and self-efficacy jointly influence behaviour.

Interventions should therefore address not only information gaps but also perceived barriers and self-confidence in managing dog bite situations.

Significant associations between knowledge and gender, religion, education and occupation underline the differential distribution of information in the community. Women, individuals with higher education and those in government jobs had better knowledge, indicating that socio-demographic factors shape access to and assimilation of health information. The finding that previous knowledge of rabies is significantly associated with better practice further reinforces the importance of prior exposure to health education and suggests that targeted IEC efforts can improve real-world behaviours.

No significant associations between attitude and socio-demographic variables, and between practice and most socio-demographic factors, may reflect a more uniform distribution of attitudes and practices once basic awareness is present, or may indicate that other unmeasured variables (e.g. cultural beliefs, local experiences of dog bites) play a role.

Overall, the study supports the need for sustained health education at PHC and community level, focusing on correct first-aid (immediate wound washing with soap and water), timely PEP, completion of vaccination schedules and discouraging harmful traditional practices. These efforts can complement national strategies such as NRCP and NAPRE to move towards dog-mediated rabies elimination by 2030.

CONCLUSION

Adults attending PHC Shivpur generally exhibited average to good knowledge, positive attitudes and good to excellent practices regarding dog bite and its management. However, gaps in critical areas such as immediate first-aid measures and prompt health-seeking behaviour remain. Knowledge was significantly influenced by gender, religion, education and occupation, and better practice was associated with prior knowledge of rabies. Strengthening community-based health education, with emphasis on high-risk and less-informed groups, is essential to further improve practices and support ongoing national rabies control and elimination initiatives.

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Declarations

Funding: None.

Conflict Of Interest: None declared.

Ethical Approval: Obtained from Institutional Human Ethics Committee, AIIMS Gorakhpur (IHEC/AIIM-GKP/BMR/195/2023).

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