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Original Article

Cross-Sectional Study of Post-Exposure Prophylaxis and Management of Animal Bite Cases and Evaluating Functionality of Anti-Rabies Clinics at Peripheral Health Institutions in Western Gujarat

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ABSTRACT

Background: Rabies is a neglected zoonotic disease-causing significant death, especially in Asia and Africa, with children being highly affected.(1) In India, stray dog bites are the main cause, with low RIG use despite frequent Category III exposures.(2) This study assesses PEP practices and ARC functionality at peripheral health institutions.

Methodology: A cross-sectional study was conducted from August 2024 to April 2025 among 400 animal bite victims receiving PEP at a tertiary care Anti-Rabies Clinic and healthcare workers from selected government health institutions in Western Gujarat. Consecutive sampling and structured questionnaires were used for data collection. Data were analysed using descriptive statistics, with prior ethical approval and informed consent.

Results: Among 400 victims, most were male (72.5%), aged 20–29 (26.5%), urban residents (77.0%), and middle-class (36.25%). Stray animals (81.25%)—predominantly dogs (91.75%)—caused most bites, which were largely unprovoked (84%), Category III (81.5%), and on multiple sites (30.25%). While 89.75% did not wash wounds at home, 91.25% received hospital wound care, and 87.5% started vaccination within 6 hours. Community awareness was low regarding pet vaccination and fatality. Only 1 of 40 peripheral institutions had a dedicated ARC and RIG stock.

Conclusion: Significant gaps exist in infrastructure, RIG availability, and community awareness at peripheral ARCs in western Gujarat. Strengthening ARC functionality, ensuring round-the-clock services, supplying RIG, and conducting targeted IEC campaigns are essential to reduce the rabies burden in the region.

Keywords: *Rabies, post-exposure prophylaxis, Anti-rabies clinic, Zoonosis.*

INTRODUCTION

Rabies is a serious public health problem in over 150 countries and territories, mainly in Asia and Africa. It is a viral, zoonotic, neglected tropical disease that causes tens of thousands of deaths annually, with 40% being children under 15.Dog bites and scratches cause 99% of the human rabies cases, and can be prevented through dog vaccination and bite prevention. Once the virus infects the central nervous system and clinical symptoms appear, rabies is fatal in 100% of cases.(1) Animal bites pose significant public health concerns, including potential zoonotic disease transmission. (2) the disease is almost always fatal, with treatment limited to palliative care focused on easing the patient's suffering. In regions with poor healthcare access, many patients die at home. Healthcare providers must understand the correct postexposure prophylaxis (PEP) schedule and vaccine administration methods relevant to their area, as well as general global rabies prevention strategies. Rabies and related Lyssaviruses are found worldwide and can infect dogs, cats, livestock, and wild animals.(1)

Of the estimated 25,000 deaths due to rabies in SEAR, a majority are in India (around 19,000) and Bangladesh (2000). More than 2.5 million people undergo post-exposure prophylaxis after being bitten by rabid or suspected rabid animals causing considerable morbidity and economic loss.(3) Despite the substantial economic burden and human suffering caused by animal bites and rabies, information on their incidence in India remains limited due to the absence of a systematic reporting system. Since rabies is not a notifiable disease in India, the reported number of cases is widely considered to be an underestimate.(4) This study aimed to assess the management practices and post-exposure prophylaxis (PEP) provided to animal bite victims and to evaluate the functionality and service delivery of Anti-Rabies Clinics (ARCs) at peripheral health institutions. Specifically, the study assessed the socio-demographic and epidemiological profile of animal bite cases attending a tertiary healthcare centre, evaluated PEP practices in accordance with NRCP/WHO guidelines, determined the time interval between exposure and initiation of PEP, assessed the knowledge of animal bite victims regarding rabies and PEP.

MATERIAL AND METHODS

A hospital-based cross-sectional study was conducted over a period of nine months, from August 2024 to April 2025, among animal bite victims attending the Anti-Rabies Clinic (ARC) of a tertiary care teaching hospital and healthcare personnel working at selected government peripheral health institutions in a district of Western Gujarat. The study population comprised animal bite victims receiving post-exposure prophylaxis (PEP) and healthcare workers directly involved in the management of animal bite cases and PEP administration.

The sample size for animal bite victims was determined based on the previous year's attendance of approximately 4,000 cases at the ARC. Ten percent of the annual caseload was included, yielding a sample size of 400 participants. As an average of 40 new animal bite cases attended the clinic daily, four participants were enrolled each day using a consecutive sampling technique over a six-month data collection period, excluding public holidays. In addition, 40 healthcare personnel from selected peripheral health institutions were included to assess the functionality and service delivery of Anti-Rabies Clinics. The inclusion criteria for animal bite victims were individuals who had received PEP for rabies at the study centre, aged 18 years or older, or those younger than 18 years accompanied by a guardian able to provide informed consent and relevant information. Healthcare personnel included doctors, nurses, and other staff directly involved in the management of animal bite cases and PEP administration who had been working at the selected health institutions for at least six months. Participants who did not provide consent, had incomplete or unreliable records or responses, or healthcare personnel not directly involved in animal bite management and PEP administration were excluded from the study.

Data were collected using a predesigned, self-structured questionnaire developed by the investigators. Face-to-face interviews were conducted with animal bite victims to obtain information regarding socio-demographic characteristics, epidemiological profile, treatment received, adherence to the PEP schedule, and follow-up practices. The principal investigator also visited selected peripheral health institutions to interview healthcare personnel regarding their knowledge, training, and experiences in managing animal bite cases. Additionally, an observational checklist was used to assess the functionality of Anti-Rabies Clinics, including the availability of vaccines and Rabies Immunoglobulin (RIG), services provided, infrastructure, and adherence to national guidelines and protocols.

The collected data were entered and cleaned using Microsoft Excel 2019 and analysed using Jamovi version 2.3.28. Categorical variables were summarized using frequencies and percentages, while continuous variables were expressed as mean and standard deviation (SD). Graphs were prepared using Microsoft Excel. Associations between categorical variables were assessed using the Chi-square test. All statistical tests were two-tailed, and a p-value of less than 0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Institutional Ethics Committee before commencement. Written informed consent was obtained from all participants or their guardians where applicable. Participation was entirely voluntary, confidentiality was maintained throughout the study, and participants were informed of their right to withdraw from the study at any stage without affecting their access to healthcare services.

RESULT:

Table.1 Sociodemographic profile of participant

Variable	Category	n (%)
Age group (years)	<20	98 (24.5)
	20–29	106 (26.5)
	30–39	57 (14.25)
	40–49	59 (14.75)
	50–59	42 (10.5)
	≥60	38 (9.5)
Gender	Male	290 (72.5)
	Female	110 (27.5)

Residence	Urban	308 (77.0)
	Rural	92 (23.0)
Religion	Hindu	358 (89.5)
	Muslim	42 (10.5)
Education	Illiterate	53 (13.25)
	Primary	133 (33.25)
	Secondary	71 (17.75)
	Higher secondary	96 (24.0)
	Graduate & above	39 (9.75)
	Not applicable	8 (2.0)
Occupation	Housewife	55 (13.75)
	Student	113 (28.25)
	Labour	85 (21.25)
	Business	90 (22.5)
	Service	49 (12.25)
	Not applicable	8 (2.0)
Socioeconomic class	Upper	1 (0.25)
	Upper middle	116 (29.0)
	Middle	145 (36.25)
	Lower middle	98 (24.5)
	Lower	40 (10.0)

Table 1 presents the socio-demographic profile of the 400 study participants. The highest proportion of participants belonged to the 20–29 years age group (26.5%), followed by those aged <20 years (24.5%), while participants aged ≥60 years constituted the smallest proportion (9.5%). The majority of participants were male (72.5%), urban residents (77.0%), and Hindus (89.5%). Regarding educational status, 33.25% of participants had primary education, followed by higher secondary education (24.0%), whereas 13.25% were illiterate. With respect to occupation, students (28.25%) formed the largest group, followed by those engaged in business (22.5%) and labour work (21.25%). Based on socioeconomic status, the majority of participants belonged to the middle socioeconomic class (36.25%), followed by the upper middle class (29.0%) and lower middle class (24.5%), while only 0.25% belonged to the upper socioeconomic class.

Table.2 distribution of animal and its type (n=400)		
Variable	Category	n (%)
Biting animal	Dog	367 (91.75)
	Cat	32 (8.00)
	Rat	1 (0.25)
Type of animal	Stray	325 (81.25)
	Pet	75 (18.75)

Table 2 presents the distribution of participants according to the biting animal and the type of animal involved. Dogs accounted for the majority of animal bite cases, constituting 91.75% (367) of the total, followed by cats 8.0% (32) and rats 0.25% (1). With respect to the type of animal, 81.25% (325) of bite incidents were caused by stray animals, while 18.75% (75) were attributed to pet animals. These findings indicate that stray dogs were the predominant source of animal bite injuries among the study participants.

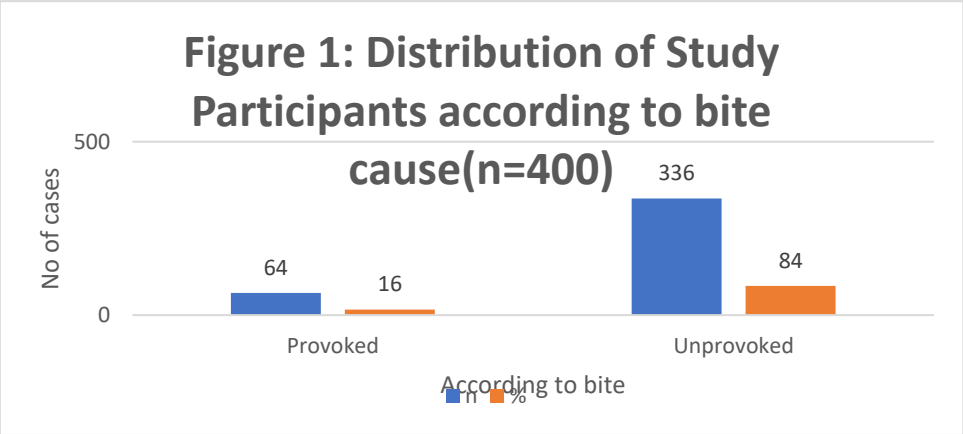
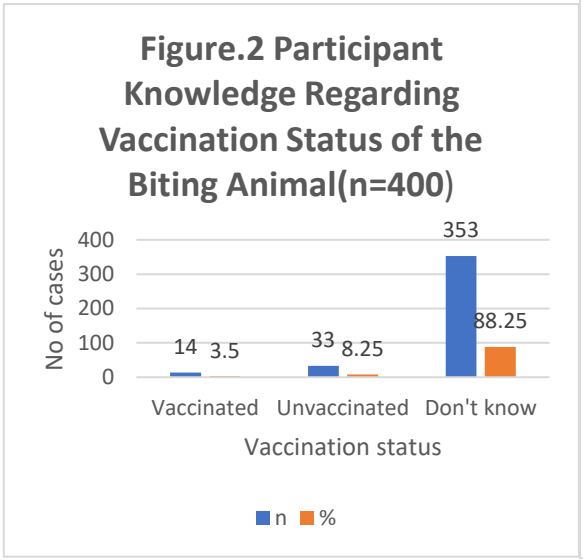


Figure 1 shows the distribution of the 400 study participants according to the cause of the animal bite. The majority of bite incidents were unprovoked, accounting for 336 cases (84%), while 64 cases (16%) were provoked.

This indicates that unprovoked animal bites were substantially more common than provoked bites among the study participants.



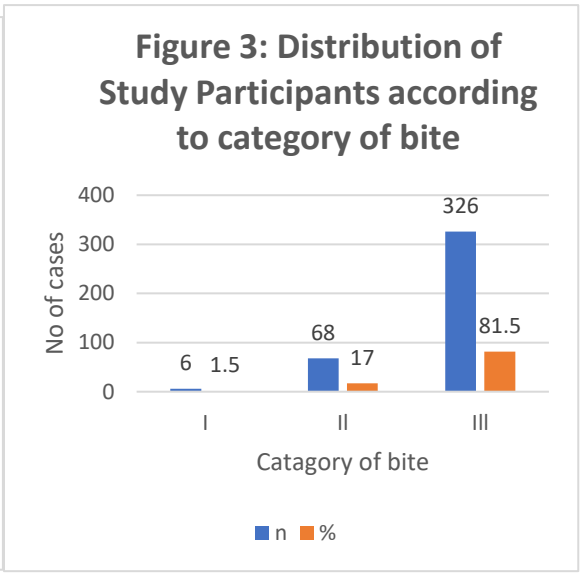
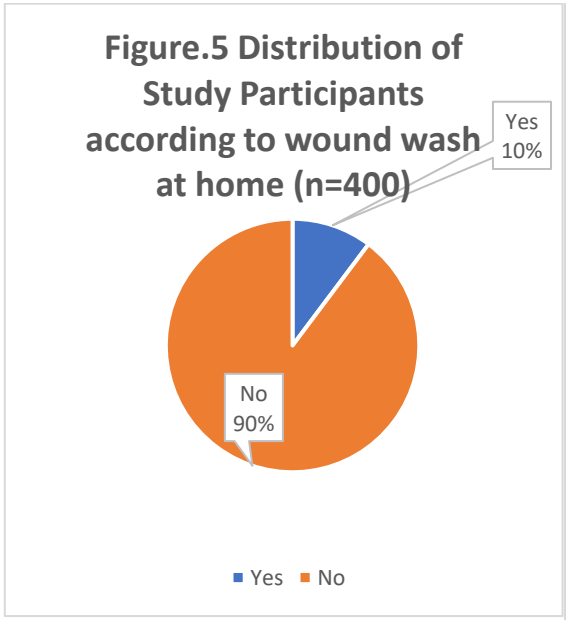


Figure 2 illustrates the participants' knowledge regarding the vaccination status of the biting animal among the 400 study participants. The majority of participants, 353 (88.25%), did not know the vaccination status of the biting animal. Only 14 (3.5%) participants reported that the animal was vaccinated, while 33 (8.25%) reported that the animal was unvaccinated.



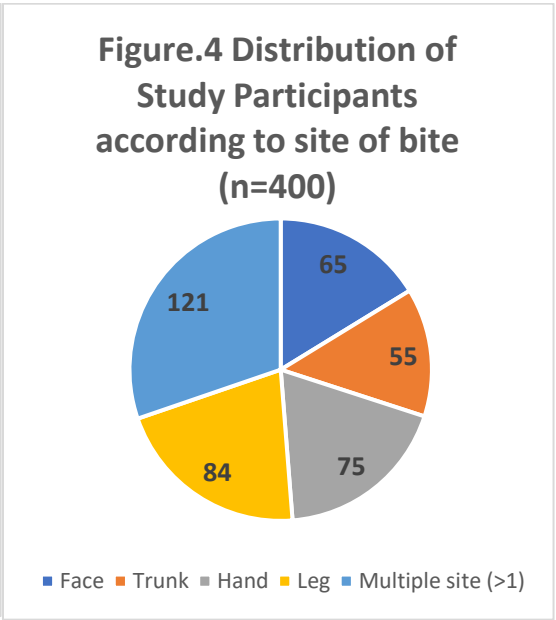


Figure 3 depicts the distribution of study participants according to the WHO category of animal bite among the 400 participants. The majority of participants sustained Category III bites, accounting for 326 cases (81.5%), followed by Category II bites with 68 cases (17%). Only 6 participants (1.5%) sustained Category I bites. Figure 4 show Among the 400 study participants, multiple-site bites were the most common, accounting for 121 (30.25%) cases, followed by leg bites in 84 (21.00%) participants, hand bites in 75 (18.75%), face bites in 65 (16.25%), and trunk bites in 55 (13.75%) participants. As per the Figure 5, the majority of participants (359, 89.75%) did not wash their wounds at home following the animal bite incident, while only 41 (10.25%) performed home wound care.

Table.3 Distribution of table base on the wound history (n=400)		
Variable	Category	Frequency, n (%)
Number of bite wounds	1	114 (28.5%)
	2	135 (33.75%)
	3 or more	151 (37.75%)
Wound wash at home	Yes	41 (10.25%)

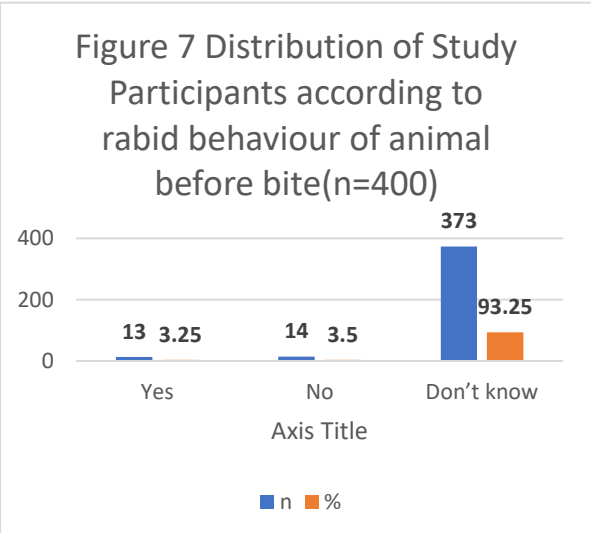
	No	359 (89.75%)
Wound wash at the hospital	Yes	365 (91.25%)
	No	35 (8.75%)
Material used for wound washing	Tap water	45 (11.25%)
	Tap water + Soap	47 (11.75%)
	Tap water + Soap + Antiseptic (e.g., Betadine)	308 (77.0%)
Duration of wound washing with tap water	<15 minutes	204 (51.0%)
	≥15 minutes	196 (49.0%)
Time gap between bite and wound washing	<30 minutes	201 (50.25%)
	≥30 minutes	199 (49.75%)

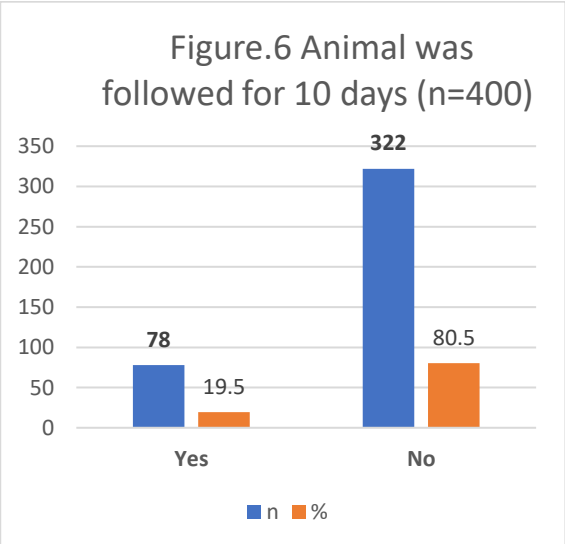
Table 3 presents the distribution of study participants according to their wound history following an animal bite (n=400). Regarding the number of bite wounds, 151 (37.75%) participants had three or more wounds, 135 (33.75%) had two wounds, and 114 (28.5%) had a single wound. Only 41 (10.25%) participants performed wound washing at home, whereas the majority, 359 (89.75%), did not wash the wound at home. In contrast, wound washing at the hospital was reported by 365 (91.25%) participants, while 35 (8.75%) did not receive wound washing at the hospital. With respect to the material used for wound washing, the majority of participants, 308 (77.0%), used tap water with soap and an antiseptic (e.g., Betadine). 47 (11.75%) used tap water with soap, and 45 (11.25%) used tap water alone. Regarding the duration of wound washing with tap water, 204 (51.0%) participants washed the wound for less than 15 minutes, while 196 (49.0%) washed it for 15 minutes or more. The time interval between the animal bite and wound washing was less than 30 minutes for 201 (50.25%) participants and 30 minutes or more for 199 (49.75%), indicating an almost equal distribution between the two groups.

Table 4. Distribution of study participants according to anti-rabies prophylaxis (n = 400)

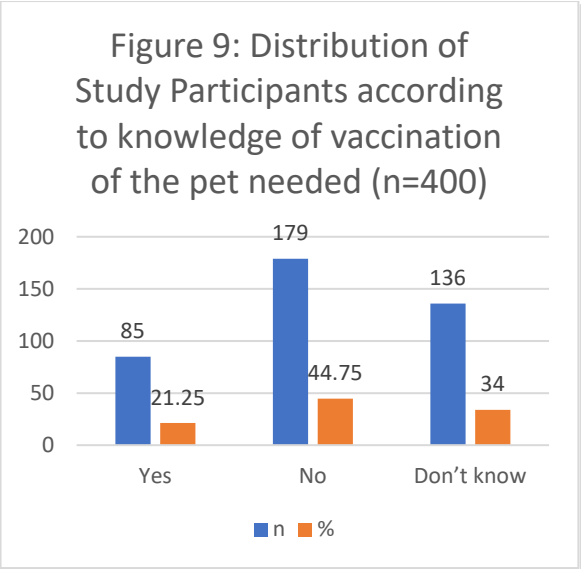
Variable	Category	Frequency, n(%)
Time gap between bite and vaccination	<6 hours	350 (87.5%)
	6–48 hours	50 (12.5%)
As per bite category, was RIG required?	Yes	326 (81.5%)
	No	74 (18.5%)

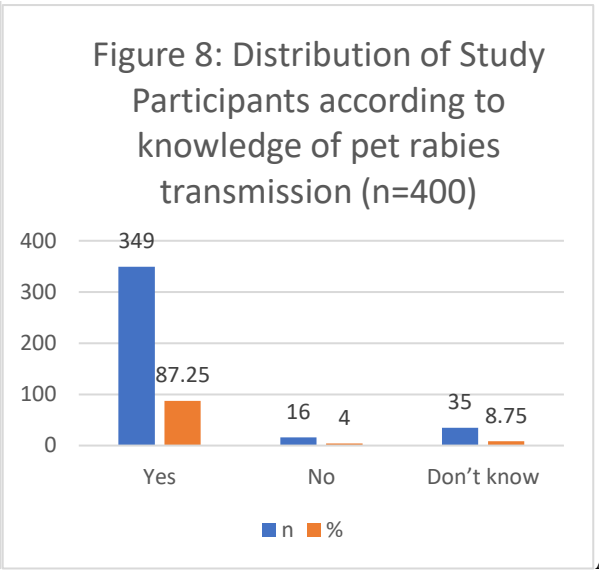
Table 4 shows the distribution of study participants according to anti-rabies prophylaxis (n=400). The majority of participants, 350 (87.5%), received the first dose of anti-rabies vaccine within 6 hours of the animal bite, whereas 50 (12.5%) received vaccination between 6 and 48 hours after the bite. Based on the WHO bite category, 326 (81.5%) participants required rabies immunoglobulin (RIG), while 74 (18.5%) did not require RIG. These findings indicate that most participants received prompt anti-rabies vaccination, and a large proportion had Category III exposures requiring RIG as part of post-exposure prophylaxis.



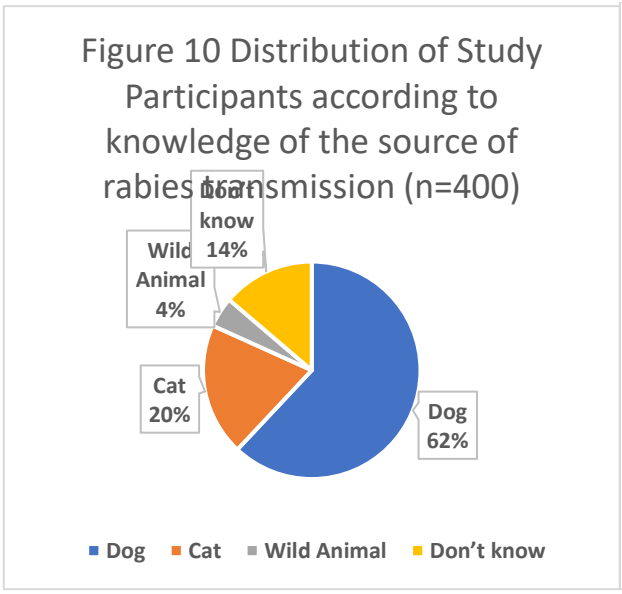


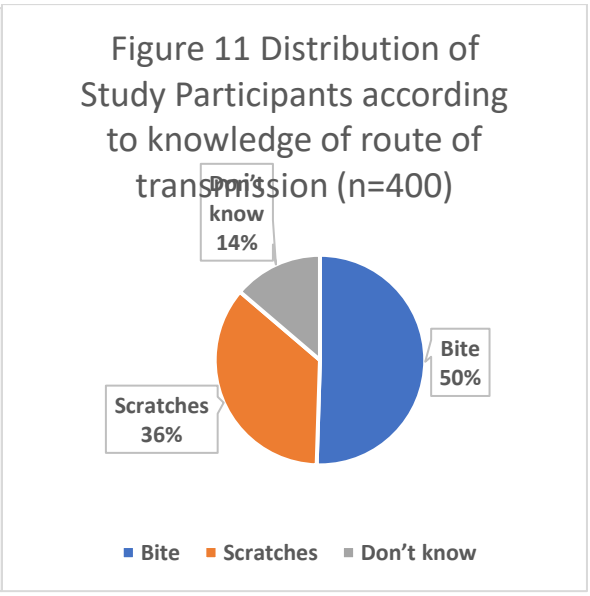
The below Figure 6 shows that the majority of biting animals (322, 80.50%) were not followed for the recommended 10-day observation period, while only 78 (19.50%) animals were monitored as per WHO guidelines.





As per the Figure 7, the majority of participants (373, 93.25%) were unable to assess or recall whether the biting animal exhibited rabid behaviour before the attack, while only 13 (3.25%) reported observing rabid behaviour and 14 (3.5%) specifically noted the absence of such behaviour. The above Figure 8 shows that the majority of participants (349, 87.25%) correctly understood that pets can transmit rabies, while only 16 (4%) incorrectly believed





pets cannot transmit the disease, and 35 (8.75%) were uncertain about pet rabies transmission. As per the above Figure 9, Knowledge about pet vaccination needs was suboptimal, with only 85 (21.25%) participants correctly understanding that pet vaccination is necessary, while 179 (44.75%) incorrectly believed vaccination is not needed and 136 (34%) were uncertain.

The above Figure 10 shows that the dogs were correctly identified as the primary source of rabies transmission by the majority of participants (248, 62%), followed by cats (79, 19.75%), while only 18 (4.5%) recognized wild animals as potential sources, and 55 (13.75%) had no knowledge about rabies transmission sources. As per the above Figure 11, Half of the participants (202, 50.5%) correctly identified bites as a route of rabies transmission, while 143 (35.75%) recognized scratches as a transmission mode, and 55 (13.75%) did not know transmission routes. Figure 12 show As show, Knowledge about rabies fatality was limited, with only 143 (35.75%) participants correctly understanding that rabies is always fatal once symptoms develop, while 89 (22.25%) incorrectly believed rabies has low mortality, and 168 (42%) had no knowledge about rabies outcomes.

Figure 12 Distribution of Study Participants according to fatality knowledge(n=400)

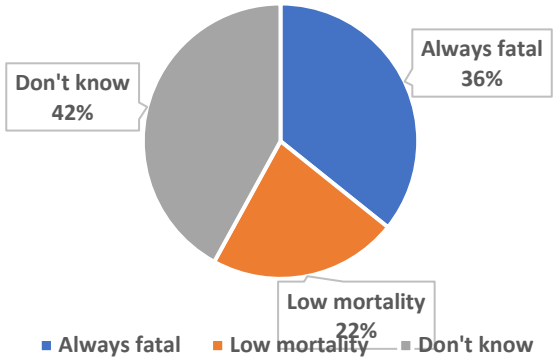


Table 5. Distribution of peripheral health institutions according to anti-rabies clinic services and healthcare personnel knowledge regarding rabies post-exposure prophylaxis (n = 40)

Variable	Category	Frequency, n (%)
Designation of health personnel	Medical Officer	13 (32.5%)
	Staff Nurse	13 (32.5%)
	MPHW	13 (32.5%)
	FHW	1 (2.5%)
Separate Anti-Rabies Clinic (ARC)	Yes	1 (2.5%)
	No	39 (97.5%)
Clinic functional on Sundays and holidays	Yes	10 (25.0%)
	No	30 (75.0%)
Timings of ARC	7 hours	30 (75.0%)
	24 hours	10 (25.0%)
Availability of Rabies Immunoglobulin (RIG)	Yes	1 (2.5%)
	No	39 (97.5%)
Route of ARV administration practiced	Intradermal (ID)	34 (85.0%)
	Intradermal/Intramuscular (ID/IM)	6 (15.0%)
Follow-up mechanism	Patient card	39 (97.5%)
	Patient card + Register/Logbook reminder	1 (2.5%)
Health education sessions	Patient counselling	35 (87.5%)
	Counselling + Community awareness	5 (12.5%)
Use of IEC materials	Display materials	31 (77.5%)
	Display + Handout materials	6 (15.0%)
	None	3 (7.5%)
Correct route for administering RIG	Intradermal (ID)	12 (30.0%)
	ID/IM	28 (70.0%)
Appropriate indication for RIG	Only Category III bites	35 (87.5%)
	All bite cases	1 (2.5%)
	Don't know	4 (10.0%)
Correct site of RIG administration	Into muscle and at the wound site	31 (77.5%)
	At the wound site only	3 (7.5%)
	Into muscle only	2 (5.0%)
	Don't know	4 (10.0%)

Table 5 presents the distribution of peripheral health institutions according to anti-rabies clinic (ARC) services and healthcare personnel knowledge regarding rabies post-exposure prophylaxis (PEP) (n=40). Among the respondents, Medical Officers, Staff Nurses, and MPHWs each constituted 13 (32.5%), while FHWs accounted for 1 (2.5%).
Only 1 (2.5%) health institution had a separate Anti-Rabies Clinic (ARC), whereas 39 (97.5%) did not. The clinic was functional on Sundays and holidays in 10 (25.0%) institutions, while 30 (75.0%) reported that services were unavailable during these days. Most institutions, 30 (75.0%), operated the ARC for 7 hours daily, whereas 10 (25.0%) provided 24-hour services.

Rabies immunoglobulin (RIG) was available in only 1 (2.5%) institution, while 39 (97.5%) lacked RIG availability. Regarding ARV administration, 34 (85.0%) institutions practiced the intradermal (ID) route, whereas 6 (15.0%) used both intradermal and intramuscular (ID/IM) routes.

Follow-up of animal bite cases was primarily ensured through patient cards in 39 (97.5%) institutions, while 1 (2.5%) additionally used a register/logbook reminder. Health education was mainly provided through patient counselling in 35 (87.5%) institutions, whereas 5 (12.5%) also conducted community awareness activities. Regarding IEC materials, 31 (77.5%) institutions displayed educational materials, 6 (15.0%) used both display and handout materials, and 3 (7.5%) did not use any IEC materials.

Assessment of healthcare personnel knowledge showed that 28 (70.0%) identified ID/IM as the route for RIG administration, while 12 (30.0%) selected the ID route. Most respondents, 35 (87.5%), correctly identified that RIG is indicated only for Category III bites, whereas 1 (2.5%) believed it should be administered for all bite cases and 4 (10.0%) did not know the correct indication. Regarding the site of RIG administration, 31 (77.5%) reported that it should be administered into the muscle and at the wound site, while 3 (7.5%) selected the wound site only, 2 (5.0%) selected the muscle only, and 4 (10.0%) were unaware of the correct site of administration.

Discussion: In A large study from Rajasthan, India, done by Rana D. et al (2024) found that 67.6% of animal bite cases were in the 19–60 age group, 26.8% were under 19, and only 5.7% were older than 60, showing a similar trend of declining frequency with advancing age.(5) In a tertiary care study from Tripura, , India, done by Acharjee M. et al (2023) found males comprised 68.5% of animal bite victims, demonstrating clear male preponderance this finding is comparable to the present study.(2) Similarly, in research by Rana D et al (2024) , from Rajasthan found that 70.8% of cases were male, and only 29.2% were female, reflecting comparable patterns.(5) In a recent Haryana study done by Sachdeva A et al (2022) 65% of animal bite victims were from urban areas, similar to your finding, suggesting that urban dwellers are at higher risk, possibly due to greater pet ownership, increased stray dog population, and better access to healthcare facilities.(6) Another study from Tripura done by Acharjee M. et al (2023) observed a slight urban predominance (around 60%), linking it to increasing urbanization, larger stray animal populations in cities, and more prompt health-seeking behaviour.(2) A central India study done by Panda M. et al (2022) found that those with primary (30.5%) or secondary (20.2%) education comprised the majority, while only 10.6% had graduation or higher education, and illiterates made up 12.3%—nearly identical to your pattern.(7) A study in Latur, Maharashtra, done by Varsharani K. et al (2014) found that the majority of animal bite cases occurred among people with occupations like farmer, driver, labourer, watchman, and student (making up 70.85% of cases), while fewer cases were among businesspeople, housewives, and retired persons. Students and those engaged in outdoor activities were particularly at risk, reflecting a pattern similar to your findings.(8) A study from Haryana done by Sachdeva A et al (2022) reported the majority of animal bite cases among middle and lower middle-class participants (~65%), with fewer cases from lower socioeconomic backgrounds, similar to your findings. The study emphasized that middle socioeconomic groups tend to have more exposure to pets and stray animals in urbanizing areas.(6) A study from Haryana done by Sachdeva A et al (2022) reported dogs as the main biting animal in 89.5% of cases, followed by cats at 7.8%, closely matching your findings. Rat bites and other animals were negligible.(6) In a Central India hospital-based study done by Sastry NP et al (2023) reported dogs accounted for approximately 92% of bites, cats about 6%, and bites from rodents or other animals were very uncommon.(9) A study from Delhi done by Sharma S. et al (2016) found the large population of stray dogs in India, estimated at over 6 crore (60 million), contributes significantly to bite incidents.(10) A cross-sectional study in Haryana done by Sachdeva A et al (2022) reported a similar pattern where unprovoked bites constituted approximately 80–85% of animal bite cases, highlighting that most animal bites occur without direct human provocation, often from stray or frightened animals.(6) A study in Delhi done by Panda M. et al (2022) observed 78–83% of bites to be unprovoked, with provoked bites often resulting from self-defence attempts or accidental contact with animals, supporting the general trend seen in your study.(7) A study from Haryana done by Sachdeva A et al (2022) reported that in over 85% of animal bite incidents, the vaccination status of the biting animal was unknown or could not be confirmed. Approximately 10% were known to be unvaccinated, and only a small fraction was confirmed vaccinated, reflecting similar data challenges in vaccination documentation and animal tracking.(6) Research in Central India done by Sastry NP et al. (2023) reported that the majority (>80%) of biting animals had unknown vaccination status, with only 7-9% confirmed unvaccinated animals. The low known vaccinated proportion is common, highlighting gaps in animal immunization record-keeping and stray dog vaccination coverage.(9) A study from Haryana done by Sachdeva A et al (2022) reported that Category III bites made up approximately 78-82% of animal bite cases, similar to your findings, emphasizing that the most severe exposures tend to predominate among patients seeking care at tertiary centres (6) Study

in Central India done by Sastry NP et al. (2023) found that over 80% of cases were Category III bites, with Category II bites around 15-18%, and Category I rather rare, consistent with your data and highlighting the pattern of higher-severity bites comprising most reported cases.(9) Research from Latur (Maharashtra) done by Varsharani K. et al (2014) found about 86.54% bites on lower limbs, followed by upper limbs, trunk, abdomen, and head/neck/face, matching the prominence of leg and hand bites in your results.(8) A study from Kashmir done by Bashir K. et al (2020) reported that the lower limbs were the most common bite site (71.7%), consistent with high leg bite prevalence. However, your study shows a substantial number of multiple site bites and considerable bites on hands, face, and trunk as well, indicating more diverse bite locations.(11) A study from Pondicherry done by Naik B. et al (2015) found that while all bite victims initiated anti-rabies vaccination promptly, only about two-thirds washed their wounds with soap and water immediately, indicating a significant gap in proper wound care knowledge and practice(12) Research conducted in a tertiary care hospital in Haryana done by Sachdeva A et al (2022) showed that about 30% of cases had single bite wounds, while multiple wounds (two or more) accounted for about 65-70%, closely aligning with your data emphasizing the predominance of multiple wounds.(6) Research from Latur, Maharashtra done by Varsharani K. et al (2014) reported that washing wounds with soap and water after animal bite was lacking in around 90% of cases, with many applying potentially harmful substances like chili paste, turmeric, or herbal preparations instead(8) A study from Pondicherry done by Naik B. et al (2015) found that while all bite victims initiated anti-rabies vaccination promptly, only about two-thirds washed their wounds with soap and water immediately, indicating a significant gap in proper wound care knowledge and practice(12) Research from Mumbai done by Gogtay NJ et al (2014) highlighted that while immediate wound washing at home was often inadequate, hospital wound care practices including irrigation and cleansing were generally well performed(13) Research from Latur done by Varsharani K. et al (2014) and other parts of India reported very low rates (3-6%) of proper wound washing with soap and water among bite victims, with many relying on local harmful remedies instead, highlighting greater gaps than in your study.(8) A study in Pondicherry done by Naik B. et al (2015) showed that about two-thirds washed wounds with soap and water, followed by antiseptic application, consistent with your finding of a large majority receiving recommended wound care. However, harmful traditional practices like applying oil, turmeric, or chili paste were still reported in a minority (~17%).(12) A study from Haryana done by Sachdeva A, et al (2022) reported that around 80–85% of animal bite victims initiated post-exposure prophylaxis (PEP) within the first 6 hours of the bite, consistent with your higher proportion reflecting timely healthcare seeking behaviour. A study from Haryana reported that around 80–85% of animal bite victims initiated post-exposure prophylaxis (PEP) within the first 6 hours of the bite, consistent with your higher proportion reflecting timely healthcare seeking behaviour.(6) In the study by Naik BN et al. (Pondicherry), most bite victims were unable to describe the health or behavioural status of the biting animal prior to the incident, usually because the animals were stray or unfamiliar to the victim or observation was not possible.(12) A study from Haryana done by Sachdeva A. et al (2022) found Recent government efforts have reduced rabies deaths by approximately 75%, but mortality remains high due to gaps in public awareness and health access(6) A nationwide multi-centric survey conducted in India (2017–2018) assessing 35 anti-rabies clinics found that dedicated ARV clinics or separate units specifically for animal bite management are limited, and many health facilities integrate rabies vaccination as part of general outpatient services rather than specialized clinics(14) Similar findings are reported from Odisha done by John D et al (2121) where many governmental facilities providing ARV and rabies immunoglobulin services operate only during typical working days, leading to patients experiencing delays and sometimes seeking care from private providers with higher out-of-pocket costs(15) A large nationwide ICMR-led survey across 534 facilities done by Krishna NS et al (2025) found that RIG was available in only about 20.3% of public health facilities, with wide regional variation—availability was lowest (around 1.8%) in Urban Primary Healthcare Centres and highest (up to 69.2%) in medical college hospitals, aligning with your very low RIG availability figures at most centres(16) A study of Haryana done by Sachdeva A, et al (2022) found the use of facility-based registers or logbooks in addition to patient cards for reminders and follow-up tracking is less common and often limited to tertiary centres or specialized anti-rabies clinics, reflecting the minimal combined usage seen in your data.(6) A study done by Sudarshan MK et al (2019) noted that displayable IEC materials—such as posters, banners, and wall charts—are the primary tools for raising awareness about animal bite management in both primary and secondary care settings in India. For example, Sudarshan et al. documented that the majority of government institutions use visual IEC for patient and visitor education, echoing your high percentage of facilities employing this method.(14)

CONCLUSION

This study highlights critical infrastructure deficiencies in peripheral ARCs in western Gujarat, particularly the near-universal absence of RIG, dedicated ARV clinics, and round-the-clock service availability. While hospital-level wound care and vaccination timeliness were satisfactory, home wound washing practices and public knowledge about pet vaccination and rabies fatality remain inadequate. Targeted interventions are urgently needed, including ensuring continuous ARC functionality (including weekends and night hours), universal RIG availability at all peripheral facilities handling Category III bites, display of national PEP guidelines, and comprehensive IEC campaigns promoting immediate wound washing and awareness about rabies transmission and prevention.

RECOMMENDATIONS

1. Ensure 24-hour availability of ARC services at all peripheral health institutions, including Sundays and holidays, to prevent delays in PEP initiation.

2. Urgently address the near-zero availability of RIG at peripheral facilities; stock availability must be mandated for all institutions managing Category III bites.
3. Promote immediate home wound washing through targeted community health education and school-based campaigns.
4. Display national rabies PEP guideline posters at all ARCs to support frontline health worker decision-making.
5. Strengthen animal birth control (ABC) and mass dog vaccination (MDV) programs to reduce the population of stray dogs.
6. Conduct IEC campaigns emphasizing pet vaccination, rabies fatality, and the importance of completing the full PEP regimen.

LIMITATIONS

This study was conducted at a single tertiary care centre using consecutive sampling, which may limit generalizability. Recall bias among participants may have affected the accuracy of some responses. The cross-sectional design does not allow causal inferences. ARC functionality was assessed at a single point in time and may not reflect seasonal or supply-chain variability.

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CONFLICT OF INTEREST

NIL

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