SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Nibhoria *et al*., 2026
doi: 10.21276/SSR-IIJLS.2026.12.3.30

Original Article

open access

# Study to Assess the Factors Influencing Delay in Initiation of Post-Exposure Prophylaxis among Paediatric Animal Bite Victims

**Komal Nibhoria[1]*, Mahesh Upadhyay[2], Anand Singh[1], Rakesh Khinchi[3], Tejal Mali[3]**

[1]PG Resident, Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan, India
[2]Associate Professor, Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan, India
[3]PG student of MPH, Department of Public Health, RNT Medical College, Udaipur, Rajasthan, India

***Address for Correspondence:** Dr Komal Nibhoria, PG Resident, Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan, India
**E-mail:** komalnibhoria@gmail.com

**Received: 15 Jan 2026/ Revised: 10 Mar 2026/ Accepted: 22 Apr 2026**

## ABSTRACT

**Background:** Rabies is a universally fatal yet vaccine-preventable zoonotic disease. Children constitute a major proportion of animal bite victims and are particularly vulnerable because of dependence on caregivers, delayed healthcare seeking, and poor awareness regarding timely post-exposure prophylaxis (PEP). Delay in initiation of PEP significantly increases the risk of rabies-related mortality. This study aimed to assess factors influencing delay in initiation of post-exposure prophylaxis among paediatric animal bite victims attending an Anti-Rabies Clinic.

**Methods:** A hospital-based cross-sectional study was conducted at the Anti-Rabies Clinic, Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan, during July–August 2025. A total of 120 children and adolescents aged ≤18 years with Category II and III animal bites were included using consecutive sampling. Data were collected from caregivers through a pretested semi-structured interview schedule. Delay in PEP initiation was defined as initiation more than 6 hours after the bite. Data were analysed using SPSS, with proportions and the chi-square test; $p<0.05$ was considered significant.

**Results:** Among 120 paediatric animal bite victims, 73 (60.8%) were below 10 years. Overall, 105 (87.5%) experienced delayed PEP initiation. Major factors included vaccine unavailability at peripheral centres (20%), absence of parent/companion (18.3%), lack of awareness (12.5%), parental negligence and use of home remedies (8.3%), and transport barriers (5.8%). Younger children were significantly more likely to experience delay.

**Conclusion:** Delay in PEP initiation was alarmingly high. Strengthening vaccine availability, improving caregiver awareness, and community-based education are essential to ensure timely PEP and to achieve the elimination of dog-mediated human rabies deaths by 2030.

**Key-words:** Rabies, Post-exposure prophylaxis, Animal bite, Paediatric victims, Delay, Rabies prevention

## INTRODUCTION

Rabies is an acute viral encephalitis caused by the Rabies virus (RABV), a neurotropic single-stranded RNA virus belonging to the genus *Lyssavirus* and family *Rhabdoviridae*. It is transmitted primarily through bites, scratches, or exposure to saliva from infected animals, particularly dogs.

**How to cite this article**
Nibhoria K, Upadhyay M, Singh A, Khinchi R, Mali T. Study to Assess the Factors Influencing Delay in Initiation of Post-Exposure Prophylaxis Among Paediatric Animal Bite Victims. SSR Inst Int J Life Sci., 2026; 12(3): 9901-9905.

**Access this article online**
https://iijls.com/

Rabies remains one of the most feared zoonotic diseases because of its nearly 100% case fatality rate once clinical symptoms appear.[1]

Despite being entirely preventable through timely wound washing, administration of anti-rabies vaccine, and rabies immunoglobulin when indicated, rabies continues to pose a major public health challenge globally, particularly in Asia and Africa. India contributes substantially to the global burden of rabies-related deaths.[2,3]

Children account for nearly 40% of all dog bite victims worldwide and constitute a highly vulnerable population.[1] Their playful behaviour, inability to recognize danger, smaller body size, and dependence on

 

doi: 10.21276/SSR-IIJLS.2026.12.3.30

caregivers increase both the likelihood of bites and delays in obtaining appropriate medical care. Delay in initiation of post-exposure prophylaxis (PEP) is a critical determinant of poor outcomes, as rabies becomes almost universally fatal once symptoms develop.[1,4]

Several factors may contribute to delayed initiation of PEP, including lack of awareness regarding rabies, poor accessibility to healthcare facilities, unavailability of vaccines at peripheral centres, socioeconomic constraints, transport difficulties, and reliance on traditional or home-based remedies. [4,5] Understanding these factors among paediatric populations is essential for designing targeted public health interventions.

The present study was undertaken to assess the factors influencing delay in initiation of post-exposure prophylaxis among paediatric animal bite victims attending the Anti-Rabies Clinic at RNT Medical College, Udaipur.

## MATERIALS AND METHODS

**Research Design-** The present study was conducted as a hospital-based cross-sectional study at the Anti-Rabies Clinic under the Department of Community Medicine, RNT Medical College. The study was carried out over a period of two months, from July 2025 to August 2025, to assess the profile of animal bite cases among children and adolescents attending the clinic during the study period.

**Methodology-** The study population included children and adolescents aged 18 years or below who presented to the Anti-Rabies Clinic with Category II and Category III animal bites. A total of 120 participants fulfilling the eligibility criteria were enrolled in the study. Participants were selected using a consecutive sampling technique, wherein every eligible patient attending the clinic during the study period was included until the desired sample size was achieved. Data were collected by interviewing caregivers using a pretested semi-structured interview schedule. Information regarding demographic characteristics, type of exposure, timing of presentation, awareness regarding rabies, healthcare accessibility, and reasons for delay in seeking PEP was obtained.

**Operational definition-** Delay in initiation of PEP was defined as initiation of post-exposure prophylaxis more than 6 hours after the animal bite.

**Inclusion criteria**- Children aged 18 years or younger presenting with fresh Category II or Category III animal bites during the study period and reporting for initiation of post-exposure prophylaxis were included in the study. Only those children accompanied by a legally acceptable guardian willing to provide informed consent and participate in the interview were enrolled.

**Exclusion criteria**

- Category I exposures
- Children with pre-exposure prophylaxis
- Children who already received PEP before arrival, presenting for continuation or follow-up
- Children requiring hospital admission for other acute conditions
- Children with guardians not willing to provide informed consent
- Unable to reliably ascertain time of exposure (cannot classify delay vs non delay)

**Statistical Analysis**- Data were entered and analysed using Statistical Package for Social Sciences (SPSS) software. Descriptive statistics such as frequencies and proportions were used. Chi-square test was applied to assess the association between variables. A p-value <0.05 was considered statistically significant.

**Ethical approval**- Approval for the study was obtained by the institutional ethics committee, RNT Medical College, Udaipur, Rajasthan, India. Written informed consent was obtained from parents or legally acceptable guardians of all participants.

## RESULTS

A total of 120 paediatric animal bite victims were included in the study. Table 1 shows that the majority of participants, 73 (60.8%), were below 10 years of age, while 47 (39.2%) belonged to the age group of 10–18 years.

**Table 1:** Age Distribution of Study Participants (n=120)

| Age Group | Frequency | Percentage |
|---|---|---|
| <10 years | 73 | 60.8 |
| 10–18 years | 47 | 39.2 |
| Total | 120 | 100 |

 

doi: 10.21276/SSR-IIJLS.2026.12.3.30

Table 2 shows that out of 120 participants, 105 (87.5%) experienced delayed initiation of PEP, while only 15 (12.5%) initiated PEP within 6 hours of exposure.

**Table 2:** Distribution According to Delay in PEP Initiation

| PEP Initiation | Frequency | Percentage |
|---|---|---|
| Delayed (>6 hours) | 105 | 87.5 |
| Non-delayed (≤6 hours) | 15 | 12.5 |
| Total | 120 | 100 |

Table 3 shows that among the 105 participants with delayed PEP initiation, the most common reason was vaccine unavailability at peripheral healthcare centres (20%), followed by absence of parent or companion (18.3%), lack of awareness regarding rabies and PEP (12.5%), parental negligence and use of home remedies (8.3%), and transport/logistical barriers (5.8%).

**Table 3:** Factors Responsible for Delay in Initiation of PEP (n=105)

| Reason for Delay | Frequency | Percentage |
|---|---|---|
| Vaccine unavailable at peripheral centres | 24 | 20.0 |
| Absence of parent/companion | 22 | 18.3 |
| Lack of awareness regarding rabies | 15 | 12.5 |
| Parental negligence/home remedies | 10 | 8.3 |
| Transport/logistical barriers | 7 | 5.8 |
| Other reasons | 27 | 25.1 |
| Total | 105 | 100 |

Younger children were found to be significantly more affected by delayed initiation of PEP compared to older children ($p<0.05$).

## DISCUSSION

The present study highlights the substantial burden of delayed initiation of post-exposure prophylaxis among paediatric animal bite victims attending a tertiary care Anti-Rabies Clinic.

A large proportion of study participants were below 10 years of age, which is consistent with previous Indian studies reporting higher vulnerability among younger children. Their curiosity, playful interaction with animals, and inability to defend themselves make them more susceptible to bites.

The study observed that 87.5% of participants experienced delayed initiation of PEP. This finding indicates a serious gap in timely healthcare-seeking behaviour and accessibility of rabies prevention services. Similar findings have been reported in studies conducted in India and Iran. [4,6]

Vaccine unavailability at peripheral healthcare centres emerged as the most common reason for delay. This reflects deficiencies in vaccine supply chains and inadequate availability of anti-rabies services at primary and peripheral levels of healthcare. Similar observations were reported by Ravish *et al.* and Esmaeilzadeh *et al*. [7,8]

Absence of parents or responsible caregivers at the time of exposure also contributed significantly to delays. Since children are dependent on adults for healthcare decisions and transport to health facilities, caregiver-related barriers strongly influence the timely initiation of PEP.

Lack of awareness regarding rabies, misconceptions about animal bites, and reliance on traditional or home remedies continue to hinder appropriate healthcare-seeking behaviour. Similar trends have been documented in studies conducted in India, Iran, and Ghana. [4,6,9]

Unlike adult populations, where occupational exposure and self-neglect are frequently implicated, delays in paediatric victims are largely caregiver-driven. Therefore, interventions targeted toward parents, guardians, teachers, and community members are essential. [10-12]

## RECOMMENDATIONS

Rabies prevention services should be strengthened at the community and healthcare levels. Ensuring the uninterrupted availability of anti-rabies vaccines and immunoglobulins at peripheral centres and improving referral systems can reduce treatment delays. Regular IEC activities, as well as school- and community-based awareness programmes on rabies prevention, wound care, and timely PEP initiation, should be promoted. Improved transport facilities, greater access to healthcare in underserved areas, and periodic training of healthcare workers in standard animal bite management protocols are also essential for effective rabies control.

 

doi: 10.21276/SSR-IIJLS.2026.12.3.30

**LIMITATIONS**

The present study had certain limitations. Since the study was conducted in a hospital setting, the findings may not completely reflect the actual community burden of delayed initiation of post-exposure prophylaxis. The relatively short study duration and limited sample size may also limit the generalizability of the findings. Furthermore, information regarding the reasons for delay was obtained from caregivers and may therefore have been influenced by recall bias.

**CONCLUSIONS**

The present study demonstrates that the delay in initiation of post-exposure prophylaxis among paediatric animal bite victims is alarmingly high. The major determinants contributing to delayed initiation of PEP included unavailability of anti-rabies vaccines at peripheral healthcare centres, absence of responsible caregivers at the time of exposure, poor awareness regarding rabies and the importance of timely prophylaxis, reliance on home remedies, parental negligence, and transport, as well as logistical difficulties. Timely initiation of PEP is critical for preventing rabies-related mortality. Strengthening healthcare infrastructure, ensuring an uninterrupted vaccine supply, and improving community awareness are essential to achieving the national and global target of eliminating dog-mediated human rabies deaths by 2030.

**ACKNOWLEDGMENTS**

The authors express sincere gratitude to the Department of Community Medicine, RNT Medical College, Udaipur, and all study participants and caregivers for their cooperation and support during the study.

**CONTRIBUTION OF AUTHORS**

**Research concept-** Dr Komal Nibhoria
**Research design-** Dr Komal Nibhoria
**Supervision-** Dr Mahesh Upadhyay
**Materials-** Dr Komal Nibhoria
**Data collection-** Dr Anand Singh, Rakesh Khinchi, Dr Tejal Mali
**Data analysis and interpretation-** Dr Komal Nibhoria, Dr Mahesh Upadhyay
**Literature search-** Dr Anand Singh
**Writing article-** Dr Komal Nibhoria, Dr Anand Singh
**Critical review-** Dr Mahesh Upadhyay
**Article editing-** Dr Mahesh Upadhyay
**Final approval-** Dr Mahesh Upadhyay

**REFERENCES**

[1] World Health Organization. Rabies Fact Sheet [Internet]. WHO; 2023 [cited 2025 Sep 13]. Available from: https: //www.who.int/news-room/fact-sheets/detail/rabies.
[2] National Centre for Disease Control. National Rabies Control Programme: Operational Guidelines. New Delhi: Ministry of Health & Family Welfare, Government of India; 2021.
[3] Sudarshan MK, Madhusudana SN, Mahendra BJ, Rao NSN, Ashwath Narayana DH, Rahman A, et al. Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. Int J Infect Dis., 2007; 11(1): 29–35.
[4] Khazaei S, Ayubi E, Mansori K, Khazaei S, Soheylizad M, Nematollahi S, et al. Delay in post-exposure prophylaxis and related factors among people bitten by animals in Iran, 2013. Arch Clin Infect Dis., 2016; 11(1): e33414.
[5] Joseph J, Paul S, Puttaswamy S, Sudarshan MK. Profile of animal bite cases attending anti-rabies clinic of a tertiary care centre in South India. Indian J Public Health, 2013; 57(4): 227–30.
[6] Wani RT, Masoodi MA, Kousar R, Bhat MH. Delay in initiation of post-exposure prophylaxis for animal bite victims in Kashmir: a hospital-based study. J Commun Dis. 2016; 48(1): 13–18.
[7] Esmaeilzadeh F, Rajabi A, Vahedi S, Rahimi H, Fallah F, Rezaei F. Epidemiology of animal bites and delayed post-exposure prophylaxis in rabies endemic areas of Iran. J Infect Public Health, 2017; 10(6): 748–51.
[8] Ravish HS, Kumar A, Sudharshan S, Ashwath Narayana DH, Madhusudana SN. Epidemiological study of animal bite victims attending an anti-rabies clinic in Bangalore. J Commun Dis., 2014; 46(3): 32–39.
[9] Addai JA, Addai FK, Ampofo K, Obiri-Yeboah D, Akuffo R, et al. Caregivers' knowledge, attitudes, and practices regarding rabies in children following dog bites in Ghana. BMC Public Health, 2020; 20: 1742.
[10] World Health Organization. Zero by 30: Global Strategic Plan to End Human Deaths from Dog-Mediated Rabies by 2030. Geneva: WHO, OIE, FAO; 2018.

 

doi: 10.21276/SSR-IIJLS.2026.12.3.30

[11]Patil AR, Sudeepa D. Epidemiological profile of animal bite cases admitted to a tertiary care hospital in Karnataka, India. Int J Community Med Public Health, 2015; 2(4): 486–90.

[12]Surwade P, Pawar A, Bhosale A, Jagtap M, Vidhate P. Epidemiological determinants of animal bite cases attending anti-rabies clinic in Western Maharashtra. Int J Community Med Public Health, 2016; 3(10): 2919–23.