

Original Research Article

Epidemiological patterns and post-exposure management of cat bite injuries: a cross-sectional study from North India

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ABSTRACT

Background: Cat bite injuries are an under-recognized public health concern due to traumatic injuries, bacterial infections, and potential rabies exposure. However, limited epidemiological evidence is available regarding cat bite injuries and post-exposure management practices in India. This study assessed the epidemiological patterns and post-exposure management practices among cat bite victims attending a tertiary care Anti-Rabies Vaccination (ARV) clinic in North India.

Methods: A cross-sectional observational study was conducted among 152 cat bite victims attending the ARV Clinic of MDB ASMC Hospital, Deoria, Uttar Pradesh, from January to June 2025. Data regarding socio-demographic characteristics, injury patterns, and post-exposure management practices were collected using a structured, pre-tested tool after obtaining informed consent and ethical approval. Data were analyzed using descriptive statistics, chi-square test, and multivariate logistic regression.

Results: Adults >15 years constituted 60.5% of victims, with females comprising 50.7%. Most bites were caused by stray cats (90.1%) and occurred at home (56.6%). Upper limb injuries (46.7%) and Category II exposures (66.4%) predominated. Reporting within 24 hours occurred in 74.3% of cases, while 70.4% practiced first aid. Although overall rabies vaccination coverage was high (94.1%), only 28.0% received vaccination on the day of exposure. Anti-Rabies Serum uptake among advised patients was low (33.3%). No significant socio-demographic predictors were identified for most post-exposure practices, except same-day vaccination among adolescents.

Conclusions: Cat bites represent an important public health concern, with gaps in timely post-exposure prophylaxis and Anti-Rabies Serum uptake. Strengthening awareness regarding wound care, early healthcare seeking, and appropriate rabies prophylaxis is essential.

Keywords: Anti-rabies vaccination, Cat bite injuries, Epidemiology, Post-exposure prophylaxis, Rabies

INTRODUCTION

Cat bite injuries are an important yet comparatively under-recognized public health problem worldwide, particularly in low- and middle-income countries where

close human-animal interaction, increasing pet ownership, and large stray animal populations contribute to frequent exposures. Although dog bites remain the predominant source of rabies transmission globally, cat bites constitute a significant proportion of animal bite

injuries and are associated with substantial morbidity due to deep puncture wounds, secondary bacterial infections, and the potential risk of rabies transmission.¹⁻³ Cat bites are often characterized by narrow but penetrating wounds that can inoculate pathogenic organisms deep into tissues, increasing the risk of cellulitis, abscess formation, septic arthritis, and osteomyelitis.^{4,5}

Globally, millions of animal bite injuries occur annually, with cats contributing considerably to bite-related emergency visits in both urban and semi-urban settings.⁶ Studies from different regions have shown that cat bites account for approximately 5-15% of all animal bite injuries presenting to healthcare facilities.⁷ Female victims and children are frequently affected in domestic settings, whereas stray cat bites are increasingly reported in public areas and marketplaces.⁸ The epidemiology of cat bites differs from dog bites with respect to anatomical site, severity, behavioral triggers, and healthcare-seeking practices. Upper limb injuries, particularly involving hands and fingers, are more commonly reported following cat bites because of defensive handling or feeding practices.⁹

Rabies continues to remain a major public health challenge in India, contributing to nearly one-third of global rabies deaths despite the disease being entirely preventable through appropriate post-exposure prophylaxis (PEP).^{10,11} While dogs are the principal reservoir of rabies transmission in India, cats also play an epidemiologically important role, particularly in urban and peri-urban areas where both stray and pet cats coexist closely with humans.¹² Cat-associated rabies exposures are often underestimated because of lower perceived risk among the public and healthcare providers. Delayed healthcare seeking, inadequate wound washing, incomplete vaccination, and poor uptake of rabies immunoglobulin contribute to preventable morbidity and mortality.^{13,14}

In addition to rabies, bacterial infections following cat bites represent an important clinical concern. Organisms such as *Pasteurella multocida*, *Staphylococcus aureus*, *Streptococcus* species, and anaerobic bacteria are commonly implicated in post-bite infections.⁴ Early wound management, proper irrigation, antibiotic prophylaxis where indicated, and timely administration of anti-rabies prophylaxis are therefore essential components of post-exposure management.¹⁵ Despite these risks, awareness regarding appropriate first aid and timely PEP remains inadequate in many developing regions.¹³

Most epidemiological studies from India have focused broadly on animal bites or rabies, with limited emphasis specifically on cat bite injuries and their management patterns. Consequently, data regarding demographic profile, exposure circumstances, injury characteristics, and post-exposure practices related to cat bites remain scarce, particularly from North India. Understanding these epidemiological patterns is essential for

strengthening rabies prevention strategies, improving healthcare-seeking behavior, and guiding public health interventions aimed at animal bite prevention and management.

Therefore, the present study was undertaken to assess the epidemiological patterns and post-exposure management practices among cat bite victims attending a tertiary care anti-rabies vaccination clinic in North India. This study aimed to describe the epidemiological characteristics of cat bite victims, including age, gender, educational status, type and nature of cat, site and category of bite, location of incident, and activity at the time of exposure among patients attending the ARV clinic during the study period. Also, to assess post-exposure management practices and their association with socio-demographic factors among cat bite victims, including time to reporting at the ARV clinic, first aid practices, rabies vaccination status, same-day vaccination, and Anti-Rabies Serum (ARS) uptake among study participants during the study period.

METHODS

Study design, population, and setting

This cross-sectional observational study was conducted among cat bite victims attending the Anti-Rabies Vaccination (ARV) Clinic of Maharshi Devraha Baba Autonomous State Medical College (MDB ASMC), Deoria, Uttar Pradesh, India, from January to June 2025. All patients with a history of cat bite exposure presenting during the study period were eligible. Individuals who did not provide consent or had incomplete records for key variables were excluded.

Sampling strategy and sample size

A complete enumeration sampling technique was adopted, and all 152 eligible cat bite cases attending the ARV clinic during the study period were included. Sample adequacy was based on the expected burden of animal bite injuries and the number of cat bite exposures recorded at the study center.

Study procedure and data collection

The study was approved by the Institutional Ethics Committee of MDB ASMC, Deoria (Approval No.: IEC/2025/01; Date: 09-04-2025). Data were collected using a structured pre-tested tool administered by trained healthcare personnel, including junior residents, interns, and multipurpose health workers.

After obtaining informed consent, data regarding socio-demographic profile, characteristics of cat bite injuries, and post-exposure management practices were collected. Variables included age, gender, educational status, type of cat (pet or stray), location and activity during exposure, anatomical site of bite, WHO bite category, reporting time to ARV clinic, first aid practices, rabies vaccination

status, same-day vaccination, Anti-Rabies Serum (ARS) advice, ARS uptake, and source of ARS.

Data cleaning and processing

Data entered electronically were exported to Microsoft Excel for cleaning and preprocessing. Records were checked for completeness, consistency, and duplicate entries, and personal identifiers were removed to maintain confidentiality.

Records with missing information in key variables were excluded from inferential analysis. Variable-specific analyses were conducted using available responses with appropriate denominators.

Age was categorized into predefined groups (<5 years, 5-10 years, 10-15 years, and >15 years). Reporting time was categorized as within or after 24 hours. Wound care practices were recoded as “first aid given” or “no first aid,” and similar responses were standardized.

Conditional analyses were performed where appropriate. Same-day vaccination analysis included only vaccinated participants, while ARS uptake analysis included only those advised ARS. Derived variables such as treatment delay and grouped exposure variables were generated. Quality assurance included frequency cross-checking, validation of categorizations, duplicate verification, and consistency review of analytical tables.

Statistical analysis

Descriptive statistics were expressed as frequencies and proportions [n (%)]. Chi-square test was used to assess associations between socio-demographic factors, exposure characteristics, and post-exposure management practices. Multivariate logistic regression analysis was performed to identify independent predictors of timely reporting, first aid practices, rabies vaccination uptake, same-day vaccination, and ARS uptake. Statistical analysis was performed using the latest version of jamovi.

RESULTS

Table 1 describes the socio-demographic characteristics, epidemiological profile, and post-exposure management practices among cat bite victims attending the ARV clinic. Adults aged more than 15 years constituted the majority of victims (60.5%), while children under 5 years accounted for 16.4% of cases. Females (50.7%) were marginally more affected than males (49.3%). Most participants had primary-level education (28.3%), whereas only a small proportion were graduates or postgraduates.

A major positive finding was that most bites were reported within 24 hours (74.3%), and a substantial proportion of victims practiced some form of first aid

(70.4%). Rabies vaccination coverage was also very high (94.1%).

Table 1: Descriptive statistics of socio-demographic profile, cat bite injuries and their management.

Variables	Categories	Number (%)
Age (years) (n=152)	Under 5	25 (16.4)
	5-10	12 (7.9)
	10-15	23 (15.1)
	>15	92 (60.5)
Gender (n=152)	Male	75 (49.3)
	Female	77 (50.7)
Education (n=152)	Uneducated	31 (20.4)
	Primary	43 (28.3)
	Middle	18 (11.8)
	High school	19 (12.5)
	Intermediate	26 (17.1)
	Graduates	11 (7.2)
	Postgraduates	4 (2.6)
Nature of animal (n=152)	Stray	137 (90.1)
	Pet	15 (9.9)
Location of incident (n=152)	On street	61 (40.1)
	At home	86 (56.6)
	Workplace and others	5 (3.3)
Activity at time (n=152)	While walking on the street	75 (49.3)
	While playing or running roadside	38 (25)
	Others	39 (25.7)
Site of bite (n=152)	Lower limb	63 (41.4)
	Upper limb	71 (46.7)
	Face	11 (7.2)
	Trunk	3 (2)
	Others	4 (2.6)
Category of bite (n=152)	Category I	4 (2.6)
	Category II	101 (66.4)
	Category III	47 (30.9)
Time to ARV clinic (n=152)	Within 24 hours	113 (74.3)
	More than 24 hours	39 (25.7)
Immediate measures (n=152)	First aid given	107 (70.4)
	No first aid	45 (29.6)
Rabies vaccination (n=152)	Yes	143 (94.1)
	No	9 (5.9)
Same-day vaccination (n=143)	Yes	40 (28)
	No	103 (72)
Anti-rabies serum advised (n=152)	Yes	45 (29.6)
	No	107 (70.4)
Anti-rabies serum taken (n=45)	Yes	15 (33.3)
	No	30 (66.7)
Source of anti-rabies serum (n=15)	Government	11 (73.3)
	Private	4 (26.7)

However, several important negative findings were observed. Stray cats accounted for the overwhelming majority of exposures (90.1%). Most incidents occurred at home (56.6%). Upper limb injuries were the most common site of bite (46.7%), which is characteristic of cat bites due to handling-related exposures. Although Category II bites were predominant (66.4%), nearly one-third of victims sustained severe category III bites (30.9%), indicating substantial rabies exposure risk. Despite high overall vaccination uptake, only 28% of vaccinated individuals received same-day vaccination, reflecting delays in initiation of post-exposure prophylaxis. Similarly, among patients advised Anti-Rabies Serum (ARS), only one-third (33.3%) actually received it, demonstrating poor anti-rabies serum uptake.

Table 2: Nature of animal vs wound category.

Variables	Categories	Category I	Category II	Category III	χ^2 , df, p value
Nature of animal	Stray	4	91	42	0.469, 2, 0.791
	Pet	0	10	5	

Table 3 depicts the association between socio-demographic factors and reporting to the ARV clinic within 24 hours of cat bite exposure. Majority of participants across all age, gender, and educational groups reported within 24 hours, indicating relatively good awareness regarding the importance of early medical care after cat bites. Children aged 10-15 years showed comparatively better early reporting, while delays were relatively more common among adults aged above 15 years and children aged 5-10 years. Females

Government facilities were the major source of anti-rabies serum administration.

Table 2 assesses the association between the nature of the cat (stray or pet) and severity of bite wounds. Most category II and category III bites were caused by stray cats because stray animals constituted the majority of exposures overall. Statistical analysis showed no significant association between nature of animal and wound category ($\chi^2=0.469$, $p=0.791$). This indicates that the severity of cat bite injuries did not significantly differ between pet and stray cats, emphasizing that even pet cat bites should not be considered harmless and require appropriate post-exposure management.

demonstrated slightly better reporting than males, although the difference was minimal. However nearly one-fourth of victims still delayed seeking healthcare beyond 24 hours, which remains a significant concern considering the fatal nature of rabies. No statistically significant association was observed between time to ARV clinic and age ($p=0.368$), gender ($p=0.779$), or educational status ($p=0.739$). This suggests that delayed reporting occurred relatively uniformly across different socio-demographic groups.

Table 3: Factors associated with time to ARV Clinic.

Variables	Categories	Within 24 hrs	>24 hrs	χ^2 , df, P value
Age (years)	Under 5	18	7	3.16, 3, 0.368
	5-10	2	10	
	10-15	20	3	
	>15	65	27	
Gender	Male	55	20	0.079, 1, 0.779
	Female	58	19	
Education	Uneducated	21	10	3.53, 6, 0.739
	Primary	32	11	
	Middle	15	3	
	High school	14	5	
	Intermediate	18	8	
	Graduate	9	2	
	Postgraduates	4	0	

Table 4 shows the association between socio-demographic factors and immediate first-aid practices following cat bite exposure. Majority of participants (70.4%) practiced some form of first aid before attending the healthcare facility. Children under 5 years demonstrated comparatively better first-aid practices than other age groups. Females also showed slightly higher first-aid practices compared to males. However, an

important finding was that nearly 30% of victims did not undertake any immediate wound care, increasing the risk of infection and rabies transmission. Inadequate first-aid practices were observed across all educational groups, including among educated participants. No statistically significant association was found between first-aid practices and age ($p=0.199$), gender ($p=0.777$), or educational status ($p=0.753$). This suggests that

awareness gaps regarding immediate wound management existed broadly across the study population.

Table 4: Factors associated with immediate measures.

Variables	Categories	No first aid	First aid given	χ^2 , df, P value
Age (years)	Under 5	4	21	4.65, 3, 0.199
	5-10	6	6	
	10-15	7	16	
	>15	28	64	
Gender	Male	23	52	0.08, 1, 0.777
	Female	22	55	
Education	Uneducated	11	20	3.43, 6, 0.753
	Primary	11	32	
	Middle	7	11	
	High school	6	13	
	Intermediate	7	19	
	Graduate	3	8	
	Postgraduates	0	4	

Table 5 describes the association between socio-demographic factors and rabies vaccination uptake among cat bite victims. A very high rabies vaccination coverage (94.1%) observed across all age, gender, and educational categories, reflecting good acceptance and accessibility of vaccination services among patients reaching healthcare facilities. Vaccination uptake was consistently high in both males and females and across all educational levels. Children under 5 years demonstrated particularly high vaccination uptake. Nevertheless, a small proportion of victims (5.9%) still did not receive anti-rabies vaccination despite exposure. Given the fatal outcome of rabies once symptoms develop, even small gaps in vaccination coverage remain clinically significant. No statistically significant associations were observed between rabies vaccination uptake and age ($p=0.337$), gender ($p=0.762$), or educational status ($p=0.537$), indicating relatively equitable vaccination practices across population groups.

Table 5: Factors associated with rabies vaccination.

Variables	Categories	No	Yes	χ^2 , df, P value
Age (years)	Under 5	1	24	3.38, 3, 0.337
	5-10	2	10	
	10-15	2	21	
	>15	4	88	
Gender	Male	4	71	0.091, 1, 0.762
	Female	5	72	
Education	Uneducated	1	30	5.06, 6, 0.537
	Primary	3	40	
	Middle	1	17	
	High school	0	19	
	Intermediate	2	24	
	Graduate	2	9	
	Postgraduates	0	4	

Table 6 assesses the association between socio-demographic characteristics and receipt of same-day rabies vaccination among vaccinated individuals. Same-day vaccination was observed across all demographic groups, indicating availability of vaccination services for patients presenting after cat bite exposure. However, majority of vaccinated individuals (72%) did not receive vaccination on the same day as exposure, reflecting considerable delays in initiation of post-exposure prophylaxis. Delayed vaccination was especially common among participants with primary education. Participants aged 10-15 years showed comparatively better same-day vaccination rates than other age groups. Females had slightly higher same-day vaccination uptake than males. Although educational status showed a borderline association with same-day vaccination ($\chi^2=11.7$, $p=0.069$), the relationship did not achieve statistical significance. No significant association was observed with age ($p=0.42$) or gender ($p=0.749$).

Table 6: Factors associated with rabies vaccination.

Variables	Categories	No	Yes	χ^2 , df, P value
Age (years)	Under 5	18	6	2.82, 3, 0.42
	5-10	7	3	
	10-15	12	9	
	>15	66	22	
Gender	Male	52	19	0.103, 1, 0.749
	Female	51	21	
Education	Uneducated	17	13	11.7, 6, 0.069
	Primary	36	4	
	Middle	10	7	
	High school	13	6	
	Intermediate	17	7	
	Graduate	7	2	
	Postgraduates	3	1	

Extreme values of OR due to universal coverage in vaccination

Table 7 presents the multivariate logistic regression analysis identifying independent predictors of healthcare-seeking behavior and post-exposure management practices following cat bite injuries. A positive finding was that no major socio-demographic disparities were observed in rabies vaccination uptake, reflecting generally uniform vaccination coverage across the study population. For reporting to the ARV clinic within 24 hours, none of the predictors showed statistically significant associations. However, children aged 10-15 years had relatively higher odds of early reporting compared to adults aged above 15 years. Regarding first-aid practices, no socio-demographic variable showed statistically significant independent association after adjustment, although higher educational groups demonstrated comparatively increased odds of performing first aid. Regression estimates for vaccination uptake were unstable due to near-universal vaccination

coverage. For same-day vaccination, participants aged 10-15 years had significantly higher odds of receiving same-day vaccination compared to adults above 15 years (OR=6.585, $p=0.006$), representing an important positive finding regarding timely healthcare utilization in adolescents. A major negative finding was that

participants with primary education had significantly lower odds of receiving same-day vaccination compared to uneducated participants (OR=0.065, $p<0.001$), indicating possible delays in treatment initiation among this group.

Table 7: Multivariate logistic regression results.

	ARV $\leq 24h$		First aid given		Rabies vaccination		Same-day vaccination	
Predictor	Odds ratio	P value	Odds ratio	P value	Odds ratio	P value	Odds ratio	P value
Intercept	1.79	0.19	1.499	0.36	4.41e+8	0.99	0.5708	0.23
Age category in years								
Under 5-above 15	1.834	0.32	2.843	0.12	3.80e-8	0.99	1.951	0.34
5-10 -above 15	3.462	0.17	0.44	0.26	7.28e-9	0.99	4.6313	0.11
10-15 -above 15	3.703	0.07	1.086	0.88	1.10e-8	0.99	6.585	0.006
Gender								
Male-female	0.719	0.43	0.776	0.52	1.4	0.66	0.8861	0.78
Education								
Primary-uneducated	0.932	0.90	2.069	0.22	1.38	0.82	0.0652	<0.001
Middle-uneducated	2.242	0.31	1.245	0.74	1.31	0.88	0.5848	0.47
High school-uneducated	1.389	0.63	1.599	0.48	2.55e+7	0.99	0.4777	0.31
Intermediate-uneducated	1.568	0.48	2.145	0.24	2.20e-8	0.99	0.7854	0.72
Graduate-uneducated	2.684	0.27	1.867	0.43	9.64e-9	0.99	0.5138	0.47
Postgraduates-uneducated	1.04e+7	0.98	1.19e+7	0.98	1.65	1	0.6198	0.70

Overall, the regression analysis suggests that while vaccination uptake remained uniformly high, delays in same-day vaccination and deficiencies in first-aid practices persisted across multiple demographic groups.

DISCUSSION

The present study provides important insights into the epidemiological profile and post-exposure management practices among cat bite victims attending a tertiary care Anti-Rabies Vaccination (ARV) clinic in North India. Although dog bites remain the predominant focus of rabies prevention programs globally, the present findings highlight that cat bites also represent a significant public health concern because of their association with traumatic injuries, bacterial infections, and potential rabies exposure. Similar concerns regarding cat bite-associated morbidity have been emphasized by Talan et al, Hampson et al, Ostanello et al, and Abrahamian and Goldstein.^{5,6,8,9}

Adults aged more than 15 years constituted the majority of cat bite victims (60.5%). Similar adult predominance has been reported by Ostanello et al, Weiss et al, and Patrick and O'Rourke, where adults were more frequently

exposed because of occupational activities, pet handling, and greater interaction with domestic or stray cats.^{7,16,17} In contrast, Schalamon et al documented a higher burden among children because of playful interactions with pets.¹⁸ The predominance of adults in the present study may reflect greater outdoor exposure and increased handling of cats in domestic environments.

Unlike most animal bite studies reporting male predominance, females were slightly more affected than males in the present study. Similar female predominance among cat bite victims has been observed by Benson et al and Griego et al, where women were more commonly involved in feeding, handling, and caring for domestic cats.^{19,20} This difference from dog bite epidemiology suggests that behavioral and domestic exposure patterns vary considerably between cat and dog bite injuries.

The overwhelming majority of bites in the present study were caused by stray cats (90.1%). Similar observations have been reported by Koruk et al, Sriaroon et al, and Garcia et al, where stray cats contributed substantially to bite-related healthcare visits.²¹⁻²³ The high proportion of stray animal exposures highlights the need for strengthening animal birth control programs and

community-level awareness regarding safe interaction with stray animals.

Most bite incidents in the present study occurred at home (56.6%), which differs from several dog bite studies where street-related exposures predominate. Similar domestic predominance for cat bites has been documented by Patrick and O'Rourke and Benson et al because cats frequently coexist closely with humans in household settings.^{17,19} This finding suggests that domestic preventive strategies, including safe handling practices and vaccination of pet animals, are important components of rabies prevention programs.

Upper limb injuries were the most common site of exposure (46.7%), followed by lower limb injuries. This pattern is consistent with findings reported by Goldstein and Abrahamian and Goldstein, who observed that cat bites commonly involve the hands and upper extremities because bites usually occur during feeding, restraining, or handling activities.^{4,9} Cat bites involving the hands are clinically important because of the high risk of deep tissue infections, septic arthritis, and tendon sheath involvement.

Category II bites constituted the majority of exposures (66.4%), while approximately one-third of victims sustained category III injuries. Similar findings have been reported by Sudarshan et al and Ichhpujani et al in studies on animal bite epidemiology.^{11,12} The substantial proportion of severe category III exposures indicates considerable risk of rabies transmission and the need for timely administration of both anti-rabies vaccine and anti-rabies serum where indicated, as emphasized in the WHO Expert Consultation report.¹⁵

The present study demonstrated relatively satisfactory healthcare-seeking behavior, with 74.3% of victims reporting to the ARV clinic within 24 hours of exposure. Similar findings have been observed by Dodet et al and Abbas et al, reflecting improving awareness regarding rabies prevention.^{24,14} However, nearly one-fourth of patients still delayed seeking healthcare beyond 24 hours. Delayed reporting remains concerning because timely initiation of post-exposure prophylaxis is critical for rabies prevention. Agrawal and Reddaiah and Sharma et al identified lack of awareness, misconceptions regarding cat bites, transportation barriers, and underestimation of rabies risk as major causes of delayed healthcare seeking.^{8,13}

Immediate wound care practices in the present study were comparatively better than those reported by Agrawal and Reddaiah and Sharma et al, with 70.4% of participants practicing some form of first aid.^{8,13} Nevertheless, almost one-third of victims did not perform any immediate wound washing or antiseptic application. Similar gaps in first-aid practices have been documented by Hossain et al, Jemberu et al, and Cleaveland et al.²⁵⁻²⁷ Inadequate wound care significantly increases the risk of both bacterial

infection and rabies transmission. WHO guidelines strongly recommend immediate washing of bite wounds with soap and running water for at least 15 minutes as the first and most effective step in rabies prevention.¹⁵

Rabies vaccination coverage in the present study was very high (94.1%), which is encouraging and comparable to findings reported by Sudarshan and Narayana and Matibag et al.^{28,29} The uniformly high vaccination uptake across socio-demographic groups indicates relatively equitable access to anti-rabies vaccination services among patients reaching healthcare facilities. However, despite high overall vaccine coverage, only 28% of vaccinated individuals received same-day vaccination. Similar delays in initiation of post-exposure prophylaxis have been reported by Abbas et al, Jemberu et al, and Wilde et al, often related to operational barriers, referral delays, heavy patient load, and logistic constraints.^{14,26,30}

The uptake of Anti-Rabies Serum (ARS) in the present study was particularly poor. Although anti-rabies serum was advised in 29.6% of cases, only one-third of eligible patients actually received it. Similar low utilization of anti-rabies serum has been documented by Bharti et al, Sudarshan et al, and Quiambao et al because of high cost, limited availability, inadequate awareness, and poor accessibility.³¹⁻³³ Government facilities were the major source of Anti-Rabies Serum administration in the present study, emphasizing the crucial role of the public healthcare system in providing life-saving rabies prophylaxis.

No statistically significant association was observed between nature of animal and wound severity. Similar findings were reported by Koruk et al and Garcia et al, indicating that both stray and pet cats were capable of causing severe category III injuries.^{21,23} This finding reinforces the importance of appropriate post-exposure management irrespective of whether the biting cat is stray or domesticated.

Multivariate logistic regression analysis demonstrated that most socio-demographic variables were not significantly associated with vaccination uptake or first-aid practices after adjustment, suggesting that awareness gaps and healthcare delays were distributed broadly across the study population. However, adolescents aged 10-15 years had significantly higher odds of receiving same-day vaccination compared to adults, possibly reflecting greater parental concern and early healthcare seeking for younger individuals. Conversely, participants with primary education had significantly lower odds of receiving same-day vaccination, indicating persistent disparities in healthcare utilization patterns.

Overall, the findings of the present study indicate that although awareness regarding rabies vaccination and healthcare seeking after cat bites has improved considerably, important deficiencies remain in immediate wound care, same-day vaccination, and anti-rabies serum

uptake. Strengthening public awareness regarding cat bite-associated rabies risk, improving accessibility of anti-rabies serum, ensuring uninterrupted vaccine supply, and implementing effective stray animal population control measures are essential for improving post-exposure management and reducing rabies-related morbidity and mortality.

This study has few limitations. This study was conducted at a single tertiary-care ARV clinic with a relatively small sample size of 152 participants, which may limit the generalizability of the findings to other settings. The cross-sectional design prevents establishing causal relationships between socio-demographic factors and post-exposure management practices. Data were based partly on participant-reported information, which may be subject to recall or reporting bias. Additionally, the study assessed only patients who presented to the ARV clinic and therefore may not represent individuals who did not seek healthcare following cat bites.

CONCLUSION

The present study demonstrated that adults and females constituted the majority of cat bite victims, with stray cats accounting for most exposures. Upper limb injuries and category II bites were the predominant patterns observed, although a substantial proportion of category III bites highlighted the potential risk of severe rabies exposure.

The study identified several encouraging findings, including relatively high rates of reporting to the ARV clinic within 24 hours, satisfactory first-aid practices, and very high overall rabies vaccination coverage. However, important gaps remain in post-exposure management, particularly with regard to delayed same-day vaccination and poor uptake of anti-rabies serum among eligible patients. These deficiencies may compromise optimal rabies prevention despite good healthcare-seeking behavior.

The findings emphasize the need for strengthening public awareness regarding the risks associated with cat bites, promoting immediate wound washing practices, ensuring uninterrupted availability of vaccines and anti-rabies serum, and improving accessibility of post-exposure prophylaxis services. Effective stray animal population control measures and community-based educational interventions are essential to reduce the burden of cat bite injuries and prevent rabies-related morbidity and mortality.

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