

Original Research Article

A study on factors associated with delay in post-exposure prophylaxis among animal bite victims attending anti rabies clinic of a tertiary care hospital of southern Odisha

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ABSTRACT

Background: Rabies is a fatal viral disease of CNS. In India 17.4 million people are exposed to animal bites annually. Having a varied incubation period, post exposure prophylaxis should be started immediately after any animal bite exposure to prevent rabies. This study was conducted to find out the reasons behind delay in seeking treatment immediately which may pose potential risk to the exposed. Objectives were to describe the characteristics of animal bite exposures. To determine the factors associated with delay in post exposure prophylaxis.

Methods: A hospital-based cross-sectional study was conducted from November 2023 to January 2024 in ARC. All animal bite victims who came for PEP after 24 hours of exposure were included in the study. Data was collected using predesigned pretested questionnaire and analysed using SPSS v 17.

Results: Majority of the study population were males (63.4%) and between age group of 18-59 years (61%). 97.6% had category-III bites (mostly abrasions in lower limb). About 66% of the study population reported to the ARC after 72 hours of the exposure, the major reason being negligence (29%).

Conclusions: Thus, we need to address the issue and create awareness about rabies and its fatality to prevent future Rabies related deaths.

Keywords: ARC, Delay, Factors, Post exposure prophylaxis, Rabies

INTRODUCTION

Rabies is a fatal viral zoonotic disease of central nervous system caused by *Lyssa virus* of family *Rhabdoviridae*.¹ In India, 17.4 million people are exposed to animal bites annually.² About 20,000 deaths (that is, about 2 per lac population at risk) due to rabies are estimated to occur annually.¹ It is transmitted to man usually by the bite of rabid animals. The majority of the cases of rabies are due to the bites from rabid dogs followed by bites from other animals like the monkey, fox, cat, cow, pig, camel and all other wild animals. Rabies has a varied incubation period from 7 days to many years. Post-exposure prophylaxis (PEP) should be started immediately after any animal bite exposure to prevent rabies. In order to reduce viral

inoculum at the wound site, virucidal agents must be applied after washing the wound with soap, detergent, and water. The post-exposure vaccination course must then be completed to induce antibodies that reduce the risk of the virus entering peripheral nerves and infiltrating rabies immunoglobulin (RIG)/rabies monoclonal antibodies (RMAb) into the wound in all category III exposures to neutralize the virus at the wound site. Even after a high-risk exposure to potentially rabid animals, PEP will prevent rabies, if done timely and thoroughly.³

The study was conducted to find out the reasons behind delay in seeking immediate treatment which may pose potential risk to the exposed.

Objectives

To describe the characteristics of animal bite exposures of cases attending ARC of MKCG Medical College. To determine the factors associated with delay in post-exposure prophylaxis.

METHODS

This was a hospital based cross-sectional study conducted from November 2023 to January 2024. All animal bite victims attending the anti-rabies clinic of MKCG Medical College and Hospital, Berhampur, Odisha were included as study population. Animal bite cases who came for post exposure prophylaxis after 24 hours of exposure were included as study participants while category I bite cases, re-exposure cases were excluded from the study. A total of 82 cases were selected through purposive sampling. A pre-tested, semi-structured questionnaire was administered, collecting details of sociodemographic profile of the participants, type of bite, category of bite, site of bite, time of reporting to the facility after the bite. Institutional ethics committee approval was taken. All patients, including those who were illiterate and needed explanations regarding the study, provided written informed consent. If the patient was under the age of 18, consent was also acquired from the patient's parents or guardians.

Data collection and analysis

Data collected was cleaned and analysed using MS Excel and SPSS version 17. Descriptive statistics were analysed

for frequencies and percentages while inferential statistics were applied and $p < 0.05$ was considered as statistically significant.

RESULTS

Out of total 2517 patients of animal bite attending ARC during the study period only 82 cases (3.26%) found to be reported by more than 24-hour delay. A total of 82 study participants were analysed. The sociodemographic profile shows 61% of the study participants belonged to the age group of 18-59 years, 31.7% to 0-17 years and 7.3% belonged to ≥ 60 years of age group (Table 1). Around 63.4% of study participants were males and 36.6% were females. Majority (43.2%) of study participants were students, 22% were homemakers, 7.3% were businessman or professionals, 12.9% unskilled and 4.9% were skilled/semiskilled employees.

Around 75.6% of animal bite cases were caused by dogs while 22% of the bites were by cats. Maximum (97.6%) cases belonged to category-III. The most common wound type was abrasion (90.2%) and site of the bite was lower limb (58.5%) (Table 2).

About 66% of the animal bite victims came after 72 hours of the exposure with negligence and the most common reason for the delay was lack of awareness (29%). Other reasons for the delay in health seeking were difficulty in accessing Healthcare (24%) and non-disclosure of incident (12%) (Figures 1 and 2).

Table 1: Socio-demographic characteristics of the study participants (n=82).

Variables	Categories	Frequency (n=82)	Percentage
Age (years)	0-17	26	31.7
	18-59	50	61
	≥ 60	6	7.3
Gender	Male	52	63.4
	Female	30	36.6
Education	Graduates and above	08	9.8
	Secondary	16	19.5
	Primary	38	46.3
	Illiterate	20	24.4
Occupation	Homemaker	18	22
	Student	36	43.2
	Business and professional	6	7.3
	Unemployed	8	9.8
	Unskilled	10	12.9
	Skilled and semiskilled	4	4.9
Residence	Rural	40	48.8
	Urban	42	51.2

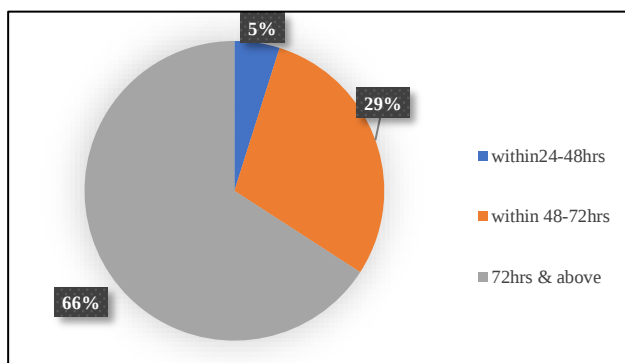
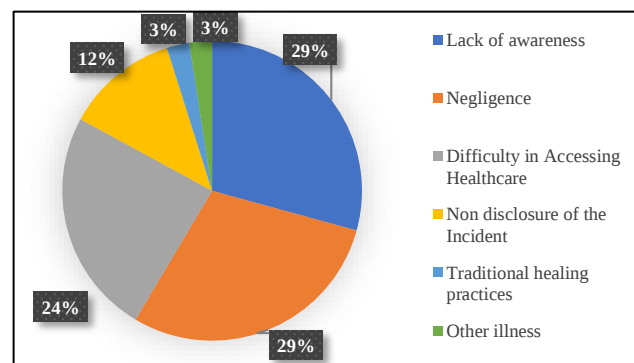
Table 2: Distribution of study participants according to animal bite characteristics (n=82).

Characteristic	Categories	Number of patients (n=82)	Percentage
Type of animal	Dog	62	75.6
	Cat	18	22
	Monkey	2	2.4
Category of bite	II	2	2.4
	III	80	97.6
Wound type	Abrasion	74	90.2
	Laceration	8	9.8
Site of bite	Lower limb	48	58.5
	Upper limb	18	22
	Trunk	6	6.6
	Pulp of fingers	10	12.9

Table 3: Factors associated with time of reporting to ARC after animal bite exposure (n=82).

Factors	Sub parameters	Time of reporting to arc			Chi-square value (p<0.05)
		Within 24-48 hours	Within 48-72 hours	≥72 hours	
Age (years)	0-17	0	10	16	$\chi^2=8.97$; p=0.062 Df=4
	18-59	4	10	36	
	≥60	0	04	02	
Gender	Male	4	10	38	$\chi^2=8.33$; *p=0.016 Df=2
	Female	0	14	16	
Residence	Rural	2	18	20	$\chi^2=9.59$; *p=0.008 Df=2
	Urban	2	06	34	
Education	Graduates and above	2	02	04	$\chi^2=14.5$; *p=0.025 Df=6
	Secondary	2	02	12	
	Primary	0	12	26	
	Illiterate	0	08	12	
Type of animal	Cat	0	04	14	$\chi^2=3.31$; p=0.507 Df=4
	Dog	4	20	38	
	Monkey	0	0	02	
Site of bite	Lower limb	2	16	30	$\chi^2=13.612$; *p=0.034 Df=6
	Upper limb	2	0	16	
	Trunk	0	2	4	
	Pulp of fingers	0	6	4	
Wound type	Abrasion	2	20	52	$\chi^2= 10.9$; *p=0.04 Df=2
	Laceration	2	4	2	

To determine the statistical significance, the chi square test was used. P value was calculated with 95% confidence interval. P value of <0.05 is considered as statistically significant (marked by *).

**Figure 1: Distribution of study participants according to time of reporting to the ARC (n=82).****Figure 2: Reasons for delay in reporting to the anti-rabies clinic (n=82).**

On analysis, gender (p value- 0.016), residence (p value- 0.008), education (p value- 0.025), site of bite (p value- 0.034) and wound type (p value- 0.04) were found to be significantly associated with delay in reporting (Table 3).

DISCUSSION

Rabies post exposure prophylaxis (PEP) is essential for the prevention of this fatal disease but many factors influence the timely access to PEP and its administration.

In the present study total 82 cases of animal bite were studied and it was seen that majority of the patients were in the age group of 18-59 years (61%) followed by 0-17 years (31.7%) and ≥ 60 years of age (7.3%) were observed. In the study conducted by Surwade et al.⁵ Majority of the patients were in the age group of 21-30 years followed by 11-20 years (19.61%) and less than 10 years of age (17.96%) were observed. In the Wani et al study children less than 18 years were 26.13% and 6.53% were above 60 years in the samples taken.⁶ Similarly, in study conducted by the Addai et al, majority of suspected rabies exposed receiving rabies post-exposure prophylaxis were between the age group 1-10 years (29.2%) followed by individuals between the age group 10 to 19 years (18.7%) were reported.⁷ According to the study conducted by Esmaeilzadeh et al most of the bite victims (58.9%) were younger than 30 years of age.⁸ The mean age of the subjects in the study of Khazaei et al was 32.4 years and the highest proportion of them (34.1%) fell in the 0-to-20-year age range.⁹ This implies that most of the delayed reporting cases were adults followed by children.

In the current study, most of the delayed cases were reported in male (63.4%), which is almost similar to the findings in the study conducted by Biswas et al (70.3%).⁴

In a similar study conducted by Malini et al majority of cases (62%) reported late because the animal was alive, looking healthy and traceable, but in our study the reason for delay in reporting found to be lack of awareness and negligence.¹⁰

In our study about 66% of study participants had reported to ARC OPD after a gap of more than 72 hours, 29% cases within 48-72 hours whereas a few (5%) of the cases reported within 24-48 hours, which is slightly higher than the study conducted by Biswas et al.⁴ It was seen that the prevalence of delay in initiating the PEP in the study conducted by Surwade et al was 25.14%.⁵ In the Addai et al study, 18.7% of participants started PEP within 24 hours of the bite, 37.8% and 31.7% initiated PEP within 1-2 days and 3-7 days respectively and 11.7% started treatment after one week.⁷ In the Khazaei et al study 37.18% victims started treatment on time while 49.41% victims had started treatment with delay of 7-48 hours whereas 13.41% victims had started treatment with delay of more than 48 hours.⁹ Whereas in the study by Wani et al the prevalence of delay in initiation of treatment by 48

hours was 9.04%.⁶ In the study conducted by Esmaeilzadeh et al majority (85.9%) of those who presented at the rabies treatment centre came within 24 hours of the animal bite while a delay (of ≥ 48 hours) in the initiation of PEP was observed in 6.8% of the animal bite patients.⁸ In a study conducted by Bedi et al also found that knowing the disease is fatal still about 49.8% of animal bite victims reported after 24 hours.¹¹ In a similar study conducted by Khokkhar et al found that 31.03% cases reported after 24 hours.¹²

As the present study was hospital based and was limited to individuals who sought treatment at the anti-rabies clinic, it is possible that our study excluded some individuals who were bitten but did not seek treatment.

CONCLUSION

In the present study, gender, residence, education, site of bite and wound type were the characteristics found significantly associated with delay in reporting to ARC. Male cases were predominant, abrasion was most common wound type and lower limb was the most common site of bite. Community level awareness can be created through rallies/campaigns by school children especially on world zoonosis day (6th July)/world rabies day (28th September) in order to motivate people to seek immediate healthcare. VHND Sessions can be dedicated to provide information regarding rabies and primary wound management.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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