



Research Article

Pattern and Reporting of Animal Bite Cases at Anti-rabies Clinic of a Tertiary Care Hospital during COVID-19 Lockdown Period in Odisha - A Hospital-based Cross-sectional Study

Chumki Rani Nanda¹, Pradyuspita Sahoo², Smaraki Mohanty³, Minakshi Mohanty⁴,
Tapas Ranjan Behera⁵

¹Junior Resident, Department of Community Medicine, SCBMCH, Cuttack, India; ²Post-PG Tutor, Department of Community Medicine, SCBMCH, Cuttack, India; ³Associate Professor, Department of Community Medicine, IMS & SUM Hospital, Bhubaneswar, India; ⁴Professor & HOD, Department of Community Medicine, PRM MCH, Baripada, Odisha, India; ⁵Associate Professor, Department of Community Medicine, FMMCH, Balasore, Odisha, India.

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Corresponding Author:

Tapas Ranjan Behera, Department of Community Medicine, FMMCH, Balasore, Odisha, India.

E-mail Id:

tapas4behera@gmail.com

Orcid Id:

<https://orcid.org/0000-0003-3934-6546>

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A B S T R A C T

Background: The commencement of the COVID-19 pandemic and lockdown has affected healthcare all over the world. Odisha had also imposed a lockdown from May 2021 which was extended up to October 2021 during the devastating second wave of COVID-19. The lockdown period was after 6 p.m. The study was done to know the pattern and reporting of animal bite cases who had attended the Anti-rabies Clinic (ARC) during the lockdown period in one of the tertiary care hospitals in Odisha.

Methods: A cross-sectional study was conducted with 271 participants who attended the ARC OPD during the lockdown period. All animal bite cases were included irrespective of age and gender. To measure the association between variables, Chi-square test was used.

Result: About 46.9% of patients hailed from the Cuttack urban area. Cases of bites after 6 p.m. constituted 37.6% of the patients and the number of bites was higher among males which was found to be statistically significant. 60% of the cases were referred to SCB Medical College because of the non-availability of Rabies Immunoglobulin (RIG) followed by 26% who were referred because of the non-availability of both RIG and Anti-rabies Vaccine (ARV).

Conclusion: Despite the lockdown, many patients from both areas (urban and rural) were victims of animal bites and out of them, around half of the patients were referred for RIG. Despite the availability of ARV at the CHCs, a few patients came to SCB for the same which indicates a lack of sensible responsibility to adhere to lockdown rules.

Keywords: Animal Bite, Lockdown, COVID-19, Rabies



Introduction

Rabies is a highly fatal zoonotic disease caused by Lyssavirus. It is mainly transmitted through the saliva of rabid animals. More than 95% of the bites are due to dogs followed by cats and other wild animals. The virus enters the body through broken skin and contact of mucosa with the body fluids of the rabid animal. It cannot cross the intact skin.

Despite the availability of effective Anti-rabies vaccines (ARV) and Rabies Immunoglobulins (RIG), globally dog-mediated rabies leads to 59000 human deaths annually. Asia (59.6%) and Africa (36.4%) account for most of the deaths.¹

According to WHO, 65% of the deaths due to human rabies in the South East Asia region are in India. Also, India contributes to 36% of human rabies death globally. Unvaccinated free-roaming dogs (FRD) within human dwellings constitute a major factor which leads to more cases of rabies in India.¹

The commencement of the novel Coronavirus pandemic in the year 2020 affected healthcare as well as the economy globally. Lockdowns were imposed worldwide to contain the pandemic. Till now, India has witnessed 4 waves; among them, 2nd was the most devastating. During the second wave, the Odisha Government imposed a lockdown from the 1st of May till 5 a.m. of 19th May, 2021. Weekly shutdowns were there on Sundays. The lockdown period started after 6 p.m. in the evening till 5 a.m. the next morning. The lockdown was further extended up to the month of October 2021 and thereafter it was lifted gradually.^{2,3}

Our OPD provides Post-exposure Prophylaxis (PEP) for animal bite cases as per national guidelines. All medications like injection tetanus toxoid, anti-tetanus serum/ tetanus immunoglobulin, ARV, ERIG, HRIG, medicines, and dressing services are provided free of cost. It functions every day including Sundays and Government holidays from 9 a.m. to 5 p.m. Two registers are maintained in the ARC OPD, one comprising the information about socio-demographic details of animal bite victims like name, age, gender, address, category of bite, site of bite, and reason for referral cases, and another register maintains the treatment (ARV and RIG) given to patients with the stock position of the different biologicals used. As per National Rabies Control Programme (NRCP), all bites of categories II and III cases are reported. That is why it caters to more cases of animal bites, but the reporting of these cases decreased after the commencement of the lockdown. There were no studies on the pattern and reporting of animal bite cases during the lockdown of the COVID-19 pandemic. So, this study was conducted with the objective to know the pattern and reporting of animal bite cases during the lockdown period in Odisha.

Methods

A hospital-based, cross-sectional study was carried out in the ARC of SCB Medical College and Hospital Cuttack, Odisha during the lockdown period from May 2021 to October 2021. SCB Medical College Cuttack being a tertiary teaching hospital caters not only to Cuttack district but also to 4 neighbouring districts from where patients are being referred for either higher treatment or when there is non-availability of drugs in those districts (Figure 1). All animal bite victims attending the ARC OPD from June 2021 to August 2021 were included in the study. Mapping of the animal bite cases (district-wise and rural vs urban, if from Cuttack district) was done to know the pattern of referral. Follow-up animal bite cases were excluded from the study. A structured questionnaire was used to collect relevant information. Patients were interviewed face-to-face after taking verbal informed consent. For children, parents' consent was taken. 271 subjects were included in the study by the method of convenient sampling. The study was approved by the Institutional Ethics Committee of SCB Medical College, Cuttack.

Analysis

After obtaining data from 271 subjects, analysis was performed using SPSS software version 21.0. Categorical variables were expressed as percentages and continuous variables were expressed as mean and SD. Chi-square test was used to compare the proportions. A p value of less than 0.05 was considered statistically significant.

Result

271 participants were enrolled in the study. About 75.6% of the animal bite victims were aged more than 15 years. 70.5% of them were male and 29.5% were female. About 89.3% of the animal bite cases hailed from the Cuttack district itself including both urban (46.9%) and rural (42.4%) areas. The remaining 10.7% of subjects were from other districts.

Figure 2 depicts that 66.4% of the bites were due to dogs followed by cats (25.5%), monkeys (6.3%) and other wild animals (1.2%).

90.4% of bites were of category III and 9.6% were of category II. Necessary information about the animal bite victims who reported on day 0 was obtained from them on that day only. No information could be collected about the completion of PEP for the referral cases as they were from different districts. However, these patients were counselled and advised to complete the rest of the doses of ARV at their near Primary Health Centres (PHC) as ARV is available in all PHCs in Odisha. All patients who hailed from Cuttack district were followed up for completion of treatment as they came to our ARV OPD for the rest of the doses. About 53.9% of bites occurred when the victims

were away from their houses while 46.1% occurred when they were around their locality/ house. In spite of the lockdown, 37.6% of the animal bites happened after 6 p.m. and 62.4% occurred before 6 p.m. 55% of the bites were provoked and 45% were unprovoked.

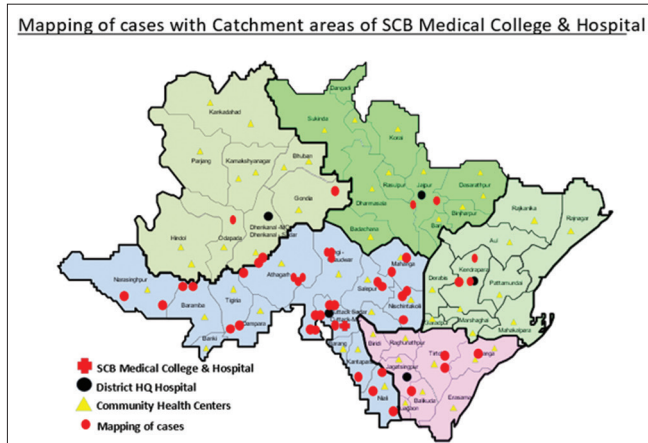


Figure 1. Mapping of Cases with Catchment Areas of SCB Medical College & Hospital.

Among all animal bite cases, 18.4% were referred. Among these, 60% were referred because of the non-availability of RIG while 26% were referred because of the non-availability of both RIG and ARV. 57% were referred from within the Cuttack district followed by referrals from other districts (43%) (Table 1). Among other districts, most of the cases were from Jajpur (13) followed by Kendrapara (6). Among Cuttack's rural area, most of the cases were from Tangi (9) followed by Salepur (5) (Figure 1).

47.6% of cases were coming to SCB with the expectation of better treatment and 29.2% came as they were living near

the college. 70.5% of the victims had reported within 24 hours, 15.9% between 24 and 48 hours, and 13.7% beyond 48 hours post-bite.

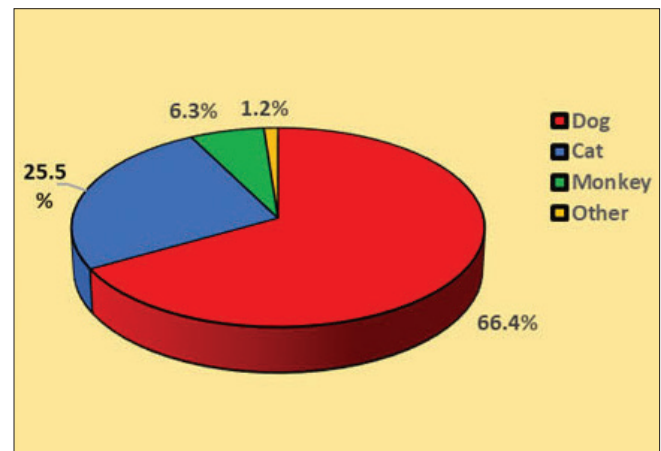


Figure 2. Types of Animals.

Table 2 shows the association of different variables with animal bites. Most of the cases of bites after 6 p.m. were male (77.5%). Males (75.3%) contributed the highest among all animal bite cases that occurred when the victims were away from their homes. These two associations (bite after 6 p.m. and place of bite being outside their homes) were statistically significant.

About 80.8% of the bites were among the age group of more than 15 years when they were away from their houses and for those who were less than 15 years of age, the value was 19.2% and this association was statistically significant (p value = 0.03). The majority of the bites after 6 p.m. were among those who were more than 15 years of age but it was not statistically significant.

Table 1. Pattern of Reporting among Animal Bite Victims (N = 271)

Variables	Number	Percentage
Referral	Yes	18.4
	No	81.6
Reason for referral	Non-availability of RIG	60.0
	Non-availability of ARV	14.0
	Non-availability of both	26.0
Place of referral	Cuttack district	57.0
	Districts other than Cuttack	43.0
Reason for coming to SCB	Referred	18.4
	SCB is better	47.6
	SCB is nearest to the residence	29.2
	Other reasons	4.8
Time of reporting to SCB (hours)	< 24	70.5
	24-48	15.9
	> 48	13.7

Table 2. Association of Different Variables with Animal Bites (N = 271)

Variables	Variables [N (%)]									
	Time of bite					Place of bite				
Gender	Before 6 p.m.			After 6 p.m.		Away from home		In and around home		
Male	112 (66.3)			79 (77.5)		110 (75.3)		81 (64.8)		
Female	57 (33.7)			23 (22.5)		36 (24.7)		44 (35.2)		
p value	0.05					0.05				
Age (years)										
< 15	42 (24.9)			24 (23.5)		28 (19.2)		38 (30.4)		
> 15	127 (75.1)			78 (76.5)		118 (80.8)		87 (69.6)		
p value	0.8					0.03				
Residence	Reason for coming to SCB				Reason for referral			Time of reporting to SCB (hours)		
	Referred	SCB is better than other centres	SCB is near to residence	Other reasons	Non-availability of RIG	Non-availability of ARV	Non-availability of both	< 24	24-48	> 48
Cuttack U*	5 (10.0)	51 (39.5)	64 (81.0)	7 (53.8)	1 (3.3)	2 (28.6)	2 (15.4)	99 (51.8)	15 (34.9)	13 (35.1)
Cuttack R#	21 (42.0)	74 (57.4)	14 (17.7)	6 (46.2)	9 (30.0)	4 (57.1)	8 (61.5)	79 (41.4)	19 (44.2)	17 (45.9)
Other than Cuttack	24 (48.0)	4 (3.1)	1 (1.3)	0 (0.0)	20 (66.7)	1 (14.3)	3 (23.1)	13 (6.8)	9 (20.9)	7 (18.9)
Total	50 (18.4)	129 (47.6)	79 (29.2)	13 (4.8)	30 (60.0)	7 (14.0)	13 (26.0)	191 (70.5)	43 (15.9)	37 (13.6)
p value	0.00				0.00			0.01		

*U: Urban, #R: Rural

Most of the people from Cuttack’s rural area were coming to SCB with the expectation of better treatment (57.4%). Among the referred cases, most were from districts other than Cuttack (48%) and the rural area of Cuttack (42%). 81% of the victims from the urban area of Cuttack were coming to SCB because it was near their residence.

People from districts other than Cuttack were referred mainly because of the non-availability of RIG (66.7%). Referrals from the rural area of Cuttack were because of the non-availability of both ARV and RIG (61.5%) followed by the non-availability of ARV (57.1%).

Only 6.8% of people from districts other than Cuttack reported within 24 hours after the bite. Similarly, only 20.9% reported between 24 and 48 hours of the bite and 18.9% reported after more than 48 hours of the bite.

A statistically significant association was found between the variables like the reason for coming to SCB, reasons for referral, and time of reporting to SCB medical college after the animal bite.

Discussion

It was a cross-sectional study done in the ARC of SCB Medical

College & Hospital, Cuttack, Odisha to know the pattern and reporting of animal bite cases during the lockdown period in the state. Most of the victims were more than 15 years old (75.6%). This might be because older people are more exposed to the outside world but children mostly stayed at home (24.4%) during the lockdown period when the schools and colleges were closed. Similar findings were observed in a study done by Bashir et al. at SMHS Hospital, Srinagar but it was not during the lockdown period.⁴

Male victims were almost double their female counterparts (male (M):female (F) = 2.4) which is also a study finding by Satapathy et al. at MKCG Hospital, Berhampur in 2020 during the COVID-19 period (M:F = 2.16). A study conducted by Saleem et al., at GMC Srinagar in 2020 during the COVID pandemic showed the male-to-female ratio to be 4.3. This might be because males have major responsibilities and they have to go outside more frequently than their counterparts during the lockdown period for work, groceries, medications etc.^{5,6}

The majority of cases hailed from the Cuttack district itself (89.3%) and the proportions between rural and urban areas were almost equal (urban = 46.9%, rural = 42.4%) which

was also found in a study done by Satapathy et al. in 2020 at MKCG Hospital, Berhampur (urban = 52.48%, rural = 47.52%). In spite of the lockdown, people were exposed almost equally in both urban and rural areas.⁵

The prevalence of dog bites was more (66.4%) followed by cats and monkeys. Satapathy et al. also found dogs to be the major culprit (71.8%) but here monkeys held the 2nd rank in contrast to our study where cats hold the second position.⁵ Both Satapathy et al. and Saleem et al. found an overall decline in dog bite cases during the lockdown period as compared to previous years.^{5,6}

The majority of bites were of category III in our study (90.4%). This is also one of the findings observed in a study by Bisoyi et al. done at ARC of SCBMCH, Cuttack in 2016 (71.8%) though it was not during the lockdown period.⁷

It was observed that the victims were bitten more when they were away from their houses. This may be because of more interaction between the patients and animals roaming during the lockdown and not adhering to the guideline of staying in their houses.

In spite of the lockdown, 37.6% of bites were in the evening (after 6 p.m.). Bashir et al. found quite fewer cases after 6 p.m. in their study (10.5%) done at SMHS Hospital, Srinagar as compared to our study.⁴

Of the total, 18.4% of cases were referred and the majority were because of the non-availability of RIG (60%) followed by the non-availability of both RIG and ARV (26%). These findings are consistent with those of Bisoyi et al. (RIG: 67.4%, both: 25.4%).⁷

43% of the cases were coming from outside Cuttack district against lockdown and shutdown rules. Jajpur and Kendrapara districts referred maximum cases. Non-availability of RIG in their District Headquarter Hospitals (DHH) compelled people to come to SCB leading to a loss of their wages.

Most people were coming to SCB to get better treatment than other facilities (47.6%). Lack of awareness among them about the availability of treatment near their facility might be the reason behind this action.

70.5% of victims presented to the OPD within 24 hours of the bite. Among the late reporting cases (after more than 48 hours), the majority were from outside Cuttack district (18.9%) leading to a delay in initiating PEP. A study by Joseph et al. in the ARC of a hospital in Delhi in 2013 found quite a high number of people reporting late (41%). They found distance and increasing age as the main causative factor for delay in reporting which is similar to our study.⁸

Most of the victims bitten after 6 p.m. were male (77.5%) and the majority of them were bitten outside their houses (75.3%). It can be explained as males were mostly going

outside to the market during the lockdown. Most of the victims more than 15 years of age were bitten outside their houses (80.8%). Referred cases belonged to districts other than Cuttack (48%) and the rural area of Cuttack (42%), and among those who were referred due to the non-availability of RIG, 66.7% were from districts other than Cuttack. People from the rural area of Cuttack were referred because of the non-availability of both ARV and RIG (61.5%). All these findings were statistically significant.

Strength of the Study

Our study was the first in Odisha to study the pattern of animal bites in ARC during the COVID lockdown. All animal bite cases reported to the ARC during that lockdown period were included. The patients who came from within the Cuttack district were followed up for completion of treatment and they completed the full course of anti-rabies vaccination treatment.

Limitations of the Study

As convenient sampling was done, the results cannot be extrapolated to other geographical areas. Doing a comparison between pre and post-COVID patterns would have given a better insight into the study findings. Follow-up of the referral cases could not be done to know whether they have completed the ARV treatment schedule however, they were counselled and advised for completion of the treatment.

Recommendations

To eliminate rabies, ARV and RIG should be made available starting from the Primary Health Centres level to District Head Quarter Hospital which is the guideline laid down in the NRCP so that an animal bite victim should not be referred for either RIG or ARV. During the lockdown period (COVID-19 pandemic) too, patients were referred which might have created a panic in the mind of people regarding the movement because it was restricted by the government. But one major study finding is that most of the referred cases were due to the unavailability of either ARV or RIG. A buffer stock of biologicals used for animal bite treatment should be maintained at every PHC, CHC, and DHH level so that animal bite cases can be managed timely at the peripheral levels.

Conclusion

The majority of animal bite victims were male and of the older age group. Dogs were the major culprit followed by cats. In spite of the lockdown, people roaming outside were bitten the most. Most of the referred cases were from the rural area of Cuttack and other districts. The unavailability of RIG was the major reason for referral. There is a lack of awareness among people about facilities available in their nearby PHCs. Most people from other districts reported

late to OPD. In spite of the availability of ARV at CHC, a few came for the same which shows a lack of sensible responsibility to obey lockdown rules. The public should be made aware of how to behave with animals and to avail the facilities available at their nearby centres.

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Conflict of Interest: None

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