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Research Article

Knowledge, Attitude, and Practices regarding Dog Bites and its Management to Prevent Rabies among Cases Attending an Urban Health Center in Bangalore City

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A B S T R A C T

Introduction: Dog bite is a daily event of medical importance. Majority of the victims of dog bite may not be adopting the correct management due to lack of awareness, false beliefs and incorrect practices.

Objective: To determine the knowledge, attitude, and practice regarding dog bites and its management in victims of dog bites seeking care at an urban health center in Bangalore Urban, Karnataka.

Method: A cross-sectional study was conducted among the victims of dog bites of any category seeking health care at an urban health center in Karnataka. Face validated interview schedule was administered to the 151 subjects selected by convenience sampling. The data was analyzed using SPSS Version 21.

Results: The mean age of the study subjects was 39.7 ± 14.8 years. The mean knowledge score was found to be 9.9 ± 2.6 and the median score was 10 (IQR = 8,12). The majority of the subjects (85.4%) were aware of a disease caused by dog bites whereas only some (35.8%) of them could name the disease. The mean attitude scores of the subjects were 5.1 ± 1.7. About 37.7% of them felt that vaccination could lead to adverse effects in the population. The key practice of washing the bitten area with soap and water in the current dog bite was seen among 15.2% of subjects. A significant association was seen between this practice with the educational score on applying the Fisher exact test with a p value of 0.024.

Conclusion: The knowledge regarding dog bites was good among the subjects and the attitude and practices were poor.

Keywords: KAP, Dog Bite, Rabies

Introduction

Rabies is a zoonotic disease (transmitted from animals to man) caused by the rabies virus belonging to the *Lyssavirus* genus. About 72 lakh cases and 20 thousand deaths occur annually in India due to animal bites.[1] Domestic dogs are the most common reservoirs of this virus and about 95% of human deaths due to rabies occur due to the dog-mediated disease. Mortality due to endemic canine-mediated rabies seems to be highest in Asia, with the greatest incidence and deaths reported from India.[2–4] Children are the most vulnerable groups who come in contact with infected dogs and this has a direct implication on the increasing rabies deaths being reported among children. India contributes to about 36% of rabies deaths around the world.[5]

Although dog bite is a daily event of medical importance around us, several false beliefs and wrong practices persist in the community in the management of this condition.[6] Post-exposure prophylaxis for rabies consists of Anti Rabies Vaccine (ARV) and Human rabies immunoglobulin to be given according to the category of the wound.[7] Post-exposure prophylaxis for rabies is considered a lifesaving cocktail for the management of animal bites. In developing countries like India, a major part of the population may not be availing of these services due to the lack of awareness regarding the same.[8] The National Rabies Control Program is being implemented in the country to prevent death due to rabies. The program includes strategies to strengthen surveillance of animal bites, capacity building of health care professionals in this area, increasing community awareness, and inter-sectoral coordination.[9]

In spite of all the existing control measures, rabies continues to be a major health problem in the country taking a toll on human life. We undertook this study to assess the knowledge, attitude, and practices regarding dog bites and its management among the victims of dog bites.

Materials and Methods

This cross-sectional study was carried out to assess the knowledge, attitude, and practice regarding animal bites and management among victims of dog bites seeking care at BBMP Urban Health Centre, Bangalore Urban, Karnataka. The sample size was calculated as 151, with 5% fixed precision and 95% confidence limits, based on a previous study where 89% of the people were aware of the availability of the rabies vaccine. Convenience sampling was done over two months in 2018, where any victim of a dog bite above the age of 18 years who attended this hospital, except for those who were seriously ill, was invited to participate in the study. Written informed consent was obtained from all the participants, and a face-validated interview schedule was administered.

The study tool was prepared and face-validated by experts in the field. The final interview schedule had four parts:

Part 1: It consisted of sociodemographic details including age, gender, educational status, occupation, religion, type of family, and family income. Socioeconomic status was calculated using the Modified BG Prasad scale.

Part 2: It consisted of questions to assess the knowledge of the subjects regarding dog bites. Each correct answer was given a score of 1, and the total knowledge score was out of 15.

Part 3: It had questions to assess the attitude of the subjects towards dog bite management. The responses were captured on a Likert scale with responses as agree, disagree, and neutral. Responses that agreed with the positively worded questions were given a score of one, and responses that disagreed with the negatively worded questions were also given a score of one. The total score for attitude was 8.

Part 4: Practices after a dog bite were assessed, and one point was scored for each correct practice. The total practice score was 5.

All the subjects with ≥ 50% scores were considered to have good knowledge, attitudes, and practices.

Ethical Considerations

Ethical approval was initially obtained from the Institutional Ethics Committee and written informed consent was taken from the participants after explaining the details of the study using a participant information sheet.

Statistical Analysis

The data collected was entered in Microsoft Excel. The data was analyzed using SPSS Version 21. Descriptive variables were described in terms of frequencies, proportions, mean and standard deviation. Data was tested for normality using the Shapiro-Wilk test and it was found to be normally distributed. Tests of significance like the chi-square test and Fisher's exact test were used and ANOVA test was used to associate the mean scores with various sociodemographic variables. A p value of less than 0.05 was considered to be significant.

Results

A total of 151 victims of dog bites participated in this study.

Sociodemographic Details

The mean age of the study participants was 39.7 ± 14.8

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years and 44.4% of the subjects were in the age group of 21 to 40 years. The majority of the participants in the study 63.6% were males. Most of the subjects 62.3% had up to high school education. Professionals or gainfully employed individuals included 51.7% of the study population. The most common religion was Hinduism 78.8% and about three-quarters of the subjects came from nuclear families. Median monthly per capita income was Rs. 3333 (IQR = 2500, 5000). According to the Modified BG Prasad classification 2021, the majority of the population 33.1% belonged to upper-middle socioeconomic status (Table 1).

Table 1.Sociodemographic Details of the Study Subjects

(N = 151)

Variable	Category	n (%)
Age in years	≤ 20	10 (6.6)
	21–40	67 (44.4)
	41–60	65 (43.0)
	> 60	9 (6.0)
Gender	Male	96 (63.6)
	Female	55 (36.4)
Education	Illiterate	7 (4.6)
	Highschool	94 (62.3)
	Degree/ diploma	40 (26.5)
	Graduate/ postgraduate	10 (6.6)
Occupation	Unemployed	23 (15.2)
	Homemaker	19 (12.6)
	Skilled worker	31 (20.5)
	Professional/ gainfully employed	78 (51.7)
Religion	Hindu	119 (78.8)
	Muslim	14 (9.3)
	Christian	18 (11.9)
Type of family	Nuclear	113 (74.8)
	Joint family	18 (11.9)
	Three generation	20 (13.2)
Socio-economic class	Upper	20 (13.2)
	Upper-middle	50 (33.1)
	Middle	47 (31.1)
	Lower-middle	30 (19.9)
	Lower	4 (2.6)

In this study, the majority of the subjects had category II dog bites (88.7%) and were mostly bitten by street animals (82.1%) (Table 2).

Table 2.Details of Current Dog Bite

Details	n(%)
Classification of bite	
Category I	9 (6.0)
Category II	134 (88.7)
Category III	8 (5.3)
Type of animal	
Street	124 (82.1)
Pet	27 (17.9)
History of dog bite (past)	
Yes	21 (13.9)
No	130 (86.1)

Knowledge regarding Rabies and Management of Dog Bites

The knowledge scores ranged from 5 to 14. The mean knowledge score was found to be 9.9 ± 2.6 and the median score was 10 (IQR = 8,12). The majority of the subjects (85.4%) were aware of a disease caused by dog bites whereas only some (35.8%) of them could name the disease rabies. Almost half the study population knew that rabies is a killer disease. A little more than one-third of them were aware that disease transmission can happen by scratches from the infected animal but less than one-fourth of the subjects had information that licks on broken skin can also transmit the disease. Few (17.2%) subjects thought that the disease could be transmitted by drinking milk from an infected animal (Table 3).

Attitude regarding Management of Dog Bites

Attitude scores ranged from 0 to 8. The mean attitude score of the subjects was 5.1 ± 1.7. Almost 70.9% of the subjects felt that the traditional practice of applying jackfruit gum over the wound with a coin over it could prevent the disease from occurring. Very few subjects (21.1%) felt that a traditional healer could prevent the disease from developing. About 37.7% of them felt that vaccination could lead to adverse effects in the population. The association between mean knowledge scores and mean attitude scores was compared with the various sociodemographic variables out of which gender showed a significant association with the attitude score, and the difference in socioeconomic classes showed a significant association with the mean scores (Table 4).

Among the study group, 13.9% of individuals had a dog bite in the past and the practices followed among this group included washing with soap and water (19%), taking vaccination (100%), applying turmeric/ coffee powder (57.1%), avoiding alcohol consumption (52.3%), avoiding meat consumption (47.6%), and observing the dog for 10 days (14.2%) (Figure 1).

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Table 3.Knowledge regarding Rabies and Management of Dog Bite

(N = 151)

Awareness of Rabies		n (%)
Heard of rabies		54 (35.8)
Heard of a disease caused by a dog bite		129 (85.4)
The disease is caused by germs (viruses)		52 (34.4)
A person can die of dog bite-related disease		75 (49.7)
Animals responsible for rabies transmission	Dogs	122 (80.8)
	Cat	67 (44.4)
	Rat	20 (13.2)
	Monkey	14 (9.3)
	Squirrel	6 (3.9)
Can be transmitted by	Scratches	60 (39.7)
	Licks on skin	35 (23.2)
	Bites	112 (74.2)
	Contact with saliva	28 (18.5)
	Drinking the milk of an infected animal	26 (17.2)
Symptoms of this disease	Fever	20 (13.2)
	Itching/ tingling at the site of injury	10 (6.6)
	Fear of water	96 (63.3)
	Excessive salivation	67 (44.4)
Children are at greater risk of bites		65 (43.0)
Management of dog bite		
Immediate washing with soap and running water		58 (38.4)
The wound is to be washed for ten minutes		14 (9.3)
There is existing vaccination/ injection for rabies prevention		111 (73.5)
The usual number of injections of vaccine is five		31 (20.5)
The site of vaccination is the arm		110 (72.8)
Other than vaccination, another injection to be taken in case of dog bites (immunoglobulin)		0 (0.0)
Vaccination is free of cost		132 (87.4)
Vaccination can be given during pregnancy		38 (25.2)
Vaccines are available at	Government hospital	101 (66.9)
	Private hospital	6 (4.0)
	Both	43 (28.5)
Biting animals should be observed on the days following the bite		46 (30.5)
Animal to be observed for ten days		24 (15.9)

Table 4.Association of Mean Awareness Score with Different Sociodemographic Variables

Variable	Category	Knowledge about Dog Bites and Management		Attitude toward Dog Bite Management	
		Mean Score ± SD	p Value	Mean Score ± SD	p Value
Age (years)	≤ 20	9.5 ± 2.3	0.773**	5.3 ± 0.7	0.551**
	21 – 40	9.9 ± 3.0		5.0 ± 1.7	
	41 – 60	9.8 ± 2.1		5.1 ± 1.9	
	> 60	10.6 ± 1.8		5.8 ± 0.9	
Gender	Male	10.1 ± 2.7	0.054¶	5.2 ± 1.8	0.012¶
	Female	9.6 ± 2.2		5.0 ± 1.5	
Occupation	Unemployed	9.8 ± 2.2	0.164¶	5.1 ± 1.5	0.065¶
	Gainfully employed	9.9 ± 2.7		5.2 ± 1.8	
Religion	Hindu	9.8 ± 2.7	0.355**	5.0 ± 1.8	0.073**
	Muslim	9.9 ± 1.5		4.8 ± 1.1	
	Christian	10.7 ± 1.3		6.0 ± 1.1	

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Type of family	Nuclear	10.0 ± 2.8	0.263**	5.1 ± 1.7	0.241**
	Joint	10.2 ± 1.4		5.7 ± 1.7	
	Three generation	9.1 ± 1.5		4.8 ± 1.6	
Socioeconomic class	Upper	11.2 ± 2.9	0.033**	5.9 ± 0.8	0.016**
	Upper-middle	10.2 ± 2.6		5.4 ± 1.6	
	Middle	9.4 ± 2.5		4.8 ± 2.0	
	Lower-middle	9.7 ± 2.0		4.5 ± 1.6	
	Lower	8.0 ± 1.6		6.2 ± 1.5	

**: ANOVA, ¶: Independent t test, p < 0.05 is significant

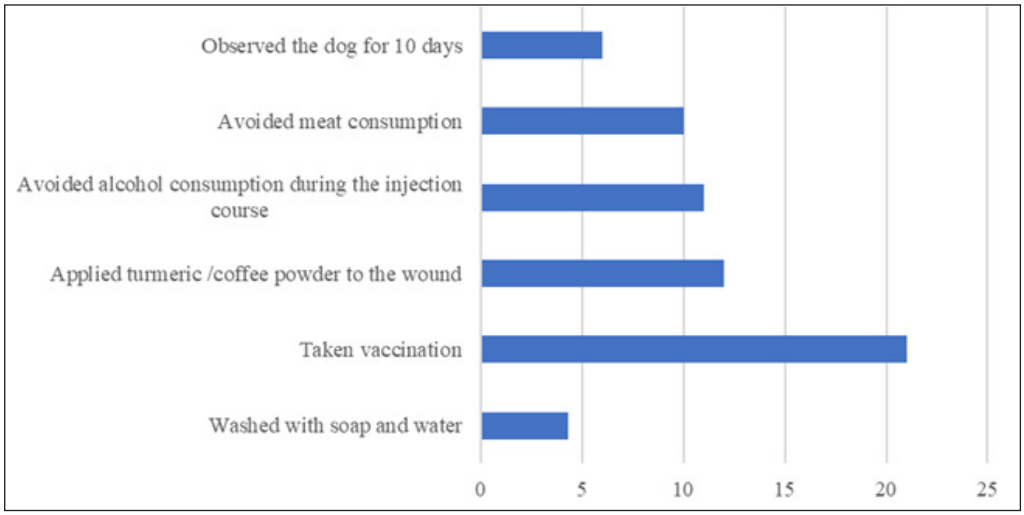

Figure 1.Practices Following Previous Dog Bite (N = 21)

The key practice of washing the bitten area with soap and water in the current dog bite was seen among 15.2% of subjects. A significant association was seen between this practice and the educational score, as determined by applying the Fisher exact test with a p value of 0.024 (Table 5).

Table 5.Association between Key Practices and Demographic Variables

Variable	Categories	Washing the Bitten Area with Soap and Water		p Value
		Yes n (%) 23 (15.2)	No n (%) 128 (84.8)	
Age (years)	≤ 20	0 (0.0)	10 (66.0)	0.212*
	21–40	14 (9.3)	53 (35.1)	
	41–60	9 (6.0)	56 (37.1)	
	> 60	0 (0.0)	9 (6.0)	
Gender	Male	16 (10.6)	80 (53.0)	0.640#
	Female	7 (4.6)	48 (31.8)	
Education	Illiterate	0 (0.0)	7 (4.6)	0.024*
	High school	21 (13.9)	73 (48.3)	
	Degree/ diploma	2 (1.3)	38 (25.2)	
	Graduate/ postgraduate	0 (0.0)	10 (6.6)	
Occupation	Unemployed	7 (4.6)	35 (23.2)	0.761#
	Gainfully employed	16 (10.6)	93 (61.6)	

*: Fisher exact test, #: Chi-square test, p < 0.05 is significant

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Discussion

Dog bite cases persist as a major public health concern in our country despite the various measures taken. The most common victims of dog bites in this study included young adults (44.4%) in the age group of 21 to 40 years. The majority of the subjects were males (63.6%), which could be clearly because males have more chances of going out and hence a greater risk of exposure to street animals. This finding was consistent with other studies in similar settings.[10–13]

The most common biting animal in our study was street dogs (82.1%), which was similar to other studies conducted in urban communities.[14] This could be attributed to the study setting and the lack of control over street animals in the overpopulated urban areas. Category II bites were the most common (88.7%) in this study, as reported by other studies from different parts of the country.[6,14]

Knowledge regarding the disease was comparatively good, with the majority of the subjects knowing about the disease caused by animal bites. This finding was similar to a study conducted in Bangladesh, where most of the participant population had good knowledge about the disease.[8] In this study, about 35.8% of the subjects had heard of rabies, compared to a study done by Jain and Jain in Ghaziabad, where only 20% of the subjects attending the CHC for dog bites had heard the name of the disease.[6] This difference could be due to the higher educational status among the urban population in our study.

A significant association between socioeconomic class with knowledge and attitude scores indicated that subjects coming from higher socioeconomic classes would certainly have higher education status and thus better health awareness. These subjects would be more open to information on public platforms, which would have raised their understanding of dog bites and their management.

Major gaps were seen in the knowledge regarding the management of dog bites especially the first aid practice of washing with soap and running water was seen only among 15.2% of the current dog bite cases. Among the previous dog bite cases, only 4 (19%) subjects out of 21 had followed this practice. In a similar study done in Jharkhand, 48.2% of the subjects followed the practice of washing the wound with soap and water.[14] This could be due to the difference in the study setting which was a tertiary care center in the later study. This finding was drastically different from a similar study done among the para-medical staff working in various rural primary health centers of Western India which showed that almost all the staff knew about the first aid for dog bites which was washing the wound with soap and running water. Among these, the majority (83%) said that the time of washing is less than ten minutes while the recommended duration is more than 10 minutes.[15] The good knowledge and practices in this study are clearly due to the occupational background of the study population as all of them were trained healthcare staff.

Recommendations

One of the limitations of this study is that a lesser number of subjects or no subjects were obtained in certain categories on sub-group analysis and this was because the sample size was calculated based on one of the important factors considered in the objectives of the study and not all. The findings from this study will help throw light on the direction of further research in the field of animal bites and their management. To improve the knowledge and practices in the community, there is a need to increase the awareness programs and behaviour change communication needs to be brought in among the general population.

Conclusion

The knowledge regarding dog bites was good among the subjects, whereas the attitude and practices were poor. There is a need for behaviour change communication to be conducted regarding the importance of seeking appropriate treatment for dog bites among the urban population.

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Conflict of Interest: None

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