

ORIGINAL ARTICLE

Cross-sectional observational study about awareness of rabies and response to dog bites in school children between age group 10-18 years and their teachers.

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Abstract

Background: Rabies is a highly fatal infectious zoonotic disease, 100% preventable by vaccination which is endemic in India especially among children¹. Knowledge about rabies in children and their teachers is critical in prevention and control of this disease.

Aim of the study: To assess awareness of rabies among school children, both boys and girls from 10 to 18 years and their teachers.

Study design: Cross sectional observational study,

Methods: The study included adolescent boys/girls from 10-18 yrs and teachers of three government co-education higher secondary school at rural Budge Budge belonging to the district of south 24 parganas near Kolkata. A questionnaire about awareness and prevention of rabies was given to school children and their teachers to assess knowledge about rabies. The school visit was conducted between January to March 2019.

Results: Awareness about the disease was poor among students (57%) as compared to teachers (93%). Among those who had an idea about the disease, only 4% of students and 12% of teachers did know that it can be caused by animal other than dog. Knowledge regarding post exposure prophylaxis was 63% among students and 95% in teachers. Majority of teachers (96%) were aware about prolonged washing of bite wound with soap water whereas figure was only 16% in case of students.

Conclusion: As knowledge on wound wash after dog bite and post exposure prophylaxis is poor among children, there is need to create awareness to reduce the burden of disease by inclusion of this topic in curriculum or mass education.

Introduction

The World Health Organisation states that rabies is responsible for 59,000 deaths each year globally, out of which 20,000 in India, making India the country with highest rabies fatalities in Asia and the second highest in the world². These deaths mostly occur in children. Domestic dogs are the main reservoir of rabies in the developing countries of the world. Rabies causes fatal encephalomyelitis which has 100% mortality³. Being a fatal and 100% preventable disease¹ all efforts should be made to prevent even a single case of rabies.

Children who go to school are at risk for exposure to dogs because of their exposure of limbs, playful nature and preference to outdoor activities. Severe exposure makes failure of all intervention and difficult to prevent rabies.

Teachers remain in contact with students for more than six hours a day, so awareness among teaching community is a determining factor in the control of rabies.

A lack of adequate awareness about rabies makes the disease prevalent in the community. Certain misconceptions regarding wound management makes the patient further prone to spread of rabies virus. Many myths and superstitions are prevalent in the community for wound management of animal bite, application of red chilli, lime, turmeric powder and some indigenous herbs. Washing wounds with soap and water immediately after exposure for a minimum period of 15 minutes is an important preventable aspect of rabies as it removes virus from the wound site². Insufficient dog vaccination in uncontrolled canine population and an irregular supply of rabies vaccines and immunoglobulins in some areas are responsible for rabies spread in India.

Among exposed individuals rabies prevention largely depends on proper and prompt first aid and post exposure prophylaxis. Children however do not report minor injuries either for fear of being scolded by parents or they just do not understand the risk involved. In spite of free vaccines and immunoglobulins available at health centres, people often do not seek proper care. Knowledge about consequences of dog bite along with appropriate preventive measures need to be practiced immediately after bite and seeking medical care, especially among children may play an important step in reducing the burden of this highly fatal neglected zoonotic disease.

Aims and Objectives

To assess awareness of rabies among school children, both boys and girls from 10 to 18 yrs and their teachers.

Materials and Methods

Study type: Cross sectional observational study

Study population: Adolescent boys and girls from 10-18 yrs and teachers of three government co-education school.

Inclusion criteria: Adolescent boys and girls from 10-18 yrs and teachers who were present on the day of school visit and consented for questionnaire.

Exclusion criteria: All those who did not give verbal consent.

Methods: Adolescent male or female from 10-18 yrs and teachers of three government co-education higher secondary school at rural Budge Budge belonging to the district of south 24 parganas near Kolkata. With informed consent from school authority and individual study participant, a pretested semi structured questionnaire was distributed in the morning and answers were sought after one hour. The questionnaire was formed to assess knowledge about rabies virus, its transmission, severity of disease, first aid measures opted after dog bite, prevention, vaccination and its availability. Those who faced difficulty in understanding English, the questions were asked in local language.

Result and Analysis

Table 1: Demography, students (N 1828)

	Category	Frequency N (%)
Age group in years	10- 14 yrs	1133 (62%)
	14-18 yrs	695 (38%)
Gender	Male	1041 (57%)
	Female	787 (43%)
Class	Less than class V	512 (28%)
	Class V--VIII	530 (29%)
	Class IX--XII	786 (43%)
Religion	Hindu	1206 (66%)
	Muslim	622 (34%)

Among 1828 students in the age group 10-18 years, 1041 (57%) were boys and 787 (43%) were girls. By religion 66% were Hindu and 34% Muslim. 62 % of students belongs to age group 10-14 yrs and 38% are 14-18 years. 786 or 43% of respondents were from class IX-- XII , whereas 29% (530) belongs to class V-VIII , rest 512 or 28% of students were in less than class V.

Table 2: Demography , teachers (N 88)

	Category	Frequency N(%)
Gender	Male	56 (64%)
	Female	32 (36%)
Education	Higher Secondary	18 (20%)
	Graduation	56 (64%)
	Post graduation	14 (16%)
Religion	Hindu	62 (70%)
	Muslim	26 (30%)

Among 88 teachers who participated in questionnaire based response, 56 were male and 32 were female.70% belongs to Hindu and 15% belongs to Muslim community. The educational status showed 64% were graduate, 20 % passed higher secondary and 16% did post graduation.

TABLE 3: Distribution of study participants (students) based on their knowledge of rabies.

Participant's knowledge	Category	Frequency N (%)
Are you aware of rabies (N 1828)	Yes	1050 (57%)
	No	778 (43%)
How does rabies occur (N 1050)	Dog bite/scratch/lick/close contact	645 (61%)
	Other than dog (bite/scratch/lick)	36 (4%)
	Does not know	369 (35%)
Mode of transmission (N 681)	Bite	393 (58%)
	Scratch	108 (16%)
	Lick on intact skin	64 (9%)
	Close contact with animals	15 (2%)
	Does not know	101 (15%)
Belief of students in fatality of rabies (N1050)	Fair chance of survival	72 (7%)
	Minimal chance of survival	200 (19%)
	100% fatal	778 (74%)
Prevention of human rabies by vaccine (N 1050)	Yes	665 (63%)
	No	212 (20%)
	Does not know	173 (17%)
Prevention of human rabies by vaccination of dog (N 645)	Yes	59 (9%)
	No	110 (17%)
	Does not know	476 (74%)
Availability of vaccine N (665)	District hospital	224 (34%)
	Municipality	98 (15%)
	Private clinic	63 (9%)
	Does not know	280 (42%)

A total of 1828 students belonging to three different schools participated in this study. Out of which 1050 (57%) were aware of the fatal disease rabies. Among those who were aware, majority (61%) believe that only dog is the animal responsible for rabies transmission, 35% do not have any clue regarding animal responsible, a few approximately 4% have an idea that this disease can be transmitted by other animals also. When enquired about the mode of transmission 58% responded for the bite, 16% for scratch whereas lick and close contact were 9% and 2% respectively.

Among 645 students who opted dog as a causative animal, 42% marked aggressive behaviour as a sign of rabid dog, 24% went for hypersalivation, 10% think that dog die out of disease and 24% had no idea. Regarding fatality of rabies 74% believe that rabies is a 100% fatal disease, 19% think that there are minimal chances of survival and only 7% are in favour of fair chances of survival.

With respect to knowledge about human rabies prevention by vaccine, 63% of respondents said, 'yes' it can be prevented, 20% opted 'no' and rest 17% were unaware in this field. Only 9% of the total students participants of this study who did know that rabies is transmitted by dogs were aware by the fact that this highly fatal disease can be prevented by vaccination of dogs, 17% have a false belief that prevention of rabies is not possible by vaccinating dogs and a major chunk (74%) did not have any idea. 42% of students had no information about availability of vaccine, 34% responded that district hospital is the only source whereas availability in municipality and private clinic were 15% and 9% respectively.

TABLE 4: Distribution of study participants (teachers) based on their knowledge of rabies.

Participant's knowledge	Category	Frequency N (%)
Are you aware of rabies (N 88)	Yes	82 (93%)
	No	6 (7%)
How does rabies occur (N 82)	Dog bite/scratch/lick/close contact	68 (82%)
	Other than dog (bite/scratch/lick)	10 (12%)
	Does not know	4 (6%)
Mode of transmission (N 78)	Only bite	68 (87%)
	Other than bite	10 (13%)
Belief of teachers in fatality of rabies (N 82)	Fair chance of survival	2 (2%)
	Minimal chance of survival	8 (10%)
	100% fatal	72 (88%)
Prevention of human rabies by vaccine (N 82)	Yes	78(95%)
	No	4 (5%)
Prevention of human rabies by vaccination of dog (N 68)	Yes	32(47%)
	No	10 (15%)
	Does not know	26 (38%)
Availability of vaccine N (78)	District hospital	40 (51%)
	Municipality	20 (26%)
	Private clinic	18 (23%)

Table 4, represents the knowledge of teachers regarding rabies, its transmission and modes of prevention. Among a total of 88 teachers, 82 (93%) were aware of rabies but 6 of them did not heard about this disease before and we could not proceed with further questionnaire with them. In remaining 82 teachers, 68 (82%) did know that dog is the only causative animal, whereas 10 of them said it can be caused by other animals also but 6% had no idea. 87% of total respondents has a belief that only bite of a rabid animal can transmit disease while 10% has an idea about various modes of transmission other than bite. When enquired about belief of teachers in fatality of rabies, 88%

opted for 100% fatal, 10 % opined minimal chance of survival and only 2% answered fair chances of survival. 95% of total teachers who were aware of rabies opined that it is a vaccine preventable disease but only 47% agreed that prevention of human rabies is possible by vaccination of dogs. With respect to knowledge about availability of vaccine 51% were in favour of district hospital, 26% municipality and 23% private clinic.

Table 5: First aid practice observed by the students (N 1828) and teachers (N 88) after dog bite

First aid	Students	Teachers
Wound wash with only water	540 (29%)	2 (2%)
Prolonged wound wash with soap water	292 (16%)	84(96%)
Sprinkle of turmeric powder on the wound	126 (7%)	NIL
Application of turmeric and lime paste	72 (4%)	NIL
Sought remedy from traditional healer	86 (5%)	NIL
Do nothing	712 (39%)	2 (2%)

This table depicts various first aid measures which were opined by our study participants after an incidence of dog bite. Majority of students were unaware about correct first aid measures to be taken and would do nothing (39%), whereas 29% would wash with plain water, 16% with soap water while some of them (5%) will go to a traditional healer, 7% opted for application of turmeric powder and a few (4%) will apply turmeric and lime paste.

This scenario was different among teachers. 96% of teachers opted for prolonged wound wash with soap water, whereas 2% are in favour of plain water for this purpose, remaining 2% will do nothing and none of them opted for traditional cultural practices.

Discussion

This study showed that, a large percentage of students approximately 43% (N =778) were not aware of rabies, those who were aware their knowledge regarding transmission was poor. Majority believe that only bite or scratch by rabid animal can transmit the disease whereas a few had an idea that licking and close contact with animal can also transmit. This is very alarming and unacceptable as children, who are the main victims of this disease, they overlook and ignore these incidences of minor modes of transmission out of their lack of knowledge. Children should be educated to report even a minor history of contact with animal to their parents, caregivers or teachers.

Regarding rabies fatality, we were surprised to see that a fair number of respondents in both the group have a false belief that there are chances of survival in this disease. This is due to gap of knowledge and awareness. Various rabies awareness studies in school children and community had similar results⁴. So absolute focusing on awareness is needed to bridge the gap.

Washing dog bite wounds with soap and water just after exposure for a minimum period of 15 minutes is an important preventable aspect of rabies². We assessed the level of knowledge among the two groups of participants about correct method of wound management. Teachers were well informed while majority of students had misbeliefs.

The knowledge of students about prevention of rabies by vaccination was very poor, only 63% believe that vaccine has a role in prevention. Awareness in this topic will definitely increase the vaccine acceptance and vaccine seeking behaviour of students after dog bite. Whereas 95% teachers were aware of post exposure vaccination but were less informed about rabies prevention by vaccination of dogs⁵. Only about half of the total number of teachers agreed that rabies can be prevented by vaccinating dogs and this figure was meagre in students (9%). Apart from the knowledge of post exposure prophylaxis, mass community should be updated about the availability of vaccines and where to seek proper care and treatment immediately after exposure.

Majority of students were not aware about correct method of wound wash following dog bite , rather they were driven by traditional superstitions of applying turmeric powder, paste of turmeric & lime or visit to traditional healer.

Therefore, steps should be taken by government to make it mandatory to vaccinate pet dogs and also take immediate actions to vaccinate freely roaming street dogs.

Conclusion

Dissipation or sharing of rabies awareness to students is very important step in rabies control. This is best achieved if a curriculum is included in the syllabus. Along with that, health education to school going children should be started on a major scale with the involvement of mass media. It can decrease the number of animal bite cases and the burden on post exposure prophylaxis against rabies. Educating the children will make a positive impact on the awareness level of their families and thereby the entire community.

Recommendation

We also recommend this has to be included in syllabus. Moreover we emphasize a formal education and training for parents and school teacher.

Strengths and Limitations of the Study

Strength: Evaluation of knowledge and awareness of school children at regular interval helps rabies prevention in a big way.

Limitation: In questionnaire based study claims of the respondent is taken for granted without any cross verification.

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