

*Research article***Preliminary survey on knowledge, attitudes and practices regarding rabies**

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Abstract

Introduction: The Ministry of Health's goal is to reduce the number of human deaths from rabies to zero by 2020. Community awareness and responsible behaviour of pet owners are key factors to achieve this goal. Knowledge, attitude and practices (KAP) regarding rabies has been reported only from the Kandy district. We describe a preliminary survey among outpatients in Colombo, to supplement existing knowledge.

Methods: A convenience sample (n = 200) was selected from 26th March to 8th April 2016, from outpatients of the National Hospital of Sri Lanka. Data was collected using a self-administered questionnaire.

Results: The majority were females (66.5%), Buddhist (80.5%) and from the Colombo District (58.5%). More than 75% of the subjects knew that dogs were the main reservoir of rabies, transmission was by biting, that washing the wound was important and that rabies could be prevented by vaccinating dogs and humans. However, only 22.5% were aware that rabies was fatal after development of disease. There was a lack of knowledge regarding other animal reservoirs, other modes of transmission and clinical features of rabid animals.

Pet owners were more likely to have been bitten by a dog than those who did not own pets (p<0.05). However, only half of the respondents admitted that their pets had been vaccinated during the last year.

Conclusion: Future health educational programs should highlight the risks of rabies transmission by animals other than dogs and methods of transmission other than bites as well as the clinical features of rabies for easy identification of rabid animals. The message that vaccination after developing the disease does not change the outcome needs to be clearly presented. Reasons for non compliance of dog vaccination needs to be investigated and rectified.

Keywords: Rabies, Sri Lanka, Knowledge

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Introduction

Rabies is a fatal animal disease of significant public health importance globally.¹ Although it is a vaccine preventable disease, it is responsible for tens of thousands of deaths annually, mostly in Asia and Africa.¹ Domestic and wild animals are reservoirs for rabies.² Exposures recorded in Sri Lanka are mainly from domestic or stray animals with very little exposure from wild animals.² Therefore, elimination of rabies in the domestic and stray animal population would lead to a marked decline in the number of cases in Sri Lanka.

The policy goal of the Ministry of Health, Sri Lanka is to reduce the number of human deaths from rabies to zero by 2020.³ This appears feasible as only five cases of human rabies were recorded in the first half of 2016 compared with 24 in all of 2015.³ In 2015, the Colombo district had the second highest recorded number of deaths (4 deaths) due to rabies.⁴

Community awareness of rabies and responsible behaviour of pet owners are key components for prevention. Studies on this subject have been conducted in the Kandy district in 2006.⁵ However, these findings do not necessarily apply to other districts in the country. The current study was therefore designed to ascertain the knowledge, attitudes and practices of a sample population attending the outpatient department at the National Hospital of Sri Lanka (NHSL) in order to identify areas that need to be addressed through future health educational programs.

Methods

A preliminary survey was conducted from 26th March to 8th April 2016 among outpatients attending the NHSL. A pre-tested self-administered structured questionnaire was used to collect data from 200 respondents. Every fifth patient was selected to be part of the survey. Those over 12 years of age were recruited following informed written consent. For those who were illiterate, the questionnaire was read out and the responses given marked by the data collector.

The questionnaire was formulated in a similar structure to the previously reported survey in Kandy, to enable comparison.⁵ Chi square test or Fisher's exact test (2 tailed) was used as appropriate to evaluate statistical differences in responses between pet owners and non-pet owners and those who had been previously bitten. A p value <0.05 was considered as significant.

Results

Outpatient attendees resident in the Colombo district consisted of 58.5% of the sample. Ages ranged from 12-76 years (median age 36 years) and 66.5% were females. The majority were Buddhists (80.5%) and Sinhalese (88.5%). Fifty six percent were educated up to the GCE Ordinary Level. Sixty-four percent of our convenience sample were pet owners (Table 1).

Table 1 Profile of study respondents (n=200)

		n	%
Hometown	Colombo	117	58.5
	Not Colombo	83	41.5
Gender	Male	67	33.5
	Female	133	66.5
Age (years)	12-19	18	9.0
	20-29	63	31.5
	30-39	31	15.5
	40-49	22	11.0
	50-59	41	20.5
	≥60	25	12.0
Educational status	Up to GCE O/Levels	112	56
	Higher than GCE O/Levels	88	44
Religion	Buddhism	161	80.5
	Hinduism	6	3.0
	Islam	8	4.0
	Christianity	25	12.5
Ethnicity	Sinhalese	177	88.5
	Tamil	13	6.5
	Muslim	8	4.0
	Burgher	2	1.0
Pet ownership	With pets	128	64.0
	Without pets	72	36.0

More than 75% of our convenience sample knew that dogs were the main animal reservoir, were aware that rabies was transmitted through bite wounds and that washing the bite wound was an important first aid measure (Table 2). They were also aware that rabies could be prevented by vaccination of dogs and post exposure vaccination of humans and that vaccines were available free of charge from government centres. The majority of study participants had gained this information from health care officials (Table 2).

Knowledge was lacking regarding other animals that could transmit rabies and modes of transmission other than bites (Table 2). Foaming was identified as a sign of rabies but knowledge of other signs, especially of the paralytic type was lacking in most participants (Table 2). Only 22.5% were aware that rabies could not be cured once humans develop the disease

(Table 2).

There was no difference in gender, hometown or knowledge of rabies between those who had or had not previously experienced a dog bite ($p > 0.05$) except for two instances (Table 3). There was a higher level of awareness that cats could also be a reservoir of infection in those who had been previously bitten by dogs ($p < 0.05$). Most of those with no previous exposure to bites, correctly answered the question on prevention of dog rabies by vaccination ($p < 0.05$).

Attitudes

Most considered rabies a major problem and stray dogs a nuisance (Table 4). The majority (94%) were willing to take post exposure treatment if bitten by an animal (Table 4). However, most people were not willing to kill their pets if suspected of having rabies (Table 4). A large group of participants (40.5%) had no knowledge of stray dog control (Table 4). A few (19%) suggested the use of dog pounds, killing of strays (17.5%), vaccination (14%) and sterilization of dogs (9%) as measures for controlling the stray dog population. On direct questioning, 78% were in favour of sterilization of dogs as a control measure (Table 4).

Practices

Most participants (97%) responded that they would seek treatment from a doctor or hospital after exposure and that they would go immediately following an exposure (Table 4). Most pet owners had dogs (Table 4) and pet owners were more likely to have been bitten by a dog than those who didn't have pets ($p < 0.05$) (Table 5). Only half the respondents admitted that their pets had been vaccinated during the past year (Table 4). However, those who had been

previously bitten were more likely to have had their pet dogs vaccinated during the previous year ($p < 0.05$) (Table 5).

Table 2 Knowledge of rabies in study participants (n=200)

Question asked		No	%
Animal reservoirs of rabies in Sri Lanka	Dog	198	99.0
	Cat	90	45.0
	Rat	38	19.0
	Bat	33	16.5
	Cattle	16	8.0
	Squirrels	27	13.5
Symptoms and signs of rabies in dogs	Biting without provocation	110	55.0
	Agitated behaviour	116	58.0
	Growling	63	31.5
	Foaming at the mouth	142	71.0
	Refusal of food	44	22.0
Can rabies be cured after symptoms and signs appear?	Yes	89	44.5
	No	51	25.5
	Uncertain	60	30.0
Methods of transmission of rabies	Biting	196	98.0
	Scratches	113	56.5
	Licking of open wound	110	55.0
Can human rabies be prevented by vaccination?	Yes	153	76.5
	No	11	5.5
	Uncertain	36	18.0
Can vaccination of dogs prevent rabies?	Yes	186	93.0
	No	6	3.0
	Uncertain	8	4.0
Can dog rabies vaccine be obtained from authorized government veterinary offices?	Yes	169	84.5
	No	8	4.0
	Uncertain	23	11.5
The following procedure should be adopted after a dog bite	Wash the wound with soap and water	181	90.5
	Application of ointments	13	6.5
	Clean the wound with surgical spirit or betadine	44	22.0
	Apply dressing	65	32.5
	Take patient to a hospital immediately	123	61.5
Sources of information	Health officials	150	75.0
	Television	103	51.5
	Newspaper	69	34.5
	Radio	48	24.0
	Internet	49	24.5

Table 3. Association between knowledge and previous exposure to dog bite

		Bitten	Never bitten	p value
Gender	Male	26	41	0.488
	Female	45	88	
Hometown	Within Colombo district	43	74	0.660
	Outside Colombo district	28	55	
Methods of transmission of rabies	Biting			
	Correct	70	126	1.0*
	Incorrect	01	03	
	Licking of open wound			
	Correct	41	69	0.562
	Incorrect	30	60	
	Scratches			
	Correct	40	73	0.973
Incorrect	31	56		
Animal reservoir of rabies in Sri Lanka	Dogs			
	Correct	69	129	0.125*
	Incorrect	02	00	
	Cats			
	Correct	39	51	0.036
	Incorrect	32	78	
	Rats [†]			
	Correct	57	105	0.848
	Incorrect	14	24	
	Bats			
	Correct	15	18	0.191
	Incorrect	56	111	
	Cattle			
	Correct	8	8	0.206
	Incorrect	63	121	
	Squirrels			
Correct	11	16	0.541	
Incorrect	60	113		
Symptoms and signs of rabies in dogs	Biting without provocation			
	Correct	43	67	0.241
	Incorrect	28	62	
	Agitated behaviour			
	Correct	43	73	0.586
	Incorrect	28	56	
	Growling			
	Correct	23	40	0.840
	Incorrect	48	89	
	Foaming at the mouth			
	Correct	55	87	0.135
	Incorrect	16	42	
Refusal of food				
Correct	17	27	0.623	
Incorrect	54	102		

Table 3 (ct). Association between knowledge and previous exposure to dog bite

		Bitten	Never bitten	p value
The following procedure should be adopted after a dog bite	Wash with soap and water			
	Correct	63	118	0.527
	Incorrect	08	11	
	Application of ointments			
	Correct	67	120	1.0*
	Incorrect	04	09	
	Clean the wound with surgical spirit or betadine			
	Correct	11	33	0.099
	Incorrect	60	96	
	Apply dressing			
	Correct	24	41	0.770
	Incorrect	47	88	
Take patient to hospital immediately				
Correct	46	77	0.478	
Incorrect	25	52		
Immediate medical attention to be sought following a dog bite	Yes	69	127	0.616*
	No	02	02	
Can dog rabies vaccine be obtained from authorized government veterinary offices?	Yes	60	109	0.998
	No / unsure	11	20	
Can vaccination of dogs prevent rabies?	Yes	62	124	0.03*
	No	09	05	
Can human rabies be prevented by vaccination?	Yes	58	95	0.438
	No	13	34	
Can rabies be cured after symptoms and signs appear?	No	23	28	0.097
	Yes / unsure	48	101	

*Fisher's exact test

† Rat rabies has not been reported in Sri Lanka. Therefore, those who said NO were taken as correct

Table 4 Attitudes and practices of study participants

		n	%
Following a dog bite how soon would you seek medical advice?	Immediately	196	98.0
	Within a week	2	1.0
	Within a month	2	1.0
Following a dog bite from whom would you seek treatment	Nearest doctor or hospital	194	97.0
	Native/ traditional healers	4	2.0
	No one	2	1.0
Are you willing to take the recommended treatment for prevention of rabies	Yes	188	94.0
	No	12	6.0
Type of pet	Dog	100	50.0
	Cat	22	11.0
	Other	6	3.0
	No pet	72	36.0
Vaccination status of pet dog during the last 1 year	Yes	102	51.0
	No	26	13.0
	No pets	72	36.0
Would you euthanize your pet if found rabid	Yes	92	46.0
	No	108	54.0
Annoyed with stray dogs	Yes	132	66.0
	No	68	34.0
Actions suggested for controlling stray dog population	Killing	35	17.5
	Sterilization	18	9.0
	Segregate in a dog pound	38	19.0
	Uncertain	109	54.5
In favour of animal sterilization	Yes	156	78.0
	No	44	22.0

Table 5 Variables associated with previous history of being bitten

	Previously bitten	Not bitten	p value
Pet owner	54	68	0.001
Non pet owner	17	61	
Vaccinated dog within the last 1 year	49	53	0.001
Not vaccinated	6	20	
No pets	16	56	

Discussion

Most participants identified dogs as the source of rabies, as shown in this study, as well as the previous survey in Kandy. It is important that future campaigns should focus more on improving knowledge of other animal reservoirs and clinical features of rabid animals, especially of the paralytic type.

The majority of participants knew that post exposure vaccination could prevent rabies. However, it was disturbing to note that 44.5% of respondents believed that rabies could be

cured once symptoms developed and 30% were unsure of the outcome of human rabies. The previous study in Kandy⁵ reported a high level of awareness of the fatal nature of rabies, but it is not clear how the question was phrased in that survey.⁵ In our questionnaire, we did not ask “Is rabies fatal?” Our question was phrased as “can you be cured after developing symptoms and signs of rabies”. Future surveys should include questions to find out if respondents clearly understand the need for seeking treatment without delay and that the vaccine is for prevention and not as a cure.

Knowledge and attitudes of the use of post exposure vaccination was satisfactory in the current study. Vaccination and sterilization of dogs are key strategies to control rabies in the stray dog population. However, a small group of respondents (17.5%) still considered killing of dogs as a suitable strategy. People need to be made aware that more humane measures are equally effective and that responsible pet ownership is the most important factor.

Although many were aware that vaccination of dogs could prevent rabies, only half admitted that they had vaccinated their pet during the previous year. The survey done in Kandy showed a similar pattern.⁵ As shown in our study, pet owners are more likely to be bitten. The fact that pet owners are most likely to require post exposure vaccination needs to be conveyed to the public, in order to encourage people to vaccinate their pet animals. Reasons for non-compliance with dog vaccination need to be studied, and corrective measures should be taken in future mass dog vaccination campaigns.

More detailed questions on attitudes and practices regarding responsible pet ownership need to be included in future surveys. More information is needed on the reasons for dogs being allowed to roam freely on roads, willingness of owners to sterilize pets and what they would do with unwanted puppies. The media should be utilized to a greater extent for educating the public and making them aware about dog adoption agencies.

Ethical considerations

Approval was obtained from the Ethics Review Committee of the Faculty of Medicine, Kotelawala Defence University (EC-11-121). Administrative approval was obtained from all relevant authorities.

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Conflicts of interests

No conflicts of interests

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