

Original Research Article

A cross-sectional study on knowledge, attitude and practice regarding rabies among patients attending a tertiary care centre, Solapur Maharashtra

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ABSTRACT

Background: Rabies is a neglected zoonotic tropical disease. Rabies is one of the world's deadliest diseases which has 100% fatality and at the same time 100% preventable. The present study is an attempt to assess the knowledge, attitude and practice regarding rabies among animal bite patients and sociodemographic factors associated with it.

Methods: This observational cross-sectional study was done in a tertiary care centre, Solapur after taking IEC approval during 1st October 2022 to 31st October 2022, among all adult patients (≥ 18 years age) attending anti-rabies OPD, in a pre-tested, structured, questionnaire.

Results: Among 194 participants 51 (26.29%), 101 (52.06%) and 42 (21.65%) of participants had high, moderate and low knowledge regarding rabies respectively; 75 (38.66%), 106 (54.64%) and 13 (6.7%) had high, moderate and low attitude towards rabies respectively; 160 (82.47%), 33 (17.01%) and 1 (0.52%) had high, moderate and low practice towards rabies prevention and control respectively. In this study knowledge is significantly associated with age, family size, education and socio-economic status; attitude is significantly associated with education and practice is significantly associated with family size.

Conclusions: Majority of the participants (101) had moderate knowledge regarding modes of transmission of rabies, fatality of rabies, symptoms of rabid animal, incubation period of rabies and PEP after animal bite, etc. Most of the participants (106) had moderate attitude towards completion of Inj. ARV schedule and the necessity to promote knowledge about rabies in the community. Majority of the participants (160) had high practice regarding first aid after animal bite and anti-rabies vaccination.

Keywords: Attitude, Cross-sectional study, Knowledge, Practice, Rabies

INTRODUCTION

Rabies is a neglected zoonotic tropical disease that usually affects the poorest communities.¹ It is the world's deadliest disease which has 100% fatality and at the same time 100% preventable.¹ Almost 95% of the human cases are from Asia and Africa and 99% of all human rabies is

transmitted through dog bites.¹ Globally, it is estimated that rabies accounts for more than 59,000 deaths every year and the majority of human rabies deaths occur due to biting of the rabid dogs.¹ India is endemic for rabies and except for the islands of Andaman and Nicobar and Lakshadweep, which are historically rabies-free.¹ Since 1985, in India annually around 20,000-30,000 human

rabies deaths were estimated.² WHO, the World Organization for Animal Health (OIE), the Food and Agriculture Organization of the United Nations (FAO) and the global alliance for rabies control have set a global target of “zero human rabies deaths by 2030” (WHO, 2017).² World Rabies Day was officially launched in 2007 which aims to raise public awareness regarding the health impacts of human and animal rabies (www.avma.org).² Most human deaths due to rabies are dog mediated.³ Human deaths due to rabies are largely seen in rural areas in communities with poor socio-economic status.³ The main reason for human deaths is lack of awareness among people about the importance of post-exposure prophylaxis.³ Free-roaming dogs (FRD), which are responsible for 96% of all human rabies deaths in India, are ubiquitous in both rural and urban localities/communities.⁴ Rabies is a viral zoonosis, and human infection usually occurs following a transdermal bite or scratch by an infected animal (WHO, 1992).⁵ Moreover, allowing dogs to roam freely would increase the likelihood of rabies transmission among the animal population and would make rabies a continual threat to humans.⁶ As such, the World Health Organization (WHO) guidelines on rabies PEP recommend three important aspects of treatment immediately after exposure to rabid animals: profuse washing of the bite wound with soap and water or detergent, or with water only; administration of the rabies vaccine; and infiltration of rabies immunoglobulin in and around the wound.⁷ Rabies, an enzootic and epizootic disease of worldwide importance, is an acute fatal viral encephalitis that usually transmits to man after domestic and wild animal bites.⁸ The disease affects virtually all mammals, and an infected species invariably die from the disease once the associated clinical signs have manifested.⁹ Rabies, caused by a negative-stranded RNA virus within the *Lyssavirus* genus of the *Rhabdoviridae* family, is one of the oldest diseases accounting for significant public health issues.¹⁰ Endemic canine rabies, a high dog population density, large numbers of unvaccinated and poorly cared dogs, and a low percentage of people seeking medical advice after being bitten by animals are the main factors that contribute to the increase in the number of cases of human rabies.¹¹ Globally, rabies is still endemic in over 150 countries and territories causing an estimated 8.6 billion USD worth of economic loss.¹² The incidence density of human deaths linked with rabies typically ranges from 20 to 30 cases per million people yearly in India.¹³ Rabies is a neglected tropical disease of poor and vulnerable populations whose deaths are rarely reported & where measures to prevent dog to human transmission have not been implemented.¹⁴ The disease primarily affects disadvantaged groups, in both rural and urban areas, due to a lack of awareness of the disease, insufficient financial resources to seek medical help, poor health care infrastructure, unavailability of prophylactic and therapeutic measures and an overemphasis on the use

of traditional practices for treatment and wound healing.¹⁵ Knowledge, attitudes and practices (KAP) studies have been widely used around the world for different applications in public health based on the principle that increasing knowledge will result in changing attitudes and practices to minimize disease burden. With this background, the present study is an attempt to assess the knowledge, attitude and practice regarding rabies among animal bite patients and sociodemographic factors associated with it.

METHODS

An observational descriptive cross-sectional study was done in a tertiary care centre in Solapur. All adult patients (≥ 18 years) attending Anti-Rabies OPD in October (1st to 31st) 2022 who were willing to participate and given consent, were included in the study. Patients < 18 years age group were excluded from the study.

Data collection and analysis

Ethical approval has been taken from the Institutional Ethics Committee before starting the study. During Anti-Rabies OPD visit, patients of ≥ 18 years age informed about this study and its purpose and written consent was taken from them. Data was collected in predesigned and pretested proforma. We constructed a questionnaire consisting of few questions on demographics, 15 questions on knowledge, 6 questions on attitude and 5 questions on practice. The knowledge questions had entries related to the transmission of rabies, fatality of the disease, regarding rabid animals, first aid, and prevention and control of the disease. Attitude questions included on their perspectives regarding rabies and vaccination. On practices regarding rabies control, the respondents were asked on their practices relating to first aid after bite and rabies vaccination. Each correct answer to the questions was coded as 1 and an incorrect answer was coded as 0. incorrect answer was coded as 0.

RESULTS

Among 194 participants 51 (26.29%), 101 (52.06%) and 42 (21.65%) of participants had high, moderate and low knowledge regarding rabies respectively; 75 (38.66%), 106 (54.64%) and 13 (6.7%) had high, moderate and low attitude towards rabies respectively; 160 (82.47%), 33 (17.01%) and 1 (0.52%) had high, moderate and low practice towards rabies prevention and control respectively.

In our study knowledge is significantly associated with age, family size, education and socio-economic status; attitude is significantly associated with education and practice is significantly associated with family size.

Table 1: Knowledge regarding rabies in study participants.

Knowledge parameter		Number of participants (%)
Have you heard about rabies?	Yes	57 (29.38)
	No	137 (70.62)
Do you know that rabies causes death?	Yes	89 (45.88)
	No	105 (54.12)
Which animal responsible for transmission of rabies?	Dog	56 (28.87)
	Other animals can also cause rabies	57 (29.38)
	Don't know	81 (41.75)
Transmission routes of rabies.	Bite	57 (29.38)
	Scratch and bite over broken skin	17 (8.76)
	Lick and bite	15 (7.73)
	Scratch, lick and bite over broken skin	45 (23.20)
	Don't know	60 (30.93)
Symptoms of rabid animal	Animal become aggressive	72 (37.11)
	Attack without provocation	43 (22.16)
	Excessive salivation	12 (6.19)
	Run amok	12 (6.19)
	Lethargy	00 (0)
	Bellowing	12 (6.19)
	Don't know	53 (27.32)
How long is the incubation period of rabies usually?	<14 days	09 (4.64)
	1-3 months	29 (14.95)
	>1 year	11 (5.67)
	Don't know	145 (74.74)
What measures do you think should be taken following an animal exposure?	Wash with soap and running water	90 (46.39)
	Wash with water only	45 (23.20)
	Application of household antiseptics	07 (3.61)
	Application of indigenous material	12 (6.19)
	Application of iodine or alcohol solution	02 (1.03)
	Wash with soap and running water and application of alcohol or iodine solution	03 (1.54)
	Don't do anything	19 (9.79)
	Don't know	16 (8.25)
Can anti-rabies vaccine prevent the occurrence of rabies?	Yes	133 (68.56)
	No	02 (1.03)
	Don't know	59 (30.41)
Do you know how many anti-rabies vaccine doses is needed?	5	11 (5.67)
	4	85(43.81)
	3	25 (12.89)
	2	00 (0)
	1	01 (0.52)
	Don't know	68 (35.05)
	Others--- 14	4 (2.06)
Can we give anti-rabies vaccine in pregnancy?	Yes	40 (20.62)
	No	10 (5.15)
	Don't know	144 (74.23)
Where anti-rabies is available?	Government hospital	110 (56.70)
	Private hospital	02 (1.03)
	Both government & private hospital	64 (32.99)
	Don't know	18 (9.28)
Do you know about tetanus vaccination following animal bite?	Yes	160 (82.47)
	No	34 (17.53)
What should be done to the biting animal?	Observe the animal for symptoms of rabies	47 (24.23)
	Kill the animal	43 (22.16)

Continued.

Knowledge parameter	Number of participants (%)
	Inform the authorities
	55 (28.35)
	Don't do anything
	07 (3.61)
	Don't know
	42 (21.65)
Have you heard about ARS?	Yes
	29 (14.95)
	No
	165 (85.05)
What is the most effective method for rabies control in dogs?	Regular vaccination
	103 (53.09)
	Restriction of dog movements
	34 (17.53)
	Killing of stray dogs
	54 (27.84)
	Don't know
	03 (1.54)

Table 1 shows, out of 194 participants only 57 (29.38%) participants heard about rabies, 81 (41.75%) participants don't know which animals are responsible for transmission of rabies, 60 (30.93%) participants don't know how rabies is transmitted, 145 (74.74%) participants don't know about incubation period of rabies,

16 (8.25%) don't know what the measures to be taken after animal bite, 59 (30.41%) had no idea about the preventive property of anti-rabies vaccine, 144 (74.23%) participants don't know that anti-rabies vaccine can be given in pregnancy, 165 (85.05%) had never heard about ARS.

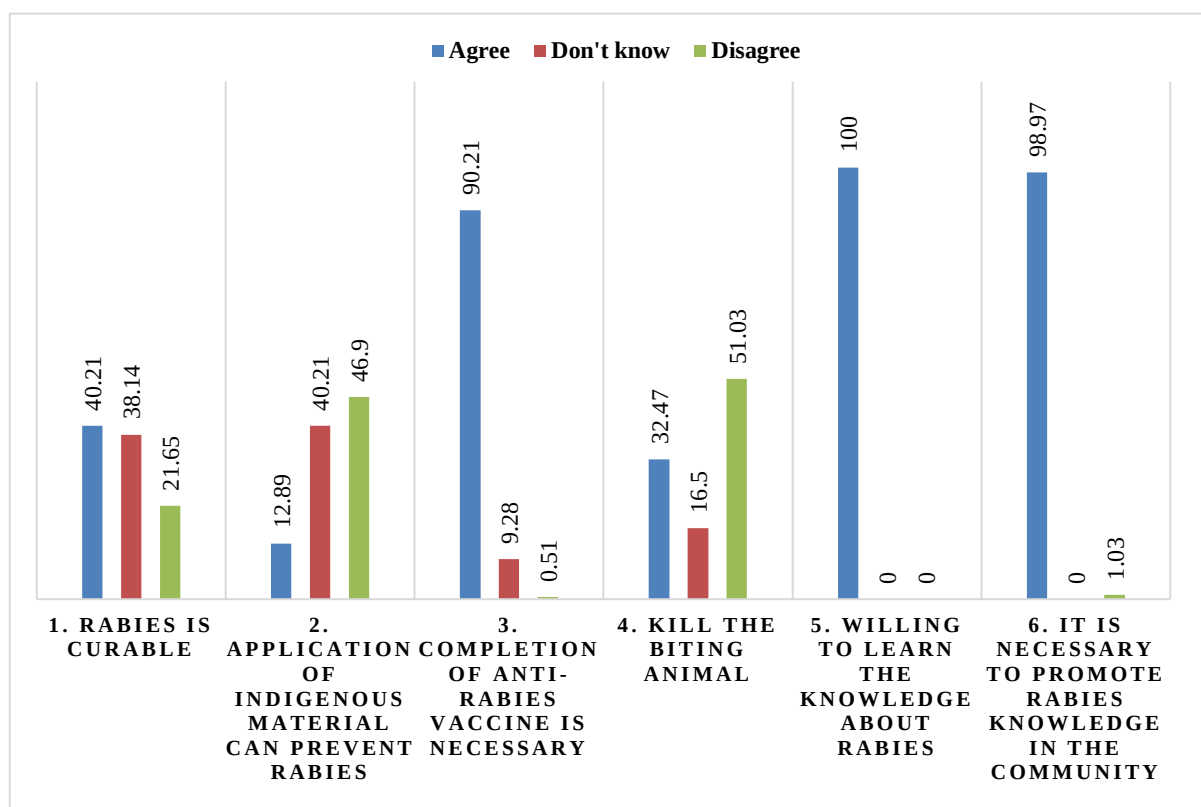


Figure 1: Attitude towards rabies prevention and control among study participant.

Figure 1 shows, out of 194 participants 78 (40.21%) participants think that rabies is curable, 25 (12.89%)

participants think application of indigenous material can prevent rabies and 194 (100%) wants to learn the knowledge about rabies.

Table 2: Practice regarding rabies prevention and control among study participants.

Practice parameter	Number of participants (%)
First aid done after animal bite	Wash with water only
	57 (29.38)
	Wash with soap & running water
	93 (47.94)
	Application of household antiseptics
	04 (2.06)
	Application of indigenous material
	11 (5.67)

Continued.

Practice parameter	Number of participants (%)
Application of iodine or alcohol solution	02 (1.03)
Wash with soap and running water and application of alcohol or iodine solution	04 (2.06)
Other- petrol	01 (0.52)
Didn't do anything	22 (11.34)
After animal bite do you visit doctor?	
Yes	193 (99.48)
No	01 (0.52)
Which type of hospital you visit first after animal bite?	
Private hospital	04 (2.06)
Government hospital	190 (97.94)
Full course of anti-rabies vaccine received?	
Yes	51 (26.29)
No	143 (73.71)
Are you immunized against tetanus?	
Yes	186 (95.88)
No	08 (4.12)

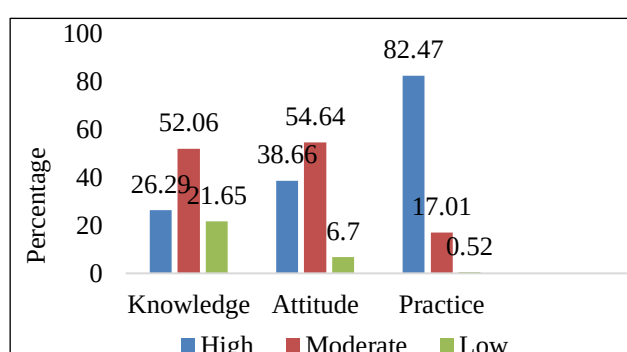


Figure 2: Knowledge, attitude and practice regarding rabies prevention and control.

Table 2 shows, out of 194 participants 93 (47.94%) participants washes their wound with soap and water and

51 (26.29%) participants took full course of anti-rabies vaccine.

Figure 2 shows, among 194 participants 51 (26.29%), 101 (52.06%) and 42(21.65%) of participants had high, moderate and low knowledge regarding rabies respectively; 75 (38.66%), 106 (54.64%) and 13 (6.7%) had high, moderate and low attitude towards rabies respectively; 160 (82.47%), 33 (17.01%) and 1 (0.52%) had high, moderate and low practice towards rabies prevention and control respectively.

Table 3 shows, knowledge is significantly associated with age, family size, education and socio-economic status. Table 4 shows attitude is significantly associated with education. Table 5 shows practice is significantly associated family size.

Table 3: Association between sociodemographic factors and knowledge regarding rabies.

Sociodemographic factors	High	Moderate	Low	
Sex	Male	35	70	28
	Female	16	31	14
Age (years)	18-34	27	48	12
	≥35	24	53	30
Address	Rural	7	22	7
	Urban	44	79	35
Family size	<6	45	70	34
	≥6	6	31	8
Education	Illiterate	0	12	11
	Primary	7	25	13
	Secondary	12	36	12
	Higher secondary	10	12	4
	Graduation	19	14	2
	Post-graduation	3	2	0
Religion	Hindu	40	82	36
	Muslim	11	19	6
Marital status	Married	40	74	34
	Unmarried	11	27	8
Socioeconomic status	Upper class	7	10	2

Continued.

Sociodemographic factors		High	Moderate	Low	
(Modified BG Prasad classification)	Upper middle class	13	16	7	P<0.01, df=2
	Middle class	21	30	14	
	Lower middle class	8	33	12	
	Lower class	2	12	7	

Table 4: Association between sociodemographic factors and attitude regarding rabies.

Sociodemographic factors		High	Moderate	Low	
Sex	Male	55	72	6	Chi-square value=3.84 p=0.15, df=2
	Female	20	34	7	
Age (years)	18-34	36	47	4	Chi-square value=1.35 p=0.51, df=2
	≥35	39	59	9	
Address	Rural	10	24	2	Chi-square value=2.61 p=0.27, df=2
	Urban	65	82	11	
Family size	<6	57	81	11	Chi-square value=0.48 p=0.79, df=2
	≥6	18	25	2	
Education	Illiterate	4	14	5	Chi-square value=15.22 p<0.01, df=4
	Primary	17	24	4	
	Secondary	19	39	2	
	Higher secondary	10	15	1	
	Graduation	23	12	0	
	Post-graduation	2	2	1	
Religion	Hindu	57	89	12	Chi-square value=2.93 p=0.23, df=2
	Muslim	18	17	1	
Marital status	Married	57	80	11	Chi-square value=0.5408 p=0.76, df=2
	Unmarried	18	26	2	
Socioeconomic status (Modified BG Prasad classification)	Upper class	10	9	0	Chi-square value=5.13 P>0.05, df=4
	Upper middle class	14	21	1	
	Middle class	22	38	5	
	Lower middle class	24	24	5	
	Lower class	5	14	2	

Table 5: Association between sociodemographic factors and practice regarding rabies.

Sociodemographic factors		High	Moderate	Low	
Sex	Male	106	26	1	Chi-square value=2.25 p>0.05, df=1
	Female	54	7	0	
Age (years)	18-34	73	13	1	Chi-square value=0.22 p>0.05, df=1
	≥35	87	20	0	
Address	Rural	29	7	0	Chi-square value=0.11 p>0.05, df=1
	Urban	131	26	1	
Family size	<6	128	21	0	Chi-square value=5.23 P<0.05, df=1
	≥6	32	12	1	
Education	Illiterate	18	5	0	Chi-square value=1.15 p>0.05, df=2
	Primary	36	9	0	
	Secondary	49	10	1	
	Higher secondary	19	7	0	
	Graduation	34	1	0	
	Post-graduation	4	1	0	
Religion	Hindu	128	29	1	Chi-square value=1.25 p>0.05, df=1
	Muslim	32	4	0	
Marital status	Married	122	26	0	Chi-square value=0.00075 p>0.05, df=1
	Unmarried	38	7	1	

Continued.

Sociodemographic factors		High	Moderate	Low	Fisher exact p value=0.46, df=4
Socioeconomic status (Modified BG Prasad classification)	Upper class	18	1	0	
	Upper middle class	31	5	0	
	Middle class	50	15	0	
	Lower middle class	43	9	1	
	Lower class	18	3	0	

DISCUSSION

This study sought to establish knowledge, attitude, and practices regarding rabies among patients attending a Tertiary Care Centre, Solapur

Knowledge

Our study reveals that 29.38% of the participants had heard of rabies and 45.88% participants knows that rabies causes death. In a study of Sivagurunathan et al, reveals 76% of the participants had heard of rabies and 63.5% knows that rabies is fatal.¹ In another study of Tiwari et al reveals 97% of the participants had heard of rabies and 86% knew that rabies is fatal once acquired.⁴ In our study we saw that 28.87% participants knows that only dog are responsible for transmission of rabies and 29.38% knows that dog and other animals can also cause rabies. In the study of Sivagurunathan et al reveals 37.6% knew animal other than dogs can also cause rabies.¹ In our study 29.38% knew that rabies can be transmitted through only animal bites and 39.69% participants knew that rabies can be transmitted through scratch, bite and lick over broken skin. In a study by Tiwari et al reveals that 98.4% knew that rabies could be transmitted through animal bites, although less than half (50%, 40.7%) were aware that it could also be transmitted through licks/scratches.⁴ In a study by Sivagurunathan et al reveals that only 31.6% knew rabies could be transmitted through bite, scratch and lick over the broken skin.¹ In our study 46.39% knew washing with soap and running water should be done following animal exposure and similarly in Sivagurunathan et al study reveals 36.2% knew washing the wound with soap and running water could prevent rabies.¹ In our study 68.56% participants said ARV following animal bite can prevent rabies. In a study by Ahmed et al reveals 69.8% population were aware that rabies is a vaccine preventable disease.¹³ Similarly in a study by Tiwari et al reveals 73% knew that rabies could be prevented by administering PEP to dog bite victims or by vaccinating dogs against rabies.⁴

Attitude

According to our study, 21.65% participants disagree with that rabies is a curable disease and according to Sivagurunathan et al study 53.1% disagree that rabies as a curable disease.¹ According to our study 46.90% disagree with application of indigenous material can prevent rabies and in Tiwari et al study 87% of respondents were aware

of the ineffectiveness of traditional applications such as chilli/turmeric powder and in Sivagurunathan et al study 57.1% disagree with the application of indigenous materials on wounds can prevent rabies.^{1,4} In our study 12.89% agree application of indigenous material can prevent rabies and in Ali et al study 58.3% respondents had strong believe on traditional medicine for rabies prevention and treatment.⁵ In our study 90.21% participants agree that completion of ARV is necessary and in Sivagurunathan et al all study 94.9% agree that the completion of ARV is necessary and in Ahmed et al study 75.6% reported that they prefer rabies vaccination.^{1,13} In our study 100% participants willing to learn the knowledge about rabies and in Li et al study 90% of respondents were agree to learn the knowledge of rabies.⁶ In our study, 98.97% participants agrees that it is necessary to promote rabies knowledge in the community and in Li et al study 94.29% thought that the propaganda of rabies knowledge in the community is necessary.⁶

Practice

According to our study 47.94% participants mentioned that they washed their wound with soap and running water and in Ung et al study only 2.3% mentioned that they would wash the wound with soap and running water.⁹ In our study 99.48% visited doctor after animal bite and in Ahmed et al study only 40.6% answered they would seek advice from a doctor after an animal bite.¹³ In our study 26.29% took full course of ARV and in Sivagurunathan et al study 35% had a full course of vaccination.¹ In our study 95.88% are immunized against tetanus and in Sivagurunathan et al study 96.8% mere immunized with a single dose of tetanus.¹

In our study 26.29% participants had high knowledge, where in Ali et al study 7.5% participants had good knowledge.⁵ In our study, 52.06% participants had moderate knowledge, where in Ali et al study 75.2% participants had moderate knowledge.⁵ In our study 21.65% participants had low knowledge, where in Ali et al study 17.3% participants had low knowledge.⁵ In our study 38.66% participants had high attitude, where in Ali et al study 18.5% participants had good attitude.⁵ In our study, 54.64% participants had moderate attitude, where in Ali et al study, 52.3% participants had moderate attitude.⁵ In our study, 6.7% participants had low attitude, where in Ali et al study, 29.1% participants had low attitude.⁵ In our study, 82.47% participants had high practice, where in Ali et al study, 11.5% participants had good practice.⁵ In our study, 17.01% participants had

moderate practice, where in Ali et al study, 67% participants had moderate practice.⁵ In our study, 0.52% participants had low practice, where in Ali et al study, 21.5% participants had low practice.⁵

This study has limitation. As this is a hospital based study so, we can't generalized the result in the community.

CONCLUSION

Majority of the participants (101) had moderate knowledge regarding modes of transmission of rabies, fatality of rabies, symptoms of rabid animal, incubation period of rabies and PEP after animal bite, etc. Most of the participants (106) had moderate attitude towards completion of Inj. ARV schedule and the necessity to promote knowledge about rabies in the community. Majority of the participants (160) had high practice regarding first aid after animal bite and anti-rabies vaccination. We found significant association between, age, family size, education and socio-economic status with knowledge; education with attitude and family size with practice regarding rabies prevention and control.

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