Original article

DOI: https://doi.org/10.70397/jbnc57

Awareness of Rabies among the Adults in a Community, Kathmandu

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ABSTRACT

Background: Rabies is a fatal disease caused by the bite of rabid animals and is a serious public concern, particularly in Asia and Africa. The death rate due to rabies is on the rise, and most of the cases are seen in developing countries of Asia and Africa. Hence, this study aims to find out the awareness of rabies among adults in a community.

Methods: A descriptive cross-sectional study was conducted among 77 adults residing in Gokarneshwor municipality ward no.9, Kathmandu. Samples were collected through a non-probability convenience sampling technique. A structured interview schedule was developed in the Nepali language and used for collecting the data. The collected data were entered and analyzed using SPSS version 16 and interpreted using descriptive statistical and inferential methods.

Results: The findings of the study showed that more than half (50.6%) of the respondents were between the age group of 20 to 39 years, with a mean age of 38.71 years. More than half (54.5%) were female. Only 16.9% respondents had owned a pet dog. All the respondents (100%) were aware that rabies is caused by the bite of an animal. Almost all (97.4%) respondents were aware that bites and scratches are the mode of transmission of rabies, and most (84.4%) of the respondents knew that the wound should be washed with soap and water. Only 6.5% had adequate awareness, nearly three-fourth (72.7%) had moderate awareness, and nearly one-fourth (20.8%) had inadequate awareness of rabies.

Conclusion: The study concluded that nearly three-fourth of the adult population of Gokarneshwor municipality ward no.9 are moderately aware of rabies. Adults are more aware of the preventive measures of rabies and relatively less aware of the management after an animal bite. Thus, this study recommends implementing public health interventions, such as awareness campaigns, to enhance community awareness. Similar studies can be carried out on larger populations to validate the findings.

Keywords: *Adults, awareness, community, rabies*

INTRODUCTION

Rabies is a vaccine-preventable fatal zoonotic disease caused by an RNA virus. The virus can be transmitted by any rabid animal; in 95% of cases, dogs are the main culprit for the transmission of the rabies virus to humans.[1] The virus is still prevailing and causing health and economic burden, particularly in Asia and Africa.[2] According to the WHO, rabies is classified as a neglected tropical disease, and this has caught global attention.[3]

Globally, 59,000 people die from rabies annually, and 45% occur in SAARC countries. It is a major problem in Asian rural and marginalized regions, responsible for over 35,000 deaths per year.[4,5] India alone accounts for 59.9% of rabies deaths in Asia and 35% globally. In Nepal, stray dog bites are the major source of rabies in humans, and mostly children under 15 years are the victims. Once a virus enters the human central nervous system, rabies is fatal in almost cent percent of cases.[6]

The National Guidelines for Rabies Prophylaxis 2019 intend to achieve zero human deaths by 2030.[7] Despite the disease being a priority, the exact status of rabies and the people's attitude and knowledge towards rabies is

unknown.[8] Further, a lack of rabies awareness has led to a low public health and veterinary priority.[9] A study conducted in a SAARC country shows that the majority of people in rural areas did not know that rabies is a fatal disease.[10] Poor management of dog bites is also a cause of human fatality, including poor techniques of wound cleaning and not reaching health facilities.[11] In Nepal, rabies cases are unreported due to poor surveillance, lack of awareness, and an improper reporting system. Understanding a community's awareness is a major step in developing strategies to control the disease.[12] Therefore, sufficient studies are necessary to find the existing awareness.[7] Hence, this study aimed to find out the existing awareness of rabies among adults in a community.

METHODS

A descriptive cross-sectional research design was used for the study to find out the awareness of rabies among adults in a community. The study was conducted in Gokarneshwor municipality, ward no.9 of Kathmandu district. The study population consisted of individuals aged 20 to 60 years residing in Gokarneshwor municipality, Ward No. 9. The total sample size of the study was calculated using the standard Cochran's formula (1997; $n = Z^2pq/E^2$). Based study on awareness on rabies conducted in India by Jain & Jain[13], the prevalence was 76%. Considering 76% prevalence, allowing 10% error, 95% confidence level and 10% non-response rate, the calculated sample size was 77.

A non-probability convenience sampling technique was used. One respondent was selected from each household on the basis of first contact. The households without adults were skipped. A set of structured interview schedule was developed in English and was translated into the Nepali language. The questionnaire included 6 questions related to socio-demographic information and a total of 16 questions related to awareness of rabies. The questions included the understanding of rabies, its cause, signs and symptoms, preventive measures, and post exposure prophylaxis after a bite by an infected animal. There were 9 single-response and 7 multiple-response questions. Each correct response secured 1 score, and each incorrect response secured 0. The total score was 32. Based on the score, three category was developed.

The level of awareness was measured as:

Level of Awareness	Score
Adequate awareness	Score above 75% of the total score (32)
Moderate awareness	Score between 50% to 75% of total score (32)
Inadequate awareness	Score below 50% of total score (32)

The usability of the instrument was established by pretesting on 7 adults from the same ward, and that population was excluded from the main study. Necessary modifications in the instrument were made as needed after pretesting and consulting with the research advisor. Ethical approval was taken from the Institutional Review Committee (IRC) of the Institute of Medicine. The IRC reference number is 65 (6-11) E2. Permission for data collection was obtained from the administrative authority of Gokarneshwor municipality-9.

Before the interview, home visiting was done, and respondents were identified on the basis of inclusion criteria. A single respondent was selected from each household. Informed verbal and written consent were taken from the respondents. Confidentiality was maintained during the process. The interview was conducted in person using a structured interview schedule. Each respondent was interviewed for 15-20 minutes, and then the collected information was checked for completeness. The data were checked, reviewed, coded, and organized daily in the datasheet. It was then analyzed using Statistical Package for Social Sciences (SPSS) version 16 by using descriptive statistics to assess the awareness of rabies, and inferential statistics (Chi-square and Fisher's Exact test) were used to measure the association of the level of awareness with selected variables. Then, the findings of the study were presented in tabular form.

RESULTS

Table 1 shows that more than one fourth (29.9%) of the respondents were between the age of 40 to 49 years, and the mean age was 38.71 years±0.626. More than half (54.5%) of the respondents were female. Among all the respondents, more than one-third (37.5%) of the respondents have completed higher education, and more than one-third (39.0%) were involved in the service sector.

Table 1: Socio-demographic characteristics of the respondents n =77

Variables	Number	Percent
Age in completed years		
20-29	20	26.0
30-39	21	27.3
40-49	23	29.9
50-60	13	16.9
Mean ± SD: 38.71 ± 0.626.		
Sex		
Female	42	54.5
Male	35	45.5
Educational Status		
Cannot read and write	5	6.5
General literate	14	19.4
Basic	11	15.3
Secondary	20	27.8
Bachelor and above	27	37.5
Occupation		
Service	30	39.0
Business	23	29.9
Homemaker	13	16.9
Others (agriculture, labor, students)	11	14.3

Table 2 illustrates that only 16.9% respondents own a dog. All (100%) of the respondents who own a dog have vaccinated their dog, and their dog did not have a history of bite.

Table 2: Respondents' information on dog ownership n =77

Variables	Number	Percent
Respondents owning a dog	13	16.9
Respondents who have vaccinated their dogs (n=13)	13	100
Respondents with no history of their dog biting others (n=13)	13	100

Table 3 summarizes that all (100%) respondents answered rabies as a disease caused by an animal bite. Almost all (97.4%) of the respondents answered bites and scratches as the mode of transmission of rabies. Nearly two-thirds (61.0%) of respondents answered hydrophobia as the symptom of rabies in humans. Most (81.8%) of the respondents answered excessive drooling as a symptom of rabies in animals.

Table 3: Respondents' awareness of rabies n =77

Variables	Number	Percent
Rabies is caused by animal bite.	77	100
Rabies is a communicable disease.	39	50.6
Rabies is commonly transmitted by dog.	50	64.9
Rabies can affect		
Man	75	97.4
Monkey	23	29.9
Cattle	20	26.0
Modes of transmission of rabies		
Bites and Scratches	75	97.4
Lick in open wound	38	49.4
Symptoms of rabies in human		
Hydrophobia	47	61.0
Fever and headache	25	32.5
Difficult to swallow	10	13.0
Vomiting	7	9.1
Symptoms of rabies in animals		
Excessive drooling	63	81.8
Being abnormally aggressive and biting	41	53.2
Change in barking voice	15	19.5
Barking in invisible things	7	9.1

Table 4 summarizes the respondents' awareness of management after an animal bite. Only 23% respondents answered that the animal should be observed for 10 days after a bite. Most (87%) of respondents answered that the vaccine should be taken soon, within 24 hours after an animal bite. Nearly two-third (61%) of the respondents answered that there is no need to take the rabies vaccine if bitten by a vaccinated animal. The majority (77.9%) of the respondents answered that a free anti-rabies vaccine is available in Teku hospital.

Regarding the respondents' awareness of prevention of rabies, almost all (97.4%) of the respondents emphasized managing street dogs, followed by 96.1 of % respondents who emphasized timely check-up of pets to prevent rabies.

Table 4: Respondents' awareness on management and preventive measures of rabies n =77

Variables	Number	Percent
After animal bite		
Go to health institution	72	93.5
Wash wound with soap and water	71	92.2
Take rabies vaccine	59	76.6
Take tetanus vaccine	22	28.6
After animal bite, animal should be observed for 10 days.	18	23.0
If animal dies within 10 days of bite		
Go to health institution	72	93.5
Take rabies vaccine 5 times	19	24.7
Take complete vaccination after animal bite if animal could not be recognized.	10	13.0
After animal bite, rabies vaccine should be taken as soon as possible within 24 hours.	67	87.0
After bite by an animal with unknown status of vaccination rabies vaccine should be taken 5 times.	12	15.6
After a bite by a vaccinated animal, there is no need to take rabies vaccine.	47	61.0
Free anti-rabies vaccine is available in Teku hospital.	60	77.9
Preventive measures of Rabies		
Management of street dogs	75	97.4
Timely check-up of pet animals	74	96.1
Receive information on first-aid management after dog bite	68	88.3
Vaccinate pet animals against Rabies	65	84.4

Table 5 shows that only 6.5% respondents had an adequate level of awareness, nearly three-fourth (72.7%) had a moderate level of awareness, and the least (20.8%) had an inadequate level of awareness on rabies.

Table 5: Respondents' level of awareness of rabies n =77

Variables	Number	Percent
Adequate Awareness (>75%)	5	6.5
Moderate Awareness (50-75%)	56	72.7
Inadequate Awareness (<50%)	16	20.8

Table 6 illustrates that there is no significant association between the level of awareness and any of the variables.

Table 6: Association between level of awareness and socio-demographic characteristics of respondents n =77

Variables	Level of Awareness		χ^2 value	p-value
	Moderate to adequate N (%)	Inadequate N (%)		
Age				
20-39years	30(73.2)	11(26.8)	1.950	0.163
40-60years	31(86.1)	5(13.9)		
Sex				
Male	30(85.7)	5(14.3)	1.644	0.200
Female	31(73.8)	11(26.2)		
Education (n=72)				
Up to basic	18(72.0)	7(28.0)	1.193	0.275
Secondary and above		8(17.0)		
Dog ownership	39(83.0)			
Yes	11(84.6)	2(15.4)	-	0.725 *f*
No	50(78.1)	14(21.9)		

f Fisher's Exact Test

DISCUSSION

The present study reveals that all (100%) of the respondents were aware that rabies is caused by the bite of an animal, while only 50.6% of the respondents were aware that rabies is a communicable disease. This finding is similar to the study conducted by Singh & Chaudhary [13,14] where 98.6% of the respondents were aware of the

same. The present study shows that nearly two-third (64.9%) of respondents were aware that rabies is most commonly transmitted by dogs, whereas, in contrast, the study conducted by Li et al., depicted 92.51% respondents were aware of the same thing.[15] Similarly, 97.4% respondents were aware that rabies can affect humans, 26% answered cattle, and 29.9% answered monkeys, whereas the findings of Mujibar Rahaman et al.,[7] showed only 27.4% were aware that rabies can affect humans and other domestic animals. These findings are lower than the findings of the present study.

The present study shows that nearly two-third (61%) of respondents answered hydrophobia as a symptom of rabies in humans, 13% answered difficulty in swallowing, 9.1% answered vomiting, and 32.5% answered fever and headache, respectively. Likewise, most (81.8%) of the respondents answered salivation as a symptom of rabies in animals. This finding differs from the findings of Pal et.al,[16] where only 16% answered hydrophobia and two-third (66%) answered salivation as a symptom of rabies in humans and animals, respectively. These finding was lower than the findings of the present study.

Regarding the awareness on management after animal bite, in this study, 93% of the respondents were aware that people should visit health facilities, 92.2% were aware that wound should be washed with soap and water and 76.6% were aware that rabies vaccine should be taken after animal bite respectively whereas, a similar study conducted in Bangladesh reflects 59% of the dog bite victims first visit traditional healers for seeking treatment instead of visiting the hospitals, 29% received the rabies vaccine, only 2% practiced proper wound washing with soap and water, while 4.8% have not taken any measures.[17] These findings were in contrast to the findings of the present study. Another study conducted in Pondicherry, India, among 126 respondents, found that all of the respondents were aware of taking the anti-rabies vaccine immediately after an animal bite, and its free availability in the government hospitals, but only one-third were aware of washing the wound with soap and water.[18]

Regarding the awareness of vaccination after a dog bite, most (87%) of the respondents were aware that the rabies vaccine should be taken as soon as possible, within 24 hours of a dog bite, which was higher than the findings of the study conducted in urban slums of Bangalore, India, where only 49.7% were aware.[3] Regarding the prevention of rabies, 97.4% respondents were aware that street dogs should be managed, 96.1% were aware that pet dogs should be timely checked and 88.3% were aware that rabies vaccine should be taken after dog bite respectively whereas, the cross-sectional study conducted in Wuhan, China illustrates 60% of the respondents were aware that stray dogs should be properly managed, 62.46% were aware that rabies vaccine should be taken after dog bite and 55% were aware that pet animals should be timely checked respectively. These findings were comparatively lower than those in comparison to this study.[15]

This study concludes that nearly three-fourth (72.7%) of respondents had moderate awareness of rabies, and 20.8% respondents had inadequate awareness of rabies, which differs from the findings of a similar study where 86% people had high awareness of rabies.[18] These differences may be due to the larger sample size of the study.

In the present study, no association was found between level of awareness and age, sex, education level, or dog ownership. But the finding of another study showed that people with higher education were more aware than people with a low educational background (p-value<0.001).[19] Also, a study done by Edukugho et al. showed that people who owned a dog had higher awareness of rabies prevention and vaccination than those who did not own a dog (p-value <0.001). The higher awareness may be linked with having dog as a pet. The same study also reveals that the age and sex of respondents did not show a significant relationship with the level of awareness (p>0.05).[20]

The generalizability of this study is limited, as the study was conducted in only one ward of a municipality. The sample of the study might not represent the whole population, as a non-probability convenience sampling technique was used.

CONCLUSION

It is concluded that nearly three-fourth of the community people of Gokarneshwor municipality ward no.9 are moderately aware of rabies. Adults are more aware of the preventive measures of rabies and relatively less aware of the management after an animal bite.

This study also recommends implementing public health interventions, such as awareness campaigns, to enhance community awareness. Similar studies can be carried out on larger populations to validate the findings.

ACKNOWLEDGEMENT

We are thankful to the participants of this study.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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