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Knowledge Regarding Rabid Animal Bite among Rural Community People

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ABSTRACT

Background: Rabies is an important public health problem in Bangladesh and is at the top of the list among the zoonotic diseases.

Objective: The objective of the study was to assess the level of knowledge regarding rabid animal bite among rural community people.

Methodology: This cross sectional study was conducted among 345 rural community people from 1st January to 31st December, 2019 in several villages of Kaligonj in Gazipur district. Convenience sampling was adopted and a semi-structured interviewer administered questionnaire was used to collect data.

Results: The mean age of the respondents was 39.63 ±13.35 years where majority (84.1%, n=290) of them were female and 81.7% (n=282) were literate. Only 4.9% (n=17) heard about rabies from health personnel, 14.2% (n=49) from mass media, 20.0% (n=69) from books and 60.9% (n=210) from general people. Most of the respondents 98.8% (n=314) knew that rabies is caused by infection from bite of rabid animal. Most of the respondents (97.7%, n=337) had knowledge that one should be vaccinated after bite of an animal. Majority of the respondents (92.8%, n=320) knew that rabies is preventable, 84.6% (n=292) knew about fatality of the disease. Half of the respondents (50.7%, n=175) had knowledge that rabies can be prevented by vaccination of rabid animals. Majority of the respondents (58.8%, n=203) had average knowledge regarding rabid animal bite while others had good (38.8%, n=134), and poor (2.3%, n=8) knowledge. Statistical significance was found regarding level of knowledge and educational status ($p<0.001$).

Conclusion: Majority of the rural community people had average level of knowledge regarding rabid animal bite. There is strong need for educational initiatives involving the local population and the public health authorities to support the rabies elimination program in Bangladesh.

KEYWORDS: Rabid Animal, Animal bite, Rural Community People, Rabies, Respondents.

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INTRODUCTION

Rabies is a preventable viral disease of mammals most often transmitted through the bite of a rabid animal [1]. Man acquires the disease once he gets bitten by a rabid animal or even on contact with its saliva on mucous membrane or broken skin. The incubation period varies depending on various factors like the site and severity of bite [2].The diagnosis of rabies is challenging because of the long incubation period (20–60 days on average, with rare reports of 5–6 days and up to 7 years) and the lack of specificity of early prodromal symptoms and neurologic symptoms, including paresthesias, pruritis and pain at the site of viral entry. Rapid diagnostic tests are not available [3].

Rabies is a vaccine-preventable disease. Vaccinating dogs is the most cost-effective strategy for preventing rabies in people. Education on dog behavior and bite prevention for both children and adults is an essential extension of a rabies vaccination program and can decrease both the incidence of human rabies and the financial burden of treating dog bites. Human rabies vaccines exist for pre-exposure immunization. These are recommended for people in certain high-risk occupations such as laboratory workers handling live rabies

viruses; and people (such as animal disease control staff and wildlife rangers) whose professional or personal activities might bring them into direct contact with bats, carnivores, or other mammals that may be infected. Pre-exposure immunization is also recommended for travelers to rabies-affected. Post-exposure prophylaxis (PEP) prevents virus entry into the central nervous system, which results in imminent death. It is the immediate treatment of a bite victim after rabies exposure. PEP consists of extensive washing and local treatment of the wound as soon as possible after exposure. The wound should be washed for a minimum of 15 minutes with soap and water, detergent, povidone iodine or other substances that kill the rabies virus. Then a course of potent and effective rabies vaccine that meets WHO standards is recommended. In case of category III, the administration of rabies immunoglobulin (RIG) is indicated. Effective treatment soon after exposure to rabies can prevent the onset of symptoms and death [4].

A survey by Disease Control Unit (2007) shows that number of rabies death is more than 2000 per year and recent vaccine consumption shows post-exposure vaccination is taken by more than 3,00,000 person per year and a good number of victims of animal bite remains untreated [5].

In Bangladesh, 95.76% of cases of rabies gave history of dog bite. The other animals involved were cat (2.77%), mongoose (1.16%) and fox (0.29%) [6].High death rate may be due to wrong wound management, delayed presentation and misconception associated with animal bite among rural population. All these factors lead to improper management of the animal bite. To increase the proper management of rabid animal bite, it is therefore necessary to identify the potential factors that prevent rural people to get the treatment timely [7].

In rural areas there is often a failure to provide PEP to dog-bite victims in a timely manner due to unavailability at trained health care provider or privately owned pharmacies in these areas. Sometimes PEP or Rabies Immunoglobulin (RIG) is often not undertaken or is delayed by patients due to distance of health care facilities which increases the likelihood of progression to clinical rabies. Adequate knowledge is essential for effective prevention and control of diseases. In case of rabies, it is important to assess the level of knowledge of rural community people to deal with the bite of rabid animal. Therefore, the present study had been conducted to assess the level of knowledge of rural community people regarding rabid animal bite.

MATERIALS AND METHODS

Study design: The study was a Cross-sectional study to assess the level of knowledge regarding rabid animal bite among rural community people.

Study setting: The study was conducted in several villages in Gazipur district. The villages are Boali, Tumola, Vetor and South Bhadarty, Gazipur, Bangladesh during the period from January to December 2019.

Sample size and sampling: The sample size was calculated by using the formula: $n=z^2pq/d^2$ where n=required sample size; z=1.96 at 95% confidence interval; p= prevalence (34.25%) 0.5;q=1-p; d is the desired precision or error allowed in the study (set at 0.05).The calculated sample size was 345. Sample was included following non-randomized convenience sampling technique and using a standard written informed consent form.

Data collection: Data were collected by face-to-face interview with the help of pre-tested semi-structured questionnaire.

Data analysis: The data collected from the respondents were analyzed. After completion of data collection, the data were checked and edited manually and verified before tabulation. Data were coded, entered and analyzed in a computer. The statistical analysis was conducted using SPSS (Statistical Package for Social Science) version 25 statistical software. The findings of the study were presented by frequency, percentage in tables and graphs. Means and standard deviations for continuous variables and frequency distributions for categorical variables were used to describe the characteristics of the total sample. Age, number of family members and monthly family income were considered as categorical variables. There were total 18 knowledge related questions which had 45 correct answers. The values were coded as 1 = incorrect response and 2 = correct response. Respondents who responded correctly to > 75% of questions were categorized as having good knowledge, 50% to 75% were categorized as having average and <50% were categorized as having poor knowledge. Associations of categorical were assessed using Chi square test and Fisher's Exact test. Here, $p<0.05$ was considered significant

Ethical consideration: All the information collected for the study was utilized only for the purpose of thesis and was not disclosed to anyone. At the beginning, approval was obtained from the ethical committee of NIPSOM, under the Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. Permission was also taken from local authority (Upazilla Health and Family Planning Officer, Kaligonj).Then informed written consent was obtained from participants after informing about the purpose of the study. A complete assurance was given that all information would be kept confidentially. Their participation and contribution was acknowledge with due respects. The right was given to the participants not to participate and to discontinue participation at any time in study with consideration/without penalty. Informed consent was documented properly. Each respondent was interviewed separately and their privacy and confidentiality was maintained strictly.

RESULTS

Table 1: Socio-demographic characteristics of the respondents (345)

Age of the respondents(in years)	Frequency(f)	Percentage(%)
19-28	72	20.9
29-38	120	34.8
39-48	52	15.1
49-58	56	16.2
>58	45	13.0
Mean ±SD = 39.63 ±13.35 years		
Gender of the respondents		
Female	290	84.1
Male	55	15.9
Educational status of the respondents		
Illiterate	63	18.3
Up to primary	50	14.5
Up to SSC	161	46.7
HSC and above	71	20.6
Monthly family income (in taka)		
Up to 10,000	35	10.1
11,000 to 20,000	114	33.3
21,000 to 30,000	106	30.7
31,000 to 40,000	46	13.3
Above 40,000	44	12.8
Mean ±SD (in taka) = 27763.77		
Total	**345**	**100**

Table 1 shows that, majority 20.9%(n=72) of the respondents were from 19-28 years age group The mean age of participants was 39.63 ±13.35 years which ranged from 19-78 years. Among them, 84.1% (n=290) respondents were female. Among the respondents, 46.7% (n=161) educational status had up to SSC. Majority 75.1%, (n=259) of the respondents were house wives. Monthly income status of the respondents 33.3% (n= 114) had monthly income from TK 11,000 to TK 20,000 while 30.7% (n=106) respondents monthly income from TK21,000 to TK30,000. The mean of the monthly income was TK27763.77 ±13796.49 which ranged from TK5,000 to TK80,000.

Table 2: Distribution of the respondents by knowledge regarding rabid animal bite (n=345)

Source of knowledge	Frequency (f)	Percentage (%)
Health personnel	17	4.9
Mass media (TV, Radio, Newspaper)	49	14.2
Books	69	20.0
General people	210	60.9
Cause of rabies		
Infection from bite of rabid animal	341	98.8
Scratch from rabid animal	156	45.2
Licking from rabid animal	91	26.4
Mode of transmission of rabies		
Bite of rabid animal	342	99.1
Scratch from rabid animal	155	44.9
Lick of rabid animal	91	26.4
Spreading from one patient to another person		
Yes	149	43.2
No	162	47.0
Do not know	34	9.9
Spreading through contaminated food or water		
Yes	143	41.4

No	168	48.7
Do not know	34	9.9
Clinical symptoms of rabies		
Fever	144	41.7
General weakness/ discomfort	128	37.1
Headache	110	31.9
Abnormal behavior	101	29.3
Unable to drink	99	28.7
Cannot identify	91	26.4
Excessive salivation	86	24.9
Discomfort or a prickling or itching sensation at the site of bite	85	24.6
Clinical sign of rabid animal		
Aggression	289	83.8
Salivating	188	54.5
Making unusual sounds	143	41.4
Unable to eat/ drink	77	22.3
Hydrophobia	72	20.9
Photophobia	56	16.2
Aerophobia	52	15.1
Total	**345**	**100**

*multiple response

Table 2 shows, most of the respondents 60.9% (n=210) source of knowledge were from general people, 98.8% (n=314)respondents knew that rabies is caused by infection from bite of rabid animal, 99.1%, (n=342) knew that rabies can be transmitted by bite of rabid animal. Here, 43.2% (n=149) of the respondents knew that rabies can spread from one patient to another person and 41.4% (n=143) knew that rabies can spread through contaminated food and water. Among the respondents, 41.7% (n=144) knew that fever is a symptom of rabies. Others knew that general weakness 37.1%(n=128), headache 31.9%(n=110), abnormal behavior 29.3%(n=101), drinking problem 28.7%(n=99), identification problem 26.4%(n=91), excessive salivation 24.9%(n=86) and discomfort or a prickling or itching sensation at the site of bite 24.6%(n=85) are the clinical symptoms of rabies. Most of the respondents, 83.8% (n=289) knew that rabid animal becomes aggression.

Table 3: Distribution of the respondents by knowledge regarding management, treatment & prevention (n=345)

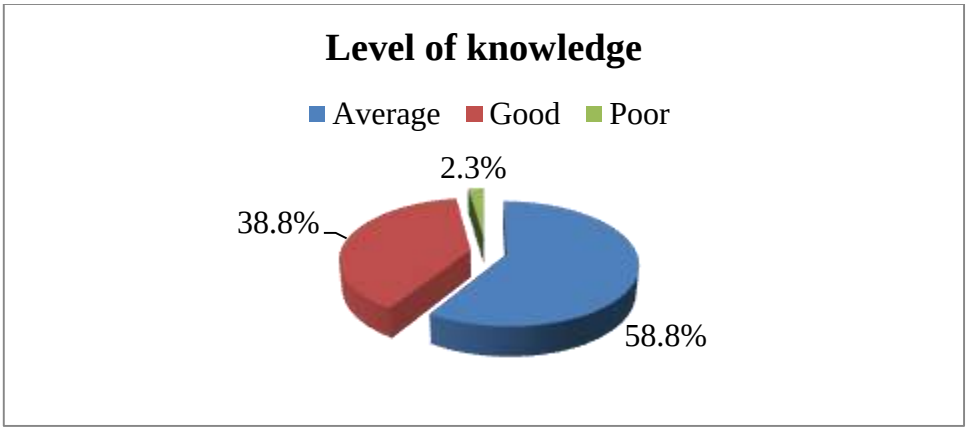
Immediate management	**Frequency (f)**	**Percentage (%)**
Visit a health personnel immediately	323	93.6
Wash the wound with soap and water	174	50.4
Duration of washing the wound with soap and water		
10 minute	95	27.5
15 minutes	11	3.2
20 minutes	35	10.1
30 minutes	20	5.8
Do not know	184	53.3
Consultation with a doctor after animal bite		
Yes	340	98.6
No/ Do not know	5	1.4
Observation of an animal that has bitten someone		
Yes	273	79.1
No	8	2.3
Do not know	64	18.6
Treatment of rabid animal bite		
Vaccination	337	97.7
Wound wash with soap and water	155	44.9

Antibiotic	119	34.5
Immunoglobulin	0	0.0
Observation period		
>10 days	8	2.3
< 10 days	40	11.6
Do not know	297	86.1
Animal bite lead to fatal disease		
Yes	292	84.6
No	39	11.3
Do not know	14	4.1
Rabies is preventable		
Yes	320	92.8
No/ Do not know	25	7.2
Vaccination of pet animal against rabies		
Yes	291	84.3
No	24	7.0
Do not know	30	8.7
Ways of Prevention of rabies		
Vaccination of people	340	98.6
Killing of stray/ rabid animal	251	72.8
Vaccination of rabid animal	175	50.7
Total	345	100

*multiple response

Table 3 shows, most of the respondents, 93.6% (n=323) knew that one should visit a health personnel immediately, only 3.2% (n=11) knew that one should wash the wound with soap and water for at least 15 minutes. Most of the respondents (98.6%, n=340) have the knowledge that one should consult with a doctor after animal bite, 79.1%(n=273) knew that one should observe an animal that has bitten someone. Majority of the respondents (97.7%, n=337) knew that one should be vaccinated after bite of an animal, only 2.3% (n=8) had knowledge that one should observe an animal for more than 10 days. Majority of the respondents 84.6%(n=292) knew about fatality of the disease. Most of the respondents (92.8%, n=320) knew that rabies is preventable, 98.6%(n=340) knew that rabies can be prevented by vaccinating people. Majority of the respondents (72.8%, n=251) knew that rabies can be prevented by killing of stray/ rabid animal and half of the respondents (50.7%, n=175) answered that rabies can be prevented by vaccination of rabid animals.

Figure 1: Distribution of the respondents by level of knowledge regarding rabid animal bite (n=345)



Above figure shows the level of knowledge of the respondents regarding rabid animal bite. Majority of the respondents 58.8% (n=203) had average knowledge regarding rabid animal bite while 38.8%(n=134)had good knowledge and 2.3% (n=8) had poor knowledge regarding rabid animal bite.

Table 4: Association between level of knowledge regarding rabid animal bite and educational status of the respondents (n=345)

Educational status	Level of knowledge			
	Good - f (%)	Average - f (%)	Poor - f (%)	Statistics
Illiterate	13 (20.6)	44 (69.8)	6 (9.5)	χ^2=34.644
Primary	13 (26.0)	35 (70.0)	2 (4.0)	df=4
SSC and above	108 (46.6)	124 (53.4)	0 (0.0)	p<0.001

Table 4shows that all respondents with educational status up to SSC and above had good and average knowledge while illiterate respondents had poor knowledge. Significant statistical difference was found regarding level of knowledge and educational status of the respondents (p<0.001) (obtained by Fisher Exact test).

DISCUSSION

Rabies is an almost-always fatal disease in humans, but treatment with post-exposure prophylaxis (PEP) that includes rabies vaccine and immune globulin prevents death if administered before symptoms begin (Soucheray, 2019). This crosssectional study was carried out among 345 respondents to assess the level of knowledge regarding rabid animal bite among rural community people.

It has been found from current study that the mean age of participants was 39.63 ±13.35 years which ranged from 19-78 years. A study was conducted in Bangladesh to explore people's awareness about rabies, their attitudes towards dogs and practices associated with treating dog bites where the mean age of the participants was found 42 years. Majority of the study participants (84.1%) were female. Data of the present study were collected in day time when female house hold members were present at home. For this the proportion of female respondents were more which was consistent with other studies (8).

Majority of the respondents (58.8%) of the current study had average knowledge regarding rabid animal bite while 38.8% had good knowledge. Inconsistent results were found in literatures. Study conducted among nurses in India revealed that they had poor knowledge regarding rabies (9). Study conducted among construction workers in India also revealed that they had poor knowledge regarding rabies (10). This poor knowledge might be the reason that India accounts for 59.9% of rabies deaths in Asia and 35% of deaths globally (11). Bangladesh is leading a national multipronged rabies elimination program towards its goal of eliminating rabies by 2020, and serving as a role model for others in the region with similar economic and sociocultural characteristics. This might be the reason for better knowledge of Bangladeshi people compared to India.

All respondents with educational status up to SSC and above had good and average knowledge while illiterate respondents had poor knowledge. Educated person can acquire knowledge through books and other mass media while illiterate person does not have that opportunity. Significant statistical difference was found regarding level of knowledge and educational status of the respondents which was consistent with other studies (10, 12). Several studies showed significant association between sex and knowledge regarding rabies (13). But the present study did not find any association between sex and knowledge regarding rabies.

CONCLUSION

Rabies is one of the oldest recognized infectious diseases, and affects all mammals. Rabid animal bite remains a major socioeconomic and public health problem in developing countries. This cross-sectional study assessed the level of knowledge regarding rabid animal bite among rural community people. Majority of the rural community people had average level of knowledge regarding rabid animal bite. The knowledge regarding clinical features of rabies in both humans and animals as lacking in many respondents. The study participants also had lack of knowledge regarding immediate management of rabid animal bite patient.

ETHICAL CONSIDERATION

All the information collected for the study was utilized only for the purpose of thesis and was not disclosed to anyone. At the beginning, approval was obtained from the ethical committee of NIPSOM, under the Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. Permission was also taken from local authority (Upazilla Health and Family Planning Officer, Kaligonj).Then informed written consent was obtained from participants after informing about the purpose of the study. A complete assurance was given that all information would be kept confidentially. Their participation and contribution was acknowledge with due respects. The right was given to the participants not to participate and to discontinue participation at any time in study with consideration/without penalty. Informed consent was documented properly. Each respondent was interviewed separately and their privacy and confidentiality were maintained strictly.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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