PERCEPTIONS AND TREATMENT SEEKING BEHAVIOR FOR DOG BITES IN RURAL BANGLADESH

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Abstract. We conducted a study of the knowledge, attitudes and practices regarding dog bites among residents of a rural community in Bangladesh from September 2006 to February 2007 using face to face interviews with 1,973 adults from five villages. The mean age of the respondents was 34±16 years. Sixty-eight percent of subjects were female, 7.3% of respondents reported a history of dog bite in a family member; 10% had been bitten twice. Sixty-five percent of subjects were aware of rabies and 99.1% knew a dog bite was the cause of rabies. Seventy-one percent of subjects were aware of a rabies vaccine, 77.5% of respondents stated rabies can cause death. Ninty percent of dog bite victims received treatment by traditional healers, 25% were treated with a rabies vaccine and 2.1% of victims died. Greater awareness is needed in rural Bangladesh regarding prevention of rabies.

Keywords: KAP, dog bite, rabies and vaccine, Bangladesh

INTRODUCTION

Rabies is a uniformly fatal zoonotic viral disease acquired by mammal bite, mostly dog bite.There are 40,000 to 70,000 estimated deaths worldwide due to rabies yearly and an estimated 10 million people receive prophylaxis (Jackson *et al*, 2003). A survey in 2007 by the Disease Control Unit of DGHS Bangladesh found >2,000 rabies deaths per year with >300,000 people requiring post-exposure vaccination; a large number of victims of animal bite remained untreated (Haque *et al*, 2011). Information from the Infectious Disease Hospital (IDH), Dhaka shows rabies is a significantly overlooked problem in Bangladesh (Ahmed, 2006). Newspaper reports of dog bites are often seen in the media. Information from the IDH reveals dog bites are more common among males (80%) less than age 15 years, more often bitten on the lower limbs (79%), in rural areas (86%) and only 14% received post-exposure prophylaxis (Rahman *et al*, 2007).

The only intervention for rabies prevention is timely effective vaccination. We studied the knowledge, attitudes and perceptions among rural residents in Bangladesh about dog bites in order to develop intervention strategies.

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MATERIALS AND METHODS

We conducted a cross sectional study

in the rural community of Chandaniash Upazila, Chittagong District, Bangladesh. Chandaniash Upazila has an estimated population of 241,641 divided into 10 unions. The study was conducted from September 2006 to February 2007. Five villages were randomly selected in Chandaniash Upazila. Ten percent of the houses in these villages were selected by systematic random sampling. Considering an annual incidence of dog bites of 300/100,000 and a 95% confidence interval, 1,973 people were surveyed. The data were collected by a trained team of health workers (HW), Health Assistants, Family Welfare Assistants and local NGO workers. Face-to-face interviews were conducted with available adult members of the families using a semi-structured, pre-tested questionnaire in the local language. Knowledge, attitudes and perceptions (KAP) about rabies were obtained from each participant after informed consent was given. Those not willing to give consent or participate in the study or not available on two occasions was excluded from the study.

Characteristics of the household were recorded as well as any history of dog bites that had occurred to any member of the family during 12 months prior to survey. A detailed history was obtained from those bitten by a dog during the previous year. Information about the victim, dog bite, management and outcome were recorded. All households with a history of dog bite were visited by one of the investigators to confirm the bite histories. Ethical clearance was obtained from the Ethical Review Committee, Bangladesh Medical Research Council.

RESULTS

Sixty percent of respondents were aged 35-39 (mean age 37.4 years). Ten percent of respondents were aged ≤20 years. Sixty-eight percent were females. Twenty-eight percent were illiterate; while only 4% had a higher level of education. Eight percent had concrete houses, 4.2% had a Katcha/leaf house and 87.1% lived in a house made of tin. Ninety-nine percent obtained water from a well, 92.4% used sanitary latrines and 7.4% used a ring slab latrine; 72.3% of respondents had electricity, 27. % listened to the radio and 38% watched television. Fifty-nine percent of respondents were landless, 144 had been bitten by a dog, of whom 70% were children and 30% were adults; 54.2% of victims were male. Seven percent of respondents reported a history of dog bite in one of the household members and 10% had been bitten twice.

Sixty-five percent of respondents were aware of rabies and 99.9% of these stated "dog bite" was the source of rabies while 0.01% stated "mongoose bite" was the source of rabies. Seventy point one percent of respondents stated there was a rabies medication and 77.5% stated rabies was a killer disease (Table 1). Eighty-nine point nine percent of dog bite victims received treatment but only 25% recieved a rabies vaccine; 2.1% of victims died (Table 2).

The incidence of dog bites was higher from August to October (Fig 1). A significant association was found between education level and knowledge about the rabies vaccine ($p<0.05$) (Table 3). Respondents with a higher level of education were more likely to be aware of the rabies vaccine ($p<0.05$) (Table 4).

DISCUSSION

Dog bites are a major public health problem in Bangladesh. In our study, the annual incidence of dog bites was

Table 1
Knowledge of the respondents regarding dog bite treatment and rabies.

Attributes	Number (%)
Dog bite	
Yes	144 (7.3)
No	1,829 (92.7)
Number of times bitten	
1	130 (90.3)
≥2	14 (9.7)
Knowledge regarding rabies	
Yes	1,269 (64.3)
No	704 (35.7)
How does rabies occur	
Dog bite	1,268 (99.9)
Mongoose bite	01 (0.1)
How many days after a bites does rabies occur	
Do not know	883 (44.8)
0 to 7 days	305 (15.4)
8-30 days	188 (9.5)
>30 days	597 (30.3)
Knowledge about rabies vaccine	
Yes	1,383 (70.1)
No	590 (29.9)
Agreeable to have rabies vaccine	
Yes	1,965 (99.6)
No	8 (0.4)
Knowledge about where to get rabies vaccine	
Yes	1,535 (77.8)
No	438 (22.2)
Knowledge about location to obtain vaccine	
Government hospital	1,134 (73.9)
Medicine shop	227 (14.8)
Town/city	164 (10.7)
Others	10 (0.6)
Amount willing to pay for vaccine	
Not willing	247 (12.5)
1-2,000 Taka	1,641 (83.2)
2,001-5,000 Taka	79 (4.0)
>5,001 Taka	6 (0.3)
Rabies can cause death	
Yes	1,527 (77.5)
No	446 (22.5)

Table 2
Treatment of dog bites.

Variable	Number (%)
Treatment after dog bite	
Yes	118 (89.9)
No	26 (18.1)
Source of treatment	
Indigenous	80 (67.8)
Local pharmacy	21 (17.8)
Quack doctors	02 (1.7)
Self washing	15 (12.7)
Vaccine after dog bite	
Yes	35 (24.3)
No	107 (75.7)
Consequences of dog bite	
Alive	141 (97.9)
Died	3 (2.1)
Sex of victim	
Male	78 (54.2)
Female	66 (45.8)
Place where bitten by dog	
Road/bazar	50 (35.2)
Neighbor's house	28 (19.7)
Field	41 (28.9)
Other	25 (16.2)
Location on body of bite	
Leg	113 (78.5)
Hand	8 (5.5)
Body	16 (11.1)
Trunk	5 (3.5)
Face/neck	2 (1.4)

72.9/1,000 population. Seventy percent of dog bite victims were aged <20 years. Other studies have found younger children were at higher risk for animal bites (Mitmoonpitak *et al*, 2000; Sudarshan *et al*, 2001). Fifty-four point one percent of bites victims in our study were male, similar to another study (Ndon *et al*, 1996).

In Bangladesh, dog breeding season is in February and March (Haque *et al*, 2011), but dog bites were more common during the summer and autumn when schoolchildren are on holiday and more likely to play outdoors. This puts them at risk for animal bites (Kilic *et al*, 2005).

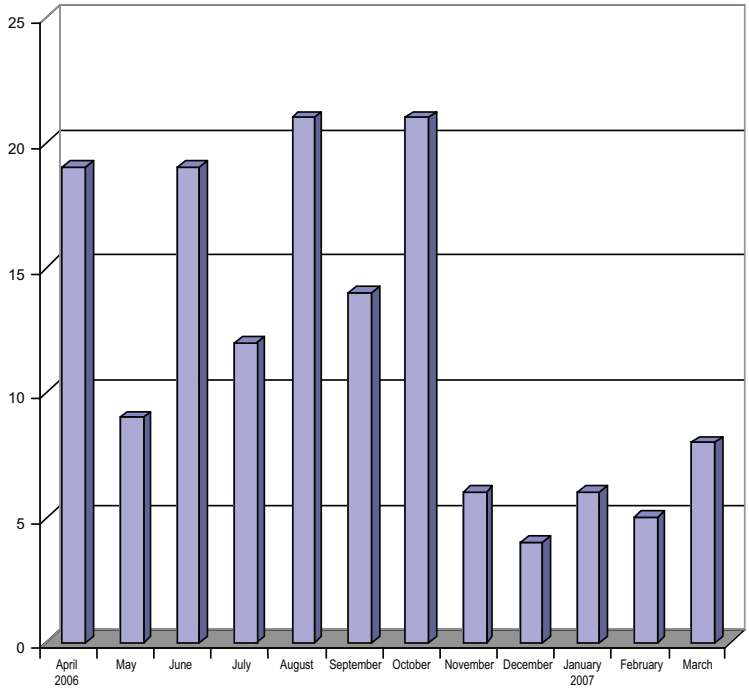

Fig 1–Dog bites by month of the year.

Table 3
Association between educational status of respondent and knowledge about rabies vaccine.

	Knowledge about rabies vaccine	
Education level	No	Yes
No education	290	250
≤Grade 5	313	245
Grade 6 - high school	464	316
>High school	62	10
Total	1,151	821

*χ^2 test- df-3, $p<0.05$

Seventy-three point nine percent of respondents stated the rabies vaccine is available at government hospitals, but the vaccine is not always available. Twelve point five percent of respondents believed the vaccine was free, while 83.2% believed its cost less than USD50. Twenty-four point three percent of the 142 bites reported receiving post-exposure rabies vaccination, but none of them received anti-rabies immunoglobulin. This inadequate treatment may result in preventable human deaths (Hemachudha *et al*, 2003).

Lack of education regarding effective prevention may be the main reason why the majority of patients visited a traditional healer. Unavailability of the rabies vaccine at public hospitals may also be a reason for where victims sought treatment. Lack of transport or inability to afford transportation may have led to delay or failure to seek medical treatment. Poor education regarding treatment of rabies was a key factor influencing health seeking behavior (Tables 3, 4). Raising awareness about rabies through health education is important to reduce incorrect health care seeking behavior after a dog bite (Weiss *et al*, 1998).

The study was conducted in a small portion of the country. The area was chosen for convenience of the researcher. The study findings cannot be generalized to other populations, although the study populations are similar in other parts of the country. A nationwide survey should be conducted regarding rabies.

Although rabies is uniformly fatal, it is often neglected in developing countries. One of the reasons for this neglect is the

Table 4
Association between educational status and knowledge about sources of rabies vaccine.

	Sources of rabies vaccination						
	Government hospital	Medicine shop	Private clinic	NGO worker	Do not know	Town	City
Education level							
No education	257	56	2	0	174	49	2
≤Grade 5	325	61	2	1	126	41	3
Grade 6 - high school	508	96	0	4	134	50	9
>High school	44	14	0	1	3	5	5
Total	1,134	227	4	6	437	145	19

*χ^2 test- df-9, $p<0.05$

poverty of those at high risk; these people lack advocacy. It is important to reexamine this disease from a public health point of view in Bangladesh.

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