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Preventive Knowledge on Seven Infectious Diseases in Rural Rajshahi District of Bangladesh: A Cross-sectional Study

Md. R. Karim[1], Md. N. I. Mondal[2], Md. J. Haque[3], S. Aik[4], S. Chakrabarty[5], Md. G. Hossain[6]

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[1]Md. Reazul Karim, M. Phil Fellow, Department of Population Science and Human Resource Development, University of Rajshahi, Rajshahi -6205, Bangladesh. E-mail:mel.dascoh@gmail.com
[2]Md. Nazrul Islam Mondal, Professor, Department of Population Science and Human Resource Development, University of Rajshahi, Rajshahi -6205, Bangladesh. E-mail:nazrul_ru@yahoo.com
[3]Md. Jawadul Haque, Professor, Department of Community Medicine, Rajshahi Medical College, Rajshahi, Bangladesh. E-mail: mjhaque61@yahoo.com
[4]Saw Aik, Professor, National Orthopaedic Centre of Excellence for Research and Learning (NOCERAL), Department of Orthopaedic Surgery, University of Malaya, Malaysia. E-mail: sawaik@hotmail.com
[5]Suman Chakrabarty, Assistant Professor, Department of Anthropology, Mrinalini Datta Mahavidyapith, Birati, West Bengal, India, E-mail: sumanshabar@gmail.com
[6]Md. Golam Hossain, Professor, Health Research Group, Department of Statistics, University of Rajshahi, Rajshahi-6205, Bangladesh, E-mail: hossain95@yahoo.com
Corresponding author: Professor, Dr. Md. Golam Hossain, Professor of Health Research Group, Department of Statistics, University of Rajshahi, Rajshahi-6205, Bangladesh, Mobile: +8801914254013, E-mail: hossain95@yahoo.com

ABSTRACT

Infectious diseases remain a major public health concern for many less developed countries including Bangladesh. In order to investigate the level of awareness among people regarding infectious diseases for its early prevention,the aim of the present study was to assess the knowledge of preventive measures on seven infectious diseases and also to find out its associated factors in the rural areas of Rajshahi district in Bangladesh. The cross-sectional data were collected from 1161 adult individuals by using a semi-structural questionnaire. Apart from the percentage distribution, multiple logistic models were also used to understand the association between factors. The results revealed that the preventive knowledge about the studied infectious diseases was varied considerably. Majority of the individuals had the knowledge of preventing diarrhea (79%) whereas only 1.8% of individuals had the preventive knowledge of Kala-azar. The younger participants was more likely to have preventive knowledge of diarrhea ($p<0.05$), but the opposite result was found for worm infestation ($p<0.05$). Female had more aware of preventive knowledge on diarrhea disease and worm infestation than male ($p<0.05$). Generally higher educated individuals were more likely to have the preventive knowledge of infectious diseases than uneducated persons ($p<0.05$). Our study reveals that the level of preventive knowledge about infectious disease is very low among the adults in the rural Rajshahi areas of Bangladesh, where level of education may have played a major role, which has required early attention.

Keywords*:* Infectious diseases, Rural people, Socio-economic factors, Preventive Knowledge, Bangladesh

INTRODUCTION

In less developed countries, people are affected by various forms of poor health conditions including infectious diseases that would reduce their quality of life and productivity (Fonkwo, 2008).The deaths occurred by the infectious diseases fell from 12.1 million in 2000 to 9.5 million in 2012.Though the percentage of all deaths due to infectious diseases decreased from 23%to 17% but yet it is a serious health concern specifically in less developed countries like Bangladesh, and the intermittent outbreaks drain the limited resources of the governments (WHO, 2015). Infectious diseases are the key focus of the sustainable development goal's (SDG) health goal and end the epidemics by 2030 (UN, 2015; Dye, 2014).

In Bangladeshi, diarrhoea, worm infestation, filariasis, measles, kala-azar, eye infection and skin infection were some of the potentially preventable infectious diseases in rural Rajshahi region (CDC, 2013).In Bangladesh, around 62% of deaths among children under the age of 5 years were attributed to infectious diseases which accounts for 55 deaths per 1000 live births (WHO, 2014; Kamruzzaman *et al.*, 2015). It was well established that thevaccination, maintenance of proper hygiene and avoidance of disease can help in the prevention of these diseases (Luby*et al.*, 2008; Dye, 2014).However, public awareness of these common diseases plays an important role in the disease control, while lack of knowledge might lead to low detection rate, interruption of optimal treatment, discrimination and stigma (He *et al*., 2013). Despite substantial progress, vaccine preventable and infectious diseases have historically been major causes of ill health and premature death in Bangladesh. Although Bangladesh has experienced greater than 90% reduction in the incidence of deaths due to childhood diarrhea over the last 25 years (Hotez*et al.*, 2009).Up to 63% of under-five deaths could be prevented if current knowledge on available and reasonable interventions were translated into effective action (Hotez*et al.*, 2009). Human migration has been known to be an important factor in the spread of many infectious diseases across the international borders (Gushulak and MacPherson, 2004).Rajshahi district is situated in the north-western part of Bangladesh, at the border with India separated by the Padma river. Many people regularly travel between Bangladesh and India through this region for business, employment, tour, and education. Based on a published report in 2011, the literacy rate of this region was 47.5%, school enrolment was 48.4%, and about 1.9% of the population were aboriginals (*Adibasi* ethnic) lived in extreme poverty (BBS, 2011).Climate change and extreme weather play significant role on the distribution, spread and burden of many tropical infections (Blazes*et al.*, 2015).The climate

of Rajshahi district is rather extreme: rather high temperature in summer and low temperature during winter.

Based on the above information, it is obvious that the promotion of preventive measures for infectious diseases in Bangladesh is difficult and challenging. The purpose of the study was to assess the general preventive knowledge on seven common infectious diseases (diarrhoea, worm infestation, filariasis, measles, kala-azar, eye infection and skin infection) among the adult peoples in rural areas of Rajshahi district, which may provide baseline information for authorities to plan and execute more effective measures in the prevention of these diseases.

METHODS

This is a cross-sectional study conducted on a sample population in a rural distract of Bangladesh from July to December 2013 using structured questionnaires with pre-coded questions. The questionnaire was pre-tested by application to a few groups of respondents. After some modifications, the final version was adopted for this current study.

Sample size determination and sampling

A total number of 1,161 subjects were enrolled from Rajshahi district of Bangladesh with 1,740,578 population and 435,697 households. Sample population was calculated from the following formula: $n = \frac{N}{1 + Nd^2}$, where n = required sample size, N= population size (in here 1,740,578 peoples), d = marginal error (we considered, d=0.03). We assumed 95% confidence level (Rana *et al.*, 2015). The calculated sample size was 1,161, and this was the number we targeted for this study. Multistage sampling technique was utilized to select individuals from 27 villages in the 9 sub-districts of Rajshahi district, Bangladesh. In the first stage, 3 villages were selected from each sub-district by simple random sampling. In the second stage, 43 households were randomly selected from each village based on their identification numbers (holding number), contributing to 1,161 households in total. From each household, the family head or the senior most person of either gender who were present at the time of survey was considered as our study subject. We would approach the subject and conduct the interview after obtaining verbal consent from the subject.

Outcome and independent variables

Our outcome was based whether the study subjects have adequate knowledge about preventive measures on common infectious diseases in this country based 7 questions that

can broadly be categorized into three groups. First group of questions was regarding the prevention of (1) diarrhea, (2) worm infestation, (3) eye infection and (4) general skin disease where good hygiene is the main preventive measure. Second group of questions was regarding the prevention of (5) filariasis, and (6) Kala-azar where avoiding mosquito bite is the main preventive measure. Third group of questions was regarding the prevention of (7) measles where vaccination is the main preventive measure. For each question, there were two possible outcome; (i) Yes, the subject has the correct information (coded as 1), and (ii) No, the subject did not have the correct information (coded as 0). For each subject, we recorded socio-demographic variables included age (in years; ≤ 25, 1; 26-40, 2; 41-60, 3; 61 and above, 4), gender (male: 1, female: 2), education level (uneducated: 1, completed primary education : 2, completed secondary education : 3, completed higher education: 4), religion (Islam: 1, others: 2) and ethnicity (Bengali: 1, others: 2).

Researcher went to the pre-selected households of the study area. Prior starting data collection, informed verbal consents were obtained from the respondents. Relevant information as per objectives of the study was collected from study participants through interviewer administered questionnaire by face to face interview. All efforts were made to collect data accurately. For structural questions, the respondents were asked in such a manner so that they could speak freely and explain their opinion in a normal and neutral way.

Analysis of data

The bivariate analysis, Chi-square (χ^2)-test was performed to examine the association between the preventive knowledge about selected diseases and other variables. Variables that were significantly associated were considered as covariate for multiple binary logistic regression analysis. This model was used to find the effects of respondents' socio-economic determinants on preventive knowledge about common preventable infectious diseases in Rajshahi region. Statistical analyses were carried out using SPSS software (version IBM 19). Statistical significance was accepted at $p<0.05$ and $p<0.01$.

RESULTS

A total of 1,161 subjects were enrolled for this study. About half of them were between 26 to 40 years, 26.8% were between 41 to 50 years, 19% were less than 25 years, and only 5.6% were older than 50 years (Table 1). Most (64.7%) of the subjects were female. Looking at the educational background, 42.4% of them were uneducated, 23.1% had completed primary level, 25.9% secondary education and only 8.6% had higher educational

qualifications. Most of the subjects were Muslims (92.4%) and were Bengali in ethnic (93.4%) (Table1).

Table 1: Distribution of the respondents by socio-demographic factors (n=1,161)

Characteristic	Number (n)	Percentage (%)
Age (in years)		
< 25	221	19.0
26-40	564	48.6
41-60	311	26.8
61+	65	5.6
Gender		
Male	410	35.3
Female	751	64.7
Educational status		
Uneducated	492	42.4
Primary (Grade I-V)	268	23.1
Secondary (Grade VI-X)	301	25.9
Higher (Grade XI and above)	100	8.6
Religion		
Islam	1073	92.4
Others	88	7.6
Ethnicity		
Bengali	1084	93.4
Adibasi(aboriginal)	77	6.6

Out of the 1,161 subjects, 79.4% knew the proper method to prevent diarrhea, 40.6% knew how to prevent worm infestation and 38.7% knew how to prevent common skin conditions. When we checked on less common conditions like measles, eye infections, filariasis and kala-azar, the percentages dropped to 26.1%, 11.2%, 2.4% and 1.8% respectively (Table 2).

Table 2: Knowledge on seven selected infectious diseases

Diseases	Knowing the best way to prevent disease	
	Correct answer (%)	Wrong answer (%)
Diarrhea	922 (79.4)	239 (20.6)
Worm	471 (40.6)	690 (59.4)
Filariasis	28 (2.4)	1133 (97.6)
Measles	303 (26.1)	858 (73.9)
Kala-azar	21 (1.8)	1140 (98.2)
Eye infection	130 (11.2)	1031 (88.8)

Diseases	Knowing the best way to prevent disease	
	Correct answer (%)	Wrong answer (%)
Diarrhea	922 (79.4)	239 (20.6)
Worm	471 (40.6)	690 (59.4)
Skin disease	449 (38.7)	712 (61.3)

χ^2test was used to find the association between some demographic and socioeconomic features of the subjects with the knowledge on prevention for the medical conditions (Table 3).

Table 3: Association between level of preventive knowledge on infectious disease and socio-demographic factors

Variables		Preventive knowledge		χ^2 -value
		Yes	No	
Diarrhea				
Age (years)	<25	190 (86.0)	31 (14.0)	37.62*
	26-40	459 (81.4)	105 (18.6)	
	41-60	239 (76.8)	72 (23.2)	
	61+	34 (52.3)	31 (47.7)	
Gender	Male	305 (74.4)	105 (25.6)	9.79**
	Female	617 (82.2)	134 (17.8)	
Education	Uneducated	340 (69.1)	152 (30.9)	61.70*
	Primary	226 (84.3)	42 (15.7)	
	Secondary	260 (86.4)	41 (13.6)	
	Higher	96 (96.0)	4 (4.0)	
Religion	Islam	865 (80.6)	208 (19.4)	12.49*
	Other	57 (64.8)	31 (35.2)	
Ethnicity	*Bangali*	872 (80.4)	212 (19.6)	10.58*
	Adibasi	50 (64.9)	27 (35.1)	
Worm				
Age (years)	<25	92 (41.6)	129 (58.4)	21.14*
	26-40	253 (44.9)	311 (55.1)	
	41-60	115 (37.0)	196 (63.0)	
	61+	11 (16.9)	54 (83.1)	
Gender	Male	128 (31.2)	282 (68.8)	22.98*
	Female	343 (45.7)	408 (54.3)	
Education	Uneducated	155 (31.5)	337 (68.5)	45.62*
	Primary	112 (41.8)	156 (58.2)	
	Secondary	139 (46.2)	162 (53.8)	
	Higher	65 (65.0)	35 (35.0)	

Religion	Islam	453 (42.2)	620 (57.8)	15.98*
	Other	18 (20.5)	70 (79.5)	
Ethnicity	*Bangali*	459 (42.3)	625 (57.7)	21.35*
	Adibasi	12 (15.6)	65 (84.4)	
Filariasis				
Age (years)	<25	6 (2.7)	215 (97.3)	1.21
	26-40	15 (2.7)	549 (97.3)	
	41-60	5 (1.6)	306 (98.4)	
	61+	2 (3.1)	63 (96.9)	
Gender	Male	14 (3.4)	396 (96.6)	2.71
	Female	14 (1.9)	737 (98.1)	
Education	Uneducated	6 (1.2)	486 (98.8)	26.55*
	Primary	2 (0.7)	266 (99.3)	
	Secondary	11 (3.7)	290 (96.3)	
	Higher	9 (9.0)	91 (91.0)	
Religion	Islam	28 (2.6)	1045 (97.4)	2.35
	Other	0 (0.0)	88 (100)	
Ethnicity	*Bangali*	28 (2.6)	1056 (97.4)	2.04
	Adibasi	0 (0.0)	77 (100.0)	
Measles				
Age (years)	<25	59 (26.7)	162 (73.3)	5.68
	26-40	155 (27.5)	409 72.5)	
	41-60	80 (25.7)	231 (74.3)	
	61+	9 (13.8)	56 (86.2)	
Gender	Male	87 (21.2)	323 (78.8)	7.82**
	Female	216 (28.8)	535 (71.2)	
Education	Uneducated	88 (17.9)	404 (82.1)	36.42*
	Primary	72 (26.9)	196 (73.1)	
	Secondary	106 (35.2)	195 (64.8)	
	Higher	37 (37.0)	63 (63.0)	
Religion	Islam	296 (27.6)	777 (72.4)	16.25*
	Other	7 (8.0)	81 (92.0)	
Ethnicity	*Bangali*	299 (27.6)	785 (72.4)	18.68*
	Adibasi	4 (5.2)	73 (94.8)	
Kala-azar				
Age (years)	<25	1 (0.5)	220 (99.5)	3.23
	26-40	12 (2.1)	552 (97.9)	
	41-60	6 (1.9)	305 (98.1)	
	61+	2 (3.1)	63 (96.9)	
Gender	Male	9 (2.2)	401 (97.8)	0.53
	Female	12 (1.6)	739 (98.4)	
Education	Uneducated	6 (1.2)	486 (98.8)	3.73
	Primary	5 (1.9)	263 (98.1)	

	Secondary	6 (2.0)	295 (98.0)	
	Higher	4 (4.0)	96 (96.0)	
Religion	Islam	21 (2.0)	1052 (98.0)	1.75
	Other	0 (0.0)	88 (100)	
Ethnicity	*Bangali*	21 (1.9)	1063 (98.1)	1.52
	Adibasi	0 (0.0)	77 (100.0)	
Eye infection				
	<25			
	26-40	28 (12.7)	193 (87.3)	
Age (years)	41-60	65 (11.5)	499 (88.5)	1.31
	61+	30 (9.6)	281 (90.4)	
	Male	7 (10.8)	58 (89.2)	
Gender	Female	43 (10.5)	367 (89.5)	0.32
	Uneducated	87 (11.6)	664 (88.4)	
	Primary	35 (7.1)	457 (92.9)	
Education	Secondary	26 (9.7)	242 (90.3)	25.50*
	Higher	51 (16.9)	250 (83.1)	
	Islam	18 (18.0)	82 (82.0)	
Religion	Other	129 (12.0)	944 (88.0)	9.69**
	Bangali	1 (1.1)	87 (98.9)	
Ethnicity	*Adibasi*	129 (11.9)	955 (88.1)	8.13**
	<25	1 (1.3)	76 (98.7)	
Skin infection				
	<25	86 (38.9)	135 (61.1)	
Age (years)	26-40	222 (39.4)	342 (60.6)	7.23
	41-60	126 (40.5)	185 (59.5)	
	61+	15 (23.1)	50 (76.9)	
Gender	Male	151 (36.8)	259 (63.2)	0.91
	Female	298 (39.7)	453 (60.3)	
	Uneducated	134 (27.2)	358 (72.8)	
Education	Primary	110 (41.0)	158 (59.0)	58.40*
	Secondary	145 (48.2)	156 (51.8)	
	Higher	60 (60.0)	40 (40.0)	
Religion	Islam	432 (40.3)	641 (59.7)	15.04*
	Other	17 (19.3)	71 (80.7)	
Ethnicity	*Bangali*	436 (40.2)	648 (59.8)	16.51*
	Adibasi	13 (16.9)	64 (83.1)	

***p<0.05; **p<0.01**

Diarrhea

For diarrhea disease, the percentages of respondents with correct information on preventive measure on the condition from those grouped under age less than or equal to 25 years, 26 to 40 years, 41 to 60 years and age 61 and above years were 86.0%, 81.4%, 76.8%,

and 52.3% respectively. χ^2-test showed that the differences in knowledge between these groups were statistically significant ($p<0.01$). Female (82.2%) respondents have more knowledgeable on preventive measure for diarrhea than male (74.4%) respondents, and the association was statistically significant ($p<0.01$). More than 86% respondents from those with education level of higher education have correct information on preventive measure for diarrhea compared to those with lower level or no education, and difference was also statistically significant ($p<0.01$). Islam and Bengali respondents were more knowledgeable on prevention of diarrhea and the associations were also significant ($p<0.01$).

Worm infestation

As regard to worm infestation, the highest percentage of respondents with the correct information on preventive measure was from the age group 26 to 40, which was only 44.9%. Percentages of respondents with correct information from other age groups were lower, and the differences were statistically significant ($p<0.01$). Respondents who were female, higher level of education, Muslims and Bengalis have higher more likely have the correct information of how to prevent worm infestation, and the associations were statistically significant ($p<0.01$).

Measles

For measles, close to 21.2% male respondents and about 28.8% female respondents knew that vaccination is the most effective preventive measure. Considering the level of education, 17.9% of those who were illiterate, 26.9% of those with primary education, 35.2% of those with secondary education, and 37.0% of those with higher education have correct information. About 28% of those who were Muslims have the correct information compared to only 8.0% of those from others religion. About 28% of Bengalis have the correct information compared to only 5.2% of those from other ethnic. Religion (being Muslim) and ethnicity (being Bengalis) were the only two factors that were significantly associated with better knowledge of prevention for measles ($p<0.01$).

Skin infection

Regarding skin infection, 27.2% of those who were illiterate, 41.0% of those with primary education, 48.2% of those with secondary education and 60.0% of those with higher education knew that good hygiene is the best preventive measure. More than 40% of Muslims, and more than 40% of Bengalis have the correct information. Higher level of education, being Muslims and being Bengali were associated with better knowledge on prevention of skin infection, and the association was statistically significant ($p<0.01$).

Eye infection

On eye infection, generally knowledge on preventive measure among the respondents was relatively poor. About 8% those who were illiterate, 9.7% of those with primary education, 16.9% of those with secondary education, and 18.0% of those with higher education knew that good hygiene was the best way to prevent eye infection. About 12% of Muslims and 11.9% of Bengalis knew the preventive measure, and these were significantly higher than those of non-Muslims (1.1%) and Aboriginals (1.3%) ($p<0.01$).

Filariasis

Knowledge on prevention for filariasis was even lower. Only 1.2% of those who were illiterate, 0.7% of those with primary education, 3.7% of those with secondary education, and 9.0% of those with higher education and above knew about prevention of filariasis. Association between level of educational and information on prevention for filariasis was statistically significant ($p<0.01$). Difference in the percentages of respondents with correct knowledge on disease prevention between those from various age groups, and between the two genders were not statistically significant ($p>0.05$).

Kala-azar

Kala-azar is a less common disease that is transmitted by mosquito bite. Less than 5% of respondents in all the study groups including those with higher level of education knew the preventive measures of this condition. No significant associations was noted between the groups ($p>0.05$).

Factors influencing preventive knowledge on infectious diseases

The binary multiple logistic regression coefficients and adjusted odds ratio (AOR) of the independent variables are presented in Table 4. Multiple binary logistic regression analysis demonstrated that on the diarrhea disease, higher percentage of respondents with age less than or equal to 25 were aware about its prevention compared to those with age 61 and above [AOR =0.44, 95% CI, 0.22-0.89; $p<0.05$]. Higher percentage of female respondents knew how to prevent diarrhea disease compared to male respondents [AOR=1.65, 95% CI, 1.20-2.28; $p<0.05$], and the similar difference was noted when we compared educated respondents to their uneducated counterparts ($p<0.05$). For worm infestation, respondents aged between 26-40 years [AOR=1.64, 95% CI, 1.15-2.32; $p<0.05$] and 40-60 [AOR=1.50, 95% CI, 0.99-2.62; $p<0.05$] were more aware about its prevention compared to those aged less than or equal to 25 years. Female and educated respondents were also noted to be more aware about its prevention. For measles, respondents who were female, educated and Bengali were more likely to know their preventions compared to their

counterparts ($p<0.05$). For eye and skin infections, educated respondents are more aware compared to uneducated respondents. For filariasis, respondents with secondary [AOR=3.07, 95% CI, 1.12-8.40; $p<0.05$] and higher [AOR=8.01, 95% CI, 2.78-23.05; $p<0.05$] levels of education were more aware of its prevention compared to uneducated respondents (Table 4).

Table 4: Effect of socioeconomic and demographic factors on preventive knowledge on infectious disease

Independent Variables	β	AOR (95% CI of AOR)
Diarrhoea		
Age in years		
≤ 25®		1.00
26-40	0.125	1.133 (1.823-0.705)
40-60	0.101	1.106 (1.878-0.652)
≥ 61	-0.820	0.440 (0.888-0.218)*
Sex		
Male ®		1.00
Female	0.502	1.653 (2.281-1.198)**
Educational status		
Uneducated ®		1.00
Primary	0.802	2.231 (3.332-1.494)**
Secondary	0.970	2.638 (4.053-1.717)**
Higher	2.502	12.201 (34.671-4.294)**
Religion		
Islam ®		1.00
Other	-1.073	0.342 (11.290-0.757)
Ethnicity		
Bengali ®		1.00
Adibasi	0.547	1.699 (7.111-0.406)
Worm		
Age in years		
≤ 25®		1.00
26-40	0.492	1.636 (2.324-1.151)**
40-60	0.404	1.497 (2.262-0.991)

≥ 61	-0.428	0.652 (1.391-0.305)
Sex		
Male ®		1.00
Female	0.769	2.158 (2.878-1.618)
Educational status		
Uneducated ®		1.00
Primary	0.370	1.448 (2.012-1.042)*
Secondary	0.680	1.973 (2.770-1.406)**
Higher	1.723	5.600 (9.299-3.373)**
Religion		
Islam ®		1.00
Other	0.371	0.690 (2.480-0.192)
Ethnicity		
Bengali ®		1.00
Adibasi	-1.518	0.219 (0.906-0.053)*
Filariasis		
Educational status		
Uneducated ®		1.00
Primary	-0.496	0.609 (3.039-0.122)
Secondary	1.122	3.072 (8.396-1.124)*
Higher	2.081	8.011 (23.053-2.784)**
Measles		
Sex		
Male ®		1.00
Female	0.483	1.620(2.187-1.200)**
Educational status		
Uneducated ®		1.00
Primary	0.477	1.611 (2.308-1.124)**
Secondary	0.862	2.368 (3.308-1.695)**
Higher	1.079	2.942 (4.779-1.811)**
Religion		
Islam ®		1.00
Other	-0.089	0.915 (3.569-0.235)

Ethnicity		
Bengali ®		1.00
Adibasi	-1.633	0.195(1.062-0.036)
Eye infection		
Educational status		
Uneducated ®		1.00
Primary	0.298	1.348(2.296-0.791)
Secondary	0.917	2.501(3.958-1.580)**
Higher	0.977	2.656(4.925-1.432)**
Religion		
Islam ®		1.00
Other	-19.183	0.001(0.001-0.002)
Ethnicity		
Bengali ®		1.00
Adibasi	17.039	0.001(0.001-0.002)
Skin disease		
Educational status		
Uneducated ®		1.00
Primary	0.584	1.793 (2.460-1.306)**
Secondary	0.862	2.367 (3.204-1.748)**
Higher	1.328	3.773 (5.911-2.409)**
Religion		
Islam ®		1.00
Other	-0.223	0.800 (2.816-0.227)
Ethnicity		
Bengali ®		1.00
Adibasi	-0.776	0.460(1.851-0.115)

β-Coefficient value; AOR-Adjusted Odds Ratio; CI-Confidence Interval; R- Reference value; *p<0.05; **p<0.01

DISCUSSION

In this study, the level of preventive knowledge about infectious diseases such as diarrhoea, worm infestation, filariasis, measles, kala-azar, eye infection and skin were measured among the adults of rural people in Rajshahi. It was observed thatin this region the highest number of adults (79.4%) had preventive knowledge of diarrhea then followed by worm infestations (40.6%) skin diseases (38.7%) and eye infections (11.2%). These findings are expected since the symptoms of the conditions are more obvious, and they are more common. Only 2.4% of our respondents knew about prevention of filariasis, and 1.8% knew about prevention of Kala-azar. Symptoms of these two conditions would only manifest after a long prodromal period that may last many month even years.

In Bangladesh, people's perception on preventive knowledge have explored the few studies about the detail on common diseases (Wahed *et al.*, 2013).In this study, we focused our attention on the prevention of the common infectious diseases (diarrhoea, worm infestation, filariasis, measles, kala-azar, eye infection and skin infection) among those staying in the rural area because they were expected to be more seriously affected by these diseases (Kahhar , 2012; Morens and Fauci, 2016).In the present study, it was noted that knowledge on prevention of diarrhea was high (79.4%) compare to that of other diseases. Some researchers reported similar findings in Haiti where 90% of their respondents knew about diarrhea prevention (De Rochars *et al.*,2010).Eye infection was relatively common among the rural people in general, but our study showed that knowledge on prevention of eye infection was only 11.2%.One of the Indian studies reported that 69.8% awareness of cataract and 60.0% awareness of night blindness among urban population in southern India (Highly prevalent for a long period of time) (Rakhi *et al.*, 2001). We would expect that eye infection should be more common than these two conditions, and the preventive measure was much simpler. Therefore, the low percentage of awareness for eye infection in our study indicates serious lack of knowledge on this condition. Lymphoedema affecting mainly the lower limbs is the main presenting problem for filariasis, and the main vector that involved in transmission of this disease is the mosquito. Rath et al. reported that 41.8% of sample population from Eastern India has adequate general knowledge on filariasis including the mode of disease transmission, compared to 2.4% of our population (Rath *et al*., 2006).

Rajshahi district is located at the border to Eastern India, and the vast difference between percentages of awareness between populations of the two areas clearly demonstrated the need of health education of our study region. Kala-azar is condition that

is transmitted by sandfly, and may result in potentially fatal febrile disease. Although a report based in endemic area of Bihar, India reported that only 4% of their sample population knew about specific transmission agent for this disease that was better than 1.8% of our respondents (Siddiqui *et al.*, 2010).

Multiple binary logistic regression showed that adults aged 61 years and older should be targeted for health education on prevention for diarrhea disease, while those aged 25 or younger should be targeted for that of worm infestation. Male adults were more likely to be ignorant on the preventive measures. In general, those with low or no education should be given priority, while non-Muslims and those from non-Bengali ethnics were two additional factors to be considered.

Limitation of the study was that we only investigated the few independent variables. We hope that information provided by our study would be able to help the authorities to improve their efforts to prevent and eventually eliminate mortalities and morbidities related to infectious diseases in this region.

CONCLUSION

In this study, the general preventive knowledge was investigated about diarrhea, worm infestation, measles, skin infection, eye infection, filariasis and Kala-azar among adult peoples in rural areas of Rajshahi district of Bangladesh. It was found that the preventive knowledge on infectious diseases among rural peoples were inadequate except diarrhea. We identified age group, gender and education level were most important predictors for getting more preventive knowledge on infectious diseases among rural adults in Rajshahi. An intervention program is essential for increasing preventive knowledge of infectious disease among Bangladeshi rural peoples living in Rajshahi district where medical facilities are not available. These findings can help to the health authorities in Bangladesh for making awareness about the preventive knowledge on infectious.

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