

SHORT COMMUNICATION

Knowledge, attitude, and practice toward zoonotic diseases among different professionals at selected coastal areas in Barguna district, Bangladesh

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ABSTRACT

Objective: The study was performed to determine the level of knowledge, attitude, and practice among different professionals toward zoonotic diseases in selected coastal areas of Barguna district, Bangladesh.

Materials and Methods: A total of 485 respondents were randomly selected from different *upazilas* (sub-districts) of Barguna district, Bangladesh. A questionnaire-based survey was conducted to collect data about awareness of zoonosis, hygienic management, zoonotic disease transmission from different species of domestic animals and consumption of their products, consciousness on management of pet animals, disease transmission from wild animals, effects of natural disaster on zoonosis, and extension works on zoonosis provided by government or private sector.

Results: Based on the level of knowledge of the different respondents, meat (43.92%) is the prime way for transmission of zoonotic disease followed by egg (18.14%) and milk (13.61%). The awareness regarding management of pet animals (23.71%) and zoonotic disease from wild animals (26.69%) were more or less similar. It has been observed that 33.81% respondents were conscious about natural disaster causing zoonotic infection. The respondents also mentioned that extension services about zoonotic infection provided by government or private sector was 34.22%. Among all the respondents, the awareness of zoonotic infection was high in employee of livestock department followed by employee of health department and teachers.

Conclusion: The awareness of zoonoses was high in employee of livestock department followed by the employee of health department, teachers, and other professionals. The present study observed that low educational background of professionals or non-health educated professionals is not conscious on zoonotic diseases. Further work should be taken to assess the prevention and control strategies regarding zoonosis in study area.

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Introduction

The objectives of veterinary medicine are to provide betterment and characteristic improvement of animal and human health. Cosivi et al. [1] reported that contribution and liability of veterinary medicine promote well being of human health. The term zoonoses originally comes from Greek world [1] “zoo” means animals and “noses” means sickness. WHO and FAO (1959) defined that zoonoses are infectious diseases that transmitted between people and animals. In microbial diseases of human, 61% are zoonotic and 13% of these infections are known as emerging and reemerging diseases [2]. Daszak et al. [3] reported that 75% of zoonotic

infection derived from emerging infectious disease. A number of determinants are responsible for zoonotic infection; the main cause is coming into close contact between animals and humans [4]. The vast majority of the animals (domestic, companion, and pets) acts as carriers and reservoir of many zoonotic infections. It has been reported that peoples of developing countries are living very close with animals where livestock usually provide draught power, transportation, fuel, and clothing [5]. The national economy of a country might be influenced by zoonotic disease, which might have direct effect on animal production and health. The public health important diseases in livestock impair

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the economy of a country due to trade barrier, expensive marketing cost to ensure safe animal products for human consumption, decrease in attraction to consumer products [6]. WHO [7] reported that zoonotic diseases have great importance from the viewpoint of public health; most of the diseases cause enormous sufferings and increases annual mortality of thousands of children and adult. Environmental alteration due to natural and manmade calamities, increase in human population, deforestation causes migration of rural people to urban habitats, and increasing susceptibility of zoonotic diseases [4]. Zoonotic diseases of the developing countries have been associated with farming patterns, educational background, food habits, presence or absence of reservoir population, and awareness about disease control program [8].

Babu et al. [4] reported that 28.06% peoples are aware about zoonotic diseases in Andra Pradesh, India. They also mentioned that employee of veterinary and medical departments are more aware about different types of zoonotic diseases as compared with other professionals. Hygienic management followed by farmer is very negligible which increase the susceptibility of zoonotic diseases [4]. Girma et al. [9] found that peoples with low education have limited consciousness on public health important diseases which are transmitted from the animals.

Climate change effects are the biggest threat of Bangladesh. The vulnerable countries like Bangladesh is now facing various natural calamities, such as cyclones, frequent flooding, soil erosion, intrusion of salt water, and destruction of biodiversity [10]. Therefore, the coastal areas of Bangladesh have adequate chance of contaminated food with polluted water. Potential sources of contaminants are fecal materials from infected livestock, carriage of animals and birds, infected wild animals, rodents, intensive husbandry of livestock, disposal of sewage, etc. The risk of transmission of pathogen to human with contaminated water is increasing day by day [11].

Biosecurity, chemoprophylaxis, and immunoprophylaxis are the important tools for the prevention and control strategies of diseases of animals. In the developing countries, the prevention of some zoonotic diseases is not feasible due to limited compensation by the government to the livestock owners [12,13]. However, there are only few reports on the level of awareness of zoonotic diseases in various professionals in Bangladesh. The present study was undertaken to assess the level of knowledge, attitude, and practices toward zoonotic diseases in different professionals.

Materials and Methods

Study area and size of population

The study was conducted in different *upazilas* (sub-district) of Barguna district (Fig. 1), Bangladesh from April



Figure 1. Bangladesh map showing study area (red color).

2018 to August 2018. The target professionals consisting of farmers, butchers, day labors, drivers, teachers, engineers, human and animal health employees, agriculturists, businessmen, bank, and private employees. A total of 485 respondents were selected randomly from different areas of the study area.

Design of the study and sample size

Well-designed structured questionnaire was used for interviewing the respondents of this study. Educational background of the various respondents were determined by stratified random sampling. The respondents were asked regarding awareness of zoonosis, hygienic management followed by farmers, transmission of zoonosis from animals and their products, awareness on management of pet and wild animals, and extension services on zoonosis by government and private sector. The written consents were taken from the respondents to publish their data.

Data collection and analysis

Data were collected and analyzed to determine the percentage of awareness of various professionals on zoonotic diseases.

Results and Discussion

Animals living in the developing countries are very close to human population. In the developing countries, the animals provide fuel, clothing, transportation, and also the source of protein, such as milk, meat and eggs. For this reason, animals are human linkage in that countries provide serious health risk of human [7]. Assessment of awareness of zoonotic disease in various professionals in study area might

play a pivotal role in prevention and control measures of the diseases. The peoples from different professionals were selected to assess the perception of awareness of the target community peoples. A total of 485 respondents (Table 1) were selected who have different level of education (elementary education to post graduate education). The respondents of the study can read and write of their own language.

In performed study revealed that 38.97% (Table 2) peoples were aware about zoonosis, which is comparatively

Table 1. Educational background of the respondents.

Categories of respondents	Educational qualification			
	Elementary and high school	Intermediate	Graduation	Post graduation
Farmers	195 (92.86%)	15 (7.14%)	-	-
Butchers	10 (10%)	-	-	-
Teachers	-	10 (2.22%)	30 (66.67%)	15 (33.33%)
Engineers	-	-	10 (10%)	-
Employee of health department	-	05 (20%)	10 (40%)	10 (40%)
Employee of livestock department	05 (12.5%)	25 (62.5%)	10 (25%)	05(11.11%)
Bank employee	-	-	10 (10%)	-
Agriculturist	-	-	05 (5%)	-
Businessman	60 (80%)	10 (13.33%)	05 (6.67%)	-
Day labor	15 (15%)	-	-	-
Driver	10 (10%)	-	-	-
Private employee	-	-	15 (15%)	-
Total	295 (60.82%)	65 (13.40%)	95 (19.59%)	30 (6.19%)

Table 2. Awareness on zoonosis and hygienic management followed by respondents.

Categories of respondents	Awareness regarding zoonosis	Hygienic management followed by respondents (farmers only)					
		Cleaning animal shed with disinfectant	Cleaning animal shed without disinfectant	Washing hand before milking	Milking without washing hands	Washing udder before milking	Milking without washing hands
Farmers	45 (21.43%)	10 (4.76%)	78 (37.14%)	56 (26.67%)	40 (19.04%)	39 (18.57%)	57 (27.14%)
Butchers	05 (50%)	-	-	-	-	-	-
Teachers	24 (43.64%)	-	-	-	-	-	-
Engineers	08 (80%)	-	-	-	-	-	-
Employee of health department	15 (60%)	-	-	-	-	-	-
Employee of livestock department	30 (66.67%)	-	-	-	-	-	-
Bank employee	07 (70%)	-	-	-	-	-	-
Agriculturist	04 (80%)	-	-	-	-	-	-
Businessman	28 (37.33%)	-	-	-	-	-	-
Day labor	08 (52.33%)	-	-	-	-	-	-
Driver	05 (50%)	-	-	-	-	-	-
Private employee	10 (66.67%)	-	-	-	-	-	-
Total	189 (38.97%)						

higher than the report of Babu et al. [4] who reported consciousness of zoonosis as 28.06%. In performed study, the consciousness of hygienic management of the farmers was found low in respective area where cleaning animal shed with disinfectant (4.76%), cleaning animal shed without disinfectant (37.14%), washing hand before milking (26.67%), milking without washing hands (19.04%), washing udder before milking (18.57%), and milking without washing hands (27.14%) were recorded. Babu et al. [4] reported that 100% farmers were not conscious on washing of udder with disinfectant and cleaning of shed with disinfectants which are inclined to the reported study. Prabhakar et al. [14] reported that 61% butchers were having awareness of zoonotic disease and more or less similar than reported study where 50% butchers were conscious on zoonosis. It has also been revealed that 30.8% respondents were aware regarding the risk of zoonotic disease [15].

The highest percentage of respondents in the reported study mentioned that dog (52.99%) is the important source of the transmission of zoonotic disease followed by cat (28.87%), poultry (28.25%), cattle/buffalo (16.085%), and sheep/goat (9.90%) shown in Table 3. Babu et al. [4] revealed that 100% respondents were conscious on zoo caused by dog followed by poultry (25.89%), pig (18.58%), cattle (4.93%), and sheep/goat (3.97%) which supports the performed study.

The respondents in this study revealed that consumption of meat (43.92%) is the prime way for zoonosis followed by egg (18.14%) and milk (13.61%) shown in Table 4. It has been reported that 22.46% and 14.10% respondents were conscious on consumption of meat and milk, respectively causes zoonotic infection [4] which support the performed

study. Girma et al. [9] also showed that the percentage of awareness and knowledge of non-health professionals on zoonosis due to consumption of meat (80.21%), milk (71.88%), and honey (91.67%) was higher.

The awareness regarding management of pet animals (23.71%) and zoonotic disease from wild animals (26.69%) are recorded in Table 5. It has been reported that 8.46% respondents were conscious on management of dog [4] which is lower than recorded study. Zoonotic diseases from wildlife represent a major public health problem affecting through the world. Many emerging and re-emerging diseases at present are transmitted from wild animals [16]. Therefore, consciousness on zoonosis from wild animals should be increased in the study area.

In recent performed study mentioned that 33.81% respondents (Table 6) were conscious about natural disaster prone zoonosis in the coastal area. The natural disasters in the coastal areas of Bangladesh has adequate chance of zoonosis due to close contact of public health with infected livestock, carriage of animals and birds, infected wild animals, including rodents and intensive husbandry of livestock. Climate change in the world leads to more warm and humid climate, especially in the developing countries which increase the risk of transmission of vector and airborne zoonotic infection [17]. Sachan and Singh [18] mentioned that outbreak of emerging zoonotic disease in the present world due to adverse effect of climate changes on biodiversity, microflora, and distribution of animals [18].

The respondents in this study observed that extension services about zoonotic infection provided by government or private sector was 34.22% shown in Table 7. So, lack

Table 3. Transmission of zoonosis from different species of domestic animals and poultry.

Categories of respondents	Transmission of zoonosis from domestic animals and poultry				
	Dog	Cat	Cattle/ Buffalo	Sheep/Goat	Poultry
Farmers	41 (19.52%)	23 (10.95%)	13 (6.19%)	05 (2.38%)	33 (15.71%)
Butchers	05 (50%)	02 (20%)	-	-	01(10%)
Teachers	52 (92.55%)	20 (36.36%)	12 (21.81%)	08 (14.54%)	18 (32.72%)
Engineers	10 (100%)	02 (20%)	01 (10%)	-	02 (20%)
Employee of health department	25 (100%)	15 (60%)	10 (40%)	03 (12%)	18 (72%)
Employee of livestock department	55 (100%)	45 (81.81%)	34 (61.81%)	28 (50.91%)	40 (72.73%)
Bank employee	09 (90%)	03 (30%)	-	-	02 (20%)
Agriculturist	05 (100%)	02 (40%)	-	-	01 (20%)
Businessman	28 (37.33%)	16 (21.33%)	05 (6.67%)	03 (4%)	15 (20%)
Day labor	08 (53.33%)	02 (13.33%)	-	-	02 (13.33%)
Driver	06 (60%)	02 (20%)	-	-	02 (20%)
Private employee	13 (86.67%)	08 (53.33%)	03 (20%)	01 (6.67%)	03 (20%)
Total	257 (52.99%)	140 (28.87%)	78 (16.08%)	48 (9.90%)	137 (28.25%)

Table 4. Transmission of zoonosis by consumption of animal and poultry products.

Categories of respondents	Transmission of zoonosis from consumption of animal and poultry products		
	Meat	Milk	Egg
Farmers	39 (18.57%)	04 (1.90%)	08(3.77%)
Butchers	04 (40%)	-	-
Teachers	48 (87.27%)	15 (27.27%)	22(40%)
Engineers	06 (60%)	02 (20%)	03(30%)
Employee of health department	22 (88%)	04 (16%)	08(32%)
Employee of livestock department	42 (93.33%)	35 (77.78%)	38(84.44%)
Bank employee	05 (50%)	-	01(10%)
Agriculturist	04 (80%)	-	-
Businessman	30 (40%)	04 (5.33%)	06(8%)
Day labor	03 (20%)	-	-
Driver	01 (10%)	-	-
Private employee	09 (60%)	02 (13.33%)	02(13.33%)
Total	213 (43.92%)	66 (13.61%)	88(18.14%)

Table 5. Awareness on management of pet animals and disease transmission from wild animals.

Categories of respondents	Awareness on management of pet animals and disease transmission from wild animals	
	Management of pet animals	Disease transmission from wild animals
Farmers	12 (5.71%)	18 (8.57%)
Butchers	-	01 (10%)
Teachers	18 (32.72%)	22 (40%)
Engineers	02 (20%)	04 (40%)
Employee of health department	17 (68%)	20 (80%)
Employee of livestock department	42 (93.33%)	40 (88.89%)
Bank employee	03 (30%)	04 (40%)
Agriculturist	02 (40%)	03 (60%)
Businessman	17 (22.67%)	24 (32%)
Day labor	-	01 (6.67%)
Driver	-	01 (10)
Private employee	02 (13.33%)	06 (40%)
Total	115 (23.71%)	144 (26.69%)

Table 6. Awareness on natural disaster which increases susceptibility of zoonotic infection.

Categories of respondents	Natural disaster increases susceptibility of zoonotic infection
Farmers	42 (20%)
Butchers	01 (10%)
Teachers	34 (61.81%)
Engineers	03 (30%)
Employee of health department	17 (68%)
Employee of livestock department	38 (84.44%)
Bank employee	02 (20%)
Agriculturist	02 (40%)
Businessman	19 (25.33%)
Day labor	02 (13.33%)
Driver	01(10)
Private employee	03(20%)
Total	164 (3.81%)

Table 7. Awareness on extension services of zoonotic infection by government or private sector.

Categories of respondents	Extension services provided on zoonotic infection by government or private sector
Farmers	36 (17.14%)
Butchers	02 (20%)
Teachers	14 (25.45%)
Engineers	02 (20%)
Employee of health department	22 (72%)
Employee of livestock department	40 (88.89%)
Bank employee	02 (20%)
Agriculturist	02 (40%)
Businessman	38 (50.67%)
Day labor	02 (13.33%)
Driver	03 (30%)
Private employee	03 (20%)
Total	166 (34.22%)

of extension services regarding zoonoses in study area increase the risk of infection.

Conclusion

The awareness of zoonotic infection was high in employee of Livestock Department followed by employee of Health Department, teachers, or other professionals. Thus, this study indicates that low educational backgrounds of professionals or non-health educated professionals are less conscious regarding zoonotic diseases. The data of the performed study might be useful to assess the target population risk for zoonotic infection. Further study need to be performed to assess the appropriate prevention and control strategies regarding zoonosis in the coastal areas.

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Conflict of interest

The authors declare that they have no conflict of interest.

Authors' contribution

MSA was involved in designed the study, interpreted the data, and drafted the manuscript. SI was engaged in collection of data and also contributed in manuscript writing.

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