

Knowledge on Vector Borne Diseases among the Rural People of Modhukhali

Afroz S¹, Catherine S², Zaman F³, Latif A⁴, Wadud A⁵

Abstract

Vector borne diseases are an emerging challenge for Bangladesh because of low socio-economic condition, poor housing, poor educational status, water pollution, soil pollution and climate change in rural area. Until now a very little attention has been paid on this issue in Bangladesh. The objective of this study was to assess the knowledge status of the people at Modhukhali. For this purpose a cross sectional study was conducted to collect data from a purposively selected sample of 390 respondents. It was revealed from the study that most of the respondents, 98.97% were Muslims. Literacy rate of rural people of Modhukhali was good. The result indicates that about 19.23% people were illiterate but most of the respondents were aware about the major vector borne diseases.

The study revealed that about 88.72% people knew about danger of using surface water for all purposes. About 47.44% people attend at any health education program. About 88.20% people know about diseases produced by mosquito and housefly. About 74.62% people know about malaria produced by mosquito. About 81.54% people know about diarrhoea produced by housefly. About 73.10% people know about dengue fever. About 18.46% people know about filariasis, about 15.12% know about kala-azar and about 35.38% people know about mode of transmission of typhoid.

Health care service provider and the concerned authority paid some attention to the vector borne diseases and to the influencing factors but yet there are some lack in rural areas. The rural people should be made aware before they get the diseases. Govt should allocate budget and organize skillful training facility to these entire health service providers. On this purpose there is also need for strong supervision and monitoring of the vector borne diseases care services and their prevention throughout the country. Beside this Govt should also consider about environmental sanitation and safe water supply to improve the situation.

Key words: Vector borne diseases, Malaria, Kala-azar, safe water supply, sanitary latrine.

Introduction:

Vector borne diseases are infections transmitted by infected arthropod species. Mosquitoes, Fleas, Ticks, Lice and Flies are the arthropods that usually acts as vectors for various pathogens (disease causing micro organisms), including bacteria, viruses helminthes (parasitic worms), and protozoa. Transmission of these pathogens to human by the

arthropod vector can causes a variety of diseases in human, including malaria, yellow fever, chaggas disease, dengue fever, filariasis, kala-azar, encephalitis. These and other arthropod-borne disease can result in a wide range of effects, from mild flu like symptoms to death. Some survivors of arthropod-borne disease can suffer chronic crippling after effects.

While arthropod-borne diseases are a major concern world wide, developing countries are most affected. These diseases tend to occur primarily in tropical countries the endemic zones of the pathogens and the arthropods that harbor them. However, these diseases can also spread when people travel between infected and non infected areas or when infected arthropods are inadvertently transported. Natural disasters, wars, poverty and over population can facilitate out breaks of diseases. Since they may create conditions that are ideal for transmission or may cause a breakdown in the health care and public health systems. Every year there are more than 1 billion cases and over 1 million deaths from vector-borne diseases. Vector borne diseases account for over 17% of all infectious diseases. Distribution of these diseases are determined by a complex dynamic of environmental and social factors. Globalization of travel and trade, unplanned urbanization and environmental challenges such as climate change are having a significant impact on diseases transmission in recent years. Changes in agricultural practice due to variation in temperature and rain fall can affect the transmission of vector borne diseases.^[1]

1. Dr. Shahana Afroz
Assistant Professor, Department of Community Medicine
Diabetic Association Medical College, Faridpur.
2. Dr. Shukti Catherine Baroi
Lecturer, Department of Community Medicine
Diabetic Association Medical College, Faridpur.
3. Dr. Fouzia Zaman
Lecturer, Department of Community Medicine
Diabetic Association Medical College, Faridpur.
4. Dr. Md. Abdul Latif
Consultant, Department of Radiology and Imaging
General Hospital, Madaripur.
5. Dr. Md. A. Wadud Miah
Assistant Professor, Department of Pathology
Faridpur Medical College.

Correspondence to:

Dr. Shahana Afroz
Assistant Professor, Department of Community Medicine
Diabetic Association Medical College, Faridpur.
E-mail: ds_afroz@yahoo.com

Diseases transmitted by arthropods:

Female anopheles	Malaria
Female culex	Bancroftian filariasis Japanese encephalitis, West Nile fever.
Female aedes	Yellow fever ,Dengue fever/DHF
House fly	Cholera, Diarrhoea, Dysentery, astroenteritis, Typhoid & para-typhoid fever, amoebiasis, Helminthic infestation, poliomyelitis.
Sand fly	Kala-azar, Oriental sore, sand fly fever
Tsetse fly	sleeping sickness.
Reduvid bug	Chagas disease.
Mite	Scabies
Ticks	Tick-typhus,
Rat flea	Q fever, Relapsing fever.
Louse	bubonic plague, endemic typhus. Endemic typhus, trench fever. ^[2]

World Scenario:

About 3.3 billion people- half of the world's population are at risk of malaria. Every year, this leads to about 250 million malaria cases and nearly one million deaths. The WHO estimates that in 2010 there were 219 million cases of malaria resulting 660000 deaths. The majority of cases (65%) occur in children under 15 years old. About 125 million pregnant women are at risk of infection each year. According to the WHO and UNICEF, deaths attributable to malaria in 2015 were reduced 60% from a 2000 estimate of 985,000, largely due to the wide spread use insecticide treated nets and artemission-based combination therapies³.

The WHO millennium development goal 6 aims to halt the spread of malaria by 2015 and its “Roll back malaria²⁾” Campaign is designed to halve mortality by 2010 by utilizing the “best evidence” vector and disease control method, such as artemither combination therapy (ACT)

Dengue is found in tropical and subtropical regions around the world, predominantly in urban and semi-urban areas. Dengue is common in more than 110 countries. It infects 50 to 528 million people worldwide a year, leading to half a million hospitalizations and approximately 20000 deaths. This incidence of dengue has grown dramatically around the world in recent decades. Some 2.5 billion people-two-fifths of the world's population are now at risk from dengue.^[3]

Leishmaniasis threatens about 350 million people in 88 countries around the world with an estimated annual incidence of 2 million new cases. Leishmaniasis is endemic in many countries in tropical and subtropical region including Africa, central and south Americas, Asia and the Mediterranean region. More than 90% of all cases of cutaneous leishmaniasis occur in Afghanistan, Algeria,

Brazil, Colombia the Islamic republic of Iran, Peru, Saudi Arabia. In the new world over 90% of cutaneous leishmaniasis cases occur in Brazil and Peru³.

Lymphatic filariasis is endemic in 83 countries around the world. Nigeria & Bangladesh account for nearly 70% of Lyphatic Filariasis. Other regions include central Africa the Nile delta, Pakistan, Srilanka, Myanmar, Thailand, Malaysia, Vietnam. The at risk population for contraction of lymphatic filariasis includes 1.2 billion people. Currently, more than 120 million people affected by lymphatic filariasis³.

Japanese encephalitis (JE) is a mosquito-borne encephalitis caused by a group B arbovirus (Flavivirus) and transmitted by culicine mosquitoes. It is also a zoonotic disease. i.e- infecting mainly animal and incidentally man.

An estimated 50,000 cases of Japanese Encephalitis occur globally each year with 10,000 deaths and nearly 15000 disabled. The vast majority of cases (about 85 percent) occur among children less than 15 years of age.

There are also vector borne diseases- Q fever, Endemic typhus, Relapsing fever, chaggas disease, sleeping sickness³.

South Asia Scenario:

Malaria is an enormous health and developmental problem in the SEA region as 687 million people are at high risk for malaria, with an estimated 90-160 million infections and more than 120,000 deaths occurring each year. The SEA region is home to the two predominant types of malaria caused by plasmodium vivax and P. falciparum. The malaria situation in the region remains highly dynamic and evolving and likely to be further aggravated by climate change. Of all the arthropod-borne viral diseases dengue fever is the most common. Dengue fever is the most important emerging disease of the tropical and sub-tropical regions affecting urban and semi urban areas. Such as India, Myanmar, Thailand, Maldives, Srilanka, Indonesia⁴.

In 2008, the south east Asia region reported 190000 cases with 16000 deaths⁴. During 2015 total 15509 cases were reported with 89 deaths. The case fatality rate which was 3.3% in 1996 has come down 0.56 in 2015 because of better management of cases.

Visceral leishmaniasis is endemic in three countries of WHO's SEA region- Bangladesh, India and Nepal Approximately 200 million people in the region are 'at risk' from the disease of the estimated 500000 people in the world infected each year, nearly 100000 are estimated to occur in the SEA region. The disease is endemic in 52 districts in India, 12 district in Nepal and 45 districts in Bangladesh.^[4]

Bangladesh Scenario:

Malaria has been a major health problem in Bangladesh. Approximately 33.6% of the total population at risk of malaria of which 10.9 million are of high moderate risk where 39.7 million people are at low risk of malaria more than 95% of all malaria cases are reported from 13 out of the total 64 districts in the country. Due to the hilly and forested, terrain climate, rainfall, humidity and temperature mosquito vectors. e.g; A.dirus, A. Philipinensis and A. minimus causes intense perennial transmission. These districts (Bandarban, Rangamati, Khagrachari, Coxbazar, Chittagong, Sylhet, Sunamgonj, Moulavibazar, Sherpur, Netrokona and Kurigram) are the east and north-east border facing international boundaries with the eastern states of India and a small part of Myanmar.

There are four serotypes of dengue virus (Den- 1, 2, 3, 4). The virus belongs to the family Flaviviridae and genus Flavivirus. The maximum transmission period is July to September each year⁵.

In 1964 first documented out break of classical dengue fever occurred in Dhaka (Called Dhaka Fever) In 2010 there were 1048 reported cases and deaths were increased in each year. 1900 dengue cases with 15 deaths have been reported so far this 2015 year in Bangladesh, mostly in Dhaka city, with experts attributing the unusual rise in the dengue cases to changing rainfall patterns 765 dengue cases were reported in the capital in August this year while 793 in this September. 109 patients affected with dengue get admitted to different hospitals while 1785 got released after taking treatment from hospitals so far this 2015 year.

Kala-Azar has been prevailing in Bangladesh for centuries as an endemic disease with epidemic outbursts in around 20 years. However, re-emergency of the disease was noticed since 1994-95. From 1999 to 2009 a total of 67, 758 cases and 225 deaths were reported from 24 districts of Bangladesh. The most affected districts are Maymensing, Pabna, Tangail, Jamalpur, Sirajgonj. Gazipur, Natore, Naugaon, Manikgonj, Rajshahi and Nawabgonj⁵.

About 5000 new cases of Kala-azar are reported in Bangladesh every year in recent days. There is high PKDL rate in Bangladesh. Thrisal and Fulbaria within the district of Maymensing have 60% of all cases of Kala-azar in Bangladesh.

In Bangladesh, lymphatic filariasis is present all over the country with highest endemic in northern parts of country. Out of 147 million people, about 20 million people in the area has been suffering from the disease, most of which are children. It is endemic in 34 districts out of 64 districts. There is high endemic in Nilphamari, Thakurgaon, Dinajpur, Rangpur, Panchagar and Kurigram. It is estimated that about 70 million people are at risk of infection while 10 million peoples are with various forms of clinical deformity and another 10 million are microfilaremics⁵.

WHO declared that malaria couldn't be eradicated from Bangladesh and subsequently a new strategy for malaria control was launched. The new strategy is being implanted gradually It emphasizes disease control aspects and endorse the four technical elements (*early diagnosis, prompt treatment, recognition of treatment failures and management of severe and complicated cases in hospitals*) and preparedness for control of malaria out breaks/epidemics and introduction of is insecticide impregnated bed nets.¹⁵¹

Methods

It was a descriptive type of cross sectional study with the objective to assess the knowledge on vector borne diseases among the rural people of Modhukhali. The study was carried out in different villages in Modhukhali Upazilla, Faridpur. People of Modhukhali Union of Modhukhali Upazilla were purposively chosen to constitute the study population. For the present study the sample size was 390. A non-random purposive sampling technique was adopted to select the respondents from the study population to collect data. A person of a village community was chosen as guide for data collection. Respondents were chosen purposively and convenience of the data collector was given priority during survey.

Data were collected from the respondents by face to face formal interview.

A pre-formed semi-structured questionnaire was used as the instrument of data collection for the proposed study.

At first the interview questionnaire were checked and rechecked to reduce the errors if any. Secondly necessary corrections were made. Thirdly the responses were coded adequately. Fourthly a master sheet was prepared based on variables used in the study.

Finally necessary calculations were made from the master sheet and presented data by tabulations and charts.

Results

The study was intended to find out the knowledge on vector borne diseases of the rural people of Modhukhali. The result showed that about 27.18% people belonged to 21-30 years of age group. About 24.10% respondents were in the age group of 31-40 years, about 21.05% respondents were in the age group 41-50 years, about 16.92% people were in age group 61-70 years, about 2.56% people were in age group 71-80 years and about 1.28% people were in age group 81-90 years. The study showed that most of the respondents about 98.97% were muslim.

Literacy rate of rural people of Modhukhali is good. The result indicates that about 19.23% people has no education in rural area.

Parent's became aware of the need for education but poverty is the main obstacle. The result showed that

majority 55.64% families had monthly income taka 0-10000 and only few families had good income (average monthly income per household at current price was estimated at taka 11,479).

Table 1: Frequency distribution of respondents by use of latrine. (n=390)

Source	Number	%
Sanitary Latrine	356	91.28
In Sanitary Latrine	34	8.72
Total	390	100

Table shows that, majorities 91.28% people use sanitary latrine & 8.72% people do not use sanitary latrine.

Table 2: Knowledge about association of diarrhoea with housefly.(n=390)

Association of diarrhoea with housefly	Number	%
Known	318	81.84
Unknown	72	18.46
Total	390	100

Table shows that, majorities 81.84% have knowledge about association of diarrhoea with housefly & 18.46% have no knowledge about association of diarrhoea with housefly.

Table 3: Knowledge about typhoid transmission. (n=390)

Typhoid Transmission	Number	%
Known	138	35.38
Unknown	252	64.61
Total	390	100

Table shows that, majorities 64.61% have no knowledge on typhoid transmission & 35.38% have knowledge on typhoid transmission.

Table 4: Knowledge about association of malaria with mosquito. (n=390)

Association of malaria with mosquito	Number	%
Known	291	74.61
Unknown	9	25.39
Total	390	100

Table shows that, majorities 74.61% have knowledge about association of malaria with mosquito & 25.39% have no knowledge.

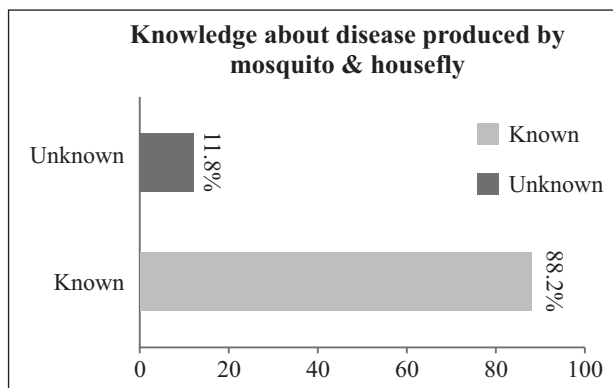


Figure 1: Knowledge about disease produced by mosquito & housefly. (n=390)

Figure 1 shows that, 88.20% study population know that disease produced by mosquito & housefly and 11.80% have no knowledge about it.

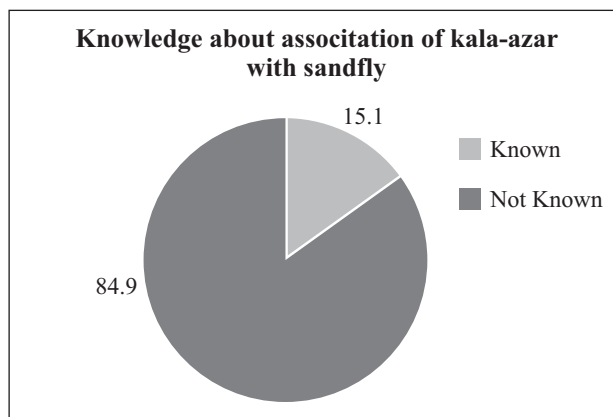


Figure 2: Knowledge about association of kala-azar with sandfly.(n=390)

Figure 2 shows that, majorities 84.90% have no knowledge & 15.10% have knowledge about association of kala-azar with sandfly.

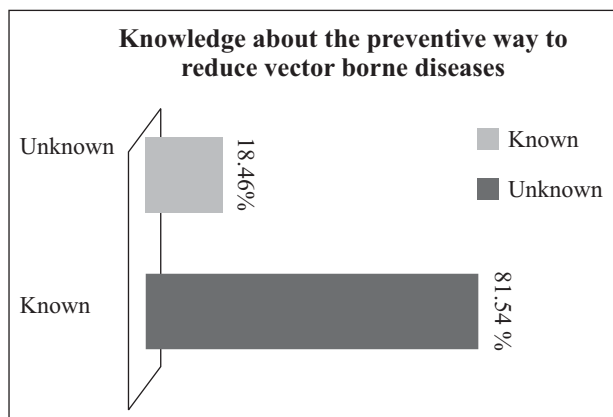


Chart 3: Knowledge about the preventive way to reduce vector borne diseases

Chart shows that, majorities 81.54% have knowledge about the preventive way to reduce vector borne diseases & 18.46% have no knowledge about it.

Discussion

The result indicates that proportionately nuclear family 66.2% was slightly higher than the joint family 47.95%. People prefer to live in nuclear families. It may be to influence modern culture and change of social norms and values.

Literacy rate of rural people of Modhukhali is good. The result indicates that about 19.23% people has no education in rural area (at national level 21.84% have education of primary level)^[6]. So, the findings regarding educational status of the study area is nearly similar to other rural areas of Bangladesh.

Parent's became aware of the need for education but poverty is the main obstacle. The result showed that majority 55.64% families had monthly income taka 0-10000 and only few families had good income (average monthly income per household at current price was estimated at taka 11,479). So, the findings suggest that majority of the people in Modhukhali live under mid socio-economic condition. (The per capita income of people of Bangladesh is 1190\$).^[7]

The people have pure tubewell water supply about 98.20% (at national level 85.37% use tubewell water)^[8] and majority of people use sanitary latrine 91.28% (at national level the percentage is not similar to this) according to national survey, about 24.51% use katcha toilet.^[6] This percentage shows a good sense of hygiene of the people of Modhukhali .

The study revealed that about 88.72% people know about danger of using surface water for all purpose. About 47.44% people attended at any health education program. About 88.20% people know about diseases produced by housefly and mosquito. About 74.62% people know about malaria produced by mosquito. About 81.54% people know about diarrhoea produced by housefly. About 35.38% know about typhoid. About 73.10% people know about dengue fever. About 18.46% people know about filariasis. About 15.12% know about kala-azar.

The finding is not so encouraging and indicates that only 47.44% people are aware of the vector borne diseases and attend in health education program.

The study also reveals that about 94.1% people know that food safety can prevent housefly borne diseases. About 90.8% people know about using sanitary latrine to prevent

vector borne diseases and about 81.54% people know about prevention of vector borne diseases. This indicates that majority have a knowledge about steps prior to prevention of diseases. Though 19.23% people are not educated, which was discussed above, they have knowledge about diseases of people as well as preventive measures.

Conclusion

Normally it is seen that the rural people have some limitations in getting the health related knowledge. But according to this study, the majority of people of Upazilla Modhukhali have some knowledge about the vector borne diseases. The rest of people, who know a little about vector borne diseases, it is important to have the appropriate knowledge for the sake of their improvement.

The study revealed that about 88.72% people know about the danger of using surface water for all purpose. About 88.20% people know about diseases produced by housefly and mosquito. About 74.62% people know about malaria produced by mosquito, about 81.54% people know about diarrhoea produced by housefly. About 35.38% people know about typhoid, about 73.10% people know about dengue fever, about 18.46% people know about filariasis and about 15.12% people know about kala-azar.

We all know that “healthy people, healthy nation.” To bring this we hope that govt. will give emphasis on the spread of information on this specific health concern to every corner of the community focusing the rural people to improve their knowledge about vector borne diseases in near future. Increased knowledge will be helpful to prevent the vector borne diseases and thus to reduce the social burden as much as possible.

References

1. https://en.wikipedia.org/wiki/Vector_borne_disease
2. Park's Textbook of preventive and social medicine, 23th edition, k. park.
3. <http://www.who.int/campaigns/world-health-day/2014/vector-borne-diseases/en/>
4. www.searo.who.int/vector_borne_diseases
5. WHO; Director-general Health (Bangladesh); 1996,1997, MOEF 2005
6. population census 2011.
7. Report of the household income and expenditure survey 2012, Bangladesh bureau of Statistics.
8. BBSC (Bangladesh Bureau of statistics Recent)