Original Article

Knowledge, Attitude and Practices Concerning Chikungunya Fever Among the Adult Population of Dhaka City During Chikugunya Outbreak in 2017

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Abstract

Background: *Chikungunya virus is a mosquito-transmitted alpha virus that is emerging as a global threat because of highly debilitating character of the associated disease and novel significance of its spread. Chikungunya fever originated in Africa and has since spread across the globe causing large numbers of epidemics that have infected millions of people. In 2008, the outbreak of Chikungunya fever was first documented in the northwest area of Bangladesh. In 2017, outbreak occurs in Dhaka city.*

Objective: *To determine the knowledge and attitude concerning Chikungunya fever among the adult population in selected urban areas of Dhaka city.*

Method: *A descriptive cross-sectional study was carried out; data was collected by face-to-face interview using semi-structured questionnaire. Convenient simple random sampling technique was followed for selecting the participants. The study was conducted among 200 participants from August-September 2017.*

Result: *Mean age of the participants was 33 years, above 64% were male, 72% were living in common housing area and 32.5% had bachelor degree level of education. 99% have heard about Chikungunya fever and mentioned that fever was the commonest sign, followed by joint pain (99%) and headache (96.5%). Participants stated that Chikungunya fever spreaded by Aedes mosquito (96%) which breeds on dirty stagnant water (58%) and bites in the daytime (38.5%). 72% stated that rainy season is the commonest season for spreading Chikungunya fever. 77.5% thought that it is preventable.*

Conclusion: *Participants lacked profound knowledge about Chikungunya fever and methods of prevention of the disease. Social awareness can play the pivotal role.*

Keywords: *Knowledge, Attitude, Chikungunya fever, Adult population, Urban areas.*

Introduction

Chikungunya fever (CF) is an arthropod-borne disease caused by Chikungunya virus (CHIKV) of Togaviridae family[1]. CF is transmitted by the bites of infected female mosquitoes of the Aedes genus (Aedes aegypti and Aedes albopictus) which transmits dengue virus as well[2] . The Aedes mosquito breeds in stored fresh water of domestic and peri-domestic settings. They rest in cool and shady areas and bite humans during the daytime, especially early morning and late evening[3].

In 1952, CF was first reported from Makonde plateaus, along the borders between Tanzania and Mozambique[4]. Ross first isolated CHIKV in 1953 from the serum of a febrile human during an epidemic in Newala, Tanzania[5]. Since then, CHIKV has become a more global concern, such that CHIKV was listed as a priority by the Scientific Leadership Group for the Global Virus Network[6]. Probably CHIKV was originated in Africa[7]. There CHIKV maintained in 'sylvatic cycle' involving wild primates and forest dwelling mosquitoes[8]. In Asia CHIKV was introduced subsequently. Since 2005, CF has become an emerging public health problem in Southeast Asia, with large numbers of cases reported in Singapore, Malaysia, and Thailand[9]. Now it is affecting millions of people in more than 60 countries of the globe. The main symptoms of CF are fever, myalgia, headache, rashes, nausea, and arthralgia and prolonged joint pain[10].

In 2008, the first outbreak of CF was investigated by Institute of Epidemiology, Disease Control and Research (IEDCR) and International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) in Rajshahi and Chapainawabganj districts of Bangladesh identified 39 Chikungunya cases. Transmission appeared to be geographically limited in two villages bordering India in northwestern Bangladesh[11].

The second outbreak of CF was occurred in 2011 near rural areas near Dhaka city. It had a high household attack rate of 29% and adult female suffered more than adult males. All of them had fever and arthralgia. In addition 76% of the confirmed cases had rash and 38% had long-lasting joint pain. Aedes albopictus was the identified vector from 89% of sources in the rural areas[12]. The subsequent outbreak occurred in 2017 from April to September, About 14,000 cases were identified from 17 out of 64 districts of Bangladesh[13]. In Dhaka, 2,314 cases have been reported in different hospitals and clinics of Dhaka from May to September 2017[14] . Before

this outbreak, the scientists anticipated an outbreak of CF due to wide distribution of the vector, unplanned and impromptu urbanization, over population and suitable climatic conditions for mosquito breeding and spread of CF[15]. Therefore, person's knowledge, attitude and practice are the most important things that can prevent and control such mosquito borne disease among the inhabitants of Dhaka city. This study was aimed to find out the knowledge, attitude and practices concerning CF among the adult population in selected urban areas of Dhaka city, Bangladesh. This may help the policy planners by providing necessary information to plan suitable strategy for prevention, control and management of CF in Bangladesh.

Methodology

This descriptive cross-sectional study was carried out in the Department of Public Health, Daffodil International University, Dhaka from 16th August to 15th September 2017. Data collected from 200 adult healthy persons randomly from Sobhanbag, Lalmatia, Sat Mashjid Road and Shankar areas of Dhaka city. The responders were recruited conveniently from different public places of the said areas. At first the objectives and project design was described to the potential participants. Upon agreement, written informed consent was obtained. After that the respondents were interviewed by a semi-structured questionnaire. The questionnaire possessed 38 questions, and was segmented into 4 major sections: A) Sociodemographic information, B) Knowledge regarding CF, C) Attitude towards CF and D) Practice to prevent CF. After collection, data were checked for completeness, correctness and internal consistency to exclude missing or inconsistent data. Then data were populated in an Microsoft Excel spreadsheet. Result was recorded as frequencies and percentages. Association of different variables and prevalence of CF was tested by chi square teat. P-values less than 0.05 were taken as the level of significance.

Results

Section A: Sociodemographic status and association with chikungunya fever

Of 200 respondents, 83 had suffered from CK which indicates a high prevalence (41%) of CF in areas of Dhaka city. Most of the responders were female (64%) and from younger to middle age groups (from 19-50 yrs). Most of them had secondary or above secondary educa tional

level and resided mainly in common housing areas. Most of the responders were service or businessmen and their household income ranged from 30,000 to 70, 0000 BDT. Among the respondents, more than 70% people of this cohort practiced Islam. About half (56%) of the respondents were married (Table-I). CF was found to be associated (p=0.012) with educational level and occupation (p=0.027) of the respondents. However, age (p=0.305) of the participants was found not to be associated with suffering from CF. Residence of the respondents were reported to be associated with suffering from CF. Nevertheless monthly income of the household (p=0.310) was not associated with suffering from CF.

Section B: Knowledge of the participants about Chikungunya fever

Table-III shows that 99% of the respondents heard about CF and 96% knew that CF is caused by mosquito bites. However, less than half of them (46%) knew the type of mosquito responsible for the transmission. Nearly 40% of the respondents knew that the mosquito breed in clean water and only 38% of respondents knew that mosquito bites during the day time. However, 72% of the respondents knew that rainy season is the commonest season of spreading of CF.

All respondents knew that fever was the commonest symptom of CF, followed by Joint pain (99%) and Headache (96.5%). Majority (49.5%) of the respondents mentioned that Knee joint was normally affected, followed by Hand joint (45.5%) (Fig-1). Television (98%), newspaper (80%), friends (80%) family members (68%) and social media (64%) were the sources of knowledge among the participants (Table-IV)

Section C: Attitude of the participants towards Chikungunya fever

Table V shows the attitude of the respondents towards CF. Here, 35.5% mentioned that environment is contributing to diseases transmission and 77.5% mentioned that CF is preventable. More than half (53.5%) mentioned that they don't know CF has a high mortality and only 6.5% stated that CF possess a high risk to others. 42% mentioned that CF is infectious and only 2% said it is difficult to detect. 53% mentioned that they are vulnerable to CF and 9% said one can get CF more than one time and 98.5% said this disease should be taught in school.

Section D: Practice of the respondents for prevention of Chikungunya fever

Table VI shows that 57% of the respondents regularly checked the possible mosquito breeding sites in and around the house. However when asked about the practices of their family member, 70% of the respondents mentioned that their family members also check the mosquito breeding sites. 97% of the respondents stated that empty and dry plant tub is the action to be taken against mosquito breeding, followed by clean the drain or water pass (96%) and 95% mentioned that use of coils, repellents or smoke is the action taken against mosquito bite, followed by using insecticide-treated bed nets (89%).

Table I: Distribution of the respondents according to Age, Education and Occupation (n=200)

Characteristics	Total number	Percentage
Age mean (±SD) years		
Age groups		
≤18	1	0.5
19 -29	92	46.0
30 -40	54	27.0
41 -51	38	19.0
52 -62	12	6.0
>62	3	1.5
Sex		
Male	72	36
Female	128	64
Education		
No formal education	6	3.0
Primary	54	27.0
Secondary	24	12.0
Bachelor	65	32.5
Masters	51	25.5
Marital Status		
Married	113	56.5
Unmarried	82	41
Others	5	5
Occupation		
Service holder	61	30.5
Business	44	22.0
Housewife	18	9.0
Student	44	22.0
Others	33	16.5
Monthly household income (BDT)		

≤ 30,000.00	1	0.5	
30,001.00-50,000.00	119	59.5	
50,000.00 -70,000.00	70	35.0	
70,001.00-90,000.00	09	4.5	
>90,000.00	1	0.5	
Residences			
Slum	29	14.5	
Common housing area	144	72	
Residential area	26	13	
others	1	0.5	

Table –II: Association of Chikungunya fever with the socio-demographic factors

Variables	Suffered Chikungunya Fever			Statistics
	Yes	No	Total (%)	
Age groups				
≤18	0	1	01	X^2= 6.009
19-29	34	58	92	P= 0.305
30-40	26	28	54	
41-50	16	22	38	
>51	7	8	15	
Household income				
≤ 30,000.00	1	0	01(0.5)	X^2= 4.761
30001-50,000	54	65	119(59.5)	P= 0.310
50,001-70,000	26	44	70(35)	
70,001-90,000	2	7	9(4.5)	
>90,000.00	0	1	1(0.5)	

Residence				
Slum	20	09	29 (14.5)	X^2= 11.177
Common housing area	54	90	144 (72)	P=0.011
Residential area	9	17	26(13)	
others	0	1	1(0.5)	
Education				
No formal education	3	3	6 (3)	X^2=12.797 P=0.012
Primary	32	22	54(27)	
Secondary	09	15	24(12)	
Bachelor	26	39	65(32.5)	
Masters	13	38	51(25.5)	
Occupation				
Service holder	16	45	61(30.5)	X^2=10.991 P=0.027
Business	24	20	44(22)	
Housewife	9	9	18(9)	
Student	17	27	44(22)	
Others	17	16	33(16.5)	

Table-III: Knowledge of respondents about Chikungunya fever (n-200)

Heard about Chikungunya fever?		
Yes	198	99%
No	2	1%
Chikungunya fever is caused by mosquito bite?		
Yes	192	96.0

Don't know	8	4.0
Which type of mosquito is spreading Chikungunya fever?		
Aedes	92	46.0
Anopheles	9	4.5
Culex	2	1.0
Any	23	11.5
Don't know	74	37.0
Where do mosquitoes of Chikungunya fever breed?		
Clean storage water	78	39.0
Dirty stagnant water	116	58.0
Mud	20	10.0
Garbage	79	39.5
Don't know	7	3.5
When does mosquito of Chikungunya fever bite?		
Day	97	38.5
Night	6	3.0
Anytime	91	45.5
Don't know	6	3.0
Which season is common for spreading out Chikungunya fever?		
Summer	43	21.5
Rainy	144	72.0
Don't know	13	6.5

Table –IV: Association of Chikungunya fever with the socio-demographic factors

Source of information (multiple responses)	Frequency	Percent (%)
Television	197	98.5
Newspaper	161	80.5
Social media	129	64.5
Radio	79	39.5
Colleague	91	45.5
Family members	136	68.0
Friends	160	80.0
Others	32	16.0

Table- V: Attitude of the respondents towards Chikungunya fever

Variables	Yes N (%)	No N (%)	Don't know N (%)
Environment is contributing to disease transmission	71 (35.5)	4 (2.0)	125 (62.5%)
Chikungunya fever is preventable	155 (77.5)	3 (1.5)	42 (21.0)
Chikungunya fever has a high mortality	1 (0.5)	92 (46.0)	107 (53.5)
Chikungunya fever poses a high risk to others	13 (6.5)	32 (16.0)	155 (77.5)
Chikungunya fever is infectious	84 (42.0)	28 (14.0)	88 (44.0)
Chikungunya fever is difficult to detect	4 (2.0)	90 (45.0)	106 (53.0)
Vulnerable to Chikungunya fever	106 (53.0)	3 (1.5)	91 (45.5)
Can one get Chikungunya fever more than one time	18 (9.0)	24 (12.0)	158 (79.0)
This disease should be taught in school	197 (98.5)	3 (1.5)	***

Table-VI: Practices of the respondents for prevention of Chikungunya fever

Variables	Frequency	Percent (%)
Regularly check of mosquito breeding sites in and around the house		
Yes	114	57.0
No	86	43.0
Family members check of mosquito breeding sites in and around the house		
Yes	140	70.0
No	60	30.0
Practices prevents mosquito breeding		
Empty and dry plant tub	194	97.0
Clean the drain or water pass	192	96.0
Remove tires, broken pots	188	94.0
Cover overhead water tanks	83	41.5
Actions prevent mosquito bite		
Use insecticide-treated bed nets	178	89.0
Use of coils, repellents or smoke	190	95.0
Use gel/medicine on body	89	44.5
Wear long-sleeved shirts & long trousers	92	46.0

The Chikungunya virus has a single stranded positive sense RNA viral genome belonging to the Alpha virus genus of the Togaviridae family. The Aedes mosquito is largely responsible for the transmission of the virus, with the target cells still widely unknown. Some studies, however, have found some human epithelial cells, endothelial cells, and fibroblasts that are sensitive to the Chikungunya virus. The Chikungunya infection is divided into two phases: an acute phase and a chronic phase. Signs and symptoms of an acute infection include polyarthralgia, high fever, asthenia, headache, vomiting, rash and myalgia.

Discussion

This study revealed a high prevalence rate of CF fever 41% in the urban areas of Dhaka city. Though this study was done to know the knowledge, attitude and practices regarding CF during the 2017 outbreak in Dhaka city of Bangladesh, it provided another important parameter of severity of the outbreak. The rate could be increased if we included the new patients in the study. This rate was doubled (22.3%) than the study conducted by Balasubramaniam et al 2016[16] in an urban site in Chennai, India in 2006. They conducted the study in larger sample and households were taken as the sample unit. In their outbreak investigation in rural area of Bangladesh, Khatun et al1[2] found an attach rate of 29% which is the incidence proportion usually calculated during outbreak investigation however not equal to the prevalence rate. But it indicates infection rate. In both the studies, female were affected more than the males which corresponded with current series. In 2011, the outbreak was occurred in rural village and adult females were suffered more however, in urban settings (in Dhaka and Chennai) young females suffered more. As our culture, females usually do the household works and reside in the household more than male which make them vulnerable for mosquito bites. However, age did not show significant association with CF ($x2= 6.009$; $p= 0.30$; table-I) in this series.

In this series, most of the respondent lived in slum and common housing areas. The surroundings of these types of residences provide the favorable environments for mosquito breeding which could be the reason of association between residence and occurrence of CF ($x2= 11.177$; $p= 0.011$; table-I).

In this series, 99% of the respondents heard about CF and 41.5% of the respondent were the sufferer of CF. The remaining respondents acquired the knowledge from the mass media, social and family and friends. Most of the respondents knew that CF occurs due to mosquito bite but more than half of them did know the type of mosquito responsible for spreading the CF. Though 70% of the respondents had educational qualification above secondary but for some other reason they did not know the name of the mosquito. It is very important to know the breeding site of Aedes mosquito however, in this study only 39% of the

respondents knew that Aedes mosquito breeds in fresh clean fresh water. Aedes mosquito bites during daytime therefore a person can protect him/herself from biting if he/she takes measures such as using mosquito repellents, ware full sleeve shirts etc. But unfortunately only 38% of the respondents knew the fact. Majority of the respondents correctly knew that the rainy season is a common season for spreading CF. As Aedes albopictus has a tendency to breed in water compartments close to homes and to feed during the day [26], persons who are at home during the day time could be at increased risk.

CHIKV has become an emerging public health problem in Bangladesh[11]. Almost all the respondents mentioned that fever was the commonest sign of CF, followed by joint pain (99%) & headache (96.5%). The majority (49.5%) of the respondents mentioned that knee joint was normally affected, followed by hand joint (45.5%). The joint pain associated with CHIKV infection can persist for weeks or months and in some cases for years.

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