

Knowledge and Awareness Regarding Chikungunya among Urban Community People of Selected Area of Dhaka City Bangladesh

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Abstract

Introduction: Chikungunya infection is a mosquito-borne disease caused by Chikungunya virus which is to the family *Togaviridae*. In 2008, Chikungunya infection was first identified in Rajshahi and Chapainawabganj, recent outbreak occur in Dhaka 2017.

Objective: To ascertain the knowledge and awareness regarding Chikungunya among community people of selected area of Dhaka city.

Methodology: A community based cross sectional study was conducted in selected area of Dhaka city. The study was conducted among 266 participants from 1st August to 30th September 2017. Convenient sampling method was followed for selecting the participants; face-face interview was taken by using pre-tested semi-structured questionnaire.

Result: Although about 92.5% of the respondents had heard of Chikungunya infection but only (50%) responded correctly that Chikungunya is transmitted by *Aedes* mosquito. Among total 47% had misconceptions that Chikungunya vector breeding in dirty storage water. Only 43% had correctly responded about the breeding habitat of Chikungunya mosquito. Study respondents were conscious about clinical features of Chikungunya infection particularly high fever (18.0%) and joint pain (14.6%). Most (88%) of respondents believe Chikungunya is preventable. Study participants use various methods including mosquito coils (15.1%), mosquito nets (28.4%), insecticide spray (19.3%), electric bat (12.4%) and window net (12.4%) for mosquito bite prevention. Social network/media was considered as the most important and useful source of information on the disease.

Conclusion: Community people had lack of in-depth knowledge about Chikungunya breeding place and methods of prevention of the disease. Health education and community awareness can play a role for control of chikungunya epidemic.

Keywords: Knowledge; Awareness; Chikungunya

Introduction

The word Chikungunya is a Makonde word (Bantu language) meaning of this word "The one which bends up" referring to the posture that the affected patient acquires as a consequence of the pain to the joints [1]. Chikungunya virus is a mosquito-borne virus of the *Togaviridae* family which is small, spherical, enveloped, positive-strand RNA genome, about 60-70 nm diameter capsid [2]. Chikungunya fever is transmitted by bites of mosquitoes of the *Aedes* genus (*Aedes aegypti* and *Aedes albopictus*) the same mosquito that transmits Dengue Fever. Only female mosquitoes are infective, because they require a blood meal for the formation of the egg. *Aedes aegypti* breeds in stored fresh water in urban and semi-urban environments [3]. The *Aedes* mosquitoes breeds in stored fresh water of domestic settings such as flower vases, water-storage containers, desert coolers, etc and peri-domestic areas like construction sites, coconut shells, discarded household junk items (vehicular tyres, plastic and metal cans, etc).

Adult *Aedes* mosquitoes rest in cool and shady areas in domestic and peri-domestic settings and bite humans during the daytime especially early morning and late evening [2]. In 1952 Chikungunya fever was first reported from Makonde plateaus, along the borders between Tanzania and Mozambique [4]. Ross first isolated Chikungunya virus in 1953 from the serum of a febrile human during an epidemic in Newala district of Tanzania [5]. Since then, Chikungunya virus has become a more global concern, such that Chikungunya virus was listed as a priority by the Scientific Leadership Group for the Global Virus Network [6]. Probably Chikungunya virus was originated in Africa [7]. Where Chikungunya virus maintained in 'sylvatic cycle' involving wild primates and forest dwelling mosquitoes [8]. In Asia Chikungunya virus was introduced subsequently where it has been transmitted from human to human mainly by *Aedes aegypti* and, to a lesser extent by *Aedes albopictus* through an urban and semi-urban transmission cycle [9]. Since then Chikungunya has been reported in Burma, Thailand, Cambodia, Vietnam, India, Sri Lanka, Indonesia, West Africa and the Philippines [10]. In India, first outbreak occurred in Kolkata in 1963, since then a number of other outbreaks in Maharashtra, Andhra

Pradesh, Tamil Nadu, and Bansi from 1964 to 1973. Chikungunya virus re-emerged in 2006 and badly spread in 13 Indian states including Gujarat, Kerala, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Maharashtra, and Karnataka. About 2994 individuals out of a total 60,777 suspected chikungunya cases lost their lives. Lakshadweep experienced a small outbreak in 2007. In Kerala 2008, one lac people were re-infected with CHIKV. After that subsequent year, other several large outbreaks occurred in many state of India includes Maharashtra, Andaman and Nicobar Islands, West Bengal, Orissa, Rajasthan, and Puducherry [10]. In 2010, the National Capital Region of India was the seroprevalence rate 9.91% [11]. In 2016, Mumbai reported 12.5% seroprevalence rate [12].

In 2008, First Chikungunya 39 cases were reported in northern area of Bangladesh (Rajshahi and Chapainawabganj districts). Chikungunya fever first outbreak investigated IEDCR and ICDDR,B [13]. In late October 2011, an outbreak of fever with prolonged joint pain was investigated in Dohar of Dhaka District, where house-to-house surveys were carried out to identify suspected cases. 29% of the village residents experienced symptoms consistent with Chikungunya fever during the three months of the outbreak [14]. In 2014, six confirmed cases of CHIKV were reported. Dhaka, the capital city of Bangladesh, recently swayed with a severe outbreak of chikungunya and there are so far 2,314 cases have been reported in different hospitals and clinics of Dhaka from May to September 2017 [15] and also Kabir et al reported more than 18 million people were affected in the capital city of Bangladesh up to September 2017 [16].

Methodology

A cross-sectional study was conducted from 1st August to 30th September Month 2017 to assess the knowledge and awareness regarding Chikungunya infection, conducted among community people (age above 18 years) of selected area of Dhaka city (Mirpur-2, 6). Convenient sampling method was used. Total sample size was 312, prevalence 22.3% were taken Balasubramaniam SM, et al. [17] where level confidence 95% and 5% standard error.

All participants were given questionnaire sheet and explained about the study objective and written informed consent was obtained. Face-to-face interview was taken by using pre-tested semi-structured questionnaire which comprised of 33 questions, and was divided into three sections which included: Section I comprised of Socio-demographic details such as age, sex, education, occupation, type of family and socioeconomic status; Section II was incorporated of knowledge regarding Chikungunya infection and Section III comprised of awareness regarding Chikungunya infection.

Data was analyzed by using statistical software package SPSS-23 version was used for data entry and analysis. All data were analyzed after checking, cleaning, editing and compiling by the software of SPSS-23 version. Result was recorded as frequencies, figures and P-values. Level of significance was taken 0.05.

The study was approved by the Institutional of Review Board at the National Institution of Preventive and Social Medicine (NIPSOM). The researchers highly consider about human right of the participant of this study. Data was collected after obtaining approval from IRB of NIPSOM and was taken permission from each respondent. The researcher was explaining clearly about the purpose of the study, the procedure, the possible benefit, and risk of the study to the participants.

Results

The socio-demographic and economic details of the study respondents are given in Table 1. A total of 266 respondents, majority (95.6%) belonged to the age group of 28-27 years, of them female was (51.1%), students were 92.5% and had education up to higher secondary (59.4%). Monthly family income of the respondents was ranged between Taka 10001-20000 (US \$120-240) and most of them were live in Building.

Distribution of respondents	Frequency	%
Gender distribution		
Male	129	48.5
Female	137	51.5
Age distribution		
18-27 years	255	95.6
28-37 years	5	1.9
38-47 years	6	2.25
Educational status		
SSC (secondary school certificate)	108	40.6
HSC (Higher school certificate)	134	50.4
Bachelor	17	6.4
Master	7	2.6
Occupation		
Student	246	92.5
Services	12	4.5
House wife	8	3.0
Income in Taka		
< 10000	32	12.0
10001-20000	198	74.4
20001-30000	15	5.6
30001-40000	5	1.9
>40000	16	6.0
Housing status		
Building	178	66.9
Semi-structure building	47	17.7
Tin shed	41	15.4

Table 1: Socio-demographic characteristics of the study population.

Among the total respondents, 92.5% have heard of Chikungunya infection. Most of them (84.2%) were known that Chikungunya viral disease and which transmitted through mosquito bites. Fifty percent opined that Chikungunya infection spread by aedes mosquito. Most of the respondents knew that mosquito usually bites any time a day

(56.4%). When respondents were asked about the breeding habitat of the Chikungunya vector, 47.4% of them answered dirty storage water, and only 43.2% of them responded correctly that they breed in clear storage water and 9.4% were don't know about breeding habitat of Chikungunya vector (Table 2). Preventive practices regarding Chikungunya were consistent with the knowledge about these practices, with majority of the people relying on bed net (28.4%) followed by mosquito coil (15.1%), Mosquito repellent cream (8.0%), insecticide spray (19.3%), Electric bat (12.0%) and Window net (12.4%).

Variable	n (%)	
Heard about Chikungunya		
Don't know	5	1.9
Yes	246	92.5
No	15	5.6
Chikungunya is caused by Virus		
Don't know	15	5.6
Yes	224	84.2
No	27	10.2
Chikungunya is caused by mosquito bite		
Don't know	5	2.0
Yes	254	95.0
No	7	3.0
Type of Mosquito spreading Chikungunya		
Don't know	51	19.2
Aedes Mosquito	133	50.0
Anopheles mosquito	68	25.6
Culex Mosquito	14	5.3
Most frequent mosquito biting time		
Don't know	11	4.1
Night Time	23	8.6
Day time	82	30.8
Any time	150	56.4
Chikungunya breeding site		
Don't know	25	9.4
Clear Storage water	115	43.2
Dirty storage water	126	47.4
Prevention against bite of mosquito		
Don't know	13	1.9
Wearing full sleeves shirt	20	2.9
Mosquito coil	106	15.1

Mosquito repellent cream	56	8.0
Bed Nets	266	28.4
Insecticide spray	135	19.3
Electric bat	84	12.0
Window net	87	12.4

Table 2: Knowledge regarding Chikungunya.

Among the study respondents, (94.0%) had aware of Chikungunya infection and (88.0%) believed that Chikungunya is preventable and which is not transmitted from person to person. When asked about the common symptoms, fever was the most consistent response 266 (18.0%) followed by body pain 209 (13.6%) and headache 188 (12.2%), skin rash 112 (7.3%) and joint pain (14.6%). Most (83.1%) of the respondents knew paracetamol is enough medicine for treatment of Chikungunya. When asked about source of information regarding Chikungunya infection, Social network 127 (23.2%) was identified as the main source of public information followed by Television (21.0%), Radio (6.0%), Newspaper (14.6%), School teacher (12.6%), (12.6%) from family member (Table 3).

Variable	n (%)	
Aware about Chikungunya		
Don't know	4	1.5
Yes	250	94.0
No	12	4.5
Chikungunya is preventable		
Don't know	18	6.7
Yes	234	88.0
No	14	5.3
Transmitted from person to person		
Don't know	26	9.8
Yes	36	13.5
No	204	76.7
Common Symptom		
Fever	266	18.0
Body pain	209	13.6
Headache	188	12.2
Skin rash	112	7.3
Joint pain	225	14.6
Vomiting	31	2.0
Don't know	2	0.8
Medicines for Chikungunya		
Don't know	19	7.1

Napa/Paracetamol	221	83.1
Pain killers	5	1.9
Antibiotic	21	7.9
Source of Information about Chikungunya		
Don't know	3	0.5
Television	115	21.0
Radio	33	6.0
Newspaper	80	14.6
Social network/media	127	23.2
School teachers	68	12.4
Family members/Friends	69	12.6
Doctor	52	9.5

Table 3: Awareness regarding Chikungunya.

Discussion

The study was conducted in the affected area of Dhaka city Mirpur-6. In this study, female were higher than male. Similar observations were reported by other studies [18]. Overwhelming majority 97.4% of the respondents' belonged to the age group 18-27 years, which is similar to the result of [18]. All respondents of this study were student; at least they had completed secondary school. Similar study was conducted in India where respondents were secondary school student [19]. Among total more than half of the respondents were lived in building. In Bangladesh perspective lower income people live in tin shed house of Dhaka city. Majority of the respondent's monthly income was below twenty thousand taka. The finding is similar to the other study [20]. Although most of the study respondents previously heard about Chikungunya infection and they had considerable knowledge about Chikungunya infection [21] but they did not fully recognize breeding sites of Chikungunya vector. In Mirpur area of Dhaka city are always dirty sites such as swage drains and garbage, where they found larvae of other mosquito species with dengue and Chikungunya. Majority of the respondents knew Chikungunya is a rainy seasonal disease, indeed Chikungunya occur within the time period of late summer to early spring session (March to October) [2]. More than two-third of the respondents had answered correctly Chikungunya is caused by Chikungunya virus. Most of the respondents had responded correctly that Chikungunya infection caused by female mosquito bite, because they require a blood meal for the formation of the egg [2]. Only half of the respondents knew Aedes Mosquito spreading Chikungunya infection [19]. Most of the respondents did not know usual time of mosquito bite; Chikungunya mosquito bites in the day time especially early morning and late evening [22]. Majority 152 (57.1%) of the respondents did not check mosquito breeding sites in and around their house regularly because they had not correct knowledge about breeding sites, 102 (38.3%) of the respondents regularly check mosquito breeding place because they had correct knowledge about breeding sites. Below half of the respondents knew Chikungunya mosquito likely to breed in dirty storage water, just forty three percent of the respondents correctly answered that Chikungunya mosquito breed in clear storage water [19]. The Aedes mosquitoes breeds in stored fresh water of domestic

settings such as flower vases, water-storage containers, desert coolers, etc and peri-domestic areas like construction sites, coconut shells, discarded household junk items (vehicular tyres, plastic and metal cans, etc). Fewer than half of the respondents believe that, discard water vases can cause reduce chikungunya infection. Preventive measure preferred were use of bed nets, mosquito sprays, bed nets, mosquito Coil, Electric bat and window net. In previous study by Malhotra G, et al. [23] found that most respondents were use window screening, mosquito mat/coil/liquid vaporizer/repellent cream, bed nets, using fans, use of smoke to drive away the mosquitoes especially both rural and slum areas. Most of the respondents were aware about Chikungunya infection [24] but 12 (4.5%) were not aware about Chikungunya infection. Similar result reported in Nagpal et al. [24]. Majority of the respondent's believe that Chikungunya is preventable. A large number of respondents considered that Chikungunya to be contagious and More than half of the respondents knew Chikungunya infection is not transmitted from person to person. The clinical profile of the Chikungunya observed in this study, high fever, head ache, vomiting, joint pain and Body rash, body ache, 5.7% myalgia sign and symptom of CHKV [25]. Most of the respondents were aware about treatment of Chikungunya infection that only paracetamol is required for treatment of CHKV, antibiotic not required for treatment of Chikungunya because Chikungunya is a self-limiting disease with morbidity rate is high, so only paracetamol, plenty of rest is enough for management of Chikungunya infected patient [26]. We asked respondents about sources of information on Chikungunya infection, Newspaper, Television and Social networking media like Facebook appeared as emerging sources of knowledge and information in our study [27]. Prior to the recent outbreak Newspaper, Television and Social networking can play an effect role for preventing chikungunya infection.

Conclusion

In recent years there have been explosive outbreaks of chikungunya fever in several parts of the SEA (South East Asia) Region and elsewhere. Although the disease is self-limiting, morbidity can be very high in major outbreaks resulting in a heavy social and economic toll. The disease should be preventable and it would require a planned approach, besides knowledge and awareness of early warning signs, for prevention. Integrated vector management through the elimination of breeding sites, use of anti-adult and anti-larval measures and personal protection will contribute to preventing an outbreak. Community empowerment and mobilization is crucial for prevention and control of chikungunya. Adult mosquito control measures such as fogging often applied by the civic authorities as a single tool may not by itself contribute to the effective containment of an outbreak.

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