ORIGINAL ARTICLE

Knowledge of Dengue Fever among Health Care Professional in large hospitals of Makkah al Mukarramah

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ABSTRACT:

Objective: To assess the knowledge of dengue fever among health care professional in three large hospital of Makkah-al-Mukarramah, Saudi Arabia.

Methodology: The design of this study was cross sectional and sample size was 188. The sample size was calculated by using epi-info software, keeping level of confidence as 95% and level of significance as 5%. One hundred and eighty eight health care staff including physician, nurses, paramedics and other office employees were interviewed about the knowledge of dengue fever and its prevention. Collected data was analyzed by SPSS version 20.

Results: It has been found that among health care professional, physicians have good knowledge of type of vector (p=0.002) but there was lack of knowledge of timing of vector bite, diagnostic criteria and preventive measures by all the participants.

Conclusion: The results of the study have demonstrated that although physicians have sound knowledge about the pathogenesis of the disease, they have deficient information about diagnosis and preventive measures, which is common to all health care professionals. However, there is need for one large scale study among health care staff for the assessment of knowledge regarding dengue and its preventive measures.

Keywords: Dengue, Fever, Health care professional, Hospital, Makkah al Mukarramah

INTRODUCTION:

Dengue is a viral disease, which is transmitted by mosquito and has quickly dispersed in all parts of the world in recent years. The vector involved is female mosquito, primarily of the species *Aedes aegypti* and, to a lesser degree, *Aedes albopictus*. Some other infections like chikungunya, yellow fever and Zika are also transmitted by the same mosquito[1]. Four distinct serotypes of dengue virus have been identified, belonging to the family Flaviviridae and genus Flavivirus. They are known as: DENV-1, DENV-2, DENV-3, and DENV-4. If a person is infected by any one of the serotype,

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Received: 14-06-2017
Revised: 10-08-2017
Accepted: 29-09-2017

lifelong immunity develops only to that specific serotype. These serotypes have been individually found to cause dengue epidemics associated with serious complications[2,3]. Subsequent infections by other serotypes (second attack by another serotype) increase the risk of developing severe form of dengue .

Today about 2.5 billion people, making up about 40% of the world's population, live in areas with a danger of dengue spread[4]. The different types of the dengue virus transmit to the humans through the bite of infected Aedes mosquitoes, primarily Aedes aegypti. These mosquitoes lay their eggs in water-filled containers in the house and patio and rain-filled cavities in tree, bamboo inter-nodes, leaf axil of plant, large discarded containers etc. Dengue is endemic in at least 100 countries in Asia, Africa, Pacific, America, Caribbean[4]. World Health Organization (WHO) determined that yearly 50 to 100 million infections of Dengue occur, including 500,000 cases of Dengue haemorrhagic fever (DHF) and 22,000 deaths, largely among children[4]. Situation in Saudi Arabia is alarming; there is significant rise of dengue cases, especially in the cities of Jeddah and Makkah[5,6]. In 2006, 1300 confirmed cases were reported while this figure rose to 4500 cases in 2013[5]. Symptoms of infection usually begin 4-7 days after the mosquito bite and typically last 3-10 days[4]. Aedes aegypti bites occur mainly during the day[7], and is most active for roughly two hours after sunrise and before sunset[7].

Dengue fever is commonly a self-limiting illness. No specific antiviral treatment is currently available for it[8]. First infection usually gives lifelong immunity, but second infection may occur with another strain, and if it happens may be more severe than previous one. Patients with dengue usually live in a locality with

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abundant mosquitoes, or give a history of recent travel to a region where the disease is prevalent. There is sudden onset of fever with chills, severe (termed break bone) aching of the head, back, and extremities, facial flushing and erythematous mottling of the skin. Duration of fever is 2-7 days and may reach up to 41°C[9]. Minimal criteria for the diagnosis of dengue haemorrhagic fever, according to WHO, are as follows; fever, haemorrhagic manifestations (e.g. haemoconcentration, thrombocy-topenia, positive tourniquet test), circulatory failure, such as signs of increased vascular permeability (e.g.hyp-oproteinemia, effusions), and hepatomegaly[10].

As discussed earlier, no specific treatment or vaccine is available for this disease, so focus should be on prevention to reduce the burden of disease. There are lot of methods available to prevent mosquito bite, but larval phase of mosquitoes should be targeted by the use of larvicides and destroying larvae habitats[11,12]. Knowledge of preventive measures and basic information about dengue is important for health care professionals to control the vector and thus prevent the disease. With this background, this study was undertaken to assess knowledge of dengue fever among health care professional in three large hospital of Makkah-al-Mukarramah, Saudi Arabia.

METHODOLOGY:

Setting: This study was conducted among the staff of King Faisal Hospital, King Abdulaziz hospital and Alnoor specialist hospital of Makkah-al-Mukarrama. There were more than one thousand staff members working in these hospitals. Those who had been interviewed, were health care professionals including doctors, nurses, paramedical staff and non-medical staff working in other departments e.g. office clerks.

Design of study: It was a cross sectional study. The estimated sample size was 188, which was calculated by using epi-info software, keeping level of confidence as 95% and level of significance as 5%, considering the prevalence of knowledge about dengue fever among health care professional as 86% in Kingdom of Saudi Arabia, and the risk of refusal by participants was 10%[13]. All employees were interviewed by principal investigator and co-investigators. Data was gathered on pre-designed proforma, adopted from Lee et al 2011[14].

Time and Duration: Data was collected over the period of six month, from 1st January 2014 till 30th June 2014.

Sampling technique: Convenient sampling technique was used for enrolment of study subjects.

Analysis: Data was analyzed by SPSS software version 20.

RESULTS:

Among 188 healthcare staff who were interviewed, the frequency of distribution was 96 physicians (51.1%), 60 nurses (31.9%), 15 paramedics (8.0%), 12 consultants (6.4%) and other 5 office employees (2.7%). Among all staff members, 72 (38.3%) had post-graduation. 95 participants (50.5%) had more than 4 years of experience. Male to female ratio was 58:42. (Table-1)

Table-1: Frequency distribution of demographic variables of study population

Variables	Categories	Number	%
Gender	Male	109	58
	Female	79	42
Education	Diploma	50	26.6
	Graduate	66	35.1
	Post graduate	72	38.3
Hospitals	King Faisal Hospital	61	32.5
	Al Noor Hospital	63	33.5
	King Abdullah Hospital	45	23.9
	Others	19	10.1
Experience	Less than 1 year	12	6.4
	1-2 years	46	24.5
	3-4 years	35	18.6
	More than 4 years	95	50.5
	Physician	96	51.0
Type of employee	Paramedic	15	8.0
	Nurse	60	31.9
	Consultant	12	6.4
	Others	5	2.7

Out of study participants, 184 (97.9%) were aware about the dengue fever while 4 didn't give answer to this question. 165 (87.5%) answered correctly about the etiological agent. Interestingly 168 participants (89.4%) had correct information about the vector, but only 128 (68.1%) had correct information about the species of mosquito responsible for spread of dengue (Table 2).

Table-2: Distribution of knowledge about dengue fever and the causative organism

Characteristics	Correct Number (Percent)	Incorrect Number (Percent)
Knowledge about organism responsible for dengue	165 (87.8)	23 (12.2)
Knowledge about vector of dengue	168 (89.4)	20 (10.6)
Knowledge about species of dengue	128 (68.1)	60 (31.9)
Knowledge about types of agents of dengue	50 (26.6)	138 (73.4)
Knowledge about habitat of vector of dengue	79 (42.0)	109 (58.0)
Knowledge about mode of transmission of dengue	178 (94.7)	10 (5.3)
Knowledge about time of bite of mosquito	11 (5.9)	177 (94.1)
Knowledge about preventive measures of dengue	85 (45.2)	103 (54.8)
Knowledge about which attack is more dangerous	76 (40.4)	112 (59.6)
Knowledge about basis of diagnosis (WHO Criteria)	49 (26.1)	139 (73.9)
Knowledge about Future of dengue	33 (17.6)	155 (82.4)
Knowledge about diagnostic sign and symptom of dengue	3 (1.6)	185 (98.4)

Among the 96 physicians who participated in the study, 88 knew about the organism, 87 (91%) chose mosquito as vector, but only 75 (78%) were aware about the correct species. 45 (47%) physicians selected fresh water as habitat (Table 3). Each question for the knowledge was given a score of 10 and as there were 12 questions, the maximum possible score was 120.

Over all knowledge score was 56±10.2. After analyzing the data, it was found that among health care providers, physicians had better knowledge about type of species of vector, mode of transmission, time of bite, severity of attack, and features of dengue. For rest of the variables, significant difference was not seen between the physicians and other health care workers (Table 3).

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Table-3: Comparison of knowledge between physicians and other health care providers about dengue fever

Category	Type of profession Physicians		Others		Chi Square Value	P value <
	Correct Number (%)	Incorrect Number (%)	Correct Number (%)	Incorrect Number (%)		
Name of organism responsible for disease	88 (91.7)	8 (8.3)	77(83.7)	15 (16.3)	2.78	0.061
Name of vector	87(90.6)	9(9.4)	81(88)	11(12)	0.33	0.368
Knowledge of type of species of vectors	75(78.1)	21(21.9)	53(57.6)	39(42.4)	9.10	0.002**
Habitat of vector	45(46.9)	51(53.1)	34(37)	58(63)	1.90	0.109
Mode of transmission	95(99)	1(1)	83(90.2)	9(9.8)	7.13	0.008**
Type of vector	29(30.2)	67(69.8)	21(22.8)	71(77.2)	1.32	0.164
Time of bite	9(9.4)	87(91.7)	2(2.2)	90(97.8)	4.42	0.034*
Preventive measures for dengue	39(40.6)	57(59.4)	46(50)	46(50)	1.67	0.126
Knowledge of diagnostic criteria	20(20.8)	76(79.2)	29(31.5)	63(68.5)	2.78	0.066
Severity of attack	47(49)	49(51)	29(31.5)	63(68.5)	5.90	0.011*
Knowledge about features of dengue	25(26)	71(74)	8(8.7)	84(91.3)	9.76	0.001**
Knowledge of diagnostic symptoms	1(1)	95(99)	2(2.2)	90(97.8)	0.38	0.484

*Significant difference
** Highly significant difference

DISCUSSION:

Adequate training of health care professionals is crucial for reducing infection incidence through patient education. Primary care physicians and nurses serve as the first-line health care providers. They are the ones concerned with not only the diagnosis and treatment, but also notification of dengue virus infection. Knowledge, attitude, and practice (KAP) among primary healthcare professionals (HCPs) regarding dengue infection may help in controlling the risk factors and improve the results of dengue control. In a study conducted in Saudi Arabia in 2015, knowledge of dengue was excellent among primary care physicians which was close to our study, but this study did not describe the knowledge among other health care workers[15]. Overall score of physicians (66.2±11.4), was better than what was conducted in major cities of Pakistan (62.5±14.37)[16]. Knowledge of our physicians were similar to study conducted in Singapore in 2011[14] but less than what was conducted in Taiwan in 2013, (74.4%)[17]which could possibly be due to higher literacy rate in the country[18].

Our result depicted that only 89% health care workers had knowledge about the types of vector, with similar result in study conducted in Pakistan[19], lower rates (58%) were reported in a study conducted in interior Sindh because of poor literacy rate in the region[20]. Similar results were observed in Punjab, Pakistan in 2012[21] and in Jamaica in 2010[22].

Effective vector control measure are critical for achieving and sustaining reduction of morbidity attributable to dengue, only 45% of the respondent knew about the correct preventive measures in our study. Our result are similar to studies conducted in interior Sindh[20] and Jeddah[23].

Surprisingly only 5.9% study participants had correct information about the timing of vector bite. Our results are much lower than reported in interior Sindh and

Jeddah[20,23]. The knowledge of the symptoms in our study correlated with the results of previous studies[20,24-26]. This deficiency of knowledge results in delayed consultations with a health care facility.

CONCLUSION:

Although this study was conducted at a small scale, but it is evident from the results that there is insufficient knowledge among health care workers about the dengue and its preventive measures.

RECOMMENDATIONS:

On the basis of results from this study, we strongly recommend the need for one large scale study among health care staff about the dengue and its preventive measures. We also recommend that health care authorities should take step for making health awareness program like seminar, teaching activities and workshops for health care professional in order to develop a dengue free world.

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