ORIGINAL RESEARCH ARTICLE

Knowledge and Attitude of Dengue Fever among Clients from Dengue Prevalent Areas

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ABSTRACT

The study was carried out to find the knowledge and attitude of Dengue Fever (DF). A cross sectional study was carried out among the 204 patients attending General Medicine Outpatient Department of Chitwan Medical College Teaching Hospital, Chitwan from 9th October to 8th November, 2011 who came from Dengue prevalent areas by means of interview method. Data was analyzed by using SPSS and various tests such as frequency distribution and chi-square was applied. The study findings revealed that the majority of respondents were from Chitwan district (66.2%) and 41.7% were between age group 15-35 years. The major source of information (67.2%) remained TV/radio. Majority (44.1%) had poor level of knowledge and (73.0%) had positive attitude towards DF. The highest score (50.2%) obtained on "Knowledge of DF" was for "Prevention of DF" and lowest (27.2%) for "Treatment of DF". The respondents' level of knowledge and attitude regarding DF is statistically significant (p<0.05) with age, sex and education. The covering of household water containers was more prevalent practice (95.5%) and less prevalent practice (57.6%) was not changing the water of the flower pot twice a week. Based on the findings it is concluded that majority of the respondents had poor knowledge but positive attitude. More than two third of the respondents had poor preventive practices. There should be dengue awareness program for the prevalent areas focusing on treatment measures, use of kerosene oil in air cooler and sleeping under mosquito net at day time.

Key words: Dengue fever, knowledge, attitude, practice, dengue prevalent areas.

INTRODUCTION

Dengue hemorrhagic fever (DHF) was first recognized in the 1950s during the dengue epidemics in the Philippines and Thailand. Today emerging DHF cases are causing increased dengue epidemics in the Americas, and in Asia, where all four dengue viruses are endemic; DHF has become a leading cause of hospitalization and death among children in several countries [1]. Dengue Fever (DF) is an acute febrile illness of 2-7 days duration (sometimes with two peaks) with two or more of the manifestations: headache, retro-orbital pain, myalgia/arthralgia, rash, haemorrhagic manifestation (petechiae and positive tourniquet test1) and leucopenia [1]. All four dengue virus (Den 1, Den 2, Den 3, and Den 4) infections may be asymptomatic or may lead to undifferentiated fever, dengue fever or dengue haemorrhagic fever with plasma leakage that may lead to hypovolemic shock and dengue shock

syndrome. The illness often begins with a sudden rise in temperature accompanied by facial flush and other flu-like symptoms. There is no specific treatment for dengue, but appropriate medical care frequently saves the lives of patients with the more serious dengue hemorrhagic fever [2]. Recovery from infection by one provides lifelong immunity against that serotype but confers only partial and transient protection against subsequent infection by the other three. There is good evidence that sequential infection increases the risk of more serious disease resulting in DHF [1]. Aegypti virus has been incriminated as the principal vector which is primarily an urban mosquito but sometimes it is also found in the periphery of cities breeding in rain water accumulated in tree holes. This species is mainly urban and semi-urban, breeding in domestic and peridomestic water storage containers. Aegypti

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Virus is transmitted to humans through the bites of infective female Aedes mosquitoes. Mosquitoes generally acquire the virus while feeding on the blood of an infected person. After virus incubation for eight to ten days, an infected mosquito is capable, during probing and blood feeding, of transmitting the virus for the rest of its life. Man is the definitive host and mosquitoes are the intermediate host [3]. Moreover, Aedes Aegypti has been identified in five major urban areas of Terai region & Kathmandu which suggests that DF transmission may occur locally in Terai districts & Kathmandu valley if imported cases are introduced. Climate is an important factor in the epidemiology of dengue as it influences the distribution and densities of vector mosquitoes. Evidences show that season, rainfall, temperature and affects dengue transmission [3]. Temperature affects the growth and multiplication of the vector. At low temperatures, it may take several weeks for adults to emerge. Studies suggest that rainfall patterns seem to be a reasonably effective predictor of time of peak dengue transmission which occurs about six or eight weeks after the peak in rainfall. A five year study in Indonesia showed DHF cases started to rise after about 4 weeks of the peak rainfall and within the next 4 weeks the peak dengue transmission was recorded. [3] The only way to prevent dengue virus transmission is to combat the disease-carrying mosquitoes. Currently vector control is the only available method for the dengue and DHF prevention and control [1]. There is no specific medicine for the treatment of the disease. However proper and early supportive treatment can relieve the symptoms and prevent complications and death. Aspirin and Ibuprofen should be avoided in DF, as it is known to increase the bleeding tendency and also it increases the stomach pain. Paracetamol can be given on medical advice. If one or more signs of DHF are seen, the patient should be immediately taken to the hospital. While transferring the patient to the hospital, giving enough fluids to drink is recommended. [3] In 2003, eight SEA Region countries (Bangladesh, India, Indonesia, Maldives, Myanmar, Sri Lanka, Thailand and Timor-Leste) reported dengue cases [4]. DF/DHF is now endemic in more than 100 countries and threatens the health of about 40% of the world's population (2.5 billion), particularly in tropical and subtropical regions and predominantly in urban and periurban areas. [5] It is estimated that nearly 50 million dengue infections occur annually in the world. Although dengue has a global distribution, the SEA region together with Western Pacific Region bears nearly 75% of the current global disease. [4] In Nepal, the first case of dengue was reported in 2004 from Chitwan district. [4] Sporadic cases were reported since 1990's in Japanese travellers who visited Nepal and developed DF after returning to Japan. [4] EV was identified in 5 major urban areas of terai region bordering with India, i.e. Biratnagar (Morang), Birganj (Parsa), Bharatpur (Chitwan), Tulsipur (Dang) and Nepalganj (Banke) during the entomological surveillance in Japanese Encephalities endemic district after the Dengue outbreak in 2006 in Nepal. [6] In 2010 the epidemic (outbreak) of DF and DHF occurred in Chitwan. In a conversation with Rajkumar KC, District Public Health Office (August, 2011) the prevalence of DF/DHF during 2010/2011 was 67.7% (500) diagnosed cases of dengue among dengue prevalent areas: Chitwan, Nawalparasi, Rupandehi, Tanahu, Makwanpur, other districts and some cases from unknown district. This caught the attention of lots of people, policy makers and health workers in the areas of awareness, diagnosis and prevention of DF/DHF.

MATERIALS AND METHODS

The cross sectional study was commenced at Medical OPD of Chitwan School of Medical Sciences P. Ltd from 2011 October 9th to 2011 November 8th and 204 subjects above age 15 years were incorporated in the study. The data were collected using face to face interview technique.

Inclusion Criteria

The patients of either sex were included in the study.

The patients coming from the dengue prevalent areas were included in the study.

Exclusion Criteria

The patients who were seriously ill and unable to participate in the study were excluded.

Ethical Consideration

The verbal informed consent was obtained prior to data collection. The confidentiality was maintained by coding the patient's respondents' name in the interview form, not disclosing the respondents' information to others and using the information for the study purpose only. The privacy was maintained by interviewing in a quiet and separate place.

Statistical Analysis

SPSS program version 17 was used for data analysis. Descriptive statistics like frequency, percentage, mean and standard deviation as well

as inferential statistics like chi-square was used for analysis. The confidence interval of mean (p=0.05).

RESULTS AND DISCUSSION

The majority 135(66.2%) of the respondents were from Chitwan district as the hospital is situated in Chitwan, 85(41.7%) were between age group 15-35 years, mean age is 42 years with 16 years standard deviation. Matta *et al.* [7] had similar findings that out of 500 persons surveyed 432(84.6%) were the age group of 26-40 years. Similar findings are present in Naik *et al.* [8] study. The majority 134(65.7%) of the respondents were literate and 70(34.3%) were illiterate. Among the literate 134(65.7%) respondents, most 32(23.9%) of the respondents had no formal education. However, in Koenraadt *et al.* [9] study entitled "Dengue knowledge and practices and their impact on Aedes Aegypti populations in Kamphaeng Phet, Thailand" revealed that 10% of the respondents were unschooled and almost 60% of them had education levels of primary school grade four or less. Contrary findings are present in Ashok *et al.* [10] research titled "Studies on community knowledge and behaviour following a dengue epidemic in Chennai city, Tamil Nadu, India" in which nearly 75% of the respondents belong to educated group.

Eighty seven respondents were housewife. This study is supported by Ashok *et al.* [10] on "Studies on community knowledge and behaviour following a dengue epidemic in Chennai city, Tamil Nadu, India" which revealed that 44% of the surveyed were housewives. Majority 202(99%) of respondents had not suffered from dengue fever. One hundred and thirty seven (83.0%) of respondents had gained information about dengue fever through TV/Radio followed by newspaper 75(45.5%). A study done by Syed *et al.* [11] on "Knowledge, Awareness and Practices Regarding Dengue Fever among the Adult Population of Dengue Hit Cosmopolitan" revealed similar findings that television was identified as the major source of public information. Another study done by Shuaib et al. [12], Itrat, *et al.* [13] and Hairi *et al.* [14] also revealed similar findings. The total knowledge score of the respondents is 24.58 (48.2%) with 16.28 of standard deviation. However, a study done by Shuaib *et al.* [12] on "Knowledge, attitudes and practices regarding dengue infection in Westmoreland, Jamaica" revealed that 54.4% of participants achieved at least 80% on the knowledge score. Similarly, a study done by

Hairi, *et al.* [14] revealed that 68.5% of the respondents had a good knowledge of dengue. The majority 90(44.1%) of the respondents have poor level of knowledge (**Table 1**).

The level of knowledge regarding dengue fever is statistically significant with age (p=0.005), sex (p=0.003), marital status (p=0.019), education (p=0.000) and participation in dengue awareness program (p=0.007) of the respondents. This finding is supported by research conducted by Koenraadt, *et al.* [9] in Thailand which revealed that sub district, sex, age and education were significantly related with overall knowledge of dengue in both univariate and multivariate analysis. Another study supporting this finding is conducted by Syed, *et al.* [12] in Pakistan revealed that knowledge scores were found to have significant associations with education (p=0.004). The majority 141(69.1%) of the respondents were aware about the nature of the disease being communicable while 63(30.9%) were not aware about the nature of disease. This finding is supported by research conducted by Hairi, *et al.* [14] which revealed that 155(77.5%) respondents knew that dengue is an infectious disease. Out of these respondents, 77.4% knew that dengue was transmitted by mosquitoes. About the seasonal pattern, the majority 117(57.4%) of the respondents were aware that dengue is seasonal disease and 87(42.6%) said dengue fever as the non seasonal disease. Among the respondents who said dengue is seasonal disease, the majority 50(42.7%) revealed summer season is the dengue occurring season, followed by 41(35.0%) as rainy season which is the correct answer and only 3(2.6%) as spring season. Regarding risk factor of DF, the majority 114(55.9%) of respondent said less covering of body with clothes and sick people 59(28.9%).

The majority 145(71.1%) of the respondents knew the mode of transmission of DF and said that dengue fever is transmitted by mosquito bite. This finding is supported by research conducted by Syed, *et al.* [11] which revealed that 93% people knew that the vector for dengue is a mosquito. However, another study conducted by Kumar, *et al.* (2010) in India revealed that 2/3rd (66.6%) of the respondents were ignorant about the mode of transmission. Only 18.3% of respondents were aware that dengue was transmitted by mosquito bite. Other researches supporting this finding are conducted by Kumar, *et al.* [10] and Itrat, *et al.* [13] Merely 54(26.5%) were aware about the biting time of mosquito being day time and others were

either wrong or not aware. The similar findings are present in study done by Kumar, *et al.* [15] which revealed that a total of 257(40%) knew that dengue transmitting mosquitoes bite at day-time while 60% of them did not know. The contradictory finding is present in Koenraadt, *et al.* [9] which revealed that 67% knew that dengue vectors bite during the day. The majority 96(66.2%) of the respondents knew that roof gutter as mosquito breeding place and 65(44.8%) as clean stagnant water.

According to respondents, the mosquito breeding containers are bucket and cans each 110(75.9%) followed by tires 101(69.7%), flower pot and discarded items both 95(65.5%), water tank 92(63.4%) and air cooler 39(26.9%). Similarly, another study also supports these findings done by Syed, *et al.* [11] which revealed that most important breeding places for the mosquito were reported as house drains (54.9%), garbage (46.3%) and water jars (36.1%). Similar findings are present in research done by Kumar, *et al.* [15] and Itrat, *et al.* [13] In contrast to this, a research conducted by Matta, *et al.* [7] revealed that coolers as the most probable breeding site (for mosquito) was named by 42.4% respondents followers by cooler & tires by 24.2%. Respondents 127(62.3%) said that fever as the signs and symptoms of the dengue fever, followed by headache 104(51.0%), joint/muscle pain 76(37.3%), periorbital pain 75(36.8%), back pain 57(28.0%) and body rashes 49(24.0%). The finding is supported by research conducted by Koenraadt, *et al.* [9] revealed that the most commonly mentioned symptoms was fever (59%). This findings is supported by research conducted by Matta, *et al.* [7] which revealed that 309(61.8%) persons could enumerate one symptom (fever), 103 (20.6%) persons could enumerate 2 symptoms (fever, bleeding) and 56(11.2%) persons could enumerate 3 symptoms of Dengue (fever, headache & bleeding). Another supporting finding is present in Syed, *et al.* [11] which revealed that symptomatology of dengue

were fever (74.5%), headaches (45.6%), bleeding (35.1%), rash (28.2%), abdominal pain (25.4%) and nausea/vomiting (22.7%). Similar findings are present in study conducted by Shuaib, *et al.* [12] The majority 123(60.3%) of the respondents knew that it is not treatable disease while 81(39.7%) did not know that it is treatable disease. The research finding is supported by study done by Shuaib, *et al.* [12] which revealed that dengue fever is treatable 136(72.7%) and 44(23.5%) did not know and only 7(3.7%) revealed as not treatable. Respondents 107(20.9%) had knowledge that if no fall in body temperature and tarry stool 46(9.0%) the dengue infected person should visit the health facility. All 143(100%) were aware that prevention of mosquito bite as preventive measure. Respondents 100(70.0%) were not aware about the use of mosquito net at day time and 143(100%) were aware about the use of mosquito net for preventing from mosquito bite, followed by 135(99.4%) use of coil/mat/liquid, 115(80.4%) spray of insecticide, 114(79.7%) screening the doors and windows, 113(79.0%) as removing the stagnant water, 101(70.6%) wearing long sleeve or whole body covering clothes, 95(66.4%) cleaning the surrounding and 47(32.9%) use of mosquito repellent. Almost all five (45.5%) didn't know the amount of kerosene oil to be used in air cooler and only 2(18.2%) knew that 1-2 spoonful of kerosene oil should be kept for preventing mosquito breeding in cooler water. Four (36.3%) knew the frequency of air cooler cleaning as twice a week. In the same way 7(5.4%) had knowledge about changing water of open container weekly. To avoid/remove stagnant water 130(98.48%) respondents answered as destroy the discarded items, followed by 129(97.7%) each answered fill the pit/burrows and clean roof gutters and 125(94.69%) invert water holding container. Among 74 patients, 26(35.1%) answered the water of the flower pot should be change daily and only 20(27.0%) knew that it's twice in a week (**Table 2 & 3**).

Table 1: Association between Respondents' Level of Overall Knowledge Regarding Dengue Fever and Selected Sociodemographic Variables

Demographic Variable	Level of Knowledge			p- value
	Poor (%)	Fair (%)	Good (%)	
Area of residence				
Chitwan	61(30.0)	44(21.6)	30(14.7)	0.910
Outside Chitwan	29(14.2)	24(11.8)	16(7.8)	
Age group				
15-35	27(13.2)	30(14.7)	28(13.7)	0.005
35-55	37(18.1)	28(13.7)	13(6.4)	
≥55	26(12.7)	10(4.9)	5(2.5)	
Sex				
Male	21(10.3)	22(10.8)	24(11.8)	0.003
Female	69(33.8)	46(22.5)	22(10.8)	
Respondent suffered from DF				
Suffered	1(0.5)	2(1.0)	0(0.0)	0.410

Not suffered	89(43.6)	66(32.4)	46(22.5)	
Family history of DF				
Family history	0(0.0)	0(0.0)	1(0.5)	0.178
No family history	90(44.1)	68(33.3)	45(22.1)	
Awareness program				
Participation	1(0.5)	1(0.5)	5(2.5)	0.007
No participation	89(43.6)	67(32.8)	41(20.1)	

Significance level at 0.05 ; χ2 is computed for p-value

Afterwards regarding the respondents' attitude, 148(72.5%) had positive attitude stating "Dengue is a fatal disease". Similar finding is present in study conducted by Hairi, et al. [14] which revealed that 91.5% of the respondents had a good attitude toward dengue control. One hundred and sixteen (56.9%) had neutral attitude stating "Person who once got dengue infection can get dengue infection again" and 91(44.6%) had negative attitude stating "Dengue infected person can sleep together with other healthy person under the same mosquito net". The majority 148(72.5%) of the respondents believed that dengue is a fatal disease and only 1(0.5%) didn't believe. The similar findings are present in research conducted by Koenraadt, et al. [9] which revealed that almost all respondents (98%) regarded dengue as a serious problem in their village. Other supporting study is research conducted by Shuaib, et al. [12] The level of attitude of DF is statistically significant with age (p=0.000), sex (p=0.025), education (p=0.000) and religion (p=0.007) of respondents (Table 3).

Table 2: Distribution of Respondents According to Level of Attitude Regarding Dengue Fever (n=204)

Attitude	Frequency	Percent
Positive	149	73.0
Neutral	51	25.0
Negative	4	2.0

Majority of the respondents 149 (73.0%) have positive attitude and minority 4 (2.0%) have negative attitude regarding dengue fever (Table 2).

Table 3: Association between Respondents' Level of Attitude Regarding Dengue Fever and Selected Sociodemographic Variables (n=204)

Demographic variables	Level of attitude			p-value
	Positive (%)	Neutral (%)	Negative (%)	
Area of residence				
Chitwan	100(49.0)	33(16.2)	2(1.0)	0.750
Outside Chitwan	49(24.0)	18(8.8)	2(1.0)	
Age group				
15-35 years	73(35.8)	12(5.9)	0(0.0)	0.000
35-55 years	60(29.4)	15(7.4)	3 (1.5)	
≥55 years	16(7.8)	24(11.8)	1(0.5)	
Sex				
Male	56(27.5)	9(4.4)	2(1.0)	0.025
Female	93(45.6)	42(20.6)	2(1.0)	
Respondent suffered from DF				0.923
Suffered	0(0.0)	1(0.5)	2(2.0)	
Not suffered	4(2.0)	50(24.5)	147(72.1)	
Family history of DF				
Family history	0(0.0%)	0(0.0%)	1(0.6%)	0.831
No family history	4(2.0)	51(25.0)	148(72.5)	
Awareness program				
Participation	0(0.0)	1(0.5)	6(2.9)	0.728
No participation	4(2.0)	50(24.5)	143(70.1)	

Significance level is 0.05 ; χ2 is computed for p-value

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