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# Awareness of dengue virus in professionals and general public

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## Abstract

A viral infectious disease, dengue which is transmitted by mosquitoes, is very severe disease. Symptoms may vary person to person and also depends upon the severity of the viral infection. High fever, headache and body aches are the general complains of dengue infectious patients. Thrombocytopenia is also common in dengue. There is no treatment of this viral infection. Avoid of aspirin, use of acetaminophen (paracetamol), rest and use of plenty of water and other drinks or juices may recover the infectious person within 7-14days. Prevention of this infectious disease is must like use of insecticidal, mosquito repellents, covering of clean water, full body covering dresses and avoid open places like parks in morning and evening times proved very much effective in order to prevent this infectious disease. Our study aims to find out its awareness among the general public as well as among the professionals. Data was collected randomly in Karachi city. All the important questions were asked during our survey. 50males and 50 females were selected from general public. Males have on average of 5.96% awareness about the dengue whereas females on average have 5.64%. Data was also collected from professionals in whom 24 pharmacists and 30 microbiologists were selected randomly. Pharmacists have on average of 5.5 percent awareness about the dengue whereas other professionals (microbiologists) on average have 5.4 percent awareness of dengue.

## 1. Introduction

The member of family Flaviviridae, Dengue virus (DENV) belongs to genus Flavivirus, and is transmitted to humans by mosquitoes specifically Aedes, mainly Aedes aegypti. On the base of neutralization assay data, four serotypes of DENV are able distinguish.<sup>[1]</sup> Infection may be asymptomatic in the majority of cases or may result in a wide spectrum of clinical symptoms,<sup>[2]</sup> ranging from a mild flu-like syndrome to the most severe forms of the disease, like coagulopathy, permeability and increased vascular fragility.<sup>[3-6]</sup>

### 1.1. Dengue Fever

Classic dengue fever is characterized by the sudden onset of fever in older children and adults. A variety of nonspecific signs and symptoms, including severe headache, body aches, retro-orbital pain, nausea and vomiting, rash, joint pains and weakness.<sup>[7-11]</sup>

Clinical laboratory findings associated with dengue fever include a neutropenia followed by a lympho cytosis. Liver enzyme levels elevated in the serum; alanine aminotransferase and aspartate amino transferase levels reach 500 to 1000 U/liter in some patients suffering from dengue. 54% of confirmed patients with data reported on liver enzymes had elevated levels. Thrombocytopenia is also common in dengue fever;

reported in 34% of patients<sup>[12]</sup>.

### 1.2. Pathophysiology

Plasma leakage is specific to the pleural and peritoneal surfaces. There is no vasculitis in dengue and hence no injury to the vessel walls. The movement of albumin and the resultant reduction of intravascular oncotic pressure facilitate further loss of fluid from the intravascular compartment. The glycocalyx, a gelatinous layer lining the vascular endothelium is also implicated in controlling fluid movement by the adherence of albumin molecules in to its matrix, leads to loss of albumin into the extra vascular compartment<sup>[13-16]</sup>.

### 1.3. Immunopathogenesis

The immune system is implicated in the pathogenesis of DHF owing to the increased propensity to develop DHF with secondary dengue infection. Vascular permeability and Complement activation may be influenced by viral products. In the form of antibody, different immune mechanisms enhanced viral replication leading to an exaggerated cytokine response impacts vascular permeability<sup>[17-19]</sup>.

### 1.4. Treatment

There is no treatment of dengue fever yet<sup>[20]</sup>

Good clinical practice in management of dengue patients:

- Assessment and follow-up of patients with non-severe dengue and careful instruction of warning signs to watch out for
- For high fever, administration of paracetamol if the patient is uncomfortable
- Obtaining a haematocrit level before and after fluid boluses
- Clinically assess the haemo dynamic status before and after each fluid bolus
- Interpretation of haematocrit levels in the context of fluid administered and haemo dynamic assessment
- Excessive vomiting or a high or rapidly rising haematocrit administration of intravenous fluids
- For severe dengue use of isotonic intravenous fluids
- Maintenance of effective circulation in the period of plasma leakage giving intravenous fluid volume for severe dengue
- Avoiding intramuscular injections in dengue dengue patients
- Frequency of monitoring and Intravenous fluid rate and haematocrit measurement adjusted according to the patient’s condition
- Close monitoring of blood glucose, i.e. tight glycaemic control
- Once haemodynamic status stabilizes reducing fluid therapy<sup>[21]</sup>

## 2. Prevention and Control

Prevention and control of dengue and DHF has become more urgent with the expanding geographic distribution and

increased disease incidence in the past 20 years.<sup>[22-30]</sup> Unfortunately, only limited tools are available to prevent dengue infection. Currently there is no vaccine for dengue. Available options for mosquito control are also limited.

Disease prevention programs must be effective and must have several integrated components, including active laboratory-based surveillance, emergency response, education of the medical community to ensure effective case management, community-based integrated mosquito control, and effective use of vaccines when they become available<sup>[31-32]</sup>.

### 2.1. Mosquito Control

Prevention and control of dengue and DHF currently depends on controlling the mosquito vector, *Aedes aegypti*. around and in the home. Insecticidal sprays to kill adult mosquitoes are not usually effective<sup>[33]</sup> unless they are used indoors. Larval source reduction is the most effective way to control the mosquitoes that transmit dengue, i.e., cleaning of water-holding containers that serve as the larval habitats for *A. aegypti* in the domestic environment<sup>[33]</sup>.

## 3. Methodology

This is a survey based study on dengue about the awareness of this disease. Cross-sectional and Random sampling method was used to collect data from different parts of Karachi city in the month of June and July, 2014. Data was collected about the general awareness, signs and symptoms, causes, transmission of this viral disease, treatment and presentational strategies of the dengue fever. Data of 100 persons was collected, 50 of them are males and others are females. Data from 24 pharmacists and 30 microbiologists was also collected. We have statistically analyzed our collected data and represented on tabular form.

## 4. Result & Discussion

Dengue fever is an infectious disease carried by mosquitoes and caused by any of four related dengue viruses. This disease used to be called "break-bone" fever because it sometimes causes severe joint and muscle pain that feels like bones are breaking. Dengue cannot be transmitted from person to person without a mosquito as the intermediate vector. Our study aims to find out the awareness of dengue fever in public. 50 male and 50 female were selected for this purpose. Our collected data is shown in the table below:

Table 1. Group Statistics

	gender	N	Mean	Std. Deviation	Std. Error Mean
awareness	male	50	5.9600	1.87312	.26490
	female	50	5.6400	1.69946	.24034

This table shows 50 males and 50 females have been chosen, males have on average of 5.96 percent awareness

about the dengue and standard deviation of 1.87312 whereas and standard deviation of 1.69946. females on average has 5.64 percent awareness of dengue

**Table 2. t-test for Equality of Means**

Awareness	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	1.761	0.188	0.895	98	0.373	0.32	0.35768	-0.3898	1.0298
Equal variances not assumed			0.895	97.087	0.373	0.32	0.35768	-0.38989	1.02989

P value =0.188>0.05, it shows that there is the variability exists in two groups of males and females about the awareness of the dengue.

A t test reveal a statistically reliable difference between the mean number of awareness percentage that the male has (M =4.12, s =1.995) and that the female has (M = 2.76, s =2.42),  $t(97) = 0.895, p=0.373, \alpha = .05$ .

It is statistically significant that male and female has variability in awareness about dengue.

We also find the awareness of dengue in professionals during our survey. For this purpose 24 pharmacists and 30 non-pharmacist professionals were selected randomly. The 30 non-pharmacists professionals were microbiologist actually. We asked different questions from the professionals and our collected data is shown in the table below:

**Table 3. Group Statistics**

	profession	N	Mean	Std. Deviation	Std. Error Mean
awareness1	other profession	30	5.4000	1.83077	.33425
	pharmacists	24	5.5000	1.58800	.32415

This table shows 24 pharmacists and 30 microbiologists have been chosen, pharmacists have on average of 5.5 percent awareness about the dengue and standard deviation of 1.58800 whereas other profession on average has 5.4 percent awareness of dengue and standard deviation of 1.8307

**Table 4. Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
awareness1	Equal variances assumed	.363	.549	-.211	52	.833	-.10000	.47312	-1.04939	.84939
	Equal variances not assumed			-.215	51.625	.831	-.10000	.46561	-1.03449	.83449

P value =0.549>0.05, it shows that there is the variability exist in two groups of pharmacist and other profession about the awareness of the dengue.

A t test reveal a statistically reliable difference between the mean number of awareness percentage that the other profession has (M =4.12, s =1.995) and that the pharmacist has (M = 2.76, s =2.42),  $t(51) = 2.15, p=0.831, \alpha = .05$ . We have done these types of awareness survey which are very useful for pharmacist and medical students.<sup>[34-37]</sup>

## References

- [1] Guha-Sapir, D., and B. Schimmer. 2005. Dengue fever: new paradigms for a changing epidemiology. *Emerg. Themes Epidemiol.* 2:1.
- [2] Harris, E., E. Videia, L. Perez, E. Sandoval, Y. Tellez, M. L. Perez, R. Cuadra, J. Rocha, W. Idiaquez, R. E. Alonso, M. A. Delgado, L. A. Campo, F. Acevedo, A. Gonzalez, J. J. Amador, and A. Balmaseda. 2000. Clinical, epidemiologic, and virologic features of dengue in the 1998 epidemic in Nicaragua. *Am. J. Trop. Med. Hyg.* 63:5-11
- [3] Carlos, C. C., K. Oishi, M. T. Cinco, C. A. Mapua, S. Inoue, D. J. Cruz, M. A. Pancho, C. Z. Tanig, R. R. Matias, K. Morita, F. F. Natividad, A. Igarashi, and T. Nagatake. 2005. Comparison of clinical features and hematologic abnormalities between dengue fever and dengue hemorrhagic fever among children in the Philippines. *Am. J. Trop. Med. Hyg.* 73:435-440.
- [4] Guzman, M. G., G. Kouri, J. Bravo, L. Valdes, S. Vazquez, and S. B. Halstead. 2002. Effect of age on outcome of secondary dengue 2 infections. *Int. J. Infect. Dis.* 6:118-124.
- [5] Kittigul, L., P. Pitakarnjanakul, D. Sujirarat, and K. Siripanichgon. 2007. The differences of clinical manifestations and laboratory findings in children and adults with dengue virus infection. *J. Clin. Virol.* 39:76-81.
- [6] Nguyen, T. H., H. Y. Lei, T. L. Nguyen, Y. S. Lin, K. J. Huang, B. L. Le, C. F. Lin, T. M. Yeh, Q. H. Do, T. Q. Vu, L. C. Chen, J. H. Huang, T. M. Lam, C. C. Liu, and S. B. Halstead. 2004. Dengue hemorrhagic fever in infants: a study of clinical and cytokine profiles. *J. Infect. Dis.* 189:221-232.

- [7] Anonymous. 1986. Dengue hemorrhagic fever, diagnosis, treatment and control. World Health Organization, Geneva, Switzerland.
- [8] Hayes, E. B., and D. J. Gubler. 1992. Dengue and dengue hemorrhagic fever. *Pediatr. Infect. Dis. J.* 11:311–317.
- [9] Sabin, A. B. 1952. Research on dengue during World War II. *Am. J. Trop. Med. Hyg.* 1:30–50.
- [10] Siler, J. F., M. W. Hall, and A. Hitchens. 1926. Dengue, its history, epidemiology, mechanism of transmission, etiology, clinical manifestations, immunity and prevention. *Philipp. J. Sci.* 29:1–304.
- [11] Waterman, S. H., and D. J. Gubler. 1989. Dengue fever. *Clin. Dermatol.* 7:117–122.
- [12] Dietz, V., D. J. Gubler, S. Ortiz, G. Kuno, A. Casta-Velez, G. E. Sather, I. Gomez, and E. Vergne. 1996. The 1986 dengue and dengue hemorrhagic fever epidemic in Puerto Rico: epidemiologic and clinical observations. *P. R. Health Sci. J.* 15:201–210.
- [13] B. A. Wills, N. M. Dung, H. T. Loan et al., “Comparison of three fluid solutions for resuscitation in dengue shock syndrome,” *The New England Journal of Medicine*, vol. 353, no. 9, pp. 877–889, 2005.
- [14] C. C. Michel and F. E. Curry, “Microvascular permeability,” *Physiological Reviews*, vol. 79, no. 3, pp. 703–761, 1999. View at Scopus
- [15] V. H. Huxley and F. E. Curry, “Differential actions of albumin and plasma on capillary solute permeability,” *American Journal of Physiology*, vol. 260, no. 5, pp. H1645–H1654, 1991.
- [16] B. A. Wills, E. E. Oragui, M. D. Nguyen et al., “Size and charge characteristics of the protein leak in dengue shock syndrome,” *Journal of Infectious Diseases*, vol. 190, no. 4, pp. 810–818, 2004.
- [17] P. Avirutnan, N. Punyadee, S. Noisakran et al., “Vascular leakage in severe dengue virus infections: a potential role for the nonstructural viral protein NS1 and complement,” *Journal of Infectious Diseases*, vol. 193, no. 8, pp. 1078–1088, 2006.
- [18] P. Avirutnan, A. Fuchs, R. E. Hauhart et al., “Antagonism of the complement component C4 by flavivirus nonstructural protein NS1,” *The Journal of Experimental Medicine*, vol. 207, no. 4, pp. 793–806, 2010.
- [19] P. Avirutnan, L. Zhang, N. Punyadee et al., “Secreted NS1 of dengue virus attaches to the surface of cells via interactions with heparan sulfate and chondroitin sulfate E,” *PLoS Pathogens*, vol. 3, no. 11, article e183, 2007.
- [20] By Varnada Karriem-Norwood, MD on September 20, 2012 WebMD, LLC. <http://www.webmd.com/a-to-z-guides/dengue-fever-reference?page=2>
- [21] Dengue: guidelines for diagnosis, treatment, prevention and control -- New edition., *Chapter 2: Clinical management and delivery of clinical services*, PAGE-45, ISBN 978 92 4 154787 1, by Dr Jacqueline Deen, Dr Lucy Lum, Dr Eric Martinez, Dr Lian Huat Tan.
- [22] Gubler, D. J. 1987. Dengue and dengue hemorrhagic fever in the Americas. *P. R. Health Sci. J.* 6:107–111.
- [23] Gubler, D. J. 1993. Dengue and dengue hemorrhagic fever in the Americas, p. 9–22. *In* P. Thoncharoen (ed.), *Monograph on dengue/dengue hemorrhagic fever*. W.H.O. regional publication SEARO no. 22. World Health Organization, New Delhi, India.
- [24] Gubler, D. J. 1997. Dengue and dengue hemorrhagic fever: its history and resurgence as a global public health problem, p. 1–22. *In* D. J. Gubler and G. Kuno (ed.), *Dengue and dengue hemorrhagic fever*. CAB International, London, United Kingdom.
- [25] Gubler, D. J. The global pandemic of dengue/dengue haemorrhagic fever: current status and prospects for the future. *Ann. Acad. Med. Singapore*, in press.
- [26] Gubler, D. J., and G. G. Clark. 1995. Dengue/dengue hemorrhagic fever: the emergence of a global health problem. *Emerg. Infect. Dis.* 1:55–57.
- [27] Gubler, D. J., and D. W. Trent. 1994. Emergence of epidemic dengue/dengue hemorrhagic fever as a public health problem in the Americas. *Infect. Agents Dis.* 2:383–393.
- [28] Halstead, S. B. 1980. Dengue hemorrhagic fever—public health problem and a field for research. *Bull. W. H. O.* 58:1–21.
- [29] Halstead, S. B. 1992. The XXth century dengue pandemic: need for surveillance and research. *Rapp. Trimest. Stat. Sanit. Mond.* 45:292–298.
- [30] Monath, T. P. 1994. Dengue: the risk to developed and developing countries. *Proc. Natl. Acad. Sci. USA* 91:2395–2400.
- [31] Gubler, D. J. 1988. Dengue, p. 223–260. *In* T. P. Monath (ed.), *Epidemiology of arthropod-borne viral diseases*. CRC Press, Inc., Boca Raton, Fla.
- [32] Gubler, D. J., and A. Casta-Velez. 1991. A program for prevention and control of epidemic dengue and dengue hemorrhagic fever in Puerto Rico and the U.S. Virgin Islands. *Bull. Pan Am. Health Org.* 25:237–247.
- [33] Gubler, D. J. 1989. *Aedes aegypti* and *Aedes aegypti*-borne disease control in the 1990s: top down or bottom up. *Am. J. Trop. Med. Hyg.* 40:571–578.
- [34] Safila Naveed .2014 A Survey Study on awareness of Hepatitis C in different groups. *World journal of pharmaceutical Sciences* ISSN 2321-331:02(5): 449-454
- [35] Safila Naveed, et al.2014 Knowledge and Attitude about Crimean Congo Hemorrhagic Fever (CCHF) Amongst Local Residents Of Karachi, PAKISTAN Accepted *J App Pharm* Vol. 6; Issue 2: 166-170
- [36] Safila Naveed, 2014 Frequency Of Diabetes In Different Age Groups of Karachi *DHR International Journal Of Medical Sciences (DHR-IJMS)* ISSN: 2278-831X, Vol. 5(1), 61-64.
- [37] Safila Naveed, Ayesha Siddiqui, Aqdas Rais, Sarah Usman, Syeda Irma Zaidi, Syeda Wasiqa (2014) General Awarnance Of Human Papilloma Virus Vaccine Against Cervical Cancer. *MJPMS Mintage journal of Medical and pharmaceutical Sciences* Vol 3 Issue 1,11-14.