

Knowledge, Attitude and Practices regarding Dengue Fever in People of Lahore

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ABSTRACT

Background: Dengue fever has emerged as an important public health problem in recent years and has become endemic throughout major cities in Pakistan. In Lahore, capital of Punjab it has appeared as an epidemic during last few years. Lahore has been worst hit by Dengue and emerged as an epidemic with terrible implications on health and economy of the populations and collapsing the health systems. Study was conducted during the peak of epidemic in 2011.

Objectives: To establish a baseline of knowledge, attitude and practices for dengue prevention.

Study Design: Cross Sectional Study.

Place and Duration of Study: This study was conducted in Lahore, Capital of Punjab province. Lahore has been divided in to eight administrative zones called 'towns'. Allama Iqbal and Gulberg towns were selected for the study. Study was conducted during the month of September 2011, at the peak of epidemic

Materials and Methods: The study was focused on densely populated 6 areas and a total of 219 household were randomly selected and interviewed and all information stored in a structured Proforma.

Results: Among 219 households, showed that electronic media was the most common source of information within the community, followed by Friends and family. Areas of deficit knowledge were information about vector and its biting time and seasonal prevalence. The identified deficit areas of practices were keeping water storage tanks uncovered and less use of insecticides. Whereas, negative attitude noted was about elimination of larval breeding sources.

Conclusion: Overall level of knowledge and practices were low however, study showed positive attitude of community toward Dengue prevention.

Key Words: Dengue fever, Knowledge, Attitude, Practices.

INTRODUCTION

Dengue is a mosquito-borne infection that had become a major public health concern. It is a disease found in most tropical and subtropical areas of the world and had become the most common arboviral disease of human. Nearly 40% of the world's population lives in Dengue endemic area¹⁻³. Dengue fever and dengue hemorrhagic fever (DHF) are viral diseases and virus is contracted from the bite of a striped *Aedes aegypti* mosquito that has previously bitten an infected person. Dengue outbreaks have also been attributed to *Aedes albopictus*, *Aedes polynesiensis* and several species of the *Aedes scutellaris* complex.⁴⁻⁷ The mosquito flourishes during rainy seasons but can breed in water-filled flower pots, plastic bags, and cans year-round. One mosquito bite can cause the disease⁵. The virus is not contagious and cannot be spread directly from person to person. There must be a person-to-mosquito-to-another-person pathway. Because it is caused by one of four serotypes of virus (DEN-1 through DEN-4) it is possible to get dengue fever multiple times.⁸⁻¹⁰ However, an attack of dengue produces immunity for a lifetime to that particular serotype to which the patient was exposed.¹¹⁻¹⁴ However, secondary infection with another serotype or multiple infections with different

serotypes leads to sever form of dengue. Because dengue fever is caused by a virus, there is no specific medicine or antibiotic to treat it. For typical dengue fever, the treatment is purely concerned with relief of the symptoms (symptomatic).

Dengue fever now believed to be the most common arthropod-borne disease in the world. Some 1.8 billion (more than 70%) of the population at risk for dengue worldwide live in member states of the WHO South-East Asia Region and Western Pacific Region, which bear nearly 75% of the current global disease burden due to dengue. Dengue inflicts a significant health, economic and social burden on the populations of endemic areas. Available data from South-East Asia is largely derived from hospitalized cases among children but the burden due to uncomplicated dengue fever is also considerable. In a prospective study of schoolchildren in northern Thailand the mean annual burden of dengue over a five-year period was 465.3 DALYs per million, with non-hospitalized patients with dengue illness contributing 44 - 73% of the total⁴⁻⁷.

Recent outbreaks of suspected dengue have been recorded in Pakistan, Saudi Arabia, Sudan and Yemen, 2005--2006. In Pakistan, the first confirmed outbreak of DHF occurred in 1994. A DEN-3 epidemic with DHF was first reported in 2005. Since then, the expansion of

dengue infections with increasing frequency and severity has been reported from large cities in Pakistan as far north as the North-West Frontier Province in 2008. Dengue is now a reportable disease in Pakistan. A pertinent issue for this region is the need to better understand the epidemiological situation of dengue in areas that are endemic for Crimean-Congo hemorrhagic fever and co-infections of this pathogens^{15, 16}.

The instant study is an attempt to establish a baseline of knowledge, attitude and practices for dengue prevention and point out deficit areas in knowledge and practices among residents of Lahore.

Operational Definitions:

Knowledge: The knowledge that the respondent have regarding the cause, transmission, clinical manifestation and prevention of Dengue fever.

Attitude: The feeling and beliefs of the respondents with regard to Dengue fever and its prevention.

Practice: The actions intended to do in order to prevent from Dengue fever.

MATERIALS AND METHODS

Study Setting: Study was conducted in Lahore, Capital of Punjab province. Lahore has been divided in to eight administrative zones called 'towns'. Allama Iqbal and Gulberg towns were selected for the study.

Study duration: Study was conducted during the month of September 2011, at the peak of epidemic.

Sample Technique: Purposive and cluster sampling technique was used for the study and a total of 219 house hold were interviewed. Allama Iqbal and Gulberg were chosen purposively among eight towns being more affected in the current epidemic of Dengue fever. Within these towns study was focused on densely populated areas of these towns. Six such areas/clusters were selected for the study. From each area, 35 households were visited for interview, on the assumption that sample of more than 30 is sufficient and representative for a KAP study.

Inclusion Criteria:

- Age: 15 - 60 yrs of age.
- Either Sex:
- Permanent residents.

Data Collection Procedure: A survey questionnaire was prepared and was translated into Urdu and pre-tested. Survey questionnaire comprised of five parts each part has specific questions to obtain information on; i) socio-demographic information, ii) knowledge, iii) attitude, iv) practices, and v) observations. For the purpose of data collection, 3 teams of surveyors, comprising of two members each were selected. One day training was organized for the field teams, in which the survey methodology and questionnaire was discussed in detail. Field simulation exercise followed by a debriefing session was also part of the training.

Data Analysis Procedure: Data was entered in Microsoft Excel. Before data entry desk editing was carried out, followed by data cleaning. Analysis was done using Microsoft Excel. Descriptive statistics (frequency, percentage, mean, standard deviation) were used primarily to summarize and describe the data to make it more understandable. Frequency distribution used in terms of Socio-demographic characteristics, Level of knowledge, Attitude towards dengue fever, Practice regarding dengue fever prevention. Participants answered a total of 14 close ended, multiple choice questions about Dengue fever. Each correct response was given one mark with a total of 14 marks. Participants' level of knowledge on Dengue fever was classified in to High (11-14 scores), Medium (07-10 scores) and Low (00-06 scores).

RESULTS

This study was conducted in Lahore City; 219 respondents were interviewed. The average age of the respondents was 35.4 years (SD 13.2). Most of the participants were female (61%). Majority of the respondents were married (78%). Most of the respondents were literate (60%) while the illiterate were (40%). Majority of the respondents were employed (95%) and majority of respondents had income (47%) between 6,000 to 10,000 More than half of the respondents (58%) were told having up to 2 rooms, (36%) had 3-5 rooms and (7%) had more than 5 rooms. 13% families were comprised up to 4 members, (47%) had 5-8 members and (39%) had more than 8 members. More than half of the respondents (68%) told having no Dengue fever to any family member; while (32%) reported having fever to family members. More than half of the respondents (63%) told they look for doctors for treatment of fever; while (1%) for Hakeem and 2% for paramedics. Majority of the respondents knew about Dengue fever includes (86%) knew through electronic media; (13%) knew through printed media; (26%) knew through friends and family, and the (4%) through health personal. Distribution of knowledge on Dengue fever of the respondents showed that 50 % of subjects had "low knowledge", 37% of them had "moderate knowledge" while 13% had "high knowledge". (Table No: 1).

Table No.1: Distribution of knowledge level on Dengue fever

Level	Knowledge	
	Number	% age
High	28	13
Moderate	82	37
Low	109	50
Total	219	100

Table No.2: Knowledge about Dengue Fever

		Yes	No	Don't know	Yes	No	Don't know
		Number			% age		
1.	The principal mosquito vector for Dengue fever is <i>Aedes aegypti</i> .	31	58	130	14	26	59
2.	Dengue fever is a severe, flu-like illness that affects infants, young children and adults.	108	35	76	49	16	35
3.	Dengue patients have chills, headache, pain upon moving the eyes, and low backache.	156	13	50	71	6	23
4.	Rainy season is the only epidemic season for Dengue infection.	118	41	60	54	19	27
5.	Mosquitoes transmitting Dengue infection bites only during day time.	68	63	88	31	29	40
6.	The mosquito that transmits Dengue infection lays its eggs in dirty sewage water.	53	94	72	24	43	33
7.	Empty stagnant water from old tires, trash cans, and flower pots can be breeding places for mosquitoes.	112	24	83	51	11	38
8.	Dengue viruses are transmitted to humans through bites of infective female <i>Aedes</i> mosquitoes	20	39	160	9	18	73
9.	Only method of controlling Dengue infection is to combat the vector mosquitoes.	120	23	76	55	11	35
10.	There is no specific treatment for Dengue infection.	112	27	80	51	12	37
11.	Insecticide can be beneficial in killing the mosquito larvae.	118	16	85	54	7	39
12.	Insecticide, if put in the standing water, can help to prevent the mosquito breeding.	71	37	111	32	17	51
13.	Stored water containers/tanks for drinking water without being covered should be cleaned every 7 days.	120	43	56	55	20	26
14.	I am afraid of getting Dengue fever, If one of my family members has DF.	149	29	41	68	13	19

Table No.3: Distribution of Attitude level on dengue fever

Level	Attitude	
	Number	% age
Positive	192	88
Neutral	25	11
Negative	2	1
Total	219	100

The mean knowledge score for the respondents was $6 \pm \text{SD } 3.65$ (Table No: 2). There were 88 % of respondents who had “positive attitude”, 11% of them had “neutral attitude”, while only 1 % had “negative attitude”. The mean attitude score for all respondents were $25.23 \pm \text{SD } 2.28$. (Table No: 3). 12 % of respondents had good practices, 46% fair and 42% had poor practices as shown in Table 5. The mean practices score for all respondents was $4 \pm \text{SD } 2.70$. 77% of respondents were covering water jars after using, 71% had covered their water tanks and 55 % were using mosquito coils/nets in their houses. 55% of respondents were also doing indoor insecticide spray

on regular basis. It is also revealed that 78% of respondents never examined mosquito larvae in the water containers in their toilets. Among the interviewed households, 64% had neat and tidy housing environment. 72% of houses had nothing that could hold water around the house. 40% of the household had stored water containers in the toilet.

Only 5% had dirty water in flower vases or indoor plants and 7% of the households had water collection on the plates supporting flower vases. 40 % of the households had covered the stored water containers/tanks. Majority of interviewed households 61% had available mosquito coil / mat or electric mosquito killer, and among these only in 39 % of houses was in use. 57 % of visited houses had wire gauze on doors, windows and ventilators or mosquito net available and among these 43 % had these in use.

DISCUSSION

The results of this study showed 50 % of subjects had “low knowledge”, 37% of them had “moderate knowledge” while 13% had “high knowledge”. A study was done in Karachi to assess knowledge and practices regarding dengue fever.

Table No.4: Attitude towards dengue fever

No.	Statement	Agree	Disagree	Neither agree nor disagree	Agree	Disagree	Neither agree nor disagree
		Number			% age		
1.	DF is a disease that cannot be prevented.	53	122	44	24	56	20
2.	Eliminating the breeding places is the responsibility of the public health staff and health volunteer.	155	35	29	71	16	13
3.	Only method of controlling or preventing dengue and DHF is to combat the vector mosquitoes.	151	21	47	69	10	21
4.	Only smogging is enough to prevent mosquito and no need for other ways.	70	77	72	32	35	33
5.	Everybody has a chance to be infected with dengue virus.	166	21	32	76	10	15
6.	Person who once got dengue infection cannot get dengue infection again.	33	95	91	15	43	42
7.	It is possible to recover completely from dengue infection.	150	10	59	68	5	27
8.	Elimination of larval breeding sources is a waste of time and very complicated.	35	74	110	16	34	50
9.	Strong and healthy person will not get dengue infection.	55	108	56	25	49	26
10.	Sleeping in mosquito net can prevent dengue infection.	120	55	44	55	25	20
11.	You are one of the important people in preventing dengue fever.	102	65	52	47	30	24

Table No.5: Distribution of practices levels (Excluding 'all don't have' responses)

Level of practices	Practices	
	Number	% age
Good	26	12
Fair	101	46
Poor	92	42
Total	219	100

About 89.9% of individuals interviewed had heard of dengue fever. Sufficient knowledge about dengue was found to be in 38.5% of the sample, with 66% of these were in Aga Khan University Hospital and 34 % were in Civil Hospital Karachi. Literate individuals were relatively more well-informed about dengue fever as compared to the illiterate people ($p < 0.001$). Knowledge based upon preventive measures was found to be predominantly focused towards prevention of mosquito bites (78.3%) rather than eradication of mosquito

population (17.3%). Use of anti- mosquito spray was the most prevalent (48.1%) preventive measure. Television was considered as the most important and useful source of information on the disease.¹⁷⁻¹⁸

A study done on knowledge and practices in Pakistan showed that knowledge had significant associations with education ($p = 0.004$) and socioeconomic status ($p = 0.02$). The high socioeconomic group showed better preventive practices. The study concluded that Knowledge of dengue is inadequate in the low socioeconomic class.¹⁹

Moreover, study had shown positive attitude of community toward Dengue prevention. Concerning negative attitude noted was that 'elimination of larval breeding sources was a waste of time and very complicated'. Study results showed that among the respondents 12 % had good practices, 46% fair and 42% had poor practices. 77% of respondents were covering water jars after using, 71% had covered their water tanks and 55 % were using mosquito coils/nets in their houses.

Table No.6: Practice regarding dengue prevention

No.	Statement	Yes	No	Not present	Yes	No	Not present
		Number			% age		
1.	Do you cover water jars after using immediately?	169	36	14	77	16	6
2.	Do you have a cover in your water tanks?	155	5	59	71	2	27
3.	Do you ever examine the mosquito larvae in the flowers pots?	9	50	160	4	23	73
4.	Do you change the water of the indoor plants every week?	24	21	174	11	10	79
5.	Do you ever drain off the water in the plates of the flower pot? How often?	25	20	174	11	9	79
6.	Do you examine any discarded thing that can hold water around your house?	48	105	66	22	48	30
7.	If yes, do you ever put them in the garbage or dispose them.	46	2	0	96	4	0
8.	Do you use mosquito net/mosquito coils in your house. When?	135	64	20	62	29	9
9.	Do you participate when your community has been sprayed fog	46	94	79	21	43	36
10.	Do you participate in any campaigns of dengue infection in your community	45	90	83	21	41	38
11.	Do you ever examine the mosquito larvae in water containers in the toilet?	30	171	18	14	78	8
12.	Do you check and clean your roof gutters in the rainy season.	121	83	15	55	38	7
13.	Do you spray insecticide inside the house regularly?	120	99	0	55	45	0

A study done in Thailand regarding vector knowledge and practices showed that almost all respondents (98%) regarded dengue as a serious to very serious problem in their village and 77% of the respondents thought it would be possible to get rid of the mosquitoes that cause dengue. Volunteers of the local public health offices (43%) were mentioned most common as the main person responsible to control mosquito breeding, followed by residents themselves (32%) and the government (13%).²⁰

CONCLUSIONS

This study concluded that:

- Overall level of knowledge and practices were low however with a wide gap between knowledge and practices.
- There is a positive attitude of community toward Dengue prevention.

Recommendations:

- Public education is necessary to address the knowledge gap revealed in the study.
- Behavior change strategy must form an essential part of integrated Dengue prevention and control program.

REFERENCES

1. Impact of Dengue. Global Alert and Response (GAR) World Health Organization. Available at: <http://www.who.int/csr/disease/dengue/impact/en/index.html>. Last Assessed: 20 March, 2011.
2. World Health Organization."Vector-Borne Viral Infections". World Health Organization.http://www.who.int/vaccine_research/diseases/vector/en/index1.html. Retrieved 17 January 2011.
3. Gould EA, Solomon T. Pathogenic flaviviruses. Lancet 2008;371(9611):500-9.
4. "Vector-Borne Viral Infections". World Health Organization.http://www.who.int/vaccine_

- research/diseases/vector/en/index1.html. Retrieved 17 January 2011.
5. Lloyd LS, Winch P, Ortega-Canto J, Kendall C. The design of a community-based health education intervention for the control of *Aedes aegypti*. *Am J Trop Med Hyg* 1994;50(4):401-11.
 6. Ballenger-Browning KK, Elder JP. Multi-modal *Aedes aegypti* mosquito reduction interventions and dengue fever prevention. *Trop Med Int Health* 2009;14(12):1542-51.
 7. Ranjit S, Kissoon N. Dengue hemorrhagic fever and shock syndromes. *Pediatr Crit Care Med* 2010.
 8. Center for Disease Control and Prevention. "Chapter 5 – Dengue Fever (DF) and Dengue Hemorrhagic Fever (DHF)". 2010 Yellow Book. <http://wwwnc.cdc.gov/travel/yellowbook/2010/chapter-5/dengue-fever-dengue-hemorrhagic-fever.aspx>. Retrieved 2010-12-23.
 9. Rodenhuis-Zybert IA, Wilschut J, Smit JM. Dengue virus life cycle: viral and host factors modulating infectivity. *Cell Mol Life Sci* 2010;67(16): 2773–86.
 10. World Health Organization Dengue and dengue haemorrhagic fever. Fact sheet No. 117; Revised 2009. Apr [cited 2011 March]. Available from <http://www.who.int/mediacentre/factsheets/fs117/en/>.
 11. WHO media centre. "Dengue and dengue haemorrhagic fever". World Health Organization. 2009; Available at: <http://www.who.int/mediacentre/factsheets/fs117/en/>. Last accessed: 12th December, 2011.
 12. Neglected Tropical Diseases. "Diseases covered by NTD Department". World Health Organization. http://www.who.int/neglected_diseases/diseases/en/. Retrieved 2010-12-27.
 13. Noble CG, Chen YL, Dong H, et al. "Strategies for development of Dengue virus inhibitors". *Antiviral Res* 2010;85 (3): 450–62.
 14. Martina BE, Koraka P, Osterhaus AD. Dengue virus pathogenesis: an integrated view. *Clin Microbiol* 2009;22 (4): 564–81.
 15. Jamil B, Hasan R, Zafar A, Bewley K, Chamberlain J, Mioulet V, et al. Dengue Virus Serotype 3, Karachi, Pakistan. *Emerging Infectious Diseases* 2007;13(1). 183-4.
 16. World Health organization. Global Alert Response. (GAR). Crimean-Congo haemorrhagic fever (CCHF) and Dengue in Pakistan Available at: http://www.who.int/csr/don/2010_10_25a/en/ Last Assessed: 10th October, 2011.
 17. Teo D, Ng LC, Lam S. Is dengue a threat to the blood supply? *Transfus Med* 2009;19 (2): 66–77.
 18. Itrat A, Khan A, Javaid S, Kamal M, Khan H, et al. Knowledge, Awareness and Practices Regarding Dengue Fever among the Adult Population of Dengue Hit Cosmopolitan. *PLoS One* 2008;3(7): e2620.
 19. Madiha S, Umme-Rubab S, Manal H, Rehan Z, Atif B, Madiha R, et al. Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups. *JPMA* 2010; 60:243.
 20. Koenraadt CJM, Tuiten W, Sithiprasasna R. Dengue knowledge and practices and their impact on *Aedes aegypti* populations in Kamphaeng Phet, Thailand. *Am J Trop Med* 2006;74(4): 692-700.
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