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Research Article

**A COMPARATIVE STUDY ON THE PREVALENCE OF
DENGUE FEVER IN THE POPULATION OF LAHORE**¹Dr Athar Rasool, ²Dr Nukhba Younas, ²Dr Adeel Khalid¹Services Hospital Lahore²DHQ Hospital, Gujranwala**Article Received:** September 2020 **Accepted:** October 2020 **Published:** November 2020**Abstract:**

Objective: To find out the Prevalence of the Dengue fever amongst the adult residents of urban and rural areas of Lahore. The objective was to assess the more prevalence of dengue virus by comparing its presence between the urban and rural area. DVI was considered more prevalent in urban area of Lahore District as in hypothesis.

Methods: The design of this study was a Comparative Study. This study was carried out at Services Hospital Lahore. From April to October 2017. 200 healthy peoples were willingly included in this study and procedure adopted for it was stratified random sampling procedure. [140] urban and [60] individual living in rural areas were included in the study. 3rd generation ELISA method was adopted in which clotted blood samples were used and anti-dengue Ab was to be detected.

Results: It was found in accordance with the hypothesis that prevalence of dengue fever showing [32.5%] in urban areas, in comparison with [17.5%] in rural areas of Lahore.

Conclusion: It was found in urban areas of Lahore that Dengue fever is more prevalent than rural area.

Keywords: Dengue Fever, Prevalence, Serotypes, Pathogenesis, Rural, Urban.

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INTRODUCTION:

Dengue (virus) consisting (04) serotypes including {I, II, III & IV} it is RNA and enclosed flavivirus. When any two out of four serotypes react with each other they form up chief pathogenesis of the disease. Till 2007 Pakistan was unable to counter the dengue Virus. Serotype II was predominated and after that serotype III was prevailing over [1]. Now a day dengue has been spread in all areas of Pakistan resultantly the number of people has increased being contaminated with this virus. It is found that the major vector is *Aedes Aegypti* and the disease can be overtaken by killing mosquito population. The age of patient, immunity, kind of virus (infected), humidity, temperature and climate had much influence upon the inclination of disease [2]. It was found in the areas where dengue is prevailing, major factors behind the outbreak of dengue were, over population, mismanaged urbanization, trade and travelling resources even in the presence of vector monitoring planning and awareness programmes [3]. Mismanagement in housing schemes and population is one major reason for the perseverance of disease in many countries, in the tropical and sub-tropical regions. Cavities for clean water including baskets and tyres were the appropriate places for propagation of *Aedes Aegypti* mosquito growth. Dengue has caused a mass number of deaths across the globe as it is one of the global issues. It has caused, [50-100 million] people directly infected, Haemorrhagic fever in [2.5 million] and [24000 deaths] happened due to Dengue shock syndrome [4]. It has affected all the regions around the world including western Pacific, South East Asia, Africa and America. Symptoms of dengue include constant headache, joint and muscle pain, dyspepsia, nausea, vomiting, Diarrhoea, red petechial on lower limb and chest and the [haemorrhagic Phenomenon] diverts to [DHF and DSS] with mortality rate [5%] Unjustified and insufficient resources have made it global issue. The main focus of disease controlling agencies was upon vector control [5]. The main focus of our study was to assess the prevalent and associated and predisposing factors behind the spread of dengue in our region. We can observe the impact of Dengue before test procession.

MATERIAL AND METHODS:

Our study focus was to compare the seroprevalence of Dengue fever in relevant areas of Lahore and to assess in which population it is more predominant. The study was carried out at the Services Hospital Lahore, From April to October 2017. Samples were derived from 12 different areas of Lahore urban area and 4 villages were taken for the samples of rural areas. Technique of

Random sampling was stratified [probability sampling] was adopted for 200 samples [140 urban and 60 Rural residents]. Healthy residents were included from various areas of the concerned region. To minimise errors and to lessen the chance of cross responding antibodies development, Japanese encephalitis and those who had been the victim of dengue fever were not included in the study.

Permission was taken as from ethical Committee for carrying out the study. Bio data form were filled up by the willing participants and they were well informed about the schedule. They had informed consent and Performa before the start of the research as pre-mandatory for the study. Under the firm aseptic measures sample were collected and [3ml] blood [venous] was collected from participants after that samples were taken to the Services Hospital Lahore.

For the separation of the serum [centrifuge process] was initiated in batches of [08] at [3000 rpm] for [6 minutes] and for identification the serum was put in bottles with the labels and were saved at [-20 C] till next process for [ELISA Test]. In a week test was done three time [Dia 710, Diamate, 3rd generation ELISA, on Microplate reader]. Omega [UK-97% accuracy] and [Vircel kits Scotland- 96.6% accuracy] were used on performing discrete samples. Samples in frozen state were bring into room temperature. Guidelines given by the manufacturers were carefully observed. To regulate the quality a calibrator, [Negative and positive] were routed with each batch.

RESULTS:

Less than 0.005 p value were significantly considered. Chi square Test was applied to assess statistical rates. [Version SPSS 16 was used for data record]. It was [Resultantly] observed that [prevalence of dengue fever (n=67 / 200) subjects living in Lahore] the dengue fever prevalence in urban residents depicted by recent research is [32.5 %] [n=60 /140] It was proved by the hypothesis of the study being applied Chi square test and p value (<0.005). On the other side It was Resultantly observed that [17.5% prevalence of dengue fever (n=20 / 60) subjects living in Lahore rural areas] the dengue fever prevalence in rural residents depicted by recent research out of the 48 total urban strata exposed living individual, were 14 females and 34 were male. While in rural category 10 female and 09 males were depicted.

The symptoms were examined to have insignificant rate by numerical means and the legitimate symptoms were examined to have insignificant value by numerical means [p value > 0.005]. the p value and Chi Square

Test have indicated the implication with higher mosquito contact [p value 0.000] Many other links i.e. contact with diagnosed dengue fever carrying

individual, travelling history and blood transfusion history were examined non-significant by numerical means. As shown in the table.

Table - I: Prevalence of Dengue Fever in Urban and Rural Strata Residents

Sr. No	Gender	Urban (n=140)			Rural (n=60)			Total Positive Cases (67)
		Total (140)	Positive (48)		Total (60)	Positive (17)		
			Number	Percentage		Number	Percentage	
1	Male	92	34	23	22	7	7.1	40
2	Female	48	14	7.5	38	10	8.2	27
3	Total	140	48	32.5	60	17	15.3	67

Table - II: Specific Associations of Dengue Viral Infection

Sr. No	Distribution in Total Population				Distribution Among Positive Cases					
	Associations of DVI		Total Urban Population (140)	Total Rural Population (60)	X ²	p-Value	Urban (48)	Rural (19)	X ²	p-Value
1	History of Travel	Yes	100(70.0)	76(9)	2.246	0.9	37(76)	13(77)	0.712	0.403
		No	38(26)	16(17)			9(20)	2(19)		
2	History of Mosquito Interaction	Yes	138(96)	64(67)	36.65	0	48(100)	9(56)	0	0
		No	3(2)	28(29)			0(0)	6(20)		
3	Hx of Interaction Dengue Fever Patient	Yes	10(6)	2(2)	1.026	0.02	9(20)	0(0)	0.024	0.02
		No	131(90)	90(96)			37(76)	17(100)		
4	Water Sanitation System	Good	86(60)	70(73)	3.101	0.019	28(60)	12(72)	0.271	0.219
		Bad	55(38)	22(23)			18(40)	3(24)		
5	Seasonal Variations	Spring	132(91)	101(3)	1.413	0.202	6(14)	1(3)	0.313	0.503
		Summer	8(5)	82(85.3)			20(82)	16(93)		
		Winter	0(0)	0(0)			0(0)	0(0)		
		Autumn	0(0)	0(0)			0(0)	0(0)		
6	History of Blood Transfusion	Yes	4(2)	1(1)	1.741	1.159	2(4)	1(3)	0.616	0.424
		No	136(60)	93(97)			48(60)	16(93)		

DISCUSSION:

In the Lahore Urban area, this study revealed the prevalence of dengue virus. Dengue fever has been considered a broad threat for the health of individual residing in Pakistan Brazil and India [6]. There is need of health management organizations, administrations, epidemiologists to counter this disease as these are vital for counter measures against this disease. Over population, mismanagement of housing societies surrounding urban development, inadequate use of dichlorodiphenyltrichloroethane and adequate

provision of travelling facilities adds up in this disease [7,8]. These all factors make for in disease predisposition and making it main world widely health problem. This is causing frustration in the developing regions like of our own region and this is avoidable disease. Our study revealed that the transmission of viral infection did occurred in rural areas and this discovery communicates the important association of travel history and the contact of mosquitos with DVI [9].

This is alarming that the chances of dengue outbreak are prevailing in the region and asymptomatic patients must be diagnosed because the contact with another serotype will form DHF and DSS. According to this study it is found, that a person in contact with mosquito and to another individual, formation of contact is necessary [10,11]. The dengue cannot spread straight from a person to another. The results from this study are not correlative with other studies as describing primary dengue fever as representative of subclinical infection. the main hazard in this study was the enhanced contact of mosquitoes. There was no attachment with respect to the age, health and social or economic status. Tetravalent vaccine must be obtained for the immunity provision against all [four] serotypes [12]. Sanofi and Novartis are enthusiastic in production of long expected vaccine against DV. All [four] strains of DV have been affected by the vaccine which is under the process of development and trials have been made on it producing affective results on monkeys [13,14]. To evaluate the actual magnitude of epidemic outbreak in a specific region the epidemiological studies for the dengue fever has helped in the evaluation process. Furthermore, identification of hazard of the factors for regional transmission can be carried out [15,16].

A well-established process of diagnosis can be made by serological methods for example ELISA as it is found [93.3%] peculiar for the detection of Dengue virus antibodies. The prognosis of dengue fever depends upon early helpful measures for shock [17]. The serological surveys based upon scheduled cross sectional and age stratified are device for managing the effect of dengue prevention. Policies for the vector controlling tasks, awareness, education, timely serological diagnosis along with the willing participation of community members can overcome illness rates [18].

CONCLUSION:

Dengue virus is more predominant in urban areas as compared to the rural areas of Lahore. It was assumed that the dengue is the disease only in urban areas but now this perception had negated. The imperative predisposing elements are travelling history, contact with dengue fever patient and enhanced mosquito contact. Preventive measures must be taken to avoid the disease by early diagnosis. Vaccine and anti-viral are helpful in reducing illness in under developed countries.

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