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A RESEARCH STUDY TO ASSESS THE PATIENT'S EXPENDITURE SUFFERING FROM DENGUE FEVER WITH RESPECT TO COUNTRY'S LOSS AND PATIENT'S CURE

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Abstract:
Objective: *The purpose of the study was to calculate the expenditure of individual patients suffering from dengue fever to treat themselves. And what is the loss of the country as a combined on the cure of these patients.*
Methods: *This research was carried out at Allied Hospital, Faisalabad from July 2017 to May 2018. They collected the data, living areas and cell numbers of the patients. Fifty patients associated with dengue fever were collected. In this way, 250 patients were chosen by random selection. Direct cost was gathered by getting the knowledge of the duration of dengue fever in different patients and its costs which were out of the range of the patients. On the other hand, the indirect cost was measured by a disability accustomed lifetime by using Murray's principle.*
Results: *There were a total of 162 males added in the study. In these males, the average age was about (30.4 ± 13.5) years. About 50% of males were observed having the age of fewer than 30 years. Their social status was also recorded. 145 patients belong to the lower class, 70 belong to the average class and 35 were related to standard class. There were also two types of patients having dengue fever. In this study out of a total of 150 patients, 32 were suffering from dengue hemorrhagic fever and 8 belongs to dengue short syndrome. The duration of dengue fever in a patient was about (32 ± 7.1) days. It was estimated that there is a loss of about 35,823 rupees on each patient. While before the admittance of patient into the hospital, costs during their stay in hospital and costs after hospitalization were 6154, 21,242 and 8,427 correspondingly. There was an almost 133.76 disability calculated life years per millions of persons.*
Conclusion: *Government took an important step in this respect. Free of cost treatment was provided to the patients by the government. Still, there are 21,242 rupees lost on every patient by the patient themselves during their residence in the hospital. It caused a load on them.*
Keywords: *Dengue, Economic Burden, Contagion and Hemorrhagic.*

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INTRODUCTION:

Dengue is a contagion caused by the bite of mosquitoes. It is sometimes easily curable and sometimes causes severe infections. It was observed that this disease occurs mostly in rife countries. 50 TO 100 million persons suffering from this infection belong to the rife areas. Dengue causes danger to about 50% of the total world's strength [1]. Female Aedes aegypti is responsible for the shift of infection in human beings [2]. Contagion may start from the continuum of disease and reaches to normal small medical infections and even the most dangerous situation which is hemorrhagic fever and dengue short syndrome [3, 4]. Now a day's dengue is the most widespread disease caused by a mosquito after malaria [5].

Many deaths and births occur due to this disease. Dengue is the major burden on developing countries [5]. The money spent on the treatment of the patients is the encumber on the family and also on the government and public. Two types of costs are in front of patients. These costs are direct and indirect expenses. The direct cost consists of the money spent on the identification of disorder, its cure and avoidance. On the other hand, indirect cost is the financial value vanished by the folks of the patients, its society because of disease and death prior to the time of dengue patients and efficiency failure of family circle and acquaintances [6]. Disability-adjusted life years also suggests the trouble of the infection. It is based on the chances of disease to occur. It gives us the guess of the numbers of a time gone because of early mortality and number of times passed by a patient with disability [7].

The trouble and burden of the dengue have presented various effects on families and the population of various countries. Sheppard and his companions identified the loss due to dengue fever in about 12 countries of Asia. According to their findings, they estimated the overall expenditure of about US$950m or US$1.65 in every capital of these Asian countries [8].

The first person attacked by dengue in Pakistan was identified in 1994. After those three cases of dengue was found in Karachi and Lahore in 2006, 2010, and 2011 [5]. Many persons affected due to these infections and some also died. This created a great impact on persons and overall population. The government takes an initial step in this regard and provides the patients with free treatment. But still, individuals have to pay many prices in case if they confer with a confidential clinic. They also have a loss of money on the identification of disease and medicines expenditure before and after the treatment in hospitals.

Many studies were arranged to explain the medical view, identification, cure and avoidance of the dengue. However, in Pakistan, there is a lack of information about the expenditures of treatment and its effects on the life and family of the patient. This study aimed to recognize the burden of dengue infections in big cities of the country.

PATIENTS AND METHODS:

This research was carried out at Allied Hospital, Faisalabad from July 2017 to May 2018. Fifty dengue patients were randomly selected. In this way, a total 250 patients were noticed. These patients were called either by sending a person into their homes or connecting them with a telephone. After getting permission from these patients they were interviewed. In interview demographic and social status, the interval of disease, and questioning about the type of disease were asked from the patients. The expenditures of patients before admittance into the hospital, staying in the hospital and after the hospital was added in the direct expenditure. Personal conference payment, drugs, acknowledgement were the expenditures of patients before entering the hospital. Whereas when the patients stay in the hospitals their expenditures include haulage overheads of sufferers and their folks, charges of drugs and tests of the patients, rations and other stuff of the persons present with the patient in the hospitals for their care. In the same way after the recovery of patients from hospitals its money spent on discussion, antibiotics and supplements in use by the patients. Researchers filled the question paper of each patient.

The data obtained by experiments was preserved in MS word papers and assessed for means and ratios. Murray's formula was used for the measurement of DALYs [9]. The mean expenditures of each patient were estimated by knowing the income of the patient. The expenditures of the patients were analyzed to be 458 per patient per day as described earlier.

FORMULA FOR CALCULATION OF DALYs:

$-[DCe\beta\alpha/(\beta+r)2=\{e-(\beta+r)(L) \quad (1+(\beta+r) \quad (L+\alpha)) - (a+(\beta+r)\}]$

Here D represents the disability load, r is the markdown rate, C is the age measuring correcting invariable, β is the age measuring factor, a is the average age of inception, L is the vanished of time duration because of early deaths.

According to the special things for measuring of DALYs, r is equivalent to 0.03, β colleagues 0.04 and C is equivalent to 0.16243 [9].

Numbers of patients were first of all multiplied by the DALYs in one year. They were then added up to give total numbers of the year. DALYs per million individuals in each year was then measured by dividing the total numbers to considered community numbers.

10 were used as a duplication feature for the supposition of patients which had been not under consideration of DF/DHF. In other studies, the disability load of 0.81 had been utilized [10, 11].
In Punjab 21,245 dengue cases were reported. In Sindh, the cases were reported to be about 1,533. This report was formulated in 2011 [13].

RESULTS:

Total of 162 males and 88 females were reported as dengue patients. The average age of the patients was noted to be 30.4±13.5 years. More than 50 percent patients were less than 30 years of age. The statuses of the patients were also noticed. It was noticed that most of the patients were students about 65, 52 house living females, 40 workers, 33 businessmen, and 25 were workers belonging to the government sector. It was recorded that most of the patients (145) belongs to the lower-class family, 70 belongs to the middle-class family and 35 were standard class patients. 210 patients suffering from dengue were noticed overall. Out of these 32 had dengue hemorrhagic fever and 8 were dengue shock syndrome case. Many tests were taken about 155 patients. These tests include enzyme-linked immunosorbent assay immunoglobulin G, Immunoglobulin M, and NS1 antigen. About more than 50 percent patients first went to private hospitals and then went to government hospitals. Overall the time period of fever was (32 ± 7.1) days. These days included (6.25 ± 4) days prior to admittance in hospital, (6.76 ± 5) days during stay in hospitals, and (18.89 ± 9) days after the hospital. Two persons were all the time present for the care of the patient.

Table – I: Average duration of illness due to dengue

Reference period	Average number of days		Range
	Mean	±SD	
Pre-hospital	6.25	4	1.15
Hospital	6.76	5	3.15
Post hospital	18.89	9	3.3
Total duration	31.9	7.1	7.6

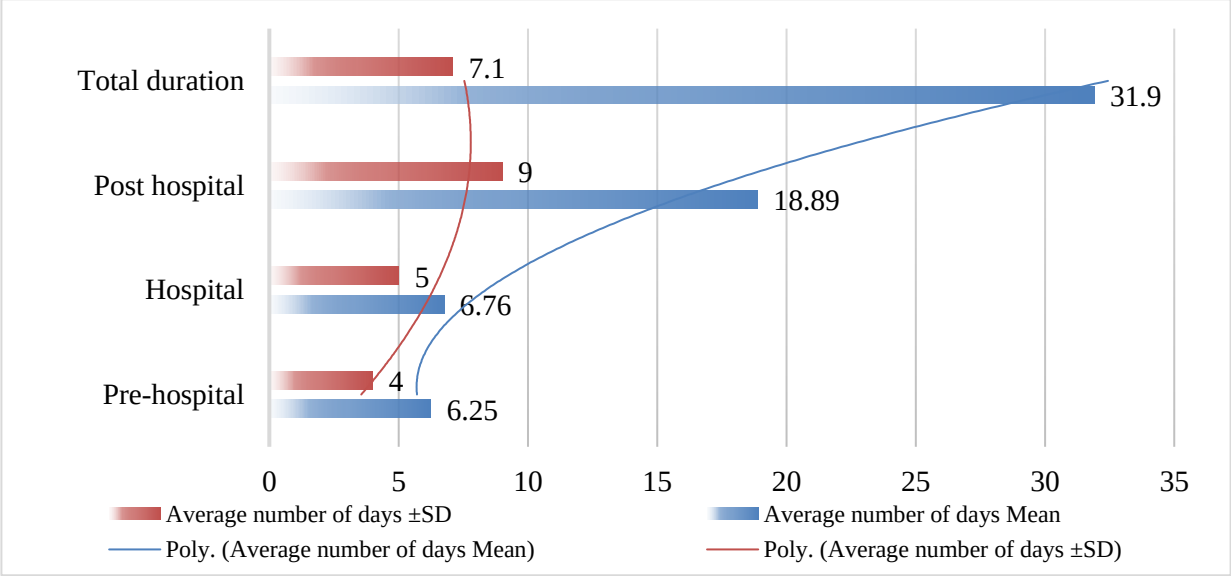
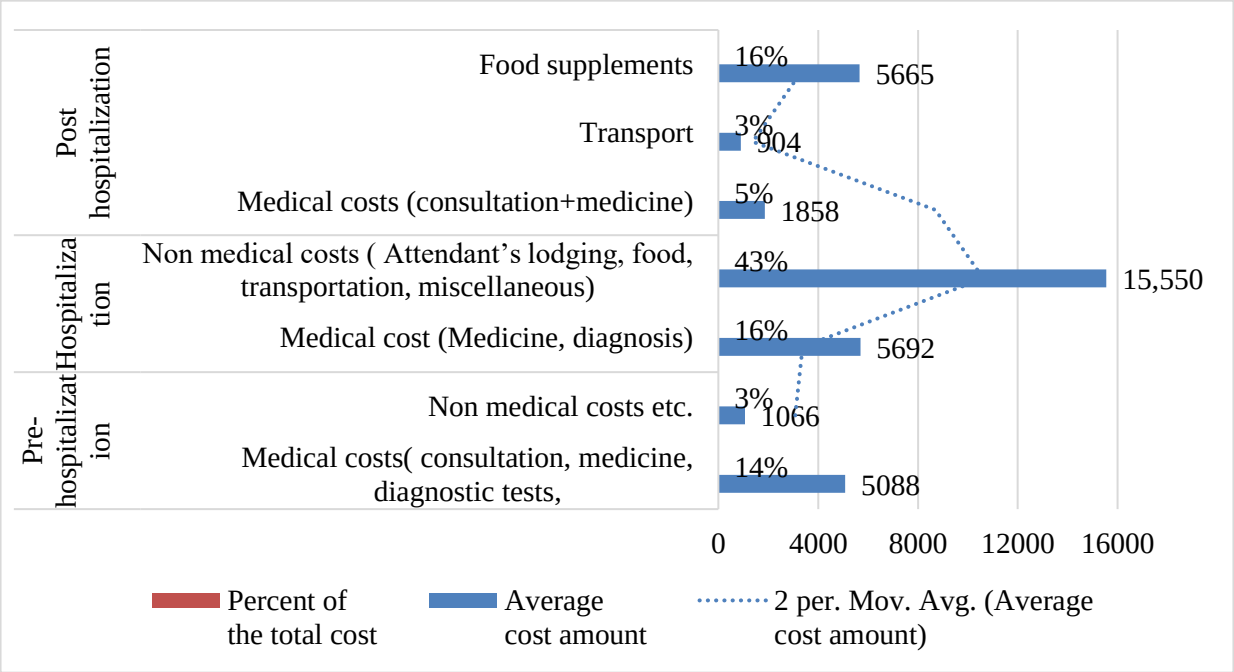


Table – II: Average cost borne by the patients during pre-hospitalization, hospitalization, and post-hospitalization period

Cost Category	Cost Heads	Average cost amount	Percent of the total cost
Pre-hospitalization	Medical costs (Consultation, medicine, diagnostic tests,	5088	14%
	Non-medical costs etc.	1066	3%
Hospitalization	Medical cost (Medicine, diagnosis)	5692	16%
	Non-medical costs (Attendant's lodging, food, transportation, miscellaneous)	15,550	43%
Post hospitalization	Medical costs (consultation + medicine)	1858	5%
	Transport	904	3%
	Food supplements	5665	16%
Total Cost		35,823	100%



After adding the expensive before hospitalization 6,154 rupees, hospitalization expensive 21,242 rupees after hospitalization 8,427 rupees, the total expenditure per patient was about 35,823 rupees.

There were 103,438.2 DALYs which was considered as a whole. But for per a million peoples, it was about 133.76. The persons who take care of the patients also lost their (13 ± 8) days for the sake of patients. Dengue fever killed about 214.18 peoples in Punjab.

DISCUSSION:

According to the study, many patients died due to dengue fever and its cure create a notable impression on the economy of society. The loss of money on every patient because of dengue fever in Pakistan is about 35,823 rupees. The loss of money on dengue affected individuals in much lower in European countries like it is US$23-26 in Thailand and US$167 in Vietnam [14, 15]. The average expenses of a patient suffering from dengue are much higher than

the monthly earnings of their family i.e. Rs 21,785 [16]. The expenses of pre-hospitalization were 6,154 which were incurred on the clandestine session, laboratory trying etc. It expresses that due to this reason patients want to go to a private hospital or treat themselves. It was told to patients during their stay in hospitals that they should consult their nearest hospitals when the signs of the dengue fevers appeared. Pre-hospitalization duration was about 6 days.

Free treatment was available for patients suffering from dengue but the cost of treatment was about 21,242 which were greater than the monthly income of the patients. Out of this cost, 73% was the non-medical expenses these includes care of patients, costs on their care assistant, meal, and haulage. Miscellaneous expenses are the money spent on family members of the patients who travel to the hospital daily. Just 27% are the costs which are medical. These non-medical expenses comprise about 43% of direct money. This rate is greater than the other countries non-medical costs [17]. This may decrease by civilizing the services in the clinics. Due to these services, the family member reduced their visiting in clinics and costs may reduce. The overall time period of the patient in hospitals is 6.76 days. This is the same with present observations of demonstration examination of two main hospitals of Lahore [18].

The expenditures of patients after their recovery from hospitals were about 8,427. In these costs, the main expenses were on food supply which was 5,665. Patients are given fresh juices and water because people believe that this may help the patient in quick response to medicines. Moreover, the disease due to after the hospitalization period was prevailed for about 18.89 days. This was greater than the time duration of pre-hospitalization and hospitalization. It was also noticed previously that post contamination tiredness residential among dengue patients [19]. It was also described that sometimes the patient felt fatigue and tiredness even after the treatment. Such types of observations were not found in the present study. But reports of patients after hospitalization expresses that these patients had undergone the same type of problems.

In Singapore the DLC for dengue was observed to be 90 to 140, 22 was observed in Brazil 83.83 in Myanmar [20 – 22]. But in Pakistan, the DLC was found to be greater than other countries which are found to be 133.76/million population. Greater numbers of DALYs was found to be present in some countries like in Thailand the number was 427, in Puerto Rico 658, in Southeast Asia 372, in Nicaragua 99 to 805 [8, 23 – 25]. And in Cambodia, in 2006 it was 400 and decreased to 240 in 2008 [6].
Dengue fever creates more burdens on the economy of the country as compared to another disease like breathing infections, diarrhoea, AIDS, malaria, neonatal diseases and tuberculosis. The economic burden of the dengue is 133.76 per million population, and 76.6, 59.2, 42.9, 32.8, 31.4, and 22.4 in another disease respectively.

In a recent study, the total expenses caused by dengue fever were not measured exactly. In a local study, the expenses of tertiary care hospitals were exactly calculated which were found to be 458 per day of every patient [11]. If these costs were taken as orientation expenditure, the expenses were estimated to be 56 million for all the patients present in the hospitals.

The study was carried out only in tertiary care centres. The study was organized only in big cities of the country. Only 50 patients were selected for study in every city. That's why its results are not too much common.

CONCLUSIONS:

Most of the money spent on patients during their stay in hospitals. Most of this money is linked to non-medical expenditures. It was also noticed that the time period of the patient subsequent to hospitalization was higher than in other countries and this also causes the enhanced DALYs. For the control of disease for a short time, all-inclusive disease supervision is needed. It also gives the imminent for extra forecasts and discoveries on dengue. Especially it was found that either patient was suffered from complexities after the treatment of dengue or not.

REFERENCES:

1. Carrasco LR, Lee LK, Lee VJ, Ooi EE, Sheppard DS, Thein TL, et al. Economic Impact of Dengue Illness and the Cost-Effectiveness of Future Vaccination Programs in Singapore. PLoS Negl Trop Dis 2011; 5: e1426.
2. Luz PM, Grinstein B. Galvani AP. Disability-adjusted life years lost to dengue in Brazil. Tropical Med Int Health 2009; 14:237-46.
3. Naing CM. Assessment of dengue hemorrhagic fever in Myanmar. Southeast Asian J Trop Med Public Health 2000; 31:636-41.
4. Clark DV, Mammen MP, Nisalak A, Puthimethee V, Endy TP. Economic Impact of Dengue Fever/Dengue Hemorrhagic Fever in Thailand at the family and population levels. Am J Trop Med Hyg 2005; 72:786-91.

5. Meltzer MI, Rigau-pe JG, Clark GG, Reiter P, Gubler DJ. Using disability-adjusted life years to assess the economic impact of dengue in Puerto Rico: 1984-1994. Am J Trop Med Hyg 1998; 59: 265-71.
6. Wet stein ZS, Fleming M, Chang AY, Copenhagen DJ, Watseka AR, Bartsch SM, et al. Total economic cost and burden of dengue in Nicaragua:1996-2010.AmJTropMedHyg2012;87:616-22.
7. Global Burden of Disease. Analysis categories and mortality data sources. WHO Report; 2004.
8. Sheppard DS, Underage EA, Halasa YA. Economic and Disease Burden of Dengue in Southeast Asia. PLoS Negl Trop Dis 2013; 7: e2055.doi: 10.1371/journal.pntd.0002055.
9. Murray CJ. Quantifying the burden of disease: the technical basis for disability-adjusted life years. Bull World Health Org 1994; 72: 429-45.
10. Hazir T, Qazi S. A, Abbas KA, Khan MA. Therapeutic Re-appraisal of Multiple Drug Resistant Salmonella Typhi (MDRST) in Pakistani Children's Pak Med Assoc 2002;52:123-7
11. Clark DV, Mammen MP, Nisalak A, Puthimethee V, Endy TP. Economic Impact of Dengue Fever/Dengue Hemorrhagic Fever in Thailand at the family and population levels Am J Troop Med Hyg 2005; 72:786-91.
12. Dengue in Punjab. [online] [cited 2013 March 3] Available from: URL: http://dengue. punjab.gov.pk/?q=node/234.
13. Weekly Dengue & Malaria Bulletin Sindh Province. Report week 51,16 December-22 December 2011.
14. Okanurak K, Sornmani S, Indaratna K. The cost of dengue hemorrhagic fever in Thailand. Southeast Asian J Trop Med Public Health 1997;28: 711-7.
15. Tam PT, Dat NT, Huu LM, Thi XC, Duc HM, Tu TC, et al. High household economic burden caused by the hospitalization of patients with severe dengue fever cases in Can Tho province, Vietnam. AmJ Trop Med Hyg 2012; 87:554-8.
16. Pakistan Bureau of Statistics. [Online] [Cited 2013 March 3] Available from: URL: http://www.pbs.gov.pk/sites/default/files/ psalm/publications/hies10_11/tables/table11.pd
17. Suaya JA, Sheppard DS, Siqueiros JB, Martello CT, Lum LC, Tan LH, et al. Cost of dengue cases in eight countries in the Americas and Asia: a prospective study. Am J Trop Med Hyg 2009; 80:846-55.
18. Saqib MA, Rafique, Bashir S, Salam AA. A retrospective analysis of dengue fever case management and frequency of co-morbidities associated with deaths. BMC Res Notes 2014; 7:205.
19. Raymond CSS, Amy MLQ, Erle CHL. Post-infectious fatigue syndrome in dengue infection. J Clin Viral 2007; 38:1-6
20. World Health Organization. WHO. [Online] [cited 2013Jan5]. Available from URL: website www.who.int/dengue/mosquito/en/index.html
21. HeatonNS, Randall G. Dengue Virus and Autophagy.Viruses2011; 3:1332-41.
22. Halstead SB. Dengue. Lancet 2007; 370:1644-52.
23. Mairuhu AT, Wagenaar J, Brandies DP, Van EC. Dengue: an arthropod-borne disease of global importance. Eur J Clin Microbiol Infect Dis 2004; 23:425-33.
24. Raheel U, Faheem M, Riaz MN, Kanwal N, Javed F, Zaidi NS, et al. Dengue fever in the Indian subcontinent: an overview. J Infect Dev Ctries 2011; 5:239-47.
25. Beaute J, Vong S. Cost and disease burden of Dengue in Cambodia. BMC Public Health2010; 10:521. 7. Fox-Rush by JA, Hanson K. Calculating and presenting disability adjusted life years (DALYs) in cost-effectiveness analysis. Health Policy Planning 2001; 16:326-31.