Descriptive study on treatment cost for fever during outbreak of Dengue fever in Pondicherry

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***Abstract*- Background:** Patients suffering from fever are scared about the possibility of Dengue fever during the outbreak of Dengue due to uncertain clinical manifestation. The members of the community seek treatment irrespective of their social economic status. The cost incurred for such diagnostic and treatment activities are not known. Efforts have been made to estimate such costs in this study. **Aims and Objective:** To estimate the total cost and per capita cost, direct cost and indirect cost of treating fever cases during outbreak period of 3 months. **Methodology:** Cross sectional, community based, house to house survey of all fever cases among 496 houses was undertaken in Kudapakkam of Pondicherry. Data was collected using pretested questionnaire by interviewing the cases and the dependents at their door steps during the 1st week of November 2012. Direct cost and indirect cost for fever treatment was estimated using different parameters. **Results:** The data on 98 fever cases were analyzed with respect to total cost, PerCapita cost, direct cost and indirect cost for fever treatment. Children accounted for one third of the cases and nearly 50% of the cases were in the age group of 16-45 years. The total cost of ₹54,900(931USD) & ₹47,147(812USD) and PerCapita cost incurred was ₹1247 (21USD) &₹873(15USD) among male and female cases respectively. The indirect cost for men was two folds higher than females representing financial burden to the family. Cost of treating male child was twice the cost to treat female child in the age group of less than six years. **Conclusion:** The costs of treatment for male child were higher compare to female child. The economic burden to the family is high when the male members are affected which drains the considerable amount of their family income.

***Index Terms*-** Community based, Dengue, Direct cost, Fever, Indirect cost, PerCapita, Outbreak.

I. Introduction

Dengue is an emerging vector borne disease in many tropical and sub-tropical regions of the world. Dengue fever outbreak makes an impact on the health status, economic condition and social burden to the community. Although the case fatality rate of 10-15% from Dengue hemorrhagic (or) Dengue shock syndrome, the people who are suffering from fever during outbreak are literally scared about Dengue fever and its complications due to uncertain clinical course of disease. The economic burdens of Dengue fever were estimated using different models and process in many countries [1,2,3,4]. The economic burden from Dengue fever is higher than that of Japanese encephalitis, upper respiratory tract infection, Hepatitis B in Southeast Asia region accounting for annual cost of 1.65 USD Per Capita.

The outbreak of Dengue fever is reported in many regions within India either seasonal or cyclic pattern since last two decades [6, 7, 8]. The actual cost of treatment of suspected Dengue fever or fever from other causes during outbreak is not exactly known in Indian situation and availability of such literatures are rare. Many members of community seek treatment for fever immediately during outbreak of Dengue fever irrespective of their socio-economic condition. An effort is required to know the cost incurred for treating suspected Dengue fever or fever due to other causes. Hence this study was conducted with an objective to estimate the total and Per Capita cost, direct and indirect cost of treating fever cases outbreak period of 3 months.

II. Methods

This is a cross sectional, community based, descriptive study conducted during first week of November 2012 in Kudapakkam. Kudapakkam is semi-urban area of Pondicherry, house to house survey of all fever cases among 496 houses was done by direct interview using pretested questionnaire. The confirmed Dengue fever cases were traced to this community from inpatients of Sri Lakshminarayana Institute Medical Science & hospital, Pondicherry. There were 116 fever cases during 3 months period between August and October 2012. All efforts were made to collect the data of patients by visiting their houses on three occasions and it was possible to collect information of 98 cases. The data was collected on age, sex, education, occupation; daily wage on salary, money spent on consultation, medicine, lab investigation, hospitalization, transport, and number of people accompanied the person, no of days absent for work or studies, etc from each patients and care takers. The data on the cost was calculated as Indian rupees (1 US Dollar = 58₹ during 2012). Direct cost for treatment was estimated by money spent on Doctor fees, medicine cost, hospitalization and investigation cost. Indirect cost for treatment

was estimated by money incurred on Transport, Loss of pay or wages of sick and caring person, etc.

III. Results and Discussion

There were 98 fever cases (Male 44 & Female 54) in this study and there were four confirmed cases of Dengue Fever in this population traced from Sri Lakshminarayana Institute Medical Science & hospital.

Table 1: Description of Fever Case in Kudappakam Village

Age Groups in years	Male n=44	Female n=54	Total n=98 (%)
1 – 6	4	12	16 (16.3)
7 – 15	11	9	20 (20.4)
16-30	10	10	20 (20.4)
31-45	14	13	27 (27.5)
46-60	2	7	9 (9.1)
61-75	2	4	6 (6.1)
Occupation			
Student	17	13	30 (30.6)
Salary	2	1	3 (3.1)
Daily wager	20	10	30 (30.6)
Not working	22	13	35 (35.7)

Not Working includes House wives, less than 6 years children, Old age people

Table 1 shows Children less than 15 years of age accounted for one third of the total cases. Forty seven (48%) of 98 fever cases are in the age group of 16-45 years. This shows the fever was affected to economically productive age group of the community. Majority of the affected adults were daily wagers by occupation accounting for 30.6 Percent.

TABLE 2: Distribution of Total Cost, Direct Cost & Indirect Cost of Fever Treatment

Cost	Male		Female			Total
	Total	Percapita	Total	Percapita	Total	Percapita
Total cost	54,900	1,247	47,146	873	1,02,046	1,041
Direct cost	20,400	463	30,049	556	50,449	514
Indirect cost	34,500	784	17,097	316	51,597	526

Note: Figures are in Rupees

Table 2 shows Total cost of fever treatment among males was ₹54,900(931USD) and females was ₹47,147(812USD), percapita total cost accounts for ₹1,247(21USD) &₹873(15USD) among male and female respectively. Indirect cost of treatment for male patient is (62.7%) higher than the direct cost (38.3%) of treatment. It may be because of Transport, loss of daily wagers by patient and care takers etc. The total cost spent for treating 10 Dengue Fever was ₹28,900(480USD) and PerCapita was ₹2890(48USD).

Table 3: Distribution of Direct & Indirect Treatment Cost According To Sickness Absenteeism

	Male			Female		
Reason for absenteeism (44)	No.	Direct cost Total (PerCapita)	Indirect cost Total (PerCapita)	No.	Direct cost Total (PerCapita)	Indirect cost Total (PerCapita)
Sick Person	23	17,750(772)	24,554(1067)	10	4,500(450)	7,578(758)
Caring Person	4	0	5,632(1408)	7	0	6,286(629)
Total	27	17,750(772)	29,986(2475)	17	4,500(450)	13,864(1388)

Note: Figures are in Rupees

Table 3 shows the PerCapita for indirect cost was ₹2,475(21USD) &₹1388(18USD) for men and women respectively on account of absenteeism. The indirect cost for men in both sick and caring person was two folds higher than females representing financial impact on the family and community. The indirect cost for men (₹24,554 = 423USD) was much higher than the indirect cost for females (₹7,578=131USD) as a result of their sickness. The median number of sickness absenteeism days was 4 (range 1-20 days).

Table 4: Distribution of Fever Treatment Cost Among Under Six Years Children

Under 6 years	No of cases	Direct cost (PerCapita)	Indirect cost (PerCapita)	Total cost (Percapita)
Male	**4**	**700(175)**	**3,323(830)**	**4023(1006)**
Female	**12**	**3,600(327)**	**2,777(252)**	**6377(532)**
Total	**16**	**4,300(286)**	**6,100(406)**	**10400(650)**

Note: Figures are in Rupees

Table 4 shows the total PerCapita cost of treatment for less than six years male child is twice the cost of treating a female child. Indirect treatment cost for Male child is four folds higher compare to female child. This shows the attitude of the family members and community towards the priority and preference for male child treatment. The study was conducted in India during 2006 epidemic among serologically confirmed cases of inpatient was calculated to the 432USD per patient [5]. The economic burden of Dengue illness in Malaysia is estimated by 2USD per patient [3]. In this study, PerCapita cost for treating 10 confirmed Dengue fever cases was estimated as 2890₹ (48USD). Nearly 21USD for male and 15USD for females was spent as PerCapita for getting the fever treatment at the community level during the outbreak. This shows the amount of panic created by Dengue fever in the community with mass media reports. The overall economic burden of Dengue would be higher than the cost associated with Dengue after prevention and control measures. Children below 6years with sickness were taken for treatment by the parents irrespective of their economic conditions. In this study, indirect cost for male child four times more compare to getting treatment for female child for fever showing gender wise priorities for seeking treatment for fever in this community.

IV. Conclusion

The total Per Capita cost for treatment of fever for male and female was₹1,247(21 USD) &₹873 (18 USD) respectively. Majority of the affected adults were daily wagers by occupation influencing the economically productive age group of the community. Cost of treating male child was two folds higher compare to female child especially among less than six year aged children.

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