

Trend of Dengue Cases in Sri Lanka: An Empirical Investigation in Doluwa Area in Kandy District

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Introduction

Dengue Fever (DF) is an infectious tropical disease caused by the dengue virus. As there is no commercially available vaccine, prevention is sought by reducing the habitat thus resulting a decrease in the number of mosquitoes and limiting exposure to bites. According to the WHO report (2012) approximately 2.5 billion people, two fifths of the world's population is now at risk of dengue and estimates that there may be 50 million cases of dengue infection worldwide every year. The disease is now endemic in more than 100 countries.

The cases of dengue related diseases have dramatically increased in Sri Lanka over the last few decades, and also there was an explosive increase in geographic distribution of dengue after 1950s in the country. Reasons such as uncontrolled urbanization, rapid population movement, inadequate water, bad waste management as well as unsustainable vector control programs have already been identified. Sri Lanka is classified as a “Category A” country by W.H.O. which means dengue fever is a leading cause of hospitalization and death. Limited researches have been done to estimate the cost in prevention and treatment for dengue in Sri Lanka and there is no research done to estimate the cost in prevention and treatment dengue in Kandy district. Estimation of the costs of dengue has many dimensions which include information on the economic benefits of dengue control, prevention

intervention and information on cost-effectiveness and budget impact analysis. A number of studies have been already undertaken to investigate various aspects of the spread of dengue fever and cost of prevention and treat dengue in different countries (Kovats et al. 2001; Lafferty, 2009). Then cost elements were examined to identify variables and fixed costs pertaining to each activity within each element. Health cost of dengue prevention activities in Colombo district reached a total of LKR 127 million. The review of the previous studies shows that most studies have considered the different aspects on spreading of dengue in different countries and estimates the cost for dengue. However, these studies have only provided limited information on these links. Accordingly, it is obvious that more conceptual and theoretical work is needed to develop a better understanding of this relationship. This study will fill this void in the literature.

Objectives

The goal of this study is to investigate the trend of dengue cases in Sri Lanka and measure the cost of prevention of dengue fever in Doluwa M.O.H area in Kandy district. Study attempts to measure the cost of dengue control activation implemented by Doluwa M.O.H. team and measure the cost of dengue treatment. This study will investigate these issues by using secondary data covering all GS divisions in Doluwa M.O.H. area in Kandy district.

Methodology

This study employs a descriptive method of study in order to analysis the trend of dengue cases in Sri Lanka. Measuring the cost of dengue control activities implemented by Doluwa M.O.H team is examined through collecting secondary data from the M.O.H office of Doluwa. Data collection is based on 6 years and a year wise comparison is conducted. On the other hand, measuring the cost of treatment on the dengue patients in Doluwa M.O.H area is also examined by collecting secondary data from past 6 years from M.O.H office of Doluwa. The

total cost for treatment is divided as direct and indirect cost. Direct cost is based on the expenditure done on treating the patient whereas the indirect cost is based on the loss of working days. Cost of illness approach is used to find the cost of prevention of DF as well as cost of treatment on patients.

Results and Discussion

In the analysis first, the trend of dengue cases in the country was investigated and it is reported in Table 1 (see Annexure). When considering the total it is shown that the dengue cases have increased throughout the years. Table 1 shows the number of provincial wise dengue cases as well. Here the highest average number in period between 2011 and 2016 is from the Western Province. This can be seen as a result of Western Province being the most urbanized and industrialized province when compare to others. According to the Table 3, the highest average of dengue cases reports in July 5173 of average precisely. The lowest average is shown in the month of April which is 1952. These results are due to the climatic changes in Sri Lanka. Table 2 shows the cost for dengue prevention in Doluwa MOH area. Divisional secretariat office Dolwa, Udapalatha Pradeshiya Sabha and Peradeniya and Gampola police stations have put a significant effort to prevent dengue cases in those areas. Table 4 gives the information of the main cost components of treatment of dengue patients. Further, it was estimated the cost of dengue treatment for the patients who suffered from dengue in Doluwa M.O.H area which shows in Table 5. In year 2012 the cost for treating dengue patients in Doluwa M.O.H area was 325,034 LKR. This remains the lowest cost reported between, 2011-2016. The highest cost for dengue treatment was in 2011 which increased up to 797,377 LKR.

Conclusion and Recommendation

The results of this analysis show that during the last few years, suspected dengue cases have been increasing in Sri Lanka.

Interestingly, more than 50 % of dengue cases were reported from the Western province. Simultaneously, the cost of treatment and prevention is also increasing. This situation shows the important of regular removal of possible mosquito breeding sites from the environment. It is also important to seek medical attention in the event of fever by day three of the illness and make awareness program in high risk areas in the country. Prevention programmes need to be continued with the assistance of public health officers, police and military personnel. Not only residences but also the officers both public and private will be thoroughly inspected and legal actions would be taken against offenders. This type of policy measures can reduce the reported dengue cases in Sri Lanka in the future.

References

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Figure 1: Basic Framework of Methodology

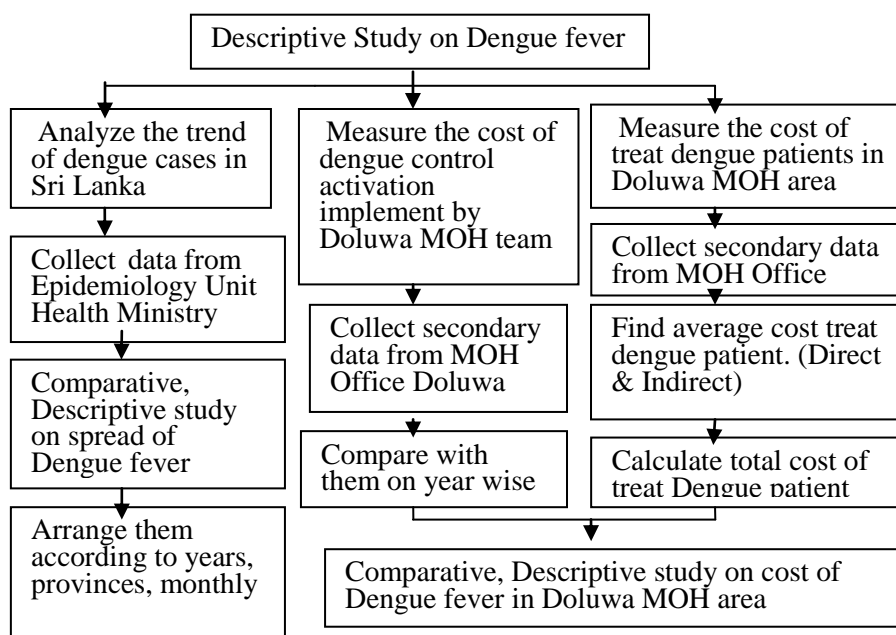


Table 1: Number of dengue cases

Province	Cases of dengue					
	2011	2012	2013	2014	2015	2016 (Jan. to Aug.)
Western	15913	20814	16540	26153	15582	19300
Central	2252	3455	2530	3299	1906	3973
Southern	2090	3952	1771	2637	1887	2976
Northern	666	1319	1161	2564	2552	2174
Eastern	2154	1442	1509	2306	2666	1343
North-western	1611	5337	3696	3380	1992	2783
North Central	603	782	1077	1190	651	872
Sabaragamuwa	2240	6643	2966	4547	1752	3303
Uva	944	717	813	1426	789	879
Total	28473	44461	32063	47502	29777	37603

Source: Epidemiology unit Ministry of Health

Table 2: Cost for dengue prevention in Doluwa M.O.H area

Year	2011	2012	2013	2014	2015	2016
Expenses (Rs.)	17000	31375	76250	12200	35000	54000

Source: MOH office Doluwa

Table 3: Cases of dengue in Sri Lanka

Month	Cases of dengue					
	2011	2012	2013	2014	2015	2016
January	933	3986	3462	3610	6345	6674
February	1052	3145	3258	2011	3731	4439
March	1118	2628	2996	1648	1962	2696
April	1771	2028	2109	1682	1293	2830
May	1967	2550	2614	4292	1625	2412
June	3471	5955	2427	6736	1477	4730
July	4817	5193	2924	5721	2125	10259
August	2106	5266	3282	4022	1604	3563
September	2445	2857	1912	2640	1099	
October	2127	3181	1636	4297	2066	
November	2203	4034	2611	5452	2762	
December	4463	3638	2832	5391	3688	

Source: Epidemiology unit Ministry of Health

Table 4: The main costing elements in treatment of dengue patients are

Patient type	Diagnosis	Place of treat	Average cost (Rs.)
Paediatric	Dengue fever	Ward	6717
Paediatric	D.Hemorregic fever	Ward	16985
Paediatric	Dengue fever	ICU	10378
Paediatric	D. Hemorregic fever	ICU	58179
Adult	Dengue fever	Ward	4210
Adult	D.Hemorregicfever	Ward	11965
Adult	Dengue fever	ICU	43256
Adult	D.Hemorregicfever	ICU	91902

Source: Thalagala (2013).

Table 5: Cost for treating dengue in Doluwa MOH area

Year	Total cases	Adult Patients		Pedia. patients	Cost for treatment LKR	Number of daily wage patients	Daily wage LKR	Loss of wage LKR	Total cost LKR
		DF ward	DHF ICU	DF ward					
2011	46	40	05	01	634627	31	750	162750	797377
2012	20	18	02	00	259584	11	850	65450	325034
2013	25	22	03	00	368326	14	950	93100	461426
2014	30	27	02	01	304191	22	1050	161700	465891
2015	31	28	03	00	393586	20	1150	161000	554586
2016	22	22	02	00	276424	15	1250	131250	407674