

Improved surveillance for Dengue by involving private sector and its impact on mortality due to dengue in Gandhinagar district.

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DOI: 10.29322/IJSRP.8.6.2018.p7858

<http://dx.doi.org/10.29322/IJSRP.8.6.2018.p7858>

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Index Terms- About four key words or phrases in alphabetical order, separated by commas. Keywords are used to retrieve documents in an information system such as an online journal or a search engine. (Mention 4-5 keywords)

Introduction

Worldwide the challenges posed by dengue has increased at an alarming rate affecting 50-100 million people in 120 countries. 3.6 billion people are at the risk and 70% of which are in Asia pacific region and can be considered as the epicenter of dengue activity. Dengue is a viral disease transmitted by *Aedes aegypti* mosquitoes, which poses serious threat to public health and the economic and social impact of the disease is quite high. Geographical expansion of dengue disease mainly due to the spread of *Aedes aegypti* mosquitoes has been rapid in the last decade in India with increase in morbidity and mortality^(1,2). Every year newer areas are coming under the grip of this life threatening disease. Gujarat is considered as one of the endemic states in India for Dengue, contributing about 4-5 % of the cases reported in the country. Gandhinagar though a small district in Gujarat is also affected by Dengue and the numbers have increased quite rapidly in last 2-3 years. One of the major cause for the high morbidity due to febrile illness in the community is dengue in Gandhinagar district.

Several factors govern the intensity of transmission of the disease foremost being migration of people occurring due to rapid urbanization. Number of people living in the cities has almost doubled in the last three decades, which is likely to further increase and Asia will witness significant rise in urban population. The adaptation and prevalence of *Aedes aegypti* mosquito which acts as an efficient vector. The geographical expansion of this mosquito has also greatly contributed the spread of the disease at such an alarming rate.

The fight against dengue can only be won with a robust surveillance system. With the advancement in technology newer diagnostic tools are now available which allows early identification of the cases and thus effective surveillance plays a key role in interrupting the transmission due to timely initiation of preventive measures on notification of a dengue case⁽³⁾. An inefficient surveillance mechanism will not reveal the actual disease burden in the community which will result in to intense transmission with high morbidity and mortality. The proportion of patients attending private clinics in India as well as in Gujarat is in higher proportion as compared to those going to Government institutions. Gandhinagar district is no exception to this phenomenon. Considering this the private sector, hospitals as well as laboratories has a greater role in strengthening surveillance for dengue which will ultimately lead to effective control of morbidity and preventing mortality. This is very important considering the fact that Government of India and Government of Gujarat have declared dengue as a notifiable disease respectively in 2016 and 2017.

Aim of the study

To understand the role of effective surveillance mechanism with the involvement of private sector to prevent deaths due to dengue.

Methods and Results

Gandhinagar district is a small and compact district having 12.4 lakhs population. 43.2 % people live in urban areas. The district has slightly higher literacy rate (84.5%) as compared to State average (78.3 %) and also have very good network of roads. The district comprises of 4 talukas and 302 villages There are 4 towns too in the district. As regards health infrastructure, there are 171 Sub Centers, 26 PHCs, 4 UHCs, 9 CHCs and 1 Hospital. 914 ASHAs were also deployed under National Health Mission since 2009. There are 34 private hospitals, 24 private laboratories and 60 private practitioners in the district, which provides the health and medical care to the community in addition to the government institutions.

Surveillance for dengue was mainly undertaken through the sentinel hospital functioning at the district HQ and therefore was not revealing the actual number of dengue patients in the community, as majority of the patients are seeking health and medical care from the private sector. Therefore, a strong need was felt to involve the private sector in a gradual manner by sensitizing them and motivating them to report the cases to the public health authorities. Workshops were organized for the members of IMA appealing them to report the cases as it is now mandatory too. Private laboratories and hospitals were contacted individually to bring them under the reporting network. The efforts made in this direction resulted in enhancing reporting units in the private sector to 24 in 2016 from 5 in 2015 few of them cater to large number of patients.

Line lists of all the confirmed dengue patients were obtained on a day to day basis from private as well as government institutions, compiled and analyzed ⁽⁵⁾. In 2015, Gandhinagar taluka contributed 54.38 % of Dengue cases, while in 2016 it contributed 70.78 % of the total cases. This taluka is having the maximum construction sites. It was also revealed that out of the total dengue cases detected 66.66 % were diagnosed by NS1 kits in 2015 and 75.84 % in 2016 while the remaining were diagnosed by IgM kits. This is a clear indication that suspected dengue patients reported to the health facilities during the early stage itself. Thus diagnosis at an early stage made effective management and treatment of the cases and thereby preventing deaths ⁽⁴⁾.

The proportion of dengue cases reported by private sector increased significantly from 51.7% in 2015 to 73 % in 2016 as shown in Graph no.1 and Graph no.2 below, which is based on the data given in Table no.1 and Table no.2

Table No.1: Taluka wise Dengue cases reported in Government institutions in Gandhinagar district.

Taluka	2015			2016		
	Total Dengue cases	NS1	IgM	Total Dengue cases	NS1	IgM
Gandhinagar	93	64	29	126	110	16
Mansa	9	5	4	7	7	0
Dehgam	10	7	3	12	10	2
Kalol	59	38	21	33	8	25
Other dist/state	0	0	0	0	0	0
Total	171	114	57	178	135	43

Table No.2: Taluka wise Dengue cases reported in Private institutions in Gandhinagar district.

Taluka	2015			2016		
	Total Dengue cases	NS1 +	IgM +	Total Dengue cases	NS1 +	IgM +
Gandhinagar	101	92	9	189	181	8
Mansa	33	33	0	118	115	3
Dehgam	11	10	1	79	75	4
Kalol	28	18	10	114	105	9
Total	173	153	20	500	476	24

Looking at the sex wise and age wise analysis of cases as shown in table no. 3 and table no.4, it is observed that males contributed 67.2% cases in 2015, while in 2016 it was 63.48 %. So there was no larger variation in the proportion of males in both the years.

Adults constituted 85.3 % cases in 2015 which came down to 78.6% in 2016, but there was no significant variation.

Table No.3: Age and sex wise analysis of Dengue cases in 2015 and 2016 (Government institutions)

Taluka	Sex wise distribution 2015		Age wise distribution 2015		Sex wise distribution 2016		Age wise distribution 2016	
	Male	Female	Children	adults	Male	Female	Children	Adults
Gandhinagar	65	28	8	84	81	45	25	101
Mansa	7	2	2	7	3	4	2	5
Dehgam	3	7	3	7	8	4	2	10
Kalol	40	19	12	47	21	12	9	24
Total	115	56	25	146	113	65	38	140

Table No.4: Age and sex wise analysis of Dengue cases in 2015 and 2016 (Private institutions)

Taluka	Sex wise distribution 2015		Age wise distribution 2015		Sex wise distribution 2016		Age wise distribution 2016	
	Male	Female	Children	adults	Male	Female	Children	Adults
Gandhinagar	66	35	10	91	134	55	37	152
Mansa	22	11	9	24	88	30	11	107
Dehgam	7	4	4	7	49	30	10	69
Kalol	26	2	7	21	92	22	20	94
Total	121	52	30	143	363	137	78	422

No mortality was reported in 2015 and 2016 in the district though adjoining municipal corporation reported 6 and 12 confirmed deaths due to dengue in 2015 and 2016 respectively.

CONCLUSION

Higher proportion of Dengue NS1 positive cases indicates that quality of surveillance has improved as these cases were detected during the early phase of morbidity ensuring timely treatment/management and preventive actions. Positive cases detected by private sector increased significantly due to better reporting made possible by constant interaction with IMA members and also due to the directives issued by central and state government for mandatory reporting. This might be one of the reason that timely referral took place which is very crucial to prevent deaths. Therefore, strengthening surveillance for dengue particularly by obtaining reports from the private sector had a very important role to prevent mortality. This also lead to preventive actions in the affected area which were undertaken in 24 hours of notification. Gandhinagar taluka having more construction sites contributed maximum cases. Higher proportion of cases in adult males reveals that working class group are affected as they can contract infection while at work and are on the move from one place to another with in as well as outside the district.

Though the study reveals some positive outcomes of strengthening surveillance by involving private sector the task is half done as surveillance needs to be undertaken at the periphery by the PHCs and UHCs. This will require sensitization of the MOs working in these health facilities. In addition to this 15% of the private health facilities which are not still a part of the reporting network needs to be included. More over surveillance strengthening should also aim at vector surveillance along with disease surveillance, which should lead to effective vector control measures to have some impact on morbidity.

THE BEST PRACTICES IN DENGUE SURVEILLANCE PUBLISHED IN NEGLECTED TROPICAL DISEASE JOURNAL VERY CLEARLY SPELT OUT HOW BEST THE SURVEILLANCE FOR DENGUE CAN BE STRENGTHENED⁽⁶⁾. THIS NEEDS PROPER ATTENTION AT THE LEVEL OF PROGRAMME IMPLEMENTERS AT DISTRICT AND STATE LEVEL FOR TAKING APPROPRIATE MEASURES.

I. ACKNOWLEDGMENT

The authors acknowledges various functionaries of the health facilities in the private as well as government sector of Gandhinagar district to share the data regarding dengue, which made it possible for compilation and analysis. The technical staff under NVBDCP in Gandhinagar district took pains to compile the data for 2 years meticulously and helped in analysis too. The constant guidance and support from the officials of the district and State made this task much easier.

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