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Original Article

Dengue outbreak in a large military station: Have we learnt any lesson?

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ABSTRACT

Background: An outbreak was reported from a large military station located in South India in 2013. In spite of instituting the preventive measures early, it took more than 2 months to bring the outbreak under control. This paper brings out lessons learnt and suggests strategy for controlling similar outbreak in future.

Method: The Military station comprises of 6 large Regimental Centres and many smaller units. The approximate strength of the serving personnel and their families is 25,000. Besides the unit Regimental Medical Officers, a large tertiary care hospital and a Station Health Organization is available to provide health care.

Result: A total of 266 patients including 192 serving personnel and 74 of their dependents were hospitalized for dengue between 15 May 2013 and 28 Jul 2013. Many dependents not having severe symptoms, were not hospitalized and treated on outpatient basis.

Health advisories and instructions for constituting Dengue Task Force (DTF) were issued well in advance. Preventive measures were instituted early. But the outbreak was controlled only after intervention from higher administrative authorities.

Lessons learnt included correct and timely perception of threat is essential; behavioural change of individuals is desired; availability of adequate health functionaries is mandatory; and complete dataset helps correct perception.

Conclusion: Future strategy for control of dengue outbreak should include repeated and timely survey of entire area for correct risk perception, assessment of behavioural change among individuals; operational research to assess the impact of ongoing public health campaign.

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Introduction

Dengue is the fastest spreading mosquito borne viral disease and is now endemic in over 100 countries.¹ In India, number of reported dengue cases have increased by 6 – folds and deaths

due to dengue by 2-fold from 2008 to 2013. The most affected states in 2013 were Kerala, Orissa, Karnataka, Gujarat and Tamil Nadu in that order.² During the year, an outbreak also occurred in a large military station located in South India when more than 200 cases of dengue were reported in a span of 3 months from Jun to Aug 2013. In spite of instituting the

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preventive measures early, it took more than 2 months to bring the outbreak under control. This paper is an effort to share the challenges we faced in controlling the outbreak, to bring out the lessons learnt during our endeavour and suggest strategy for controlling, if not preventing, a similar outbreak in future.

Material and methods

The Military station located in the heart of the city, is in contiguity with the civil areas on all sides. It is at an altitude of 3092 ft from mean sea level. During rainy season the mean atmospheric temperature varies from 20 °C to 35 °C and relative humidity from 60% to 80%.

The Military Station comprises of 6 large Regimental Training Centres and many smaller units. The approximate strength of the serving personnel and their families is 25,000. Unit Regimental Medical Officers and a large tertiary care hospital located in the station look after the health care needs of the garrison. Station Health Organization (SHO), commanded by a specialist in Community Medicine is also located in the vicinity for monitoring the health activities and rendering technical advice to Commanders regarding prevention of diseases.

Cases of dengue fever have been reported from the station in past also. In the year 2010, 2011 and 2012, only 13, 19 and 36 cases were reported respectively. In 2013, 266 cases of dengue fever were hospitalized between 02 Jun and 06 Oct 2013. This was clearly more than the expected number and hence, was considered an outbreak.

Results

A probable case of dengue was defined as an individual reporting with fever associated with two or more of symptoms like nausea and/or vomiting; rash; aches and pains; positive tourniquet test; leucopenia; and any warning sign including abdominal pain, restlessness, lethargy, bleeding tendencies and hepatomegaly. A confirmed case was defined as a probable case found positive for NS1 Antigen ELISA Test reactive.³

During the outbreak a total of 266 patients including 192 serving personnel and 74 of their dependents were hospitalized. Age wise distribution of these cases is shown in Table 1. Many dependents even found positive on serology but not having severe symptoms, were not hospitalized and treated on outpatient basis. The possibility that some of them did not report to service hospital and went to private practitioner could not be ruled out.

Fever was present in all cases (100%). Body-ache (69.9%) was the next most common symptom followed by joint pains (51.5%) and headache (49.2%). Retro orbital pain was present in 10.9% and skin rashes in 5.3% cases.

First case of dengue fever was reported on 15 May 2013 which was considered to be a sporadic case and not the cause of current outbreak. Subsequently 4 cases reported from four different locations on 09 Jun 2013, indicating a multi-focal origin, sparked off the outbreak. By 30 Jun 2013, 10 cases of dengue fever were hospitalized which necessitated the need

Table 1 – Age wise distribution of dengue fever cases.

Age group	No. of cases				Total (%)
	Serving pers (%)	Dependents			
		Male	Female	Total (%)	
<5 years	–	1	1	2 (02.6)	2 (00.8)
6–10 years	–	2	5	7 (09.5)	7 (02.6)
11–15 years	–	6	8	14 (18.8)	14 (05.3)
16–20 years	36 (18.8)	5	7	12 (16.2)	48 (18.0)
21–25 years	60 (31.3)	3	4	7 (09.5)	67 (25.2)
26–30 years	19 (09.8)	–	3	3 (04.1)	22 (08.3)
31–35 years	27 (14.1)	–	4	4 (05.4)	31 (11.7)
36–40 years	24 (12.5)	–	4	4 (05.4)	28 (10.5)
41–45 years	20 (10.4)	–	3	3 (04.1)	23 (08.6)
46–50 years	4 (02.1)	–	1	1 (01.4)	5 (01.9)
>50 years	2 (01.0)	2	15	17 (23.0)	19 (07.1)
Tota	192 (100)	19	55	74 (100)	266 (100)

for instituting preventive measures. Number of cases kept on rising till 28 Jul 2013 and thereafter the decline started. Epidemic curve drawn on the basis of date of admission of serving personnel to hospital due to dengue fever is shown in Fig. 1.

Health advisories for prevention of dengue were issued well in advance. Dengue Task Force (DTF) teams were constituted at unit levels and members were trained by local SHO in carrying out survey, anti larval activity, elimination of breeding places, focal residual spraying and small scale fogging. Importance of use of mosquito repellants and mosquito nets; and sanitation in peri-domestic area was also explained. In spite of this, occurrence of dengue fever cases continued to be reported from almost all the units. Following death of 3 serving persons, panic was set in and the units resorted to indiscriminate fogging without much result.

Intermittent rain, collection of water in bamboo shoots, roof gutters of older buildings and laxity in garbage clearance due to weather conditions marred the control measures. Ornamental ponds and flower pots with a plate below it, perceived by unit commanders as essential for office and unit area, further compounded the problem.

A high level team including a specialist in Community Medicine and Senior Administrative Authorities visited the station which added impetus to control activity. Working

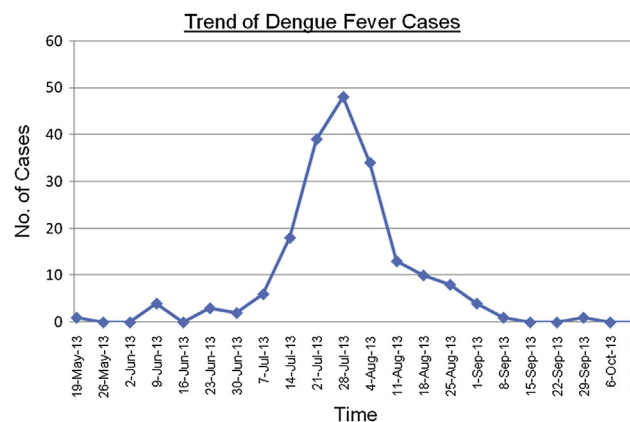


Fig. 1 – Trend of dengue fever cases.

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