

Study of Dengue Epidemiology –Visakhapatnam (GVMC Urban)

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Abstract: Introduction: Though dengue fever is self limiting disease in most of the cases, the stages of dengue hemorrhagic fever(DHF) and dengue shock syndrome(DSS) are life threatening and need more expensive and expert medical services. Avoiding mosquito bite and interrupting the transmission of virus are sound and inexpensive public health measure. The urban malaria scheme (UMS) working in local bodies (GVMC Urban) is particularly meant for control of vector born diseases. Methodology: Secondary data was collected from Grater Visakhapatnam Municipal Corporation (GVMC), Visakhapatnam from 2012 to 2016. Total 5 years data was collected. Results & Conclusion: It is noticed that the Dengue cases were reported in epidemic proportion in the year 2016. The GVMC Urban reported 853 cases, highest for the last five years. The morbidity was high and superintendent of King George Hospital was requested to make special arrangements to receive the fever patients with complications for observation and necessary treatment. GVMC Rural is under control of DM&HO Visakhapatnam and program was going as usual. The vector borne diseases particularly Dengue and Malaria are problems in urban and peri urban areas. Though it is clearly mentioned in integrated vector management about indoor residual spry in selected high risk areas, people are not cooperating and UMS staffs are not serious about it. If we go through the mosquito resting habits “Endophilism” (indoor resting) particularly aedes mosquitoes falls under this category and amenable for indoor residual spray. Since urban people are not cooperating for residual spray the alternative method , indoor space spray with pyrethrum which has knock down effect on the vector has been implemented. The transmission of virus is interrupted and Dengue is controlled.

Keywords: Dengue, Rain fall, Urban.

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I. Introduction

Though dengue fever is self limiting disease in most of the cases, the stages of dengue hemorrhagic fever(DHF) and dengue shock syndrome(DSS) are life threatening and need more expensive and expert medical services. Avoiding mosquito bite and interrupting the transmission of virus are sound and inexpensive public health measure. The urban malaria scheme (UMS) working in local bodies (GVMC Urban) is particularly meant for control of vector born diseases. Under Integrated Vector Management (IVM)¹ anti-larval measures, use of larvivorous fish, use of insecticide treated bed-nets and indoor residual spraying in selected high-risk areas will effectively control the vector borne diseases particularly Malaria and Dengue. Public private partnership² will go a long way in understanding the National health program by the community and assist the health functionaries. In the recent past, an upsurge of dengue cases occurring and particularly in 2016 cases reported in epidemic proportions. To understand the problem and to take effective measures to prevent further Incidence of dengue cases, a retrospective study was conducted for the last six years from 2012 to 2016 with the available information in GVMC. There was a gradual increase in incidence ³ from 2012 onwards and an epidemic proportion of cases were reported in the year 2016. The aim of the present study is to investigate the epidemic ⁴ and to assess the adequacy of present control measures adopted by the GVMC and if there are any lacunae by taking appropriate measures and implement the program effectively in the succeeding year i.e. 2017.

Visakhapatnam is endemic for malaria. The incidence of cases is high in the slums/weaker section colonies⁵ when compared to other planned housing colonies. The city proper i.e. GVMC Urban is with an extent of 114 square km, crowded with population of 937400(roughly one million). Due to industrialization and in search of employment people from villages migrated long ago and settled in the city and created habitations (slums) nearly 400 in number which were notified and improved under ODA scheme. Due to overcrowding, lack of proper sullage water disposal, and migration of labor, incidence of vector borne diseases are high in weaker section colonies. Other environmental factors i.e. optimum temperature ⁶ for the development of parasite in the insect vector, atmosphere humidity prolonging life of mosquito, regular rain fall during monsoon (May to November) generally provides opportunity for breeding of mosquitoes and give rise to high incidence of Vector

born diseases i.e. Malaria and Dengue. Visakhapatnam, as a coastal city has got all optimum conditions for vector propagation. In GVMC Urban area, Urban Malaria Scheme is working under the guidance of Biologist supported by trained sanitary inspectors for mainly conducting anti larval operations. Administrative and financial support is provided by Chief medical officer and the commissioner. For transmission risk reduction of mosquito born diseases particularly malaria and dengue, integrated vector management (IVM) method is followed. All complicated fever were referred to King George Hospital particularly children.⁷

II. Materials and Methods

Secondary data was collected from Grater Visakhapatnam Municipal Corporation (GVMC), Visakhapatnam from 2012 to 2016. Total 5 years data was collected. It is noticed that the Dengue cases were reported in epidemic proportion in the year 2016. The GVMC Urban reported 853 cases, highest for the last five years. The morbidity was high and superintendent of King George Hospital was requested to make special arrangements to receive the ever patients with complications for observation and necessary treatment. GVMC Rural is under control of DM&HO Visakhapatnam and program was going as usual.

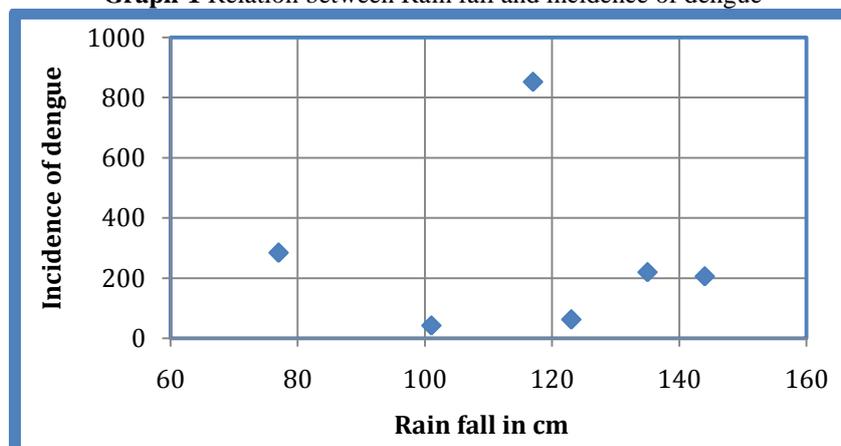
III. Results

It was decided to thoroughly study the epidemiology⁸ of dengue and the epidemic in 2016. The fevers incidence was high from the month of august and showed downward trend from the month of November 2016. It appears that the fevers closely followed the monsoon⁹. Meteorology department¹⁰ was requested to provide rain fall month wise information from 2012 to 2016. It has been found that there is an association with rain fall. Incidentally it was found that malaria is also closely coinciding with the incidence of dengue fevers. Hence it was decided to strengthen the Integrated Vector Management through Urban Malaria Scheme with existing staff. The Malaria staff and Biologist were trained well in advance i.e.in the month of March 2017. High risk areas were identified, where 46% of the total cases were contributed.¹¹ Under IVM it was planned to arrange pyrethrum space spray weekly once in identified high risk areas(large number of cases reported in housing colonies during 2016 from the month of July 2017. The sanitary inspector of each ward in charge to conduct fever survey and send the patients to urban health centers for treatment. The UHC medical officers are instructed to take additional care in treating the fever patients particularly NS1 antigen,¹² IgM and IgG positives. The entire period of 2017 year was under supervision and surveillance of urban malaria staff, Biologist and UHC medical officers. The data is obtained in January 2018 and subjected to statistical analysis.

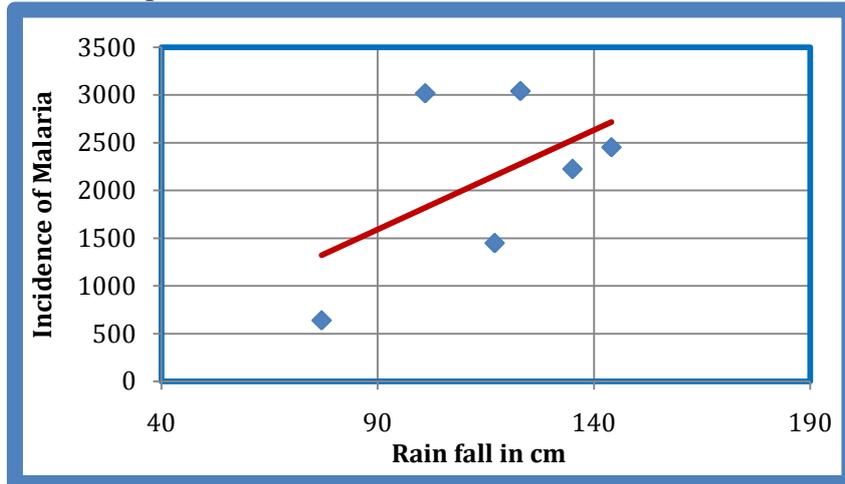
Table-1: Incidence of Dengue, Incidence of Malaria and Rain fall from 2012 to 2017

| Year | Rain fall in cms | Incidence | |
|------|------------------|-----------|---------|
| | | Dengue | Malaria |
| 2012 | 101 | 42 | 3019 |
| 2013 | 123 | 62 | 3042 |
| 2014 | 135 | 220 | 2224 |
| 2015 | 144 | 206 | 2453 |
| 2016 | 117 | 853 | 1448 |
| 2017 | 77 | 284 | 639 |

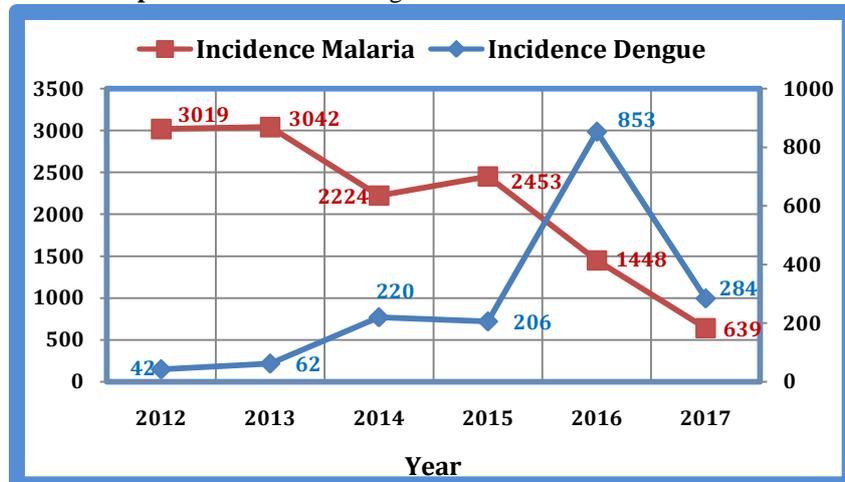
Graph-1 Relation between Rain fall and incidence of dengue



Graph-2: Relation between rain fall and incidence of malaria



Graph-3: Incidence of Dengue and Malaria from 2012 to 2017



IV. Discussion

Though the annual rain fall and monsoon showed relation in the incidence of Dengue and malaria, the variation particularly in the years 2016 and 2017 is significant. There is appreciable reduction in dengue incidence. In addition to the additional efforts taken by GVMC Urban Malaria scheme during 2017 to prevent the repetition of epidemic situation occurred in the preceding year i.e. 2016, nature has also favored by recording low rain fall. But there is no indication that low rain fall alone can help the reduction of Vector borne diseases. While comparing the rain fall year wise, it is noticed that the reduction of Dengue cases in 2017 is phenomenal. The reduction of dengue cases in the year 2017, indicates the additional efforts, particularly covering all high risk areas with regular periodical pyrethrum space spray¹³ in high risk areas, making advance action plan to cover the high risk areas, sanitary staff house to house survey, for early detection of fever cases, prompt action by UHC Medical officers have all helped in the reduction of dengue. Under IVM all high risk areas are expected to cover under indoor residual spray. Due to the public non cooperation for residual insecticidal spray, in the interest of public health ,GVMC resorted to cover under weekly pyrethrum space spray during monsoon period from June to November to interrupt the transmission.

V. Conclusion

The vector borne diseases particularly Dengue and Malaria are problems in urban and peri urban areas. Though it is clearly mentioned in integrated vector management about indoor residual spry in selected high risk areas, people are not cooperating and UMS staffs are not serious about it. If we go through the mosquito resting habits “Endophilism” (indoor resting) particularly aedes mosquitoes falls under this category and amenable for indoor residual spray. Since urban people are not cooperating for residual spray the alternative method , indoor

space spray with pyrethrum which has knock down effect on the vector has been implemented. The transmission of virus is interrupted and Dengue is controlled.

Comparison of incidence of dengue-High risk areas 2016 and 2017

| zone | Election wards | Names of the high risk areas | incidence of dengue | |
|------|----------------|---|---------------------|------|
| | | | 2016 | 2017 |
| 2 | 7 to 18 | MVPcolony,seetamma dhara,KRMcolony,peda waltair etc | 117 | 61 |
| 3 | 19 to 80 | Maharani peta,poorna market,allipuram,Chengalrao peta etc | 141 | 75 |
| 4 | 31 to 49 | Akkayya palem, Kanchara palem, muralinagar, madhava dhara etc | 133 | 58 |
| 5 | 43 | | 391 | 194 |

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