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Incidence of Acute Undifferentiated Fevers – Kadapa District- Analytical Study

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Abstract
Acute fevers mentioned in the core conditions of the Integrated Diseases Surveillance Project (IDSP) i.e. Malaria, Dengue, ARI and typhoid are under regular surveillance in Kadapa district. Generally in any given year ten to eleven percent of the total out patients' attendance consists of fevers. The medical officer is expected to examine the patients and make presumptive diagnosis basing on the clinical findings and advise the clinical laboratory tests for confirmation of diagnosis. The laboratories tests are basic in nature, conducted at the PHC level i.e. blood smear examination for malaria parasite, serological tests for rapid diagnosis of Dengue, Typhoid etc. Fevers were analyzed month wise, year wise and found that18 to 20 percent of the fevers did not show positive for basic tests conducted at PHC like blood smear examination for Malaria, Typhoid dot for enteric fevers, Rapid diagnostic tests for dengue etc and remain as[(2)] undifferentiated fevers. When they were subjected to statistical analysis they start rising from the month of June just as seasonal fevers i.e. the other important observation was incidence of malaria and dengue were found to be low in kadapa district [(1)]Though Andhra Pradesh falls under category 2 of the pre elimination phase, identification malaria cases is low in kadapa district (endemic for malaria) with many false negatives. Supporting the above observation incidence of malaria and [(3)] dengue are low in kadapa district though it is endemic for malaria. A thorough analysis is done to identify the causes of false negatives and to take rectification measures.

Keywords: *Undifferentiated fevers, Dengue, Malaria, Kadapa.*

Introduction

YSR District is centrally located and well connected with four districts of Rayalaseema. It is also the land locked district within the State and lies approximately between 130 43' to 150 14' North latitudes and 770 55' to 790 29' of East longitudes. The total area of the district is 15, 359 square kilometers and forest area is 5,017.33 Sq. Km. While conducting health profile study of kadapa district in 2017 and reviewing the core conditions in [(4)]Integrated Disease Surveillance Program (IDSP) including acute fevers, Malaria and Dengue. It was found that large proportion of fever cases were undiagnosed and mentioned as undifferentiated fevers.

Disease surveillance was a concept already in existence and defined as the continuous scrutiny of all aspects of occurrence and spread of diseases that are pertinent to effective control. Surveillance goes beyond the passive reporting of cases. It

includes laboratory conformation of presumptive diagnosis, finding out source of infection, routes of transmission, identification of all cases and susceptible contacts and still others who are at risk in order to finally prevent further spread of disease. During the present study analysis among fevers, significant number is undiagnosed and mentioned as undifferentiated fevers.

Kadapa has 3 revenue divisions and 51 mandals with a population of 2882469. Among population, 82% are below poverty line. There are 72 PHCs and 448 SUB centers. Basic clinical lab tests for diagnosis of common ailments particularly for confirmation of Malaria, Typhoid and [5] dengue are available at PHC. There is one municipal corporation and 8 municipalities fall under urban and peri-urban areas of kadapa district, contributing large no of fever cases due to deficient water management including improper water storage practices favorable for mosquito breeding resulting in high transmission.

Material and Methods

Kadapa District is very hot place and falls in to scarce rain fall area. There is one municipal corporation and 8 municipalities. The density of population in the district is 169 per sq/km. The district has a tropical wet and dry climate characterized by year round high temperatures with humidity. During this time temperatures range from a minimum of 34 °C and humidity is around 75%. Monsoon season bring substantial rain to the area.

Secondary data was obtained from DM&HO of Kadapa district for the last six years (2012-2017). The author of the present article himself worked as DM&HO kadapa for entire year 2015. A Retrospective study was conducted to know about the un-diagnosed fevers mentioned as un-differentiated fevers in each year. Incidence of malaria and dengue were obtained for the last 6years (2012 -2017). Month wise distribution of undifferentiated fevers was studied. The incidence of seasonal diseases i.e. malaria, dengue were also studied month wise along with undifferentiated fevers. Distribution of Malaria, dengue and un-differentiated fevers are similar i.e. rise in incidence during man soon period i.e. from June to November and hence it is inferred that, significant cases of malaria and dengue could not be diagnosed resulted in false negatives.

Diagnostic tools: All primary health centers were provided with microscopy and necessary staining material. Qualified technicians are posted. ASHA and other volunteer workers are provided with RDTs. For diagnosis of Dengue in addition to hematological parameters (platelet count and hematocrit) at PHC level commercial rapid format serological test kits(RDT)[6] for anti-dengue IgM and igG anti bodies have become available from the past few years.

Results

Table-1: Country wide malaria surveillance data 2000-2015

Year	Blood exam in million	Positive cases in millions	PF%	ABER	API	SPR
2000	86.79	2.03	51.5	8.9	2.1	2.3
2010	108.68	1.6	52.2	9.3	1.4	1.5
2011	10897	1.31	50.3	8.9	1.1	1.2
2012	109,03	1.07	50	9	0.9	1
2013	113.11	0.88	52.6	9.3	0.7	0.8
2014	124.07	1.1	65.6	10.1	0.9	0.9
2015	118.47	1.13	67.1	9.6	0.9	0.7

Table-2: Kadapa district wise malaria surveillance data (2012-2017)

Year	Blood examination in thousands	Positive cases in hundreds	PF %	ABER	API	SPR
2012	247733	623	93	8.5	0.21	0.25
2013	225160	205	34	7.8	0.07	0.09
2014	285189	316	54	9.8	0.1	0.1
2015	334061	292	49	11.5	0.1	0.08
2016	349611	661	90	12.1	0.2	0.19
2017	353547	601	48	12.2	0.21	0.16

Figure-2: Distribution of undifferentiated fevers month wise from 2014 to 2017

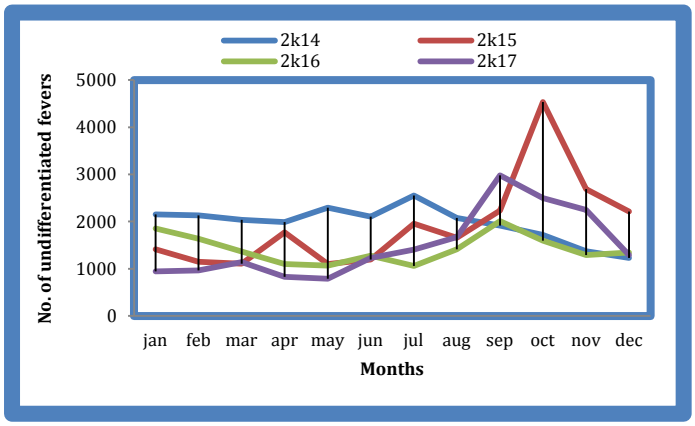


Figure-3: Distribution of malaria cases month wise from 2014 to 2017

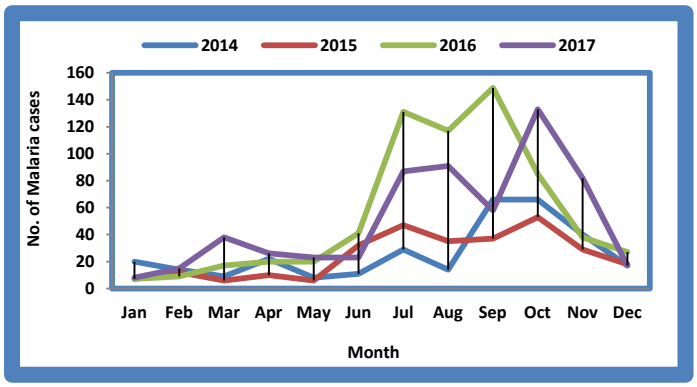


Figure-4: Distribution of dengue fevers month wise from 2014 to 2017

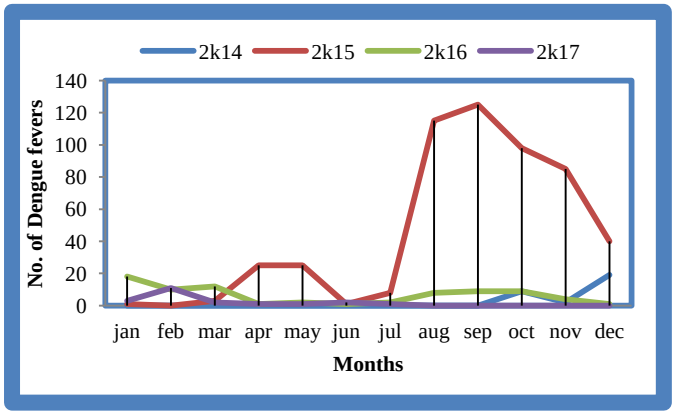


Figure-5: (1) Monthly distribution pattern of malaria, dengue[7] and un-differentiated fevers for the years 2014 to 2017 are similar showing all the three categories are seasonal fevers associated with rainy season.

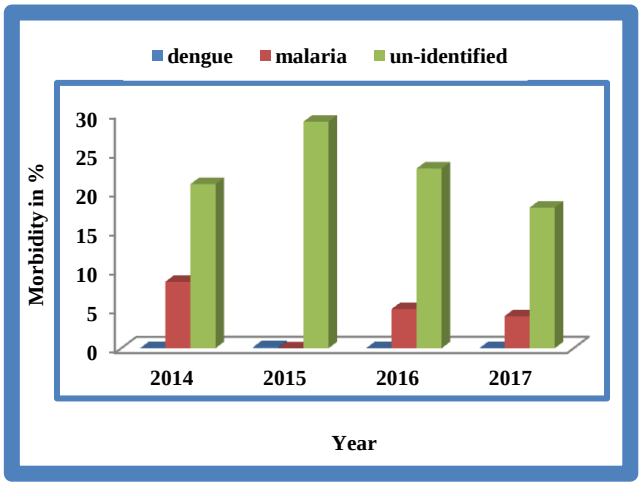


Table-3: API in Country and Kadapa District wise information from 2012 to 2017

Year	API	
	INDIA	KADAPA
2k12	0.9	0.21
2k13	0.7	0.07
2k14	0.9	0.1
2k15	0.9	0.1
2k16		0.2
2k17		0.21

Figure-6: API in Country and Kadapa District wise information from 2012 to 2017

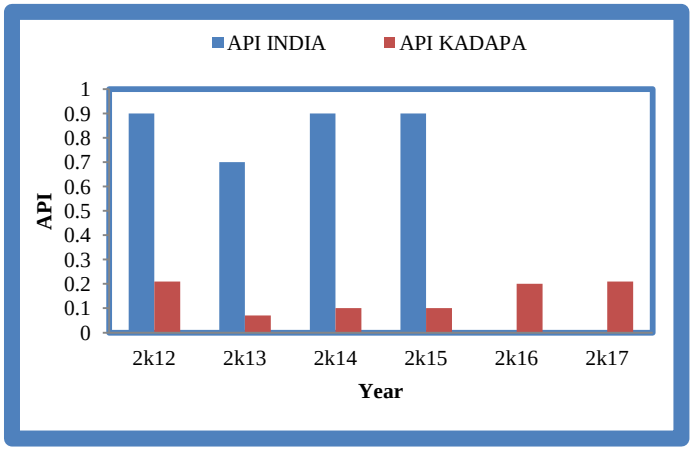
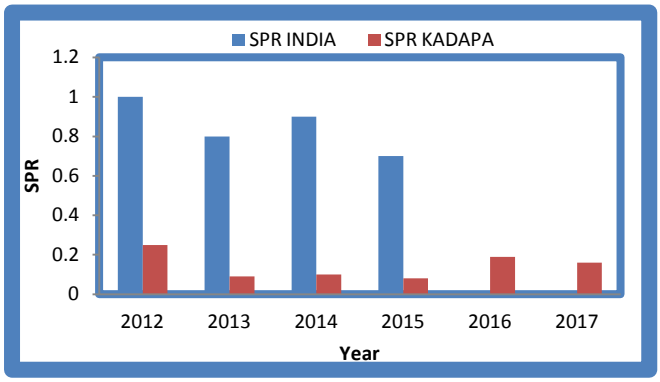


Table-4: SPR in Country and Kadapa District wise information from 2012 to 2017

Year	SPR	
	INDIA	KADAPA
2012	1	0.25
2013	0.8	0.09
2014	0.9	0.1
2015	0.7	0.08
2016		0.19
2017		0.16

Figure-7: SPR in Country and Kadapa District wise information from 2012 to 2017



(2) Annual Parasite incidence (API) for kadapa district is low when compared with national average during the same period.

(3)Slide positivity rate is also very low. The two most important surveillance data indicate low quality of malaria work in kadapa district.[8] Malaria cases were not detected resulting in false negatives. Likewise dengue also not effectively screened and large number of cases was identified as undifferentiated fevers.

Discussion

Malaria and dengue both are vector borne diseases and closely related to rainy season. In our present study large no of fevers could not be diagnosed and identified as un-differentiated fevers. Month wise and year wise incidence of malaria, dengue and un-differentiated fevers showed similar distribution confirming significant association. Large number of un-differentiated fevers may be false negatives for both malaria and dengue. Though dengue fever is self-limiting to a large extent small percentage cases may manifest as [9] DHF /DSS resulting in high morbidity. Untreated malaria cases [10] may have recurrence leading to high morbidity and in both the cases there may be high transmission. If the false negative cases visit the private hospitals in Kadapa or neighboring states Chennai and Bengalure, they may have to meet out of pocket expenses and financial loss.

All the PHCs are provided with microscope, necessary staining materials and qualified technician. RDTs are now the established method of choice for malaria diagnosis

Rapid diagnostic tests are based on the detection of circulating parasite antigen with a simple dipstick format. Several types of RDTs are available. RDTs are produced by different companies, so there may be differences in the contents and in the manner in which the test is done, the user's manual should always be reed properly to avoid false negative results. A number of commercial rapid format serological test kits for anti dengue IgM and IgG antibodies have become available in the past few years. Some of these producing results within 15 minutes. Unfortunately accuracy of most of these tests is uncertain since they have not yet been properly [11] [12] validated. Hence the gold standard tests for malaria and dengue infection are peripheral blood smear examination under microscopy for malaria parasite and haematolological parameters such as platelet count and hematocrit are important part of the diagnosis for both the diseases respectively.

Conclusion

Field level health functionaries ASHA and voluntary workers need [13] capacity building trainings to use the RDT kits in interior habitations and villages for correct interpretation. All fever cases with negative results shall have close follow up till fever subsides or for further review of the case by PHC medical officer. There shall be accountability for each and every fever case during rainy season particularly, by entrusting to ANM/Health Assistant in the area of their jurisdiction for complete course of medication in case of malaria, and observe the dengue/suspected dengue case to detect the complications at the earliest to take remedial measures.

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