

High Prevalence of Dengue among Pregnant Women in India



Contact
 Mallika Alexander
 1st Fl, Pathology Museum
 BJ Govt. Medical College
 Clinical Trials Unit
 Jai Prakash Narayan Rd
 Pune, Maharashtra, 411001
 India
 mallika.alexander@yahoo.com

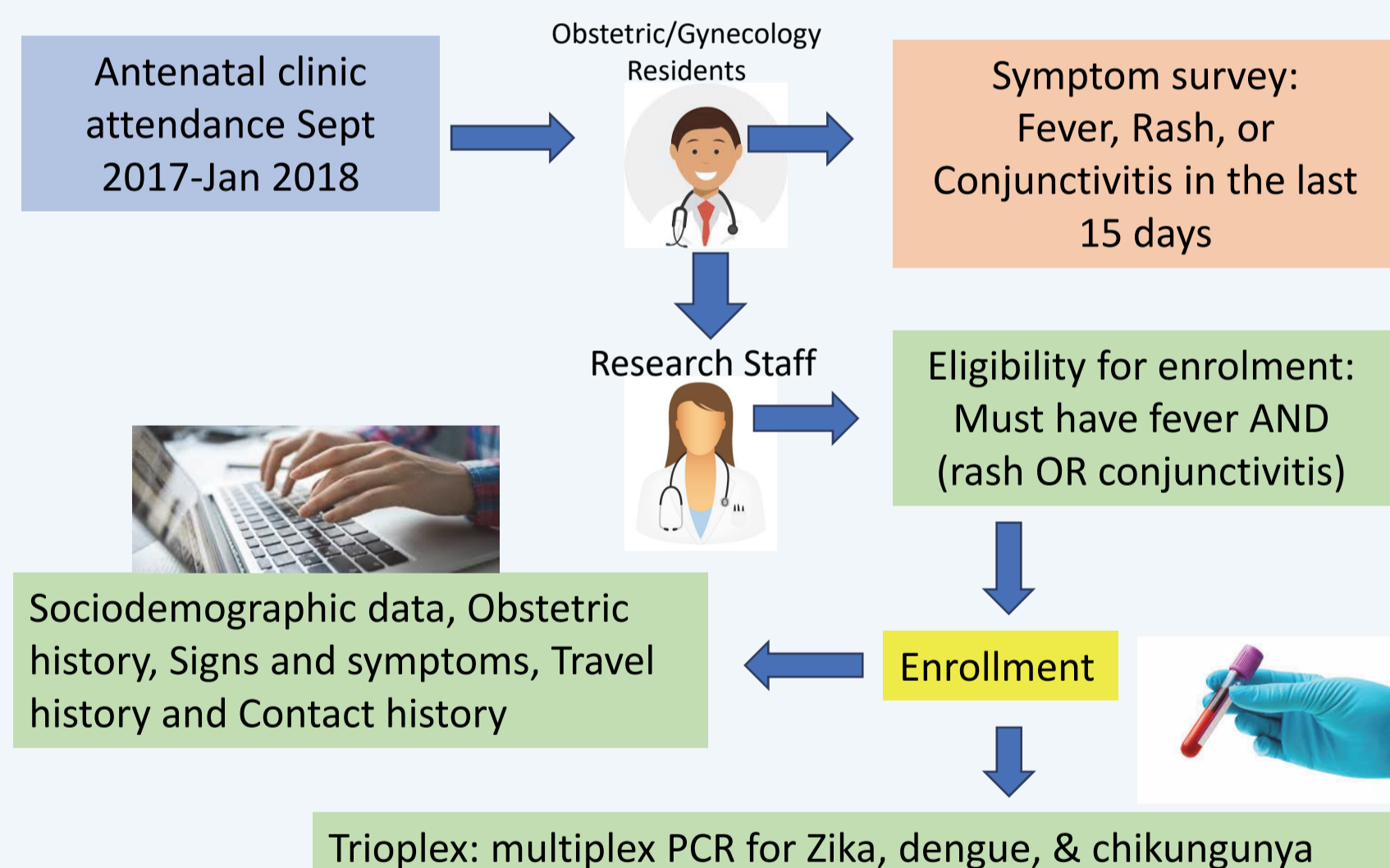
Alexander M¹, Naik S², Robinson M^{1,3}, Sapkal G⁴, Deshpande P¹, Kulkarni V¹, Nimkar S¹, Sambarey P², Kinikar A², Mave V^{1,3}, Suryavanshi N¹, Gupte N^{1,3}, Bollinger R^{1,3}, Gupta A^{1,3}, Bharadwaj R², Mathad J¹
¹Byramjee Jeejeebhoy Government Medical College-Johns Hopkins Clinical Trials Unit, Pune, India; ²Byramjee Jeejeebhoy Government Medical College/Sassoon General Hospital, Pune, India; ³Division of Infectious Diseases, Johns Hopkins University School of Medicine, Baltimore, Maryland; ⁴National Institute of Virology, Pune, India



Introduction

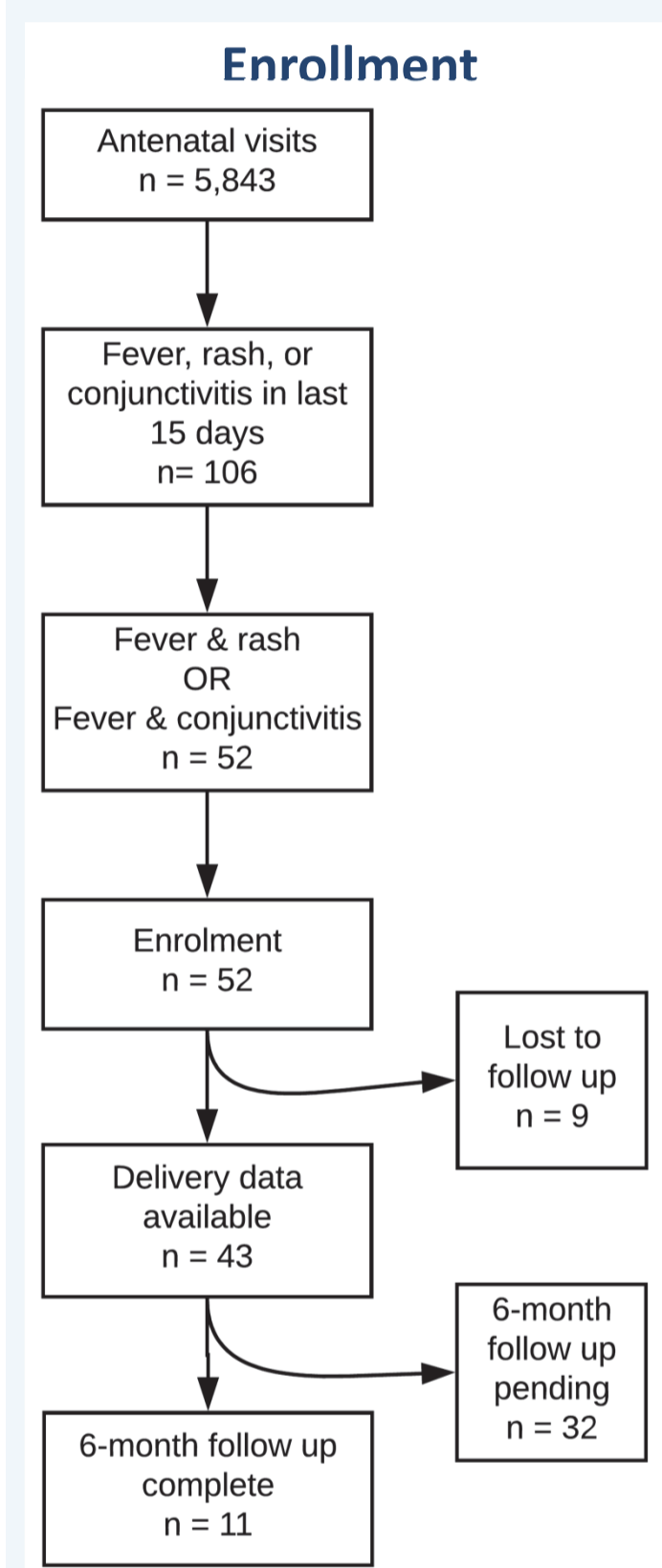
- 1/3 of the ~400 million annual worldwide dengue infections occur in India¹, most after the monsoon (July – November)²
- Risk of vertical transmission of dengue during perinatal period: 2-23%³
- Diagnosis of dengue in pregnancy challenging:
 - Clinical and laboratory features overlap with other common problems in pregnancy including HELLP syndrome, pneumonia, pulmonary embolism, septic shock/birth trauma and other infectious diseases⁴
- Fetal complications include low birth weight and premature births⁴
- Mosquito-borne viral disease incidence during pregnancy and its impact on maternal-child outcomes has not been systematically investigated in India.

Methods



Delivery Visit	
Maternal data:	Infant data:
❖ GA at delivery	❖ APGAR score
❖ Type of delivery	❖ Congenital anomalies
❖ Complications: ANC/delivery	❖ Anthropometry
	❖ Systemic examination

6 Month Follow Up Visit	
❖ Trivandrum Developmental Scale	
❖ Medical History	
❖ Anthropometry and Vitals	
❖ Systemic Examination	
❖ If abnormal → Paediatrician directed investigations	



Results

Clinical characteristics among 52 pregnant women with fever

Clinical characteristic	Entire Population, N = 52 n (%)	Maternal dengue PCR positive, N = 7 n (%)	Maternal dengue PCR negative, N = 42 n (%)	OR (95% CI)	P
Age	22 (19-25)	20 (19-23.5)	22.5 (19.2-25)	2.3 (0.1-154.5)	0.42
Gestational Age At Enrollment	23 (18-34)	30 (22.5-31.5)	23 (16.5-34)	0.1 (0-0.9)	0.57
Recent Travel	15 (31)	1 (14)	14 (33)	0.3 (0-3.2)	0.41
Primigravida	25 (51)	4 (57)	21 (50)	1.3 (0.2-10.2)	1
HIV Positive	2 (5)	0 (0)	2 (6)	0 (0-33.9)	1
Symptoms					
Myalgia	18 (37)	3 (43)	15 (36)	1.3 (0.2-9.1)	0.7
Body Pain	5 (10)	1 (14)	4 (10)	1.6 (0-20.1)	0.55
Arthralgia	13 (27)	3 (43)	10 (24)	2.4 (0.3-16.7)	0.36
Weakness	3 (7)	1 (17)	2 (5)	3.5 (0.1-80.7)	0.36
Malaise	2 (4)	1 (14)	1 (2)	6.2 (0.1-533.1)	0.27
Lymphadenopathy	0 (0)	0 (0)	0 (0)	-	-
Abdominal Pain	1 (2)	1 (14)	0 (0)	Inf (0.2-Inf)	0.15
Vomiting	14 (29)	3 (43)	11 (26)	2.1 (0.3-14.6)	0.39
Diarrhea	5 (10)	1 (14)	4 (10)	1.5 (0-19.6)	0.56
Low Appetites	14 (29)	3 (43)	11 (27)	2 (0.3-14.1)	0.4
Sore Throat	16 (33)	1 (14)	15 (36)	0.3 (0-2.9)	0.4
Eye Pain	10 (20)	4 (57)	6 (14)	7.5 (1-65.6)	0.02
Conjunctivitis	26 (54)	7 (100)	19 (46)	Inf (1.4-Inf)	0.01
Rash	13 (27)	2 (29)	11 (26)	1.1 (0.1-8.2)	1
Bumpy Rash	2 (15)	0 (0)	2 (18)	0 (0-36.6)	1
Itchy Rash	11 (85)	1 (50)	10 (91)	0.1 (0-15.6)	0.29
Bleeding Gums	0 (0)	0 (0)	0 (0)	-	-
Epistaxis	0 (0)	0 (0)	0 (0)	-	-
Headache	33 (67)	6 (86)	27 (64)	3.3 (0.3-163.2)	0.4
Cough	26 (54)	3 (43)	23 (56)	0.6 (0.1-4)	0.69

PCR, polymerase chain reaction, OR, odds ratio; CI, confidence interval

- In samples negative by Trioplex, 2 chikungunya IgM ELISA and 1 dengue IgM ELISA were positive

Birth outcomes by maternal dengue infection status among 43 deliveries

Clinical characteristic	All births, N = 43 n (%)	Maternal dengue positive, N = 6 n (%)	Maternal dengue Negative, N = 34 n (%)	OR (95% CI)	P
Gestational Age (Weeks)	39 (37.6-39.9)	37.7 (37.2-38.1)	39.1 (37.9-39.9)	0.7 (0.523-602)	0.28
Caesarean Section	12 (28)	1 (17)	9 (26)	0.6 (0-6.1)	1
Premature	9 (21)	1 (17)	8 (24)	0.7 (0-7.3)	1
Low Birth Weight	9 (21)	2 (33)	7 (21)	1.9 (0.1-16.8)	0.6
Microcephaly (head circumference < 3rd percentile*)	9 (21)	2 (40)	7 (22)	2.3 (0.2-24.9)	0.58
Head circumference < 10th percentile*	14 (33)	2 (40)	12 (38)	1.1 (0.1-11.2)	1
Stillbirth	1 (2)	0 (0)	1 (3)	0 (0-220)	1
Deceased at Birth or before 6 Month Follow Up†	4 (9)	0 (0)	3 (9)	0 (0-15)	1
Oligohydramnios	2 (5)	1 (17)	1 (3)	6.1 (0.1-530)	0.28

OR, odds ratio; CI, confidence interval; *INTERGROWTH standards⁵; †6 month follow up data available for 11 infants

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Summary and Conclusions

- 13% of pregnant women with fever were dengue PCR+
- All of the women with a positive dengue PCR had conjunctivitis
- There does not appear to be a significant difference in pregnancy or infant outcomes in women with and without dengue; follow-up is ongoing
- A simple symptom screen could be integrated into antenatal care in endemic countries to identify women at high risk of mosquito-borne infections

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