



ENTOMOLOGICAL SURVEY OF *Aedes* MOSQUITO BREEDING SOURCES IN UN CONVENTIONAL LOCATIONS AND SOURCES AND AWARENESS ABOUT HEALTH IMPLICATIONS IN SEMIURBAN AREA, TAMILNADU

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ABSTRACT

Objective: To identify *Aedes* breeding places in the un conventional sites such as hotel buildings, commercial places and shops and the mixture of different types of household and the sources in the above sites .Annamalainagar, Chidambaram.

Methods: A total of 2516 houses were divided into 12 wards. 30% of the houses (750 sites) were selected for the present study.

Results: The different index like Briteau index, house index and container index were 87.64%, 0.53% and 0.15 respectively. Refrigerator and air conditioner trays were the major breeding sources inside the premises while coconut shells and uncovered water containers were the major breeding source among outside the premises. 40% of the total study populations were not aware of mosquito borne diseases and 25% of them were not aware of mosquito breeding sites.

Conclusion: Awareness about mosquito breeding sites is essential for control the mosquito borne diseases.

KEY WORDS: *Aedes aegypti*, Dengue, Chikungunya,

INTRODUCTION:

Among the vectors, Mosquito remains very important. It transmits diseases to more than seven hundred million people every year and is responsible for one in seventeen deaths¹⁰. Some of the species like Anopheles, Culex, Aedes, and Monsonaids have gained public health importance in India. Aedes plays an important role in public health. It transmits dengue, chikungunya and yellow fever. Outbreak of chikungunya has been reported in various parts of India,⁴ with high attack rate in south India⁸. Dengue is occurs every year in different parts of India especially during and after immediately monsoon seasons in recent years,^{2,3} since there is no vaccine or specific treatment for dengue and chikungunya, the only weak link of the disease transmission chain is the vector and therefore efforts should be directed towards its effective control.⁷ Government of India is implementing a lot of vector control programmes to control the vector population and the disease burden among the community. Community participation is an important concept for primary health care system and is critical in the control of vector borne diseases.⁹ People should be aware of the problems and should have the knowledge of breeding places of these vectors and their control measures. The aim of our study is to survey Aedes Mosquitoes in the household at Annamalai

Nagar, Chidambaram and to assess the awareness regarding mosquitoes and mosquito borne diseases.

STUDY AREA:

Annamalai Nagar area is a semi-urban area located in Chidambaram near the Coramandal costal belt and is located about 45 kilometers away from headquarters, Cuddalore between 11 24' 0' North, 79' 42' 0' East. It gains good rain during the month of December and January. Annamalai Nagar is a specialty campus of Annamalai University occupying approximately 846 acres of land. The complex consists of administrative building, residential complex including students' hostels. The total numbers of houses in the complex are 2516 divided into 12 wards. Its population is 12170 which include the general public as well as staffs. Apart from that, about 15000 students are staying in different hostels in the same campus. During the year 2009, a number of dengue cases were reported at Rajah Muthiah medical college hospital located at Annamalai Nagar. We planned to know about the household breeding places of aedes mosquitoes and awareness about the mosquito among the Annamalai Nagar population. This Household survey was conducted during the period of January 2010.

OBJECTIVES:

1. To find out the breeding places of Aedes mosquito inside and outside the premises of household in Annamalai Nagar.
2. To find out the knowledge regarding mosquito borne diseases among the study population.

METHODOLOGY:

House to house survey was made to observe the possible breeding places Aedes in and around the households in Annamalai Nagar. The study area consists of 1.Complete residential area; 2. Residence with rice field; 3. Residence with commercial establishment; 4. Residence with students' hostels and university buildings etc. The total number of sites in the complex is 2516 divided into 12 wards. This forms the sampling frame for the study. 30 percent of the total sample (760 sites) was taken for our study and Equal weightage is given to each site.

A search was made to find out the possible breeding places of Aedes mosquitoes inside and outside the household premises (around three meters of the house) and it was noted. To explore the knowledge of study subjects regarding the mosquito borne diseases, a

pre-tested questionnaire was used. Respondents below 15 years were excluded from the study.

The students were given the adequate training for searching the breeding places, filling the Performa etc. The data was collected and analyzed. Percentage and ratio were calculated. Breato index, house index, container index were calculated using standard formula.

RESULTS:

$$\text{Briteau Index} = \frac{\text{Number of Positive Containers}}{\text{Number of houses searched}} \times 100$$

Britea Index = 87.64%

$$\text{House Index} = \frac{\text{Number of Houses Positive for Aedes Breeding}}{\text{Total Number of houses searched}} \times 100$$

House Index = 53.42

Container Index : Percentage of positive containers

Container Index : 15.40%

Table 1: Inside the Premises (Positive for Aedes breeding places)

Type of Container	Total sources	No of larva below 5	Between 5 - 10	Above 10	Positive containers	Percentage
Uncovered grinding stone	78	2	2	4	8	10.25
Flower pots	59	8	2	0	10	16.94
Empty coconut shell	50	20	10	0	30	60.00
Mud pot	102	3	2	1	6	5.88
Empty cans	75	0	5	0	5	6.66
Un used discarded utensils	132	8	2	1	11	8.33
Tray behind the fridge	376	46	98	6	150	39.89
Tray behind the A/C	82	7	12	3	22	26.82
Un covered water container	338	2	7	2	11	3.25
Plastic storage water tank	52	5	2	0	7	13.46
Total	1344	101	142	17	260	

Table 2: Outside the premises (Positive for Aedes breeding places)

Type of Container	Total sources	No of larva below 5	Between 5 - 10	Above 10	Positive containers	Percentage
Uncovered grinding stone	48	13	8	6	27	56.26
Discarded plastic container	168	42	8	5	55	32.73
Flower pot	32	7	2	6	15	46.87
Empty coconut shell	2241	150	40	6	196	8.74
Empty cans	40	20	0	0	28	70.00

Unused discarded utensils	23	—	3	8	12	52.17
Mud pot	43	12	0	-	12	27.90
Flower vases	18	-	3	-	3	16.66
Open cisterns	42	6	8	-	14	33.33
Old tyres	27	6	13	-	19	70.37
Un covered water containers	296	12	8	5	25	8.4
Total	2978	268	93	36	406	

DISCUSSION:

INSIDE THE PREMISES:

Among the total houses we searched, 49.4% of the household had fridge among which 39.8% were positive for breeding. The common breeding site inside the house which we observed was coconut shell. Almost 7.2% of the household had the source of breeding out of which 60% of them were positive for breeding. Similarly 10.7% of the household had the source of A/C tray among which 26.8% of them were positive for breeding .A similar study done at Kolkata by Paramanik *et al* showed that the major breeding site inside the premises is the air cooler and the I/S value per year was between 2.64 and 5. Similarly Roberto A. Medronho et al. conducted a study at Brazil and showed that cement ground tank is the major breeding site with 56.4% of the total container positive for breeding of aedes¹. In our study, major breeding site inside the premises was found to be the refrigerator because people were not aware of breeding habits of this mosquito and were unnoticed for long time. We also made comparison between the respondent’s education status and positive breeding sites in their household did not show any significant difference.

OUTSIDE THE PREMISES:

Outside the premises, the major breeding source which commonly observed was coconut shell. 35.9% of the household had the coconut shell as a breeding source among which 8.74% of them were positive for breeding. About 38.9% of household had uncovered water storage containers and 8.4% of them were positive for breeding. 22% of them had discarded plastic containers among which 32.7% of them were positive for breeding. Uncovered grinding stone 6.3% of the household had and 56.26% of it positive for breeding. Similar study was done by RS Sharma at Maharastra and found that earthen pots, plastic container are the major breeding site for the aedes at outside the premises⁶. Rakesh Katyal et al. al studied at Hariyana and found that the earthen pots and the drum act as major breeding site for aedes in rural areas⁴. The major site of breeding outside the premises was found to be the

coconut shell because People have the practice of making coconut by removing the coconut and the shell was tried for fire wood purpose. Naturally after raining the stagnant water remains in the coconut shell which accelerates breeding and people are unaware of it.

DIFFERENT INDICES:

In our study the Briatu Index, Container Index and the House Index were 87.7, 15.4 and 53.4 In similar studies like Pradeep Kumar et al. showed that BI and HI was 39% and 30% at Chennai⁸. Similarly RS Sharma also found at Maharastra that the different indices at various villages were found to be above 50%. In our study BI only 87.7% whereas the other indices like house Index and the container Index were 0.53% and 0.15% subsequently which is very low and it shows that there is no vulnerability about the disease problems but still it is significant regarding disease outbreak.

Health educations play an important role to gain knowledge on mosquito breeding places and its control. Since vector control is the important veppan to control these diseases, awareness should be created among the community on these aspects and to avoid the mosquito born disease problems.

ACKNOWLEDGEMENT:

Author convey thanks to Dr.(Col).A.L.Sharma professor of community medicine who guided throughout the study and also thank Annamalai University,RMMC III term MBBS students during the study period for helping the study.

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