

Mosquito controlling practices in two filaria endemic villages of Nanded district of Maharashtra state, India

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Abstract:

Mosquitoes, as they are known not only to spread various diseases but also as a nuisance and hence people across the world employ various practices that can control the mosquitoes in their vicinity or prevent mosquito bites in order to prevent the consequences. Lymphatic Filariasis (LF) or Filariasis is a mosquito borne disease predominantly spread through *Culex quinquefasciatus* as a vector and transmitting *Wuchereria bancrofti* to cause long term disabilities in human beings. The current investigation was carried out in two filaria endemic villages of Nanded district of Maharashtra state of India to estimate various practices used by the villagers against mosquitoes. It was found that 27.95% of the total interviewed population from both the villages was using mosquito nets while 15.98% use various chemical mosquito repellents, while 8.15% of them did not practice anything against mosquitoes. This study concludes that a considerable amount of the at risk population performs practices to keep the mosquitoes away from them.

Keywords: mosquito control, filaria, Lymphatic Filariasis, *Culex*, *Wuchereria*

Introduction:

Mosquitoes are considered as an animal which has highest nuisance value because of its ability to transmit various disease causing pathogens like bacteria, viruses, protozoans and round worms to cause medical conditions like Chikungunya, Zika virus, malaria, dengue, Lymphatic Filariasis, Yellow fever that may lead to death (1,2). There are over 3500 mosquito species across the world but only 100 of them act as potential vectors of human diseases (3). Mosquitoes cause death of more than 400000 people due to Malaria only every year (4). Lymphatic Filariasis (LF) or Elephantiasis or Filariasis is a mosquito borne disease which is caused by *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori* to the pathogens resulting in abnormal swellings in arms, breasts and legs. It is also referred as the disease of the poor. India contributes about 40 % to the world's burden of LF (5). This disease is prevalent in 339 districts of 20 states and Union Territories of the country (6). Initially India thought of eradicating LF from India by 2015 but later it was extended upto 2021 (7) and now it has been revised till the year 2027 (8,9). 18 districts of Maharashtra state

have been reported to be endemic to LF (10). But still there are many new cases of LF not only in Maharashtra but in other states of India as well. Maharashtra is having over 30000 confirmed cases of LF as of August 2023 (11, 12). This is directly attributed to the ever increasing mosquito population in the endemic villages. The current study enumerates various mosquito controlling practices adopted and employed by these villagers to get rid of mosquito bites and ultimately preventing mosquito borne diseases.

Materials and Methods:

Study Area:

Two villages from Bhokar Taluka of Nanded district were selected i.e. Palaj (19.22624 77.71285) and Kini (19.217003 77.673435). Both the villages were having history of LF patients. These villages are close to Telangana state and hence most of the villagers speak Telugu language apart from Marathi. Literacy rate is higher in males than in females in both the villages.

Ethical consideration:

All the respondents were informed about the cause of the study and their oral consent was obtained before the interviews. Respondents above 18 years were considered for interviews. They were also informed that their names will be not recorded for this investigation.

Data Collection:

Data required for the study was collected through questionnaire method which was administered orally. The questionnaire was administered in Marathi and Telugu. It was prepared with the help of District Filaria Officer, District Malaria Officer and Insect Collectors working in the respective villages considering the local understandings. The questionnaire included questions like their age, education, knowledge about LF, mosquitoes and how do they control mosquito bites etc. The data was collected from personal interviews and group discussions. A total of 319 respondents (187 from Kini and 132 from Palaj) were interviewed to collect substantial data.

Results:

Through this study to investigate the mosquito controlling practices in two filaria endemic villages i.e. Kini and Palaj from Bhokar Tehsil of Nanded district of Maharashtra state, a total of 319 participants took part in the survey. Selection of respondents was purely based on their will and age. All the participants below 18 years of age were denied. 15.67% were found to fall in the 18 to 21 years of category while maximum number of participants belonged to age group of 31-36. i.e. 21.94% from the total of n=319 participants. The selected population of 319 individuals was found to have a variety in their educational qualifications as well i.e. 12.22% of them were illiterate whereas 18.49% of them could only attend school till primary grades. A considerable amount of participants were graduate (10.97%) and post-graduate (04.07%). A good number of students (23.19%) did their education through Industrial Training Institutes (ITI's) and Diploma.

Population Characteristics

Characteristics	Number of participants	Percentage
Age Groups 18-21 years	50	15.67
22-30 years	69	21.63
31-36 years	70	21.94
37-45 years	67	21.00
46-60 years	49	15.36
Above 60 years	14	04.38
Education status		
Illiterate	39	12.22
Primary School	59	18.49
Secondary School	50	15.67
Higher School	49	15.36
Graduation	35	10.97
Post Graduation	13	04.07
Other	74	23.19
Gender		
Male	182	57.05
Females	137	42.94

The participants of this study were found to employ following mosquito controlling or mosquito bite prevention methods in the two filaria endemic villages. As the villages are already aware about the hazards caused by mosquitoes for years now, it was found that 27.95% practice using mosquito bed nets to get rid of the bites of mosquitoes. 15.98% of the people from these endemic villages use mosquito repellents while only 5.64 % of them prefer closing their windows and doors in the evening. This may be due to local mythological understandings. Neem leaves and dung discs are easily available, economically affordable and effective against mosquitoes. This is the reason why 20.06% of the interviewed population uses them on a regular basis. Negligible amount (2.82%) of the people use full clothes in night deliberately to avoid mosquito bites and 9.09% of them use electric mosquito killing rackets which are the best weapon among all. As these villagers are well known about mosquito breeding grounds, 50.16% of them regularly clean their water storage tanks and open drainage systems to keep the mosquitoes at bay. Some of the participants (8.15%) reported that they do nothing in this regard.

Methods used	Kini	Palaj	Total	Percentage
Use of Mosquito Bed Nets	47	39	86	27.95%
Use of Mosquito Repellents	25	26	51	15.98%

Closing Windows and doors in evening	8	10	18	5.64
Smoking Neem leaves and dung discs	29	35	64	20.06
Use of full clothing while sleeping	6	3	09	2.82
Electric Racket to kill mosquitoes	16	13	29	9.09
Destroying mosquito breeding grounds	89	71	160	50.156%
Did not do anything	17	09	26	8.150%

Conclusion:

Through this study, the authors conclude that the people who live in the villages endemic to filaria are least bothered about mosquitoes. A very few people pay attention to closing windows and doors in the evening and wearing full clothes in night. A substantial amount of the villagers are involved in reducing mosquito breeding grounds. This shows that there is an urgent need to spread more awareness about the mosquito borne diseases in this locality. The authorities should take strict actions against those help mosquitoes grow in their vicinity. Finally, all these reasons answer the question why we are not eliminating mosquito borne diseases, especially, Lymphatic Filariasis.

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CAPCDR 7th CONFERENCE 2023