

# Knowledge And Preventive Practices On Mosquito Borne Diseases In Relation To Japanese Encephalitis Outbreak In Imphal East District Manipur- A Cross Sectional Study.

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## ABSTRACT

**Background:** Japanese encephalitis virus (JEV) is a flavivirus causing viral encephalitis in many countries of Asia with an estimated 68,000 clinical cases every year. Due to the occurrence of recent outbreak of Japanese encephalitis in the state, this study was taken up to determine the level of knowledge and preventive practices of mosquito borne diseases and also to determine the factors associated with the level of knowledge. **Methods:** It was a cross-sectional study done among the adults (18 years & above) living in selected villages in Imphal East District from 11 th August 2016 to 7 th September 2016. Villages were sampled randomly using probability proportionate to size. Oral questionnaire was developed to collect information through interview schedule. Questions related to knowledge were given scores and summated (0-12). **Results:** Around half (48.1%) of the respondents could name two mosquito borne diseases correctly whereas only 0.4% of them could name four diseases correctly. Seventy five percent knew about involvement of any domestic animals in the transmission of JE. The participants came to know of mosquito borne disease from mostly radio (68.3%) and some from internet/social media (4%). Maximum responded use of mosquito coil as personal protective measures. Respondents have no knowledge about larvicidal fish/oil to control the breeding place of mosquitoes. **Conclusion:** Males, Christians, students and salaried govt employee have higher level of knowledge of mosquito borne disease. Higher the level of literacy more is the level of knowledge about mosquito borne disease.

**Keywords:** Japanese Encephalitis, JE knowledge, mosquito borne disease.

## INTRODUCTION

Mosquito borne diseases like Malaria, Dengue, Japanese Encephalitis (JE), Chikungunya, Yellow Fever, Filariasis etc. affects nearly 700 million people with one million deaths every year. Japanese encephalitis virus (JEV) is a flavivirus causing viral encephalitis in many countries of Asia with an estimated 68,000 clinical cases every year. Pigs and wild birds acts as host while Humans as end host. Though vaccines are available to prevent JE, no cure has been found yet. The occurrence of vector borne diseases depends on the interaction of various biological, ecological, social and economic factors.<sup>[1]</sup> Primary prevention of transmission of mosquito borne diseases is crucial to decrease the burden of diseases.<sup>[2]</sup>

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In India, it was first recognised in 1955 in Tamil Nadu. The first major JE outbreak was reported in 1973 from Burdwan district of West Bengal.<sup>[3]</sup> There were outbreaks in Manipur which resulted in 200 cases with 50 deaths reported in 1995; 100 positive cases with 10 deaths in 2010; 9 positive cases in 2015 and 42 positive with 4 deaths reported as of August 2016.<sup>[4]</sup>

Due to the occurrence of recent outbreaks this study was taken up to determine the level of knowledge and preventive practices of mosquito borne diseases and also to determine the factors associated with the level of knowledge.

## MATERIALS AND METHODS

This cross-sectional study was conducted among adults aged 18 years & above residing in Imphal East District of Manipur during the month of July to September 2016. Person who refused to give consent, those who were seriously ill and were not able to answer the performa, mentally retarded and locked house on the day of visit were excluded from the study.

Sample size was calculated based on a prevalence of 67% of knowledge on mosquito borne disease (Charu Kohli et al, 2015),<sup>[5]</sup> at 5% significance level and absolute allowable error of 5% after adding a design effect of 1.5 the calculated sample size was found to be 530.

From the list of villages in the district, 3(three) were sampled randomly using probability proportionate to size. All households in the selected villages were included in the study. Only one eligible member was selected from each household. The first eligible respondent from each household were interviewed after taking verbal informed consent.

A semi-structured questionnaire was developed to collect information through interview schedule. They were translated into local dialect to maintain uniformity. The questionnaire consisted of 3 sections namely section on Socio demographic profile, second section on Knowledge/ practice questions related to mosquito borne diseases and lastly Questions related to health seeking behavior. After data collection an interactive health talk was given to all members of the households regarding preventive practices and control of mosquito borne diseases. The questions related to knowledge were given scores and summated. The scores range from 0-12. The level of knowledge of mosquito borne diseases was grouped into three categories. Those scoring <25th percentile were leveled as having less knowledge of mosquito borne disease, respondents scoring between 25th to 75th percentile as having average knowledge and those scoring above 75th percentile as having good knowledge about mosquito borne diseases.

Data was entered into MS Excel spreadsheet and analysis was done using SPSS software version 22. Descriptive statistics like mean & proportion were calculated. Chi square test was done to look for association. A p-value of less than 0.05 was taken as significant.

Verbal informed consent was taken, all identifiers were removed from collected data and strict confidentiality was maintained. The study was approved by the institutional Ethics committee.

## RESULTS

A total of 577 houses were visited, out of which 549 responded and 28 houses were found locked. The study's response rate was found to be 95.1%. The age of the respondents ranges from 18 to 80 years with a mean age of 41.8 + 13.0 year. There were an almost equal proportion of males and females. [Table 1]

**Table 1: Demographic profile of respondents**

Variable	Frequency	Percentage
Gender		
Male	254	46
Female	294	54
Literacy		

Illiterate	90	16.4
Primary and middle school	133	24.2
10th passed	127	23.1
12th passed	103	18.8
Graduate and above	96	17.5
Occupation		
Student	32	5.8
Self-employed/weaving/daily wage labourer	138	25.1
Business/trader	68	12.4
Sells vegetables/fruits/pan dukan	28	5.1
Salaried Govt. employee	52	9.5
Salaried private sector employee	14	2.6
Agricultural labor/Farmer	29	3.8
Religion		
Hinduism	101	18.4
Islam	263	47.9
Christianity	24	4.55
Meiteism/Sanamahi	92	16.76
TRC	68	12.38

**Table 2: Responses to questions**

Variable	Frequency	Percentage
1. Heard about mosquito borne diseases		
Yes	537	98
No	12	2
2. Correctly name some mosquito borne diseases		
Correct one diseases	118	21.5
Correct two diseases	264	48.1
Correct three diseases	67	12.2
Correct four diseases	2	0.4
3. Sign/symptoms of mosquito borne diseases(multiple response)		
Correct one sign	185	33.7
Correct two sign	173	31.5
Correct three sign	58	10.6
Correct four sign	8	1.5
Correct five sign	2	0.4
4. Preventive measures taken up to prevent mosquito borne diseases (Multiple responses allowed)		
Use of bed nets	458	83.4
Wear protective/long sleeves clothes	47	8.6
Apply mosquito repellent creams	47	8.6
Vaccination	20	3.6
5. Measures that can be taken up at household/community level to prevent mosquito borne diseases (Multiple responses allowed)		
Cleaning of drains	197	35.9
Clearing dense undergrowth	121	22.0
Filling up of ditches	72	13.1
Keeping stored water tightly closed	65	11.8
Proper disposal of broken pots/buckets/bottles/old tyres	59	10.7
Windows of doors and windows	2	0.4
Putting larvicidal oils/fish in water bodies	0	0
6. Likely breeding places of mosquitoes (Multiple responses allowed)		
Ditches/nullahs	211	38.4
Broken pots/buckets/tyres	165	30.1
Rice/paddy fields	17	3.1
7. Know about the involvement of any domestic animals in the transmission of JE		
Yes	415	76
No	134	24
8. Which domestic animals are affected/involved with JE transmission		

Pig	325	78.3
Duck	33	7.9
Pig , duck	7	1.6
Don't know	50	12
Variable	Frequency	Percentage
<b>9. Heard of insecticide treated bednets ?</b>		
Yes	466	84.9
No	83	15.1
<b>10. Are you or any family members using it?</b>		
Yes	57	12.2
No	409	87.7
<b>11. From where can we avail these insecticide treated bednets?</b>		
Health centres	41	8.8
Health centres, ASHA	16	3.4
Pradhan	6	1.2
ASHA	190	40.7
ASHA, Local club/NGOs	63	13.5
Don't know	150	32.2
<b>12. Source of information of mosquito borne diseases(multiple answers allowed)</b>		
Radio	375	68.3
TV	296	53.9
Newspaper	286	52.1
Neighbours/friends/relatives	194	35.3
ASHA/AWW/Nurse/Health staff	24	4.4
Internet/social media	23	4.2
<b>13. Anyone in family is suffering from signs/symptoms mosquito borne diseases , what do you do (multiple answers allowed)</b>		
Go to hospital/health care	426	77.6
Consult local doctor/nurse	58	10.6
Go to hospital/health care and consult local doctor/nurse	55	10
Buy medicine from pharmacy	6	1.1
Don't know	3	0.5
Consult maiba/local quack	1	0.2
<b>14. Medicine to be avoided</b>		
Aspirin	1	0.02
Don't know	529	99.08
<b>Preventive measures taken up by locality in relation to JE outbreak</b>		
Did nothing	262	47.7
Distribution of medicine	181	33.0
Fogging & Distribution of medicine	51	9.3
Fogging	28	5.1
Fogging, Distribution of medicine, vaccination	17	3.1
Vaccination	10	1.8

**Table 3: Association of knowledge of mosquito borne disease with select variables (N= 549)**

	Knowledge level, n (%)			P value
	Less	Average	Good	
<b>Gender</b>				
Male	79(31.1)	63(24.8)	112(44.1)	0.001
Female	143(48.5)	57(19.3)	95(32.2)	
<b>Literacy level</b>				
Illiterate	57(63.3)	13(14.4)	20(22.2)	0.001
Primary & Middle school	58(43.6)	33(24.8)	42(31.6)	
10th passed	61(48.0)	30(23.6)	36(28.3)	
12th passed	27(26.2)	26(25.2)	50(48.5)	
Graduate & above	19(19.8)	18(18.8)	59(61.5)	
<b>Religion</b>				

Hinduism	45(44.6)	29(28.7)	27(26.7)	0.04
Islam	119(45.2)	48(18.3)	96(36.5)	
Christianity	5(20.0)	5(20.0)	15(60.0)	
Meiteism	35(38.0)	17(18.5)	40(43.5)	
TRC (tingkai rag)	18(26.5)	21(30.9)	29(42.6)	
<b>Occupation</b>				
Unemployed/homemaker	93(47.4)	41(20.9)	62(31.6)	0.001
Student	6(18.8)	6(18.8)	20(62.5)	
Self-employed/weaving/daily wage earner	57(41.3)	30(21.7)	51(37.0)	
Business/trader	24(35.3)	18(26.5)	26(38.2)	
Sells vegetables/fruits/pan shop	18(64.3)	6(21.4)	4(14.3)	
Salaried govt employee	9(17.3)	11(21.2)	32(61.5)	
Salaried pvt employee	5(35.7)	3(21.4)	6(42.9)	
Agriculture/farmer	10(47.6)	5(23.8)	6(28.6)	

## DISCUSSION

The present study shows the knowledge of mosquito borne disease was significantly associated with the educational status i.e higher the literacy more the knowledge. This finding is consistent with that carried out by Sharma et al,<sup>[6]</sup> on malaria. Males have more knowledge regarding mosquito borne disease which is different from another study done by Charu Kohli et al in Delhi where both the gender has equal knowledge.<sup>[5]</sup> Majority (98%) of the respondents had heard about mosquito borne diseases. Around half (48.1%) of the respondents could name two mosquito borne diseases correctly whereas only 0.4% of them could name four diseases correctly. According to a study conducted by Charu Kohli et al 67.6% subjects in rural and 63.6% in urban area were able to name at least one mosquito borne diseases.<sup>[5]</sup> Maximum responded use of mosquito coil as personal protective measures (91%). While in Charu Kohli study 69.0% of participants in rural and 75.7% urban areas were aware of coils.<sup>[5]</sup> Rampant use of Mosquito coils in this area could be the reason. Just 4% have heard of vaccination whereas Nepal: Analysis of Baseline Survey Data on Japanese Encephalitis, Kala-azar and Malaria found that 14% knew about the JE vaccine.<sup>[7]</sup> This may be because the late introduction of JE vaccine in our routine immunisation. In order to prevent mosquito borne disease participants opined prevention of water logging (52.6%) and disposal of broken pots, buckets, tyres (10%). Respondents have no knowledge about larvicidal fish/oil to control the breeding place of mosquitoes. This finding is different from that done by Acharya et al,<sup>[8]</sup> Delhi where 46% of the study subjects used

oil in coolers. More awareness program due to outbreaks of dengue could be the reason.

Out of 549, 75% knew about the involvement of any domestic animals in the transmission of JE. Most (78%) said pig and few (2%) said both pigs and ducks are involved. In Nepal: Analysis of Baseline Survey Data on Japanese Encephalitis, Kala-azar and Malaria there was high awareness (89%) of association of JE with pig farms and pig-raising practices.<sup>[7]</sup>

Majority (85%) of the respondents heard of insecticide treated bednets. Only 12% of participants said they currently use ITN which is almost equal to a study conducted by Niraj Pandit where 10% were using insecticide treated bed net.<sup>[9]</sup>

The participants came to know of mosquito borne disease from mostly radio (68.3%) and some from internet/social media (4%). While Charu Kohli found that 55.2% rural and 58.6% urban participants' responded television as the main source of information.<sup>[5]</sup> Radio was mentioned by 25.2% rural and 20.0% urban respondents.

## CONCLUSION

Males, Christians, students and salaried govt employee have higher level of knowledge of mosquito borne disease. Higher the level of literacy more is the level of knowledge about mosquito borne disease.

We were able to impart some degree of knowledge about the mosquito borne disease, its sign and symptoms and its prevention to the respondents and their family. Similar studies in other districts involving the hilly areas are required. It should involve repeated observation of some variables (e.g. breeding place of mosquitoes) over longer period of time. Awareness program should be arranged focusing on the preventive practices.

## REFERENCES

1. World Health Organization. Japanese encephalitis. Fact sheet No 386, December 2015. Available at: URL:<http://www.who.int/mediacentre/factsheets/fs386/en/>. Accessed on: August 20, 2016.
2. Vanlerberghe V, Toledo ME, Rodríguez M, Gomez D, Baly A, Benitez JR, et al. Community involvement in dengue vector control: Cluster randomised trial. *BMJ* 2009;338:b1959.
3. NVBDCP; Directorate General of Health services Ministry of Health and Family Welfare. New Delhi. Available from: <http://nvbdcp.gov.in/jecd.html>. Accessed on: August 20, 2016.
4. Report on positive cases and death 2016. Microbiology Department of JNIMS, Manipur.
5. Kholi C, Kumar R, Meena GS, Singh MM, Ingle GK. A study on KAP about mosquito borne disease in Delhi. *MAMC J Med Sci.* 2015;1:9-16.
6. Sharma AK, Bhasin S, Chaturvedi S. Predictors of knowledge about malaria in India. *J Vect Borne Dis.* Sept 2007;(44):189-97.

7. EHP Activity Report 121: Nepal: Analysis of Baseline Survey Data on Japanese Encephalitis, Kala-azar and Malaria. Available at: URL: <http://www.ehproject.org>.
8. Acharya A, Goswami K, Srinath S & Goswami A. Awareness about dengue syndrome and related preventive practices amongst residents of an urban resettlement colony of south Delhi. *J Vect Borne Dis.* Sept 2005;(42):122-7.
9. Pandit N, Patel Y, Bhavsar B. Awareness and practice about preventive method against mosquito bite in Gujarat. *healthline* July-December 2010;1(1):16-20.
10. Japanese Encephalitis and other-India International Society for infectious disease. Available at: URL:<http://www.promedmail.org>. Accessed on: August 20, 2016.
11. Centers for Disease Control and Prevention (CDC) Japanese Encephalitis Home Page. Available at: URL: <http://www.cdc.gov/japaneseencephalitis/>. Accessed on: August 20,2016.
12. Kumar KR, Gururaj G. Community perception regarding mosquito borne disease in Karnataka India. *Dengue Bulletin.*
13. Dhakuk KM, Gandha KM, Vadera BN, Mehta JP, Parmar DV, Yadav SB. A community level KAP study on mosquito control in Jamnagar Gujarat. *Nalt J community Med.*2013;4(2):321-28.
14. Tenglikar PV, Hussain M, Nigudgi SR, Ghooli S. KAP regarding mosquito borne disease among people of an urban area in Kalaburgi Karnataka. *Ntl J com Med.* 2016;7(3):223-25.
15. Taran SJ, Taran R, Bhandari V. KAP for mosquito borne disease among school childrens of malwa region of India. *Indian J Child Health.*2016;7(3):125-8.
16. Shobha, Saraswati S, Mukhopadaay A, Rao AK, Ranganath TS. KAP regarding dengue in Bangalore. *Asian J Pharma Hea Sci.*2014;4(3).
17. Tiwari PSN, Afroz S. Awareness and Prevention of Japanese Encephalitis among the people of Eastern UP. *Sch. J. Arts. Humanit. Soc. Sci.* Dec 2015;3(9B):1493-8.
18. Patel AB, Rathod H, Shah P, Patel V, Garsondiya J, Sharma R. Perceptions regarding mosquito borne diseases in an urban area of Rajkot city. *National journal of medical research.* Oct-Dec 2011;1(2):45-7.

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