A study of association between socio-economic factors and transmission of malaria in desert- *S.P. Yadav, A.K. Dixit and R.K. Kalundha*

Commencement: **October, 2007** Duration: **Two years** Status: **Ongoing**

Objectives

1. To study the socio-economic factors associated with malaria transmission in desert.

2. To find out the social solutions to control desert malaria.

Rationale

Malaria is one of the public health problems of desert part of Rajasthan. Some times the problem arises up to the extant, which takes the shape of epidemic and several lives are lost due to the disease. Entomological, parasitological, clinical and environmental related issues are looked into to bring down the morbidities and loss to human lives. Equally importantly, socio-economic aspects of malaria needs to studied for better understanding and implementation of action plan to control desert malaria.

Progress of the work

The API of Jaisalmer district was the highest among the desert districts of Rajasthan. Ramgarh PHC was on top among the district PHCs. Base line data of all the 60 villages of Ramgarh PHC were collected for understanding the factors associated with magnitude of disease. To accomplish the above objectives, 342 households from 12 villages namely- Sanu, Seuwa, Tejpala, Bada, Naga, Sadhana, Raimala, Sultana, Mokal, Lanela, Habur and Kakab have been covered. Thirty Households (LSEG 15 + HSEG 15) in each village were taken. Data pertaining to malaria cases during last 5 years (2002-06) was collected with respect to each household from the MPWs/ANMs. Pre-tested schedules were used for data collection which were prepared in English but communicated in *Hindi* or in local dialect- *Marwari*. Head of the Household or a member more than 18 years of age who was present at the time of survey was interviewed. Fever was used for the proxy of malaria. Some observations were made based on the accomplished work.

Observations and Inferences

Low Socio-Economic Group (LSEG) and High Socio-Economic Group (HSEG) both were comparable with socio-demographic characteristics such as age, sex, education, occupation, religion and castes (Table-1). LSEG has the API almost 2 for the 5 consecutive years from 2002-2006 which is alarming situation and nearly 3 times more than the HSEG (Table 2). Children are more affected (Table 3). These preliminary observations indicate statistically significant effect of malaria on low socio-economic group of the community. LSEG was less aware about causation of malaria and its signs and symptoms as compare to HSEG (Table 4

& 5). LSEG used less preventive measures to prevent the mosquito bite as compared to HSEG (Table 6). This has direct relation with the level of knowledge about the disease and its preventive measures and affordability.

Table1. Socio-demographic characteristics of respondents in two different groups

Characteristics		LSEG		HSEG	
		No.	%	No.	%
Age (Yrs)	<20	7	4.1	8	4.7
	20-29	61	35.7	59	34.5
	30-39	78	45.6	79	46.2
	40-49	15	8.8	16	9.4
	>50	10	5.8	9	5.2
Sex	Male	123	71.9	129	75.4
	Female	48	28.1	42	24.6
Education	Illiterate	88	51.5	84	49.1
	Literate	83	48.5	87	50.9
Religion	Hindus	125	73.1	126	73.7
	Other than Hindus	46	26.9	45	26.3
Caste	General Caste	66	52.8	72	57.6
	Other Backward Caste	41	32.8	36	28.8
	Schedule Caste/Schedule Tribe	18	14.4	17	13.6
Occupation	Agriculture/Animal keeping	132	77.2	140	81.9
	Other than Agriculture/Animal keeping	39	22.8	31	18.1

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group

Table 2. Incidence of malaria in two different socio-economic group from 2002-06

Study Parameters	2002		2003		2004		2005		2006	
	LSEG	HSEG	LSEG	HSEG	LSEG	HSEG	LSEG	HSEG	LSEG	HSEG
Population	1061	924	1087	950	1113	970	1139	995	1168	1016
ABER	7.0	7.5	7.0	8.1	7.2	8.0	7.4	8.3	6.9	7.9
(+) ve cases	20	6	22	8	18	5	24	9	18	5
Pf cases	12	1	13	2	10	1	11	3	6	1
API	1.9	0.6	2.0	0.8	1.6	0.5	2.1	0.9	1.5	0.5
Death	0	0	0	0	0	0	0	0	0	0

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group
ABER- Annual Blood slide Examination Rate Pf- falciparum
API- Annual Parasite Index

Table 3. Distribution of malaria cases according to age in two different socio-economic groups

Age group (Yrs)	LSEG		HSEG		Total	
	No.	%	No.	%	No.	%
0-1	0	0	0	0	0	0
1-5	65	63.7	20	60.6	85	63.0
5-15	24	23.5	9	27.3	33	24.4
>15	13	12.8	4	12.1	17	12.6
Total	102	100.0	33	100.0	135	100.0

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group

Table 4. Level of knowledge about causation of malaria among respondents

Causation	LSEG		HSEG	
	No.	%	No.	%
Malaria parasite	30	17.5	102	59.6
Personal hygiene	47	27.5	19	11.1
Impure water and edible items	54	31.6	15	8.8
Changing environment	23	13.5	20	11.7
Multiple cause	11	6.4	12	7.0
Don't know	6	3.5	3	1.8
Total	171	100.0	171	100.0

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group

Table 5. Level of knowledge about signs and symptoms of malaria among respondents

signs and symptoms	LSEG		HSEG	
	No.	%	No.	%
High fever with chill or sweating on alternate day	60	35.1	114	66.7
Fever with giddiness, vomiting and reddish on the face	75	43.8	29	17.0
Multiple signs and symptoms	23	13.5	20	11.7
Others	13	7.6	8	4.6
Total	171	100.0	171	100.0

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group

Table 6. Distribution of respondents using different preventive measures

preventive measures	LSEG		HSEG	
	No.	%	No.	%
Mosquito net	17	9.9	42	24.6
Odomos cream	2	1.2	8	4.7
Oils	10	5.8	25	14.6
Tortoise coil	3	1.8	11	6.4
Good night vaporizer	1	0.6	9	5.3
Smoke of cow-dung	25	14.7	38	22.2
Smoke of foliage	30	17.5	33	19.3
Nothing	83	48.5	5	2.9
Total	171	100.0	171	100.0

LSEG- Low Socio-Economic Group HSEG- High Socio-Economic Group

Important leads/outcomes from the study

The study will reveal the better understanding and implementation of action plan to control desert malaria along with the entomological, parasitological, clinical and environmental parameters.

Work remains to be done

More observations need to be obtained on desert malaria to substantiate the data and draw inferences. The following research question need to be replied which were arises during the preliminary observation of the present study:

1. Children less than one year age did not suffer with malaria. What was reason? Either mother milk was given immunity to protect from parasite or the social customary protection from the mosquito bite or inadequate data or any thing else prevented the transmission of malaria.

2. LSEG has almost 3 times more malaria as compare to HSEG. The question arises weather they were poor therefore, they suffered more with malaria or they suffer more with malaria therefore they become the poor.