Short Note

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Knowledge, awareness and practices towards malaria in communities of rural, semi-rural and bordering areas of east Delhi (India)

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Malaria not only poses a high risk to health, but the repeated clinical consequences of infection in endemic areas during early life and adulthood and outbreaks in epidemic prone areas place a burden on households, on the health services and ultimately on the economic growth of communities and the nation. Socioeconomic conditions of the community have direct bearing on the problem of malaria. Ignorance and impoverished conditions of people contribute in creating source and spread of malaria and hinder disease control strategy [1–3]. Prevention of the disease through better knowledge and awareness is the appropriate way to keep disease away and remain healthy as illness confusion and health-seeking behaviour may enhance or interfere with the effectiveness of control measures[4]. Studies pertaining to knowledge, attitude and practices (KAP) showed that direct interaction with community plays an important role in circumventing malaria problem[3,5].

In the present study a questionnaire-based survey was conducted in various groups including primary school teachers (PST), factory employees (FE), business group (BG), lower economic group (LRP), farmer group (FG), rural women (RW) and local healers (LH), to understand whether socioeconomic characteristics and worksites act as determinants for malaria risk. Occupation, worksites and to some extent socioeconomic factors are shown to be risk factors for malaria in several studies from Latin America[6–8] and Thailand [9].

Inclusion of various social groups particularly the school teachers in such studies is very important as they can impart correct knowledge about the disease to the school children and can also create awareness in community.

Information about the malaria infection (recent/past, self and/or their family members) and total expenditure incurred on medicine, transportation of patient and accompanying persons, treatment, blood test, nutritional food, recovery time and loss in daily wages, health seeking behaviour and education level were collected through a questionnaire (prepared in Hindi) from 1186 persons in the age group of 18–60 yr (94 tenders in primary schools under Municipal Corporation of Delhi; 336 factory employees (Singer India Ltd., Sahibabad, U.P., Bullet International and Roto Pump, NEPZ, Noida, U.P.); 134 businessmen, 432 labourers, 50 farmers, 15 local healers and 125 rural women residing in different parts of eastern Delhi

(New Modern Shahdara, Mandoli, Ashok Nagar and Mansarovar Park) and adjoining bordering areas of Uttar Pradesh—Ghaziabad, Shahibabad, Nayee Basti of Dadri PHC, Sholana of Dhaulana PHC and Sultanpur of Noida.

The difference in knowledge of malaria among various groups was expressed as percentage of individual groups. Household cost, man day lost in illness and recovery time and losses in daily wages were expressed as mean $\pm$ SD. Information from rural women and farmers was collected by way of group discussions (GDS).

The analysis of the data showed moderate to high awareness level among the respondents (Table 1). Prevalence of high awareness levels among the various respondents is understandable as malaria being an oldest disease of mankind and various control programmes run by the Government agencies, such as DDT spraying in 1970–76 played an important role in spreading awareness.

On the health seeking behaviour, Government hospitals were found to be the most commonly used treatment source for most of the respondents residing in semi urban areas. However, some (BG, LRP, FG and PST) preferred to visit private clinics. Self-treatment, especially with chloroquine was found prevalent among the residents of Sholana village. Practice of *Deshi ilaaj* (traditional healing) was found to be common among rural respondents (especially farmers and rural women). Paracetamol, disprine/asprin and any commonly available *Bukhar ki goli* (tablet for fever) and use of some herbal mixture containing Basil herb—*Tulsi*, botanical name *Ocimum basilicum* was also found to be in practice in rural and semi rural areas. Supernatural beliefs and practice of *Jhar-phunk* (occult or tantric practice) in treating the illness was found to be rare (Table 1).

Observation regarding personal protection measures to avoid mosquito bite, showed usage of mosquito net as the preferred method during March, mid-April, October and November months only (not in the hot humid months), usage of insecticides (mainly commercially available sprays such as Hit, Baygon spray, Finit, etc.) were noticed in the factory employees and rural residents. Among the respondents, however, more than one prevention methods were found to be in common practice.

Different parts of eastern Delhi and nearby rural pockets have been known to have unstable malaria with sporadic malaria incidents and seasonal transmission pattern[10]. The misconception prevailing among the large number of respondents about malaria vector and its breeding sites—dirty stagnant water by majority of respondents may probably be due to their lack of knowledge. Awareness about vector's breeding preferences should be created to control the vector breeding.

The practice of self-treatment and tendency to use any *Bukhar ki goli* (tablet used for fever) including some antimalarials (incomplete doses of drugs indiscriminately) among the rural respondents may be due to the prevalence of inadequate medical facilities and also due to the distantly situated medical service centres. Usage of Basil leaves as antimalarial stuff by some people may be viewed in the light of medicinal properties as well as religious belief attached to this herb[11,12]. Respondents who had experienced malaria showed better awareness level and familiarity with malaria terminology and procedures such as blood slide examination, parasite detection and buying of antimalarial drugs during their illness.

Information about malaria infection to self or family members, expenditure incurred in treatment and transportation, length of illness and recovery period (man days) loss in daily wages (direct and indirect) are given in Table 2. LRP with repeated infections (1–3 times) were recorded to be at the higher risk group for malaria.

Practice of using insecticide spray by FE is difficult to explain, it may probably be due to the easy availability

Table 1. Awareness and knowledge about mosquito, malaria and control measures in direct category of respondents groups

Queries	Response (%)			
	PST (94)	FE (336)	BG (134)	LRP (432)
Q1. Malaria is transmitted by				
A. Mosquito bite	100	100	100	100
B. Housefly bite				
C. Drinking of dirty water				
D. Due to sins				
E. No idea				
Q2. Name of malaria vector				
A. Female *Anophleles*	80	80.8	30	0
B. Male *Anopheles*	10			
C. Male *Culex*	2			
D. *Aedes* mosquito	5	19.2	40	0
E. No idea	3		30	0
Q3. Malaria vector breeds in				
A. Dirty stagnant water	99	91.1	100	96
B. Clean stagnant water	1	8.9	—	2
C. Dirty flowing water	—	—	—	—
D. Clean flowing water	—	—	—	—
E. No idea	—	—	—	2
Q4. When infected with malaria you consulted to				
A. Govt. hospital doctors	81	64.5	40	60
B. Private clinics	19	25.5	60	30
C. *Deshi* treatment	0	5	—	5
D. *Jhar-phunk* by *Ojhaa* etc.	0	5	—	5
E. Did nothing				
Q.5 What type of methods you used in your house to prevent yourself from mosquito biting?				
A. Use of mosquito net	80	42.1	50	37
B. Use of mosquito mat, agarbatties etc.	18	26	40	20
C. Use of insecticides	2	31.9	10	13
D. Use of fan only	0	0	0	15
E. Just covering of bodies with sheets	—	—	—	15

contd...

Table 1 (*contd*...)

Queries	Response (%)			
	PST (94)	FE (336)	BG (134)	LRP (432)
Q6. According to you malaria is a/an				
A. Ordinary disease	0	0	0	0
B. Serious disease if not treated in time	3.2	29.1	30	40
C. A serious disease	74.1	70.9	70	60
D. No idea	22.7			
Q7. Malaria parasite belongs to				
A. Bacteria	54.8	44	80	0
B. Protozoa (*Plasmodium*)	6.4	36	3	0
C. Virus	32.2	17	16	0
D. Amoeba	0	0	0	0
E. No idea	6.6	3	1	100
Q8. According to you malaria control should be carried out by the				
A. Govt. agencies only	4	16.5	27	40
B. Private agencies	3	5.5	1	0
C. Public	10	9	2	0
D. Govt.+ Public operation	83	69	70	60
E. No idea	—	—	—	—
Q9. Do you know the name of some of the commonest medicines used in malaria?				
A. Chloroquine	87	64	89	20
B. Quinine	13	6	11	0
C. Other medicine	—	30	—	—
D. No idea	—	–	—	80
Q10.Do you know the name of some commonly used insecticides?				
A. DDT	100	100	100	46.9
B. Finit	97	90	98	45
C. Others	40	35	30	8.1
D. No idea	—	—	—	—

of insecticide sprays in their work place. High usage of commercially available mosquito repellents (mats and coils) by urban respondents and low in rural respondents partially explained the impact of socioeconomic conditions on the selection of protection means in communities. Use of personal or household protection methods are indicators of socioeconomic status, which in itself has been reported as an important factor associated with malaria[8].

High malaria incidents in LRP with repeated infection is understandable as these respondents belong to low

Table 2. Household cost of malaria morbidity : expenditure incurred in receiving treatment, visits to doctor, losses in daily wages and time taken in recovery from illness in various groups interviewed during the year 2001–02

Groups	Total no. of respondents	Total no. of individuals experienced malaria	Percent malaria incidents in respondents	Mean illness period (days)	Mean values of expenditure incurred (Rs.)	Mean recovery time in days	Mean losses in daily wages per day in Rs.
PST	94	10	10.64	12.28	220	13.6	—
FE	336	60	17.85	12.51	633.39	13.65	141.96
BG	134	22	16.41	9.53	623.45	11.15	—
LRP (Migrated from Bihar)+U.P.	432	203	46.99	13.26	602.2	12.60	—

socioeconomic strata of the society and most of them were migratory community from rural areas of Bihar and eastern Uttar Pradesh (known for high malaria endemicity). Poor living conditions and poor health seeking behaviour of migratory population make them vulnerable to malaria frequently. Existence of a positive relationship between poverty and illness in every social structure cannot be denied; morbidity and mortality are documented to be higher among the poor[13].

Less malaria infection and low expenditure incurred in teachers' group may be due to better socioeconomic condition, education and knowledge of protection from mosquito bites and better acquaintances with Government hospitals for treatment (Table 2). Collection of information by group discussion among rural women and farmers provided an opportunity for researchers to know their experience, opinions, beliefs, practices and messages, which may be useful in spreading awareness among rural pockets and eventually help in controlling the infection. The concern shown by almost all the respondents about malaria, may probably be due to high prevalence of malaria and malaria related deaths reported in the locality.

Studies have so far shed little light on whether and how individuals adapt their behaviour to influence their risk. Researchers have included direct or indirect measure of people's knowledge of malaria in equations describing the risk of infection. Health education would offer promise of influencing individuals to adopt preventive measures [2,5].

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