1.8 A study of treatment seeking behaviour for malaria and its management in children in desert part of Rajasthan, India-

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AIMS AND OBJECTIVES

1. To assess the ability of mothers in a rural area of the desert part of Rajasthan to identify fever in their children less than five years of age
2. To estimate the proportion of children who received antimalarial drugs as recommended by WHO
3. To know the treatment seeking behaviour for malaria and its management

RATIONALE

The global data reveal that nearly 10.5 million children die annually before attending their fifth birth day in the developing countries. Out of five top most diseases, malaria is one of them by which highest morbidity and mortality occurs in these countries. These children are unable to express the severity of suffering as well as effect of medicines. It is the mother who is first to recognize that child is ill by observing dullness or not able to do routine activities such as sucking the mother milk. She identifies feverish child by touching his body and it is her ability to take prompt action for treating the child. Therefore, this study was planned to know the current status with the above objectives in the desert part of Rajasthan.

PROGRESS

The desert part of Rajasthan comprises 12 districts. Jaisalmer is one of them which had highest API among all these districts and out of 18 PHCs within the district Ramgarh PHC had the similar status. Considering this factor as one of the most leading factor, the above PHC was selected for the study area. All the villages of PHC were divided into two categories i.e. Command Villages (CVs) and Non-Command villages (NCVs) (CVs are the villages where the water was used since last 20 years or more for the irrigation and drinking purposes through IGNP and NCVs where same water is yet to reach). Random sampling method was used for the selection of the study villages. 15 villages were selected from each category of the villages. A total of 900 households from both categories (450CVs +450NCVs) of villages were selected for the study, which had at least one child less than five years of age in the household. All the head of the households were contacted and explained the aims and objectives of the study and requested for the co-operation and

participation of the family members in the study. They consented verbally for the same. Simultaneously local authorities such as Saran, Patwari, village teacher, community heads were also informed about the study. Door to door survey was carried out to collect the data. For every child of the household the mother was asked 'is this child sick today? If the mother answered yes, she was asked to describe the symptoms and their duration and to name the disease. The mothers were also asked 'by which symptoms and signs do you identify malaria?' and 'How did you treat your child?' All the children had their axillary temperature taken for 5 minutes with a mercury thermometer and the arm held firmly. They all had a complete physical examination by a PHC staff, including palpation of the spleen and blood taken by finger prick for thick and thin blood smears.

Fever was used as a proxy of malaria. Out of 900 households 863 mothers were interviewed and they have given information for a total of 1049 children whose age was less than five years. Table 1 depicts socio-demographic characteristics of the respondents. Majority (41.6%) of the mothers belonged to 29-39 years of age group followed by 39.2% in the age group 20-29, and 13.5% >39 and 5.7% <20 years of age group respectively. About one third (35.2%) do not have any formal education but they have learnt how to read and write under the Government of India scheme 'Sarv Shiksha Abhiyan' and one fourth (22.5%) were still illiterate. Nearly nineteen percent (18.9%) have studied up to primary, 10.2% up to middle, 7.2% up to secondary and 5.9% up tp senior secondary or its above level in the family. More than two third (69.3%) mothers were engaged in agriculture and its related work and animal husbandry along with the household work. Rest (42.7%) of the mother were engaged with other occupations such as service, labour, business etc. Majority (81.1%) of the mothers were Hindus and among the Hindus 59.9% were of General Caste, 25.0% Other Backward Caste and 15.1% Scheduled Caste/Scheduled Tribes.

Table 1. Socio- demographic characteristics of the study subjects

Characteristics	Number	Percentage
Age *(Yrs)*		
<20	49	5.7
20-29	338	39.2
29-39	359	41.6
>39	117	13.5
Education		
Illiterate	195	22.6
Literate	304	35.2
Primary	163	18.9
Middle	88	10.2
Secondary	62	7.2
Senior Secondary & above	51	5.9
Occupation		

Agriculture & its related work	413	47.9
Animal husbandry	185	21.4
Service	28	3.2
Business	31	3.6
Labour	166	19.2
Others	40	4.6
Religion		
Hindus	700	81.1
Non-Hindus	163	18.9
Caste among Hindus		
G C	419	59.9
OBC	175	25.0
SC/ST	106	15.1

GC= General Caste OBC= Other Backward Caste SC/ST= Schedule Caste/Schedule Tribe

Majority (71.3%) of the mothers have defined fever as *Tav* and malaria as *Hitav* (fever with shivering) or *Ekantratav* (fever on alternate days) in their local dialect *i.e.* Marwari. Further very few of them (2.1%) stated *Dhujani ri chhutan ro tav* (shaking body with fever) and *Hilnoritav* (moving body with fever). About thirteen percent (12.7%) mothers had misconceptions regarding causation of malaria. They stated poor nutrition, drinking dirty water, poor sanitation, unfavourable (hot and cold) environment, being in the rain, dirty surroundings as a cause of malaria. This data clearly indicate that misconceptions about the causation of the malaria were affecting the behavioural practices of the community for the preventive and curative measures of the disease.

Table 2. Perceptions and knowledge on the management of childhood malaria (*n*=863)

Variables	Results	No (%)	Association with age/ educational level
Perceived symptoms	Fever	750 (86.9)	Mentioning fever alone or in combination with other symptoms was significantly associated with having primary education and above
	Enteric symptoms	547 (63.4)	
	Prostration/lethargy/inactivity	391 (45.3)	
	Restlessness/excessive cries	110 (12.7)	
	Coldness/shivering & sweating	126 (14.6)	
	Respiratory symptoms	57 (6.6)	
	Convulsions	44 (5.1)	

	Others (yellow urine, etc.)	19 (2.2)	
Knowledge on the risk of persistent high fever	Leads the child's condition to convulsions/worsening of	659 (76.4)	Mentioning convulsions/ worsening of the child's condition was significantly associated with age ≥30 years, and having primary education or above.
	Others (leads to measles eruption, etc.)	204 (23.6)	
Home remedies for fever	Sponging/bath & antipyretics	802 (92.9)	Not significant
	Chloroquine alone	47 (5.4)	
	Chloroquine & aspirin/paracetamol	59 (6.8)	
Subsequent action after the home remedy	Go to a dispensary/health centre	724 (83.9)	Not significant
	Others (wait and see, etc.)	139 (16.1)	
Perceived importance of laboratory tests	Necessary and important	547 (63.4)	Significant association with primary or better education.
	Unimportant	316 (36.6)	
Perceived reasons for needing laboratory tests	To know the type of disease/ get correct/effective drug	589 (68.3)	Significant association with primary or better education
	Others	274 (31.7)	
Perceived reasons for treatment failure	Incorrect diagnosis & treatment, non compliance & ineffective drugs	488 (56.5)	Significant association with age ≥30 years and primary or better education
	Don't know	375 (43.5)	

Mothers' perception and knowledge on the management and outcome of treatment for childhood malaria fever are shown in Table 2. More than two third (86.9%) mothers considered fever as top most symptoms of the malaria and fever with loss of appetite, vomiting and diarrhoea as the important symptoms by 63.4%. Physiological and behavioural symptoms such as prostration/ lethargy/ inactivity (45.3%), coldness, shivering and sweating (14.6%), restlessness and excessive cries (12.7%) of malaria were considered during the study. Convulsions and respiratory symptoms were stated by the 5.5% and 6.6%. Mentioning fever alone or in combination with other symptoms were significantly associated with primary education and above. More than three fourth

(76.4%) mothers were very sure about the risk of convulsions and worsening of the child's condition day by day if, high fever persists for a period of seven or more days. About ninety three (92.9%) mothers used home remedies to treat their child. All the mothers stated that they assessed low, moderate and high category of fever based on their experience and knowledge by touching the body of child. For reducing the high temperature of the child they used wet cloth one by one by putting on forehead till the fever reduced from high to the low category. Few of them mentioned that feet and palms were rubbed with cloth from heel to toe.

Common practice was found among the studied mothers to treat febrile child herself at home. Treatment seeking practices of these mothers was based on their full confidence on health practices and beliefs that they were able to get rid off from the suffering within or before the time period of reaching health facility. Non-availability of public transport from the *Dhanies* to the health facilities was costly for them. Some mothers expressed non-availability of transport facility in and around their dhanies and very few mothers told that health personnel were not available at health facility at the time of urgency due to off time of the health staff. In some cases, mothers were not sure about the febrile child suffered from malaria and they consulted the elderly people in the community, if they agreed that the sickness of the child was malaria they administered antimalarial drugs. They used chloroquine, aspirin and paracetamol to treat the child. These medicines were purchased from the nearest medical shops. The antimalarial dosages were given based on the experience of the mothers or on advice of the elderly people of the community and conditions of the child.

Table 3. Distribution of children according to age and sex

Children age (Months)	Male		Female		Total	
	No.	%	No.	%	No.	%
<12	66	11.6	45	9.4	111	10.6
12-24	144	25.2	114	23.8	258	24.6
24-36	152	26.6	129	27.0	281	26.8
36-48	105	18.4	101	21.1	206	19.6
48-59	104	18.2	89	18.6	193	18.4
Total	571	100.0	478	100.0	1049	100.0

Table 3 depicts age and sex distribution of children. Majority (26.8%) of the children were in the age group of 24-36 months followed by 12-24 months i.e. 24.6%. Out of 1049 children 571 (54.6%) were male and 478 (45.4%) female. Comparison between fever reported by mothers and axillary temperature under the clinical examinations of the children less than five years of age is shown in table 4. This table depicts that according to the mothers,

out of 1049 children, a total of 311 (29.6%) children were sick. Further these sick children were divided into two categories by them based on their perception and knowledge, one as sick and feverish 245 (78.8%) and other as sick but not feverish 66 (21.2%).

Table 4. Comparison between fever reported by mothers and body temperature at clinical examination

Mother's perception	Children with temperature						
	Children No. (%)	<37.5^{0C}		37.5-38.4^{0C}		≥ 38.5^{0C}	
		No.	%	No.	%	No.	%
Sick and feverish	245 (100.0)	123	50.2	81	33.1	41	16.7
Sick but not feverish	66 (100.0)	31	47.0	23	34.9	12	18.1
Healthy	738 (100.0)	437	49.2	219	29.7	82	11.1
Total	1049 (100.0)	591	56.3	323	30.8	135	12.9

Same number of 458 children (43.7%) were clinically examined and were found with fever. A statistically significant difference was observed between the mothers' perception and clinical examination.

The mothers were informed that out of 311children, which were either sick with fever or sick without fever, 135 (43.4%) had the malaria. The results of the clinical examination of the same children reveal that only 91 (29.3%) had +ve slides for the malarial parasites. An other important observation noted was that out of 176 children whose mothers stated that they were sick but not had malaria for 34 (19.3%) blood slides were found+ve for malarial parasites. Not only this, mothers of 738 children told that they were healthy but after clinical examinations 56 (7.6%) children were also +ve for malarial parasite (Table 5). These parameters of the comparison are showing significant difference between the perceptions of the mothers towards diagnosis of malaria and clinical examination.

Table 5. Comparison of the diagnosis of malaria by mothers with the presence of a temperature ≥ 37.5^{0C} and positive thick smear result

Mother's diagnosis	Children No. (%)	Temperature ≥ 37.5^{0C} and positive thick smear result			
		positive		negative	
		No.	%	No.	%
Positive for malaria	135 (100.0)	57	42.2	78	57.7
Sick but no malaria	176 (100.0)	34	19.3	142	80.7
Healthy	738 (100.0)	56	7.6	682	92.4
Total	1049 (100.0)	147	14.0	902	86.0

INFERENCES

This study clearly indicates that children less than five years of age suffered more and malarial infection was continuing in the community. Statistically significant difference was noticed between the mothers' perceptions, knowledge, diagnosis and clinical examinations. Majority of the mothers were using home remedy to treat their children whether sick with fever or sick without fever based on their knowledge, perception and diagnosis. As a result children were not getting appropriate treatment. Without great efforts to improve home care, it is unlikely that the morbidity and mortality due to malaria in young children will be reduced. Intervention is required to the mothers for correct diagnosis and appropriate treatment of malaria in time.

WORK REMAINS TO BE DONE

The project is completed. Data of the study may be useful to the researchers, planners, evaluators, administrators and malaria control programme.