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Research Article

Utilisation and Delivery of Healthcare Services as Factors in Malaria Control in Kolar: A Community-Based Study

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A B S T R A C T

Introduction: The healthcare-seeking behaviour of the people and health service delivery in rural Kolar fluctuate with malaria endemicity. This study in Mulbagal Taluk of Kolar district was undertaken to know the healthcare utilisation and delivery as factors in malaria prevention and control.

Methodology: Two villages were chosen at random from each of the two PHC regions in Mulbagal Taluk. PHC regions were classified based on the yearly parasite incidence being greater than two (API > 2) and less than two (API < 2) in the previous five years. The awareness and practices on malaria and its prevention, as well as healthcare delivery and use in these regions, were acquired by a household survey.

Results: Around 80.6% and 83.0% of the households could be surveyed in the Devarayasamudra PHC and Nangli PHC areas, respectively. The Devarayasamudra PHC region (69.2%) had a greater understanding of malaria transmission from person to person than the Nangli area (26.2%). Around 65 fever cases were identified in these four villages. In regard to the fortnight visit for the fever survey, the healthcare personnel visited more households in the Devarayasamudra PHC area (48.5%) than in the Nangli PHC area (27.5%).

Conclusion: The better awareness on malaria was mainly due to good healthcare delivery services at Devarayasamudra PHC as it was an endemic zone for malaria. Despite the fact that the majority of participants were utilising one or more preventive measures, it was seen that the use of bed nets must be widespread in order to reduce malaria.

Keywords: Malaria, Knowledge, Healthcare Delivery, Utilisation

Introduction

In 2018, an estimated 228 million cases of malaria were reported globally. With 213 million cases (93%) in 2018, the WHO African Region continues to carry the greatest burden of malaria morbidity, followed by the WHO South-East Asia Region (SEAR). Almost 85% of all malaria cases worldwide were from 19 nations, 18 of which were in Africa and one in India. Since 2010, there has been a gradual reduction in the incidence of malaria cases, especially in SEAR.[1]

India's National Framework for Malaria Elimination emphasises screening of all fever cases suspected of having malaria, as well as enhancing referral and treatment of severe malaria cases, in order to minimise malaria-related mortality. Malaria diagnosis training for private practitioners and refresher training (continuing medical education) will be essential steps in the management of malaria patients, which will help the patients seek optimal care from private practitioners.[2]

Human conduct in terms of aetiology, treatment, and prevention of malaria promotes the disease's spread throughout the community. People seek medical assistance based on their particular impression of illness, and fever is still not considered a significant symptom. Various kinds of community-based research have shown that the general population's knowledge of malaria is still inadequate, and there is little promptness in treatment-seeking behaviour among fever patients.[3]

Local factors including social, cultural, environmental and healthcare-seeking practices play a major role in malaria transmission and its prevention and control efforts. It is, therefore, essential to study locally the social and cultural factors influencing malaria prevention and control measures including community knowledge and practices, and the healthcare-seeking behaviours for fever. These influence early malaria identification, effective treatment strategy, and health service delivery efficiency which are crucial for the elimination of malaria.[4]

Objectives

1. To assess the healthcare-seeking practices for fever
2. To study the healthcare delivery for malaria
3. To find the association between socio-economic factors and healthcare-seeking practices

Methodology

Study Setting

The Mulbagal Taluk was chosen randomly from among the five taluks in Kolar District for the study. In this taluk, 343 villages are served by 17 primary healthcare clinics for healthcare services. Two villages which had reported the API to be less than two consistently for the last five years and the other two villages among the PHC where the API was reported to be greater than two consistently for the last five years were randomly selected.

Study Design

This analytical cross-sectional study examined the associations that exist in the two groups at the given time. It was conducted from January 2013 to April 2013. A prospective data collection was conducted. The survey combined both purposes, firstly, to describe the population in the two groups in relation to sociodemographic, socio-economic and socio-environmental characteristics, and secondly, to analyse why people are not utilising preventive measures and health services for malaria control. Here, the fever survey was repeated in the same selected communities (cohort) three times (longitudinal study) to find the various healthcare-seeking behaviours and consistency in healthcare utilisation and delivery practices.[5]

Sampling

The communities in the research were chosen using multistage sampling. Firstly, two PHC locations were chosen at random from Mulbagal Taluk based on their API indices. Devarayasamudra PHC was chosen at random from among the PHCs with APIs more than two, while Nangli PHC was chosen at random from among PHCs with APIs less than two. In the second stage, two villages, namely Bellamballi and Hoskere, were selected randomly in the Devarayasamudra PHC area, and Patrahalli and Seegehalli were randomly selected from the Nangli PHC area. Among the randomly selected villages, all the individuals among all the households aged over 18 years were interviewed. The participation rate in the survey was above 80% in these four villages.

Data Collection

Based on a 74-item structured questionnaire focusing on socioeconomic status, environment, and knowledge, attitudes, and practises against malaria, the interview survey was conducted in the local vernacular (Kannada and Telugu) and was then translated into English.

The survey consisted of two parts. Firstly, visits were made to enumerate information on all the households in the selected villages, including demographic, social, educational, occupational, economic, and environmental factors. The focus, in the second part, was on details of knowledge, attitude and behaviour regarding malaria prevention. The head of the household, if present at the time of the visit, or respondents aged more than 18 years in the household, were interviewed. About three visits were made to collect information on fever in the fortnight prior

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to data collection among the households of the villages. This included the information on healthcare services utilised by the persons with fever, including self-treatment and the visits made by the multipurpose workers and ASHAs. Primary data were gathered from respondents using a pre-tested, structured, and closed-ended interview schedule that was translated into Kannada and then back-translated into English for validity. The respondents were asked about their recent episode of the disease and the activities they did for their recent episode of fever, pathways of treatment-seeking, reasons for such actions, distance and mode of travel to the provider, and so forth. The reasons for not using a provider designated by the government health system were captured.

Ethics Statement

The IEC approval was obtained from the Institutional Ethics Committee, Sri Devaraj Urs Medical College, Kolar. Informed consent and patient information were obtained in a Patient Information Sheet and the data are available at the Department of Community Medicine Locker, SDUMC, Kolar.

Statistical Analysis

The information from the questionnaire was recorded in Microsoft Excel and was later analysed with OpenEpi version 3.01.

Qualitative data were represented as frequencies and proportions. The chi-square test was used to measure any significant difference. Quantitative data were represented as mean and standard deviation and t-test was used as the test of significance. Binary logistic regression was used to find any association between malaria-endemic areas and non-malaria-endemic areas.

Results

Around 104 households in the Devarayasamudra PHC area (API > 2) and 103 households in the Nangli PHC area (API < 2) were surveyed. About 81% of households in the Devarayasamudra area and 83% of households in the Nangli area could be surveyed. Table 1 shows the demographic information of the communities surveyed in the Mulbagal rural area. There was a similar gender and age representation among both the community areas. In regard to the representation of the age group of 6–40 years, 66% were present in the Devarayasamudra PHC area and 56.6% were present in the Nangli area.

Table 2 shows the age and gender distribution of the study population. There was no significant difference in the composition of the population in terms of age and gender in the two PHC areas. The majority of the household members belonged to the age group of 19–40 years.

Table 3 shows the socio-economic status of the households surveyed in the two PHC areas graded as per Pareek's socio-economic classification. The variables studied included nine components, namely caste, occupation, education, land ownership, social participation, family members, house, farm power, and material possession. None of the households came under the upper and upper middle classes (Grades I and II). Almost three-fourths (72.5%) of the households belonged to the lower middle class. Around 21 (22.5%) and 16 (17.0%) households belonged to the lower class in the Devarayasamudra and the Nangli areas, respectively, and there was no significant difference in the distribution of households according to the socio-economic classification in the two PHC areas.

Table 4 shows the knowledge regarding malaria transmission reported by the study population in Mulbagal. In the Devarayasamudra PHC area, around 69.2% of people were aware that malaria is transmitted from one person to the other, but in the Nangli PHC area, only 26.9% of the people were aware of it. This difference in the knowledge regarding malaria transmission from person to person was statistically significant ($p < 0.001$). In the Devarayasamudra PHC area, the information or knowledge regarding malaria imparted by healthcare providers was 87.5%, whereas, in the Nangli PHC area, very few (10.5%) of the households recollected about the healthcare providers providing information on malaria. ASHA workers were active in the dissemination of malaria information in the Nangli area, but not in the Devarayasamudra area.

Table 5 reveals the distribution of households according to the availability and usage of mosquito bed nets. Around 59.5% of the households visited in these communities did not possess bed nets. More number of households (59.6%) in the Devarayasamudra PHC area had one or more bed nets compared to 25% in the Nangli PHC area. Also, 82% of the households in Nangli had never used a bed net as compared to only 37.5% in the Devarayasamudra PHC area. In the Nangli PHC area, both the possession and usage of bed nets were very low.

Table 6 shows the distribution of fever cases according to the treatment-seeking pattern in the last fortnight. Thirty-six fever cases were reported from the Devarayasamudra PHC and twenty-nine were reported from the Nangli PHC area. Out of the 65 fever cases, 49 had sought the services of primary health centres. Only 7 females in Devarayasamudra had taken treatment from the private health sector. Also, 18 of them had tried to take treatment on their own. The difference in the treatment-seeking pattern for fever among the communities studied in these two PHC areas was not statistically significant.

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Table 1.Demographic Information of the Communities Studied in Mulbagal Taluk

Variables	Devarayasamudra PHC*	Nangli PHC**	Total
	n	n	N
No. of households	104	103	207
No. of males	275	286	561
No. of females	265	271	536
Age (≤ 5 years)	25	27	52
Age (6–40 years)	140	346	670
Age (> 40 years)	181	194	375

* Malaria endemic area, API > 2, **Malaria non-endemic area, API < 2

Table 2.Age and Gender Distribution of Study Population in Mulbagal

Age (years)	Devarayasamudra PHC			Nangli PHC		
	Males n (%)	Females n (%)	Total n (%)	Males n (%)	Females n (%)	Total n (%)
≤ 5	12 (4.36)	13 (4.90)	25 (4.62)	13 (4.50)	14 (5.10)	27 (4.80)
6–18	54 (19.63)	61 (23.00)	115 (21.20)	66 (23.00)	68 (59.00)	134 (24.00)
19–40	110 (40.00)	109 (41.10)	229 (46.40)	116 (40.50)	96 (35.40)	212 (38.00)
41–60	55 (20.00)	52 (19.60)	107 (19.80)	52 (18.10)	52 (19.10)	104 (18.60)
> 60	44 (16.00)	30 (11.30)	73 (13.50)	39 (13.60)	41 (15.10)	80 (14.30)
Total	275 (100.00)	265 (100.00)	540 (100.00)	286 (100.00)	271 (100.00)	557 (100.00)

Table 3.Distribution of Study Population according to Socio-economic Status

Grades*	Devarayasamudra PHC	Nangli PHC	Total
	n (%)	n (%)	n (%)
III	7 (6.5)	11 (9.0)	18 (7.7)
IV	76 (71.0)	75 (74.0)	151 (72.5)
V	21 (22.5)	16 (17.0)	37 (19.7)

*Udai Pareek's Classification

Table 4.Reported Knowledge on Malaria Transmission in the Study Population in Mulbagal

Variables	Devaraysamudra PHC	Nangli PHC	Total	χ^2 Test	p Value
	n (%)	n (%)	n (%)		
Person-to-person transmission	72 (69.2)	28 (26.9)	100 (48.0)	38.28	< 0.001
Knowledge/ information providers					
Healthcare providers*	91 (87.5)	13 (10.5)	104 (49.0)	119.1	< 0.001
Students**	35 (33.7)	8 (7.7)	43 (20.7)	21.73	< 0.001
ASHA workers	Nil	18 (17.3)	18 (17.3)	NA	NA

*Healthcare providers from the government sector
**Students from Sri Devaraj Urs Medical College

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Table 5.Distribution of Households according to Availability and Usage of Mosquito Bed Nets

Variables	Devarayasamudra PHC	Nangli PHC	Total
	n	n	N
Availability of bed nets			
Nil	42	77	119
1	37	15	52
2	20 (19.2)	11	31
> 2	5	Nil	5
No. of members using bed nets			
Nil	44	77	121
1	42	15	57
2	14	10	24
> 2	4	1	5
Usage of bed nets according to number of months in the last year			
Nil	42	80	122
< 6	40	22	62
> 6	22	1	23
	104	103	207

Table 6.Distribution of Fever Cases according to Treatment-seeking Pattern in the Last Fortnight

Treatment-seeking Pattern	Devarayasamudra PHC		Nangli PHC	
	Male	Female	Male	Female
	n (%)	n (%)	n (%)	n (%)
Self-treatment	3 (33.3)	5 (11.1)	6 (25.0)	4 (14.8)
PHC	8 (44.4)	15 (55.5)	12 (50.0)	14 (51.0)
Private hospital	4 (22.2)	7 (25.9)	6 (25.0)	8 (2.6)
Compounder quack	Nil	2 (7.4)	Nil	1 (3.7)
Total	15 (100.0)	29 (100.0)	24 (100.0)	27 (100.0)

Discussion

This study showed that people's healthcare-seeking behaviour and health service delivery in rural Kolar varied with malaria endemicity. There was a lack of information on treatment-seeking practices and healthcare delivery for fever and malaria in Kolar. Hence, this baseline survey was carried out.

We analysed community understanding of person-to-person transmission, and we found that around 48% of those interviewed were aware that malaria is spread via mosquito bites. This understanding was higher in the Devarayasamudra PHC area (69.2%) when compared to the Nangli PHC area (26.9%). This was a statistically significant change ($p < 0.001$). In regard to the malaria treatment-seeking behaviour among Tharu and Pahari populations in Jhalari, Budhathoki and RK discovered that 33.1% of the participants were aware of person-to-person transmission.[6]

Malaria transmission information was obtained from either healthcare personnel, such as ASHA workers, ANMs or medical and nursing students. Approximately 33.7% of the questioned household members in the Devarayasamudra PHC region stated that they learned about malaria transmission from medical and nursing students and interns at Kolar's Sri Devaraj Urs Medical College. This medical college's field practising area is Devarayasamudra PHC. As a result, awareness of malaria and its transmission was higher in the Devarayasamudra PHC region (69.2%) than in the Nangli PHC area (26.9%). According to Joshi and Banjara, the sources

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of malaria information were health workers (21.7%), family and friends (13.5%), and malaria patients (10.2%).[7]

It is interesting to note around 59.5% of the households visited in these communities did not possess bed nets. More number of households (59.6%) in the Devarayasamudra PHC area had one or more bed nets compared to 25% in the Nangli PHC area. Also, 82% of the households in Nangli had never used a bed net as compared to only 37.5% in the Devarayasamudra PHC area. This observation on bed net usage is significant from the point of view of malaria incidence and its control.

Regarding the utilisation of healthcare services for fever and its management, it was observed that there was no significant difference in the pattern in these two PHC areas. However, it is interesting to note that young children were never given self-treatment by the care providers at home. Among the adults who utilised the services of a healthcare provider, it was observed that the majority utilised the services of the nearby primary health centre. The middle-aged and the elderly usually visited the government health centres. Chaturvedi et al.[8] observed in their study that 29.3% of the subjects who had a fever in the last three months utilised healthcare services of public health providers and 13% utilised services of private practitioners. This conflicts with the observation that 60% of the people in the country use the private sector for common ailments.

Conclusion

The study found that knowledge and practises concerning malaria were adequate, but there were differences in perceptions about the causes, signs and symptoms, and mosquito prevention in various places. The improved knowledge and awareness were contributed through the excellent healthcare delivery services at Devarayasamudra PHC, which was located in a malaria-endemic area. Despite the fact that the majority of the participants used one or more preventative measures, it was observed that the usage of bed nets must be widespread for malaria reduction.

Conflict of Interest: None

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