

# Knowledge on Malaria and Health Seeking Behavior among the People of Belauri Municipality of Nepal: A Cross-sectional Study

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## ABSTRACT

**Background:** Malaria infection is transmitted to humans through the bite of infected female Anopheles mosquitoes and 247 million cases of malaria in 2021, an increase from 245 million cases in 2020. The objective of the study was to assess the level of knowledge and health seeking behavior on malaria among the people of Belauri Municipality of Nepal.

**Method:** A Cross-sectional descriptive study was done among randomly selected 387 households. Head of the households were the respondents for face to face interview. Pretested and validated tool was used for data collection. Statistical Package for Social Sciences version 20 used for data analysis. Percentages, frequency, bivariate and multivariate analysis has been to measure the distribution and level of association.

**Results:** Overall knowledge about symptoms of malaria was good among 57.9% and who possessed a good understanding of malaria symptoms tended to seek treatment from modern health facilities during a malaria fever. Of these individuals, 43.8% sought treatment from public health facilities, while 32.7% sought treatment from private health facilities, resulting in a total of 76.5% seeking treatment from modern health facilities. However, the analysis found that the level of knowledge regarding malaria symptoms was not statistically significant ( $p=0.13$ ) in relation to health-seeking behavior.

**Conclusions:** For success of malaria prevention, programs should be designed to increase level of knowledge and also the translation of knowledge domain into appropriate health care seeking behavior in malaria fever.

**Key Words:** Health seeking behavior, Knowledge, Malaria, Nepal

## INTRODUCTION

Malaria remains a major global health issue causing preventable sickness and fatalities.<sup>1</sup> The latest World Malaria Report, 2022 shows that in 2021, there were 247 million cases of malaria, an increase from 245 million cases in 2020. The number of estimated malaria deaths as 619,000 in 2021, a decrease from 625,000 in 2020.<sup>1</sup> In Nepal, the percentage of *P. falciparum* infection has risen from 9.05% in FY 2020/21 to 13.53% in 2021/22, representing an increase compared to the previous year.<sup>2</sup> In Nepal, the government has also set a goal of achieving a malaria-free country by 2025, as outlined in the Annual report (2020/2021) of the Department of

Health Services/Ministry of Health and Population. Efforts to control and prevent malaria aim to reduce infection and mortality rates through effective case management and vector control strategies, such as promoting proper health seeking behavior, utilizing insecticide-treated bed nets, and controlling mosquito populations.<sup>3,4</sup> The key challenge in controlling malaria is the lack of widespread adoption of preventive measures and seeking appropriate healthcare among affected populations, making community involvement essential for successful control programs.<sup>5</sup> Lack of widespread adoption of seeking correct health care from appropriate health facilities, and use of preventive measures among affected population is the key obstacle in controlling malaria, making community

## Article information

Received: 22 March 2023

Accepted: 1 July 2023

Published Online: 31 August 2023

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involvement in malaria prevention are essential for successful control programs. It is understood that health seeking behavior itself is complex and dynamic process and don't seek one source of health care, and differs in their behavior according to who is affected and what illnesses are experienced. Health seeking decisions are not made solely by individuals alone, but are influenced by a larger decision-making process within households and social organizations, and can be affected by access to healthcare.<sup>6</sup> Good understanding of health care seeking behavior allows a better appreciation of how and why the person interacts with health service providers, both formal and informal health institutions during malaria fever.<sup>7,8</sup> Understanding health seeking behavior is crucial in reducing mortality and preventing the spread of malaria. So, this study was conducted to assess knowledge and health seeking behavior (HSB) on Malaria among the people of Belauri Municipality of Kanchanpur district of Nepal.

## METHODS

A cross-sectional descriptive design with mixed method has been adopted for this study. The Belauri Municipality of Kanchanpur was chosen as the focal area due to its composition of one high-risk and eight moderate-risk wards. Among the ten wards within Belauri, a total of five were designated for the study. This selection encompassed one high-risk ward (Ward number 1) and four moderate-risk wards (Ward numbers 2, 3, 4, and 6). These specific wards were chosen utilizing a simple random sampling methodology. All households of selected 5 wards of Belauri Municipality were the study population. A list of households of selected Wards was obtained Belauri Municipality and head of the household were the respondents. Head of households of Belauri Municipality, willing to participate and present on the study schedule were included in the study. A total of 387 households were randomly selected by using formula  $(n) = N / (1 + Ne^2)$  for the household survey method and proportionate to size (PPS) used to identify numbers of households for each Wards. The data collection tools used in the study included a household survey questionnaire and Focus group discussion (FGD) issues/questions. A set of data collection tool was developed in English and translated in Nepali language, tools were pretested and finalized. The purpose of the study was explained to the respondents before data collection; informed consent was obtained from the respondents and ethical approval from Nepal Health Research Council of Nepal (NHRC/Nepal, Ref.no: 2041/2023/3/3).

The gathered data was carefully reviewed and assessed for its completeness. Upon completion of the questionnaire, code numbers were assigned to ensure anonymity before returning them to the investigator. Based on knowledge assessment questions, score  $\geq 18$  were considered having good knowledge on symptoms of malaria and score  $< 18$  were considered poor knowledge. The quantitative data were entered into IBM® SPSS® version 20, cleaned, and analyzed. The qualitative data from FGDs were analyzed manually using thematic analysis. The results were summarized and presented by tables. Percentages, frequency and Chi-square test was applied to measure the distribution and level of association. The p

value less than 0.05 was considered statistical significant. The findings from both methods were triangulated, and final validation from research participants was obtained during data collection.

## RESULTS

### Socio-demographic characteristics of respondents

The age distribution of participants is skewed towards the younger age ranges, with the more than half (53.5%) of respondents falling in the 30-50 age range. There is a smaller proportion (22.0%) of respondents fall within the 20-30 age and 13.4% in 50-60 age group, and an even smaller proportion (11.1%) among 60 and above age group. Males dominate the distribution of sex (70.5%). Study also reveals that marital status was heavily weighted towards respondents who are currently married (87.6%). Majority of respondents were Hindu (89.4%). The largest number of respondents identify as Dalit (32.8%) and Chhetri (28.2%); other casts include Tharu (18.6%), Janajati (13.7%), Tamang (3.1%), and Brahmin (3.6%). Sixty-nine percent of the respondents belong to nuclear families and 31% coming from joint families. (Table 1)

### Understanding about malaria

Study result displayed in table 2 reveals that 75.7% of the respondents were aware of malaria, while 24.3% reported that they had not. Among those who had heard about malaria, most commonly cited symptoms were hot bodies/fever (87.6%), weakness (86.6%), and vomiting (82.9%). According to table 2, other commonly cited symptoms included convulsions (82.7%), yellow urine (82.7%), loss of appetite (81.7%), and sweating (81.1%). The least commonly cited symptoms were diarrhea (26.4%) and children not wanting to play (22.0%). Overall, it seems that the majority of respondents have heard of malaria and were able to identify common symptoms of the disease. However, there were a remarkable percentage of people who are unaware of some of the less common symptoms and were not recognized as symptoms of malaria.

### Knowledge level about symptoms of malaria

Table 3 shows the overall knowledge score of respondents about the symptoms of malaria. Large majority (57.9%) of the respondent have good knowledge about the symptoms of malaria while 42.1% of them has poor knowledge in this regard.

The FGD participants from different ethnic group mentioned different names for symptoms like malaria. It was interesting that in Tharu (Indigenous) ethnic group they used to describe malaria in the study area using local terms and local languages. "Bukhaar" was found local terms and local languages among Tharu, while among some of other non-indigenous (migrated Brahmin/Chhetri) they used "Tepaale Jworo" for symptoms like malaria (fever usually comes in gaps of three days in malaria).

### Theme: Local names to describe malaria fever

"If entire body will feel hot with joint pain, mouth will taste bitter, and no appetite than that we call "Bukhaar" (Tharu, male, 45 yrs/FGD)

"If a person feels hot and immediately feel cold with perspiring, with bitterness in the mouth, and sever pain in body than that is Tepaale Jworo" (Brahmin, female, 37 yrs/FGD)

**Table 1:** Socio-demographic features of survey respondents (N=387)

Variables	Category	Frequency	Percent
<b>Age (years)</b> [Mean =41.33 yrs; SD=12.7 yrs.]	20-30	85	22.0
	30-40	110	28.4
	40-50	97	25.1
	50-60	52	13.4
	60 and above	43	11.1
<b>Sex</b>	Male	273	70.5
	Female	114	29.5
<b>Marital status</b>	Currently Married	339	87.6
	Divorced	8	2.1
	Single/Never married	12	3.1
	Widow/Widower	28	7.2
<b>Religion</b>	Hindu	346	89.4
	Buddhist	12	3.1
	Muslim	2	0.5
	Christian	27	7.0
<b>Caste/ethnicity</b>	Bhrahmin	14	3.6
	Chhetri	109	28.2
	Tamang	12	3.1
	Dalit	127	32.8
	Janajati	53	13.7
	Tharu	72	18.6
<b>Family type</b>	Nuclear	267	69.0
	Joint	120	31.0

**Table 2:** Awareness and knowledge about symptoms of malaria (n=387)

Variables		Frequency	Percent
<b>Aware of malaria</b>	Yes	293	75.7
	No	94	24.3
<b>Knowledge about symptoms of malaria*</b>	Hot bodies/fever	339	87.6
	Becomes weak	335	86.6
	Vomiting	321	82.9
	Convulsion	320	82.7
	Yellow urine	320	82.7
	Loss of appetite	316	81.7
	Sweating	314	81.1
	Chill	282	72.9
	Diarrhoea	102	26.4
	Child would not play	85	22.0
	Others	359	92.8

\*Multiple responses

**Table 3:** Level of knowledge about symptoms of malaria

Level of knowledge *	Frequency	Percent
Good Knowledge (≥18)	224	57.9
Poor Knowledge (<18)	163	42.1

\*Total item = 24, possible score 0 to 24

“The main symptom of malaria is fever with hot and chill which is the main thing that we usually notice before we can say someone has “Bukhaar” malaria. Others noticeable symptoms common to our children may have vomiting (Tharu, female, 42 yrs/FGD)

“Mostly the old age people use local terms for malaria like symptoms and younger generation is more literate and use less such term.” (Teacher, 32 years/FGD)

Almost all participants in all FGDs reported symptoms in association with malaria, including a hot body, headache, restlessness, loss of appetite, bitterness in the mouth, weakness, body and joint pains, dizziness, fatigue, cold, chills, and a desire to sit in the sun. Remarkable proportion of FGD participants from different group recognizes common symptoms and signs of uncomplicated malaria. However, few of the FGD participants from Illiterate, Tharu, women FGD groups were not able to mention all common symptoms of uncomplicated malaria.

Theme: Knowledge about symptoms of malaria fever  
“Malaria It is associated with fever, severe headache, shivering, vomiting and severe cold” (Female, 45 yrs/FGD)

“ High fever with rigor and chill, sever body pain, loss of appetite ....at times they will start passing dark or bloody urine” (Literate, male, 52 yrs /FGD)

Knowledge about symptoms of malaria and health seeking behavior (HSB)

Individuals with a good understanding of malaria symptoms tended to seek treatment from modern health facilities during a malaria fever. Of these individuals, 43.8% sought treatment from public health facilities, while 32.7% sought treatment from private health facilities, resulting in a total of 76.5% seeking treatment from modern health facilities. However, the analysis found that the level of knowledge regarding malaria symptoms was not statistically significant (p=0.13) in relation to health-seeking behavior (Table 4).

**DISCUSSION**

This study assessed the knowledge and behaviour related to malaria on the sample population from Belauri municipality of Kanchanpur district, which is endemic for malaria. Previous studies from rural part of Ghana have shown that common local terms for malaria fever are “ebunu,” “etiridii,” “ahobene,” and “ntontom yadie” (meaning mosquito disease). In the Pibaoré community of Kaya, Burkina Faso, the term “weogo” is used to describe malaria when a person has a fever and vomits<sup>9,10</sup> The current study supports these findings by revealing that local terms for malaria fever vary based on ethnic diversity. The majority of Indigenous Tharu people use the term “Bukhaar,” while some migrants (Brahmin, Chhetri) use “Tepaale Jworo.”

Current study showed that the individuals who possessed a good understanding of malaria symptoms tended to seek treatment from modern health facilities during a malaria

**Table 4:** Association between knowledge about symptoms of malaria and health seeking behavior (n=387)

Knowledge about symptoms of malaria	Home remedy/self-care (%)	Public health facility (%)	Private health facility (%)	Traditional healers (%)	Total (%)	Chi square	p value*
Good knowledge ( $\geq 18$ )	18.3	43.8	31.7	6.2	57.9	5.639	0.13
Poor knowledge ( $< 18$ )	12.3	55.2	26.4	6.1	42.1		

fever. Of these individuals, 43.8% sought treatment from public health facilities, while 32.7% sought treatment from private health facilities, resulting in a total of 76.5% seeking treatment from modern health facilities. However, the analysis found that the level of knowledge regarding malaria symptoms was not statistically significant ( $p=0.13$ ) in relation to health-seeking behavior. It is noted that the results of previous studies on malaria knowledge in various regions have shown variations. In Ethiopia, individuals understanding of malaria were 2.7 times more likely to seek medical assistance compared to those with limited knowledge.<sup>11</sup> Another study in West Ethiopia showed participants with good knowledge were 4.65 times more likely to seek medical help compared to those with poor knowledge.<sup>6</sup> In addition, study from South Cameroon showed 86.6% of participants had good knowledge of malaria with fever and headache being the most commonly cited symptoms.<sup>12</sup> The differences in malaria knowledge levels across studies could be due to cultural differences, the quality and availability of health education and malaria awareness programs, and the socio-demographic characteristics of participants. Although some studies have shown higher levels of knowledge about malaria, the actual health-seeking behavior in those regions might still be inadequate. In addition, due to differences in study design, research participants and sampling techniques; the results of the current study have variable compatibility with previous studies. This is a cross-sectional study and causality cannot be established, so future research might apply to different study designs (i.e., longitudinal) in wider population to identify the contributing factors.

## CONCLUSION

In order to enhance the efficacy of malaria control initiatives, there is a pressing need to design comprehensive programs that not only elevate the general populace's knowledge about malaria symptoms but also effectively translate this knowledge into appropriate healthcare-seeking behavior during malaria episodes. This dual approach holds the potential to significantly influence in right decision-making and timely seeking care from modern healthcare facilities.

**Conflicts of interests:** The authors have no conflicts of interest to disclose.

**Disclaimer:** The content is solely the responsibility of the authors and does not necessarily represent any official views of any organization and offices.

**Funding resources:** This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

**Acknowledgements:** We acknowledge the respondents of Belauri Municipality for their support; staffs of

Municipality and Health Facilities for facilitating the study and appreciate respondents for their valuable time and kind cooperation.

## Author's contribution statement:

**AKPI:** Conceptualization, Writing-preparation of original draft, Writing-reviewing & editing. **MRC:** Project administration, Validation, Investigation, Writing and editing. **PPP:** Conceptualization, Data management and analysis, Writing and editing. **RL:** Investigation, Data collection and curation. **SBC:** Investigation, Data collection and curation.

## Ethics approval and consent to participate:

Ethical approval was obtained from Nepal Health Research Council (NHRC/Nepal, Ref.no: 2041/2023/3/3) and verbal consent was obtained from research participants.

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