



## Assessing The Knowledge and Awareness of Malaria Disease Among Healthcare Professionals and Community Workers of Meerut District: A Hospital Based Study

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| Article History   | Abstract   |
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| Received: 06 June 2023<br>Revised: 05 Sept 2023<br>Accepted: 28 Sept 2023 | <p><i>Introduction: Malaria is a major public health problem in worldwide and causes high morbidity and mortality, despite global efforts to eradicate the disease. The purpose of the research is to analyse the perception and behavioural practices towards malaria detection among healthcare workers. Aim -To analyze the Knowledge &amp; awareness among the healthcare professionals. Material &amp; Method: The pilot cross-sectional survey was carried out for the period of two months. Study included health care professionals, doctors and community workers who were working in private hospitals. Convenience sampling was used and total 500 participants were included in the study. Results: The least knowledge and awareness were found in Category 3 workers. Conclusion The public health professionals must play a very important role by increasing awareness among population through appropriate education &amp; counselling.</i></p> |
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### 1. Introduction

Malaria is a major public health problem in India and the leading cause of all malaria outbreaks in Southeast Asia (Saha et al., 2019). There are 75 million malaria cases and 800,000 deaths each year. According to annual estimates by the World Health Organization (WHO), there are approximately 2.14 million cases of malaria worldwide and 438,000 deaths from the disease. Malaria morbidity and mortality affect agriculture, industrial development, and national economies (Singh et al., 2018). Malaria cases have declined in India, but have not been completely eradicated. Malaria risk in our area is attributed to a lack of information, lack of knowledge about transmission, difficulty in accessing medical facilities, lack of proper treatment, and a climate suitable for mosquitoes (Rajvanshi et al., 2021). Therefore, a better understanding of people's attitudes and behaviours as well

as knowledge of malaria transmission and control is essential to developing practical and useful malaria control strategies. India has issued its first National Malaria Control Plan (2016-2030) and the Government of India has also increased funding for malaria control in India (Pandit et al., 2010). In Southeast Asia, India accounts for 79% of the malaria burden in the region and 82.4% of all malaria deaths. India's vision is to be malaria-free by 2027 and malaria-free by 2030, and the Government of India is working hard to achieve this goal. The National Vector Control Program (NVBDCP), sponsored by the National Rural Health Mission (NRHM) is one of India's largest and most comprehensive public health programs, including prevention and control of mosquito-borne diseases (Yadaf et al., 1999). Public participation, including health professionals, is essential to prevent and control mosquito-borne diseases. Odisha has the highest number of malaria deaths in India, followed by Chhattisgarh, Jharkhand and Assam. Rural areas across the state, particularly tribal areas, have been hit harder than urban areas. The prevention of malaria depends on people's knowledge and beliefs (Sharma et al., 2007). The purpose of the research is to analyze the knowledge, attitude, and behavioural practices related to malaria detection among healthcare providers and further to improve the quality of care that will serve as baseline information to improve malaria diagnosis and treatment among healthcare workers in private hospitals in India.

## 2. Materials And Methods

A pilot cross-sectional survey was carried out in 5 private Multi-speciality Hospitals of Meerut District. The duration of the study is of three months (November to January 2023). There are total of 38 private hospitals in Meerut, out of which 5 were randomly selected and a total sample size of 500 were selected through simple random sampling. All the volunteers who had participated in the study have been explained of the study procedure and those who accept to participate in the study were included as per inclusion and exclusion criteria. Study included healthcare personnel, doctors and community workers who were working in private hospitals. Informed consent was taken from all the participants prior to the study. Participants who did not give consent were excluded from the study. Confidentiality of the participants were maintained. Ethical clearance was also obtained from the Institution ethical committee of Subharti Dental College and Hospital. A self-administered structured questionnaire was designed and it was then translated into English & Hindi language and distributed among healthcare professional and community workers to assess the knowledge and awareness about Malaria. The questionnaire was formed after scrutinising literature. Questions were self-structured and were validated. The validity and reliability of the questionnaire was calculated using the Cronbach's alfa test, and it was found to be 0.78. Inter-examiner reliability was calculated which was found to be fair as 0.70. Each correct answer was scored 1, the wrong answer was scored 0. Score 1 and 2 will be ranked poor, 3 ranked fair 4 and 5 ranked good. For each question, a mixed set of multiple correct options was provided. The components of questionnaire were demographic details like name, age, gender, knowledge and awareness questionnaire including practice management of malaria. The data, thus generated, were subjected to appropriate statistical analysis. Data were analysed using Descriptive statistics and was compiled and entered in a spreadsheet computer program and then exported to data editor page of SPSS version 20.0.

## 3. Results and Discussion

Total 500 responses were analysed. The findings in the Table 1 reveals Knowledge and awareness of participants about malaria disease. If asked "Malaria is a/an ordinary disease or Deadly disease among Doctor, Health Personnel and Community participants (20%) Doctor, (36.67%) Health Personnel, (66.67%) Community responded that it is Ordinary disease while (80%) Doctor, (60%) Health Personnel (26.67%) Community responded that it is deadly disease and remaining had no idea. When asked "Malaria is transmissible or not (60%) Doctor, (60%) Health Personnel, (46.66%) Community participant responded that it is transmissible disease, while (40%) Doctor, (40%) Health Personnel, (53.34%) Community responded that it is not transmissible disease. If asked regarding Mode of spread of Malaria, (100%) Doctor, (86.67%) Health Personnel, (93.33%) Community participant responded that mosquito bite, while (0%) Doctor, (10%) Health Personnel, (6.67%) Community participant responded that dirty drinking water is the cause of malaria, remaining participants had no idea.

The findings in the Table 2 indicates practice and behavioural management of malaria diseases. When asked about Common breeding site, (0%) Doctor, (40%) Health Personnel, (33.34%) Community participant responded that running dirty water is common breeding site while (100%) Doctor, (66.66%) Health Personnel, (60%) Community participant responded that standing dirty water is the common breeding site. If asked about, most frequent mosquito bite time, (100%) Doctor, (83.34%) Health Personnel, (80%) Community participant responded that night is most frequent bite time while (00) Doctor, (6.66%) Health Personnel, (13.34%) Community participant responded that sunset is the bite time. When asked Malaria is a maternal, newborn and child health issue because these groups of people are most at risk for infection, (100%) Doctor, (80%) Health Personnel, (66.67%) Community participant responded positively. The findings of figure 1 illustrates age wise distribution of Participants.

**Table: No.1**

**Perception of knowledge and awareness among health care professionals**

| <b>Question</b>                  | <b>Doctor</b> | <b>Health Personnel</b> | <b>Community participation</b> |
|----------------------------------|---------------|-------------------------|--------------------------------|
| Malaria is a/an                  | 50            | 300                     | 150                            |
| Ordinary disease                 | 10 (20%)      | 110(36.67%)             | 100(66.67%)                    |
| Deadly disease                   | 40 (80%)      | 180(60%)                | 40(26.67%)                     |
| No Idea                          | 00            | 10(3.33%)               | 10(6.66%)                      |
| Is Malaria transmissible         |               |                         |                                |
| Yes                              | 30 (60%)      | 180(60%)                | 70(46.66%)                     |
| No.                              | 20(40%)       | 120(40%)                | 80(53.34%)                     |
| Mode of spread of Malaria        |               |                         |                                |
| Mosquito bite                    | 50(100%)      | 260(86.67%)             | 140(93.33)                     |
| Dirty drinking water             | 00            | 30(10%)                 | 10(6.67)                       |
| No Idea                          | 00            | 10(3.33)                | 0                              |
| Common symptoms of Malaria       |               |                         |                                |
| Fever                            | 40(80%)       | 290(96.67%)             | 140(93.33%)                    |
| Nausea                           | 10(20%)       | 60(20%)                 | 10(6.66%)                      |
| Headache                         | 20(40%)       | 60(20%)                 | 60(40%)                        |
| Body ache                        | 40(80%)       | 80(26.67%)              | 50(33.33%)                     |
| Vomiting                         | 30(60%)       | 80(26.67%)              | 40(26.67%)                     |
| Shivering                        | 40(80%)       | 200(66.67%)             | 120(80%)                       |
| No Idea                          | 00            | 00                      | 00                             |
| Name of Vector                   |               |                         |                                |
| Female Anopheles                 | 50(100%)      | 280(93.34%)             | 110(73.34%)                    |
| Male Anopheles                   | 00            | 10(3.33%)               | 10(6.66%)                      |
| Ades Mosquito                    | 00            | 00                      | 20(13.34%)                     |
| No Idea                          | 00            | 10(3.33%)               | 10(6.66%)                      |
| Medicine for treating of Malaria |               |                         |                                |
| Chloroquine                      | 50(100%)      | 190(63.34%)             | 90(60%)                        |
| Others                           | 00            | 00                      | 10(6.66%)                      |
| Paracetamol                      | 00            | 20(6.66%)               | 10(6.67%)                      |
| Primaquine                       | 00            | 90(30%)                 | 40(26.67%)                     |

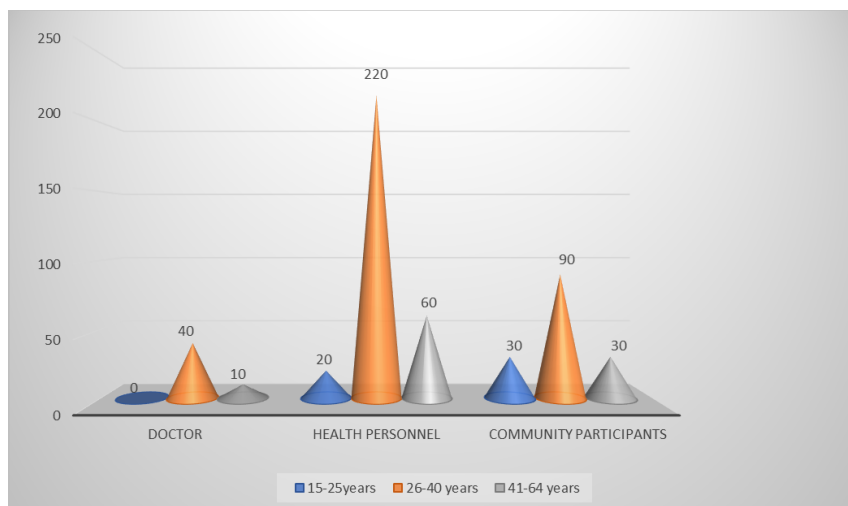
**Table: No.2**

**Perception of practice management among health care professional**

| <b>Question</b>      | <b>Doctor</b> | <b>Health Personnel</b> | <b>Community participation</b> |
|----------------------|---------------|-------------------------|--------------------------------|
| Common breeding site |               |                         |                                |
| Running dirty water  | 00            | 120(40%)                | 50(33.34%)                     |

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|   |          |             |             |
|---|----------|-------------|-------------|
| Garbage/trash   | 00       | 40(13.34%)  | 30(20%)     |
| Standing clean water  | 10(20%)  | 40(13.34%)  | 40(26.67%)  |
| Standing dirty water  | 50(100%) | 200(66.66%) | 90(60%)     |
| Running clean water   | 00       | 00          | 10(6.67%)   |
| Plants/Vegetation   | 00       | 00          | 00          |
| Most frequent mosquito bite time  |          |             |             |
| Sunset  | 00       | 20(6.66%)   | 20(13.34%)  |
| Morning   | 00       | 20(6.66%)   | 00          |
| Night   | 50(100%) | 250(83.34%) | 120(80%)    |
| Noon  | 00       | 10(3.34%)   | 00          |
| No idea   | 00       | 00          | 10(6.66%)   |
| Eradication of Breeding site of mosquito  |          |             |             |
| Prevent water stagnation  | 40(80%)  | 250(83.34%) | 110(73.34%) |
| Covering containers   | 40(80%)  | 130(43.33%) | 60(40%)     |
| Changing water in storage tanks   | 50(100%) | 110(36.67%) | 70(46.66%)  |
| No Idea   | 00       | 00          | 00          |
| Common preventive practice against Malaria  |          |             |             |
| Use of Smoke  | 20(40%)  | 60(20%)     | 70(46.67%)  |
| Mosquito mat & coil   | 40(80%)  | 60(20%)     | 100(66.66%) |
| Mosquito spray  | 50(100%) | 200(66.67%) | 130(86.66%) |
| Use of fan  | 20(40%)  | 80(26.66%)  | 30(20%)     |
| Covering of body with clothes   | 40(40%)  | 130(43.34%) | 50(33.34%)  |
| Mosquito nets   | 50(100%) | 140(46.66%) | 90(60%)     |
| Cleaning house  | 20(40%)  | 120(40%)    | 100(66.67%) |
| Cleaning water in storage tank  | 50(100%) | 70(23.34%)  | 60(40%)     |
| No idea   | 00       | 20(6.66%)   | 10(6.67%)   |
| Malaria is a maternal, newborn and child health issue because these groups of people are most at risk for infection   |          |             |             |
| True  | 50(100%) | 240(80%)    | 100(66.67%) |
| False   | 00       | 60(20%)     | 50(33.33%)  |
| Malaria poses a serious health risk to the pregnant woman but the unborn child is protected by placenta from harmful effects of Malaria                                   |          |             |             |
| True  | 50(100%) | 260(86.66%) | 80(53.34%)  |
| False   | 00       | 40(13.34%)  | 70(46.66%)  |
| Diagnosis of malaria in pregnancy using laboratory testing or rapid diagnostic tests is not recommended before testing pregnant women showing signs & symptoms of illness |          |             |             |
| True  | 10(20%)  | 100(33.34%) | 60(40%)     |
| False   | 40(80%)  | 200(66.66%) | 90(60%)     |



**Figure 3: Age Wise Distribution of Participants**

There are only fewer surveys conducted in India regarding a perception of malaria among health care professional so direct comparison could not be done owing to results and methodology. In our study Category 1 are Doctors who had good knowledge and awareness and they are well trained as per NVBDCP guidelines in implementing the programmes. Category 2 are healthcare personnel who are involved in implementing the programme, the questionnaire shows less knowledge and awareness among them as they have been involved in multitasking. According to the study by Kishore P et al. (2021) participants had good knowledge regarding malaria symptoms and treatment (92.67%), methods of prevention (86%) and diagnosis (70.67%). Most respondents did not avail government health services or DDT spray. The other study by Kadam et. Al. (2015), 24 participants (17.1 %) have a low knowledge level and 94 (67.1%) obtained an average level and 22 (15.7 %) have high level of knowledge on components like symptoms, causes and transmission of malaria.

In our study when asked regarding Mode of spread of Malaria, (100%) Doctor, (86.67%) Health Personnel, (93.33%) Community participant responded that mosquito bite, while (0%) Doctor, (10%) Health Personnel, (6.67%) Community participant responded that dirty drinking water is the cause of malaria, remaining participants had no idea. In the study by Vala Mayur et al. (2013) 87.96% respondents knew that mosquito transmits malaria. 75.93% respondents did not know how dengue is transmitted. 90.51% respondents knew that mosquito borne diseases can be prevented by using personal protective measures. 23.84% of the respondents did not use anything for prevention against mosquito bites. In the study by Munsu Dz et al. (2019), a total of 277 (93.90%) were aware of malaria, and 264 (95.31%) knew that it is transmitted by mosquito. knowledge, attitude and practice towards malaria among symptomatic patients attending Tumbi Referral Hospital.

In our study If asked regarding the name of Vector that causes malaria (100%) Doctor, (93.34%) healthcare personnel, (73.34%) Community participant responded that Female Anopheles causes malaria while (00) Doctor, (3.33%) Health Personnel, (6.66%) Community participant responded that male Anopheles causes malaria and rest participants responded for Aedes mosquito while other had no idea In the study by Abate et al (2013) all respondents had ever heard of malaria. Most of the respondents (85.2%) attributed the cause of malaria to mosquito bite. In our study If asked Malaria is a maternal, newborn and child health issue because these groups of people are most at risk for infection, (100%) Doctor, (80%) Health Personnel, (66.67%) Community participant responded positively.

In our study when asked whether Malaria poses a serious health risk to the pregnant woman but the unborn child is protected by placenta from harmful effects of Malaria, (100%) Doctor , (80%) Health Personnel, (66.67%) Community participant responded that malaria poses serious health risk to pregnant woman. In the study by Neji et al., (2013), Insecticides treated net and Intermittent

preventive treatment drugs should be given to women in antenatal clinics and the women should be encouraged to comply with malaria prevention strategy throughout pregnancy.

In our study If asked regarding Common preventive practice against Malaria, (100%) Doctor , (46.66%) Health Personnel, (60%) Community participant responded that mosquito net is common preventive practice while (80%) Doctor ,(20%) Health Personnel, (66.67%) Community participant responded that mosquito mat and coil is common preventive practice against malaria .In the study by Munsi Dz et al. (2019) Nearly all participants (263, 94.95%), identified sleeping under bed nets to be protective against malaria.

The strength of our study is that we have identified tools required to improve the perceptions among the groups. Earlier a lack of awareness tools available in health scenario was IEC and the gaps in this tool was lack of emotional feedback. In BCC tool, we have fulfilled the gaps which were there in the IEC, i.e. we have included emotional feedback through which, for some extent we are able to spread the awareness among the community effectively. In SBCC tool, we have added social mobility factor in BCC tools through which we are able to reach the community to the full extent efficiently. Common popular myths among the community which can be ruled out by using above behavioral tools and methods.

#### **4. Conclusion**

The finding of our study reveals low level of knowledge and awareness among health personnel and community participants. To change this scenario public private partnership, if introduced, can play a magnanimous catalytic role in achieving excellence in healthcare services Sanchit et al. (2018). So as public health professionals, we must play very important role by increasing awareness among population of health & personal hygiene through appropriate education & counselling. It should be sorted out & considered for further improving scenarios through behavioral tools like EC, BCC, SBCC tools in the community. Public Health Dentist, being an oral specialist had a great amount of knowledge and practices towards the general health and recruiting them into the government healthcare sector will further improve the conditions of community and will also strengthen the public health system of our country.

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#### **Recommendations**

Further studies including mix method design and behavioural trial studies are recommended in future to improve knowledge and practices among health care professional to all the disease caused by National Vector Borne diseases. Training Health program (Das et al., 2019) and Community awareness Program should be organized for the people to improve their knowledge regarding this disease.

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