

Issue 32
June

MERA-India brings you...

News & Views

Interview



Dr Nitika
Scientist E,
ICMR-National Institute of
Malaria Research, New Delhi

Interview



Professor Pranjal Sarma
Department of Sociology,
Dibrugarh University,
Dibrugarh, Assam

Upcoming



Lecture Series on Infectious Diseases 2.0:
Lecture 07 by **Professor Thomas Churcher**,
Imperial College London (UK)

EDITORIAL | NIMR & MERA-INDIA ACTIVITIES

INTERVIEWS | RESEARCH IN SPOTLIGHT

MALARIA THROUGH THE LENS OF RESEARCHERS | UPCOMING EVENT

Editorial

Dear Readers,

MERA-India team brings you the thirty-second issue of our newsletter, "News & Views".

As we know, one of the major problems in achieving malaria elimination is the hidden parasite reservoir in the human host. Cryptic malaria is one such impediment, wherein the malaria parasite persists in various host tissues with little to no clinical symptoms, making it difficult to detect using current technologies. While it was previously believed that the only source of cryptic parasites is the liver dormant stages known as hypnozoites, however, recent research has revealed the existence of cryptic niches outside the liver, such as in the lungs, bone marrow, spleen, etc. These niches represent significant sources of parasite recrudescence unrelated to hypnozoites. Studies have shown that the bone marrow and spleen harbour latent forms of the parasite responsible for relapses and asymptomatic infections. Unlike typical malaria cases that manifest with fever, chills, body aches, and other clinical symptoms, cryptic malaria can be challenging to diagnose as infected individuals often appear healthy and, therefore, may not seek medical attention. Moreover, these cryptic infections in the bone marrow and spleen may be responsible for silent chronic infections, thereby posing a challenge to malaria control and elimination efforts. This highlights the crucial need for employing active surveillance, accurate diagnostic techniques, and comprehensive malaria control strategies towards the identification and management of such asymptomatic carriers.

In light of the above, Professor Isaac K. Quaye gave a lecture on the topic "Current *Plasmodium* biological concepts vis-à-vis malaria elimination" with an emphasis on cryptic malaria. The summary of this thought-provoking lecture has been enclosed in this newsletter. We have also included glimpses from the MERA-India Community Behaviour in-person meeting in the present issue. The "Malaria Scientists to Watch" section encompasses intriguing and enlightening interviews with prominent scientists, Professor Pranjal Sarma from Dibrugarh University, Assam, and Dr Nitika, Senior Scientist at ICMR-National Institute of Malaria Research (NIMR), New Delhi.

The "Research in Spotlight" section covers the summary of three malaria-relevant research articles. The first study conducted by Oyibo W. *et al.* presents findings on malaria parasite density in a sample of 7783 children from various states in Nigeria. In the next study, Duguay C. *et al.* evaluated the impact of COVID-19 on community-level malaria prevention and health-seeking practices in Benin using a mixed methods approach. The final summary covers a systematic review and meta-analysis of vector control for malaria prevention during humanitarian emergencies by Messenger LA. *et al.*

Further, the "Malaria Through the Lens of Researchers" section embraces an image submitted for the MERA-India Image Competition 2022 by Dr Sumeet Singh, Armed Forces Medical Services, Pune. The seventh lecture in the Lecture Series on Infectious Diseases 2.0 will be delivered by Professor Thomas Churcher from Imperial College, London (UK). The details can be found in our "Upcoming Event" section.

We hope that you will find this issue engaging and fascinating. Please write to us for any feedback or suggestions regarding the newsletter's content at meranewsletter@gmail.com.

With best wishes,
MERA-India team

ICMR-NIMR & MERA-India Activities

MERA-India Community Behaviour in-person Meeting for finalizing the second phase of the projects

MERA-India conducted an in-person meeting for finalizing the second phase of the community behaviour multi-centric projects, from 08th-10th June at Guwahati. This meeting was conducted under the guidance of the experts Dr Bontha V. Babu (Director-in-Charge, ICMR-NIIRNCD, Jodhpur and Scientist-G, Head of Socio-Behavioral & Health Systems Research Division, ICMR, New Delhi) and Professor Madhumita Dobe (Chairperson, FAITH and Former Dean, Director-Professor and Head of the Department of Health Promotion and Education, AIIPH).



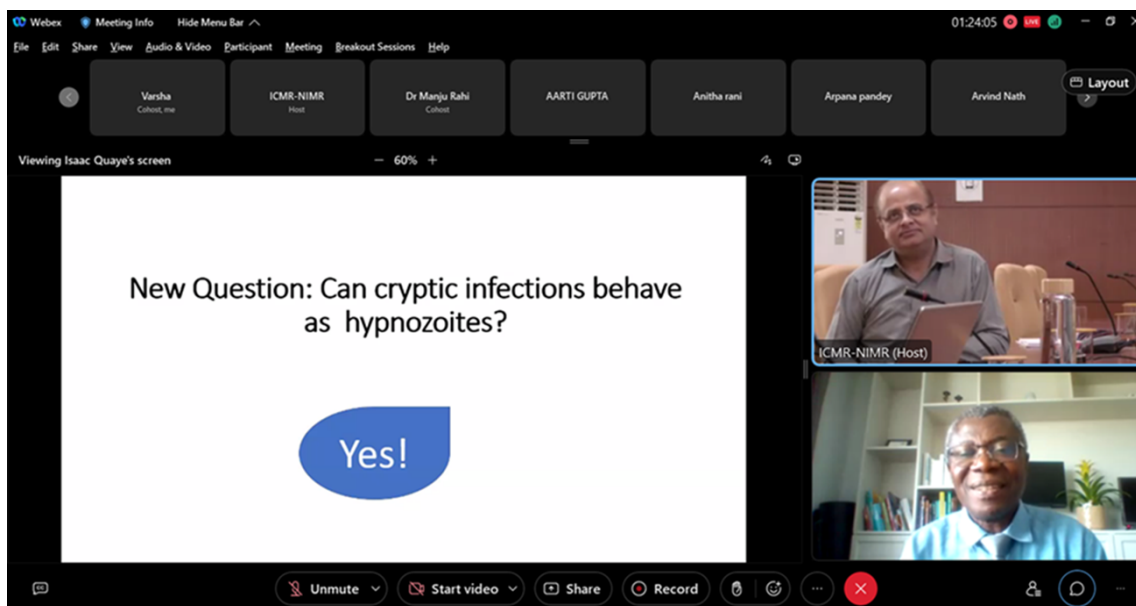
The meeting began with a comprehensive review of the project's first-year progress, including achievements, challenges, and lessons learned. The Principal Investigators (PIs) and mentors acknowledged the significant milestones achieved during the first year and recognized areas that require further attention and improvement. The participants engaged in a thorough discussion to determine the key goals, interventions, implementation, and evaluation for the second year of the project. Specific goals were identified, ensuring they align with the overall project objectives and are attainable within the given time frame.



A field visit was also organized to facilitate discussions on potential cooperation and garner the support of healthcare officials for the implementation plan of the MERA-India team at

the Assam and Tripura sites. The meeting with healthcare officials, including Assistant Malaria Officer (AMO) Mr. Jatin Rabha and Consultant Ms. Nazia, was successfully conducted by the MERA-India PIs and mentors. The meeting took place at the office of the Joint Director of Health Services in Udalguri.

Lecture Series on Infectious Diseases 2.0: Lecture 05 by Professor Isaac K. Quaye



The fifth lecture in the ICMR-NIMR and MERA-India "Lecture Series on Infectious Diseases 2.0" was delivered by Professor Isaac K. Quaye on 17th May 2023. He is a faculty at the Regent University College of Science and Technology in Ghana and has been working for over 20 years in the field of Malaria. Dr Manju Rahi (Scientist F, ICMR and Principal Investigator, MERA-India) welcomed Professor Quaye, and Dr Sachin Sharma (Chief Consultant, MERA-India) formally introduced him to the audience.

During the lecture, Professor Quaye delivered a comprehensive presentation on "Current *Plasmodium* biological concepts vis-à-vis Malaria elimination." He commenced the lecture by elucidating the fundamental aspects of *Plasmodium*, including parasite taxonomy, the biological characteristics of species that infect humans, and the life cycle of the parasite. Subsequently, he introduced the audience to contemporary biological concepts, specifically highlighting two key factors: imported transboundary (mosquito factor) and cryptic infections (parasite factors). Professor Quaye explained that malaria elimination strategies primarily revolve around detecting and treating parasites to interrupt local transmission. Blood samples are typically used for parasite detection during the asexual phase of the life cycle. However, challenges arise when attempting to identify parasites that reside in cryptic sites beyond the bloodstream, such as the spleen, bone marrow, lungs, adrenal glands, and

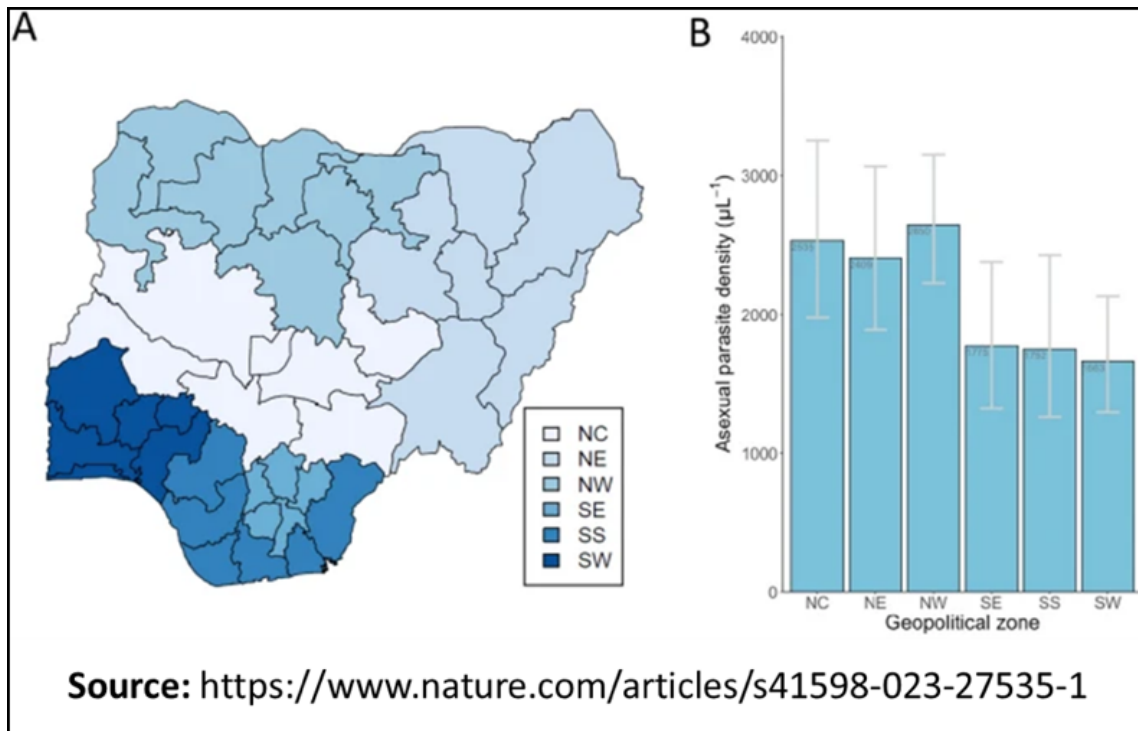
placenta. Professor Quaye underscored that cryptic infections in hidden sites, the presence of hypnozoites, and asymptomatic infections pose significant challenges for detection and treatment. He emphasized the importance of sustained research on the biology of parasites in endemic areas, the implementation of new surveillance strategies by national malaria programmes, and the establishment of quick response mechanisms tailored to each country's infrastructural capabilities as key solutions to overcome these challenges.

Following the lecture, Professor Quaye graciously addressed the questions posed by the audience, providing insightful responses and further clarifying the topics discussed. The session was concluded by Dr Sachin Sharma with a vote of thanks to the speaker and all the attendees.

The recording of this lecture is available on the MERA-India website (<https://www.meraindia.org.in/lecture-series>).

Research in Spotlight

Oyibo W. *et al.*, *Sci Rep.* 2023: Malaria parasite density and detailed qualitative microscopy enhances large-scale profiling of infection endemicity in Nigeria.

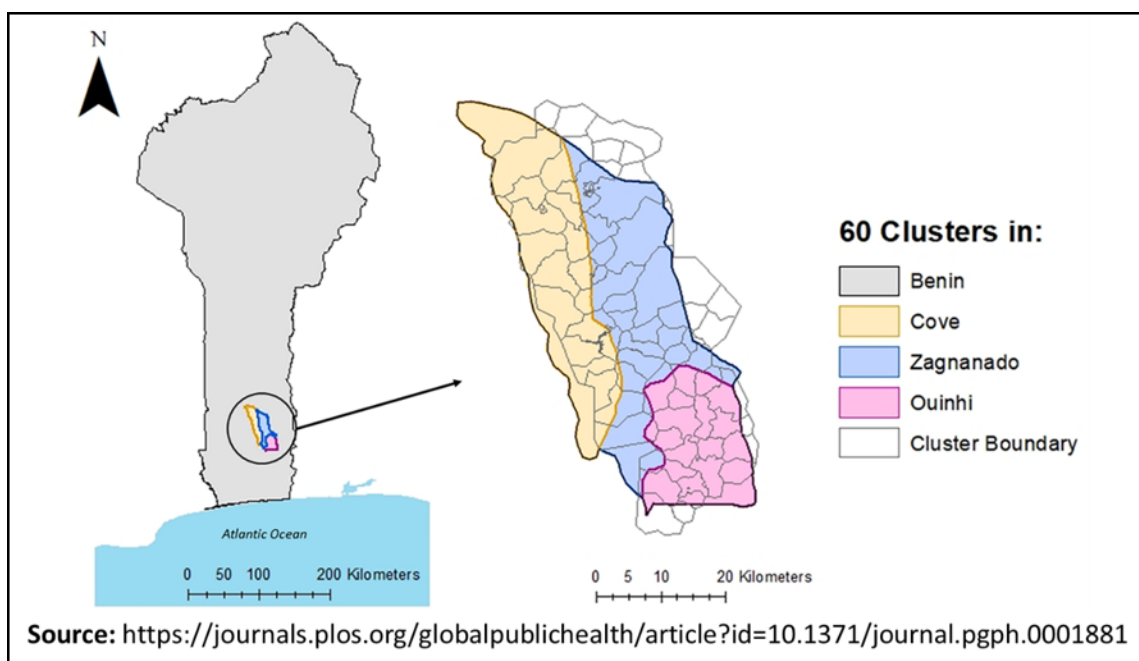


Global progress in reducing malaria has been stagnant, necessitating a deeper analysis of the disease's epidemiology, especially in countries with a high malaria burden. While national surveys have primarily focused on infection prevalence, there is a lack of comprehensive data on parasite density and different developmental forms. To address this gap, a [study](#) was conducted by Oyibo W. *et al.* in Nigeria, the country with the highest malaria burden worldwide. Blood slide microscopy was performed on over 7,700 children aged up to 5 years across all 36 states of Nigeria. The study analysed malaria parasite density, different developmental stages, and species infections.

The findings revealed a positive correlation between the mean asexual parasite density within infected individuals and the prevalence of infection in the community, with higher densities observed in the northern geopolitical zones. Additionally, sexual parasite prevalence in each state was strongly correlated with asexual parasite prevalence, although sexual parasite densities were generally low. The study also highlighted that infants had lower parasite densities compared to children above 1 year of age, and most infections were caused by the *P. falciparum* species. Mixed-species infections exhibited the highest asexual parasite densities.

The authors recommend that future large surveys in high-burden countries include parasite density measurements, developmental stages, and species analysis. This would enhance the quality of malaria epidemiology and enable better tracking of changes over time. Understanding local epidemiology is crucial for implementing effective malaria control strategies, particularly in countries that face a significant malaria burden.

Duguay C. *et al.*, *PLOS Glob. Public Health* 2023: Community-level impacts of the coronavirus pandemic on malaria prevention and health-seeking behaviours in rural Benin: A mixed methods study.



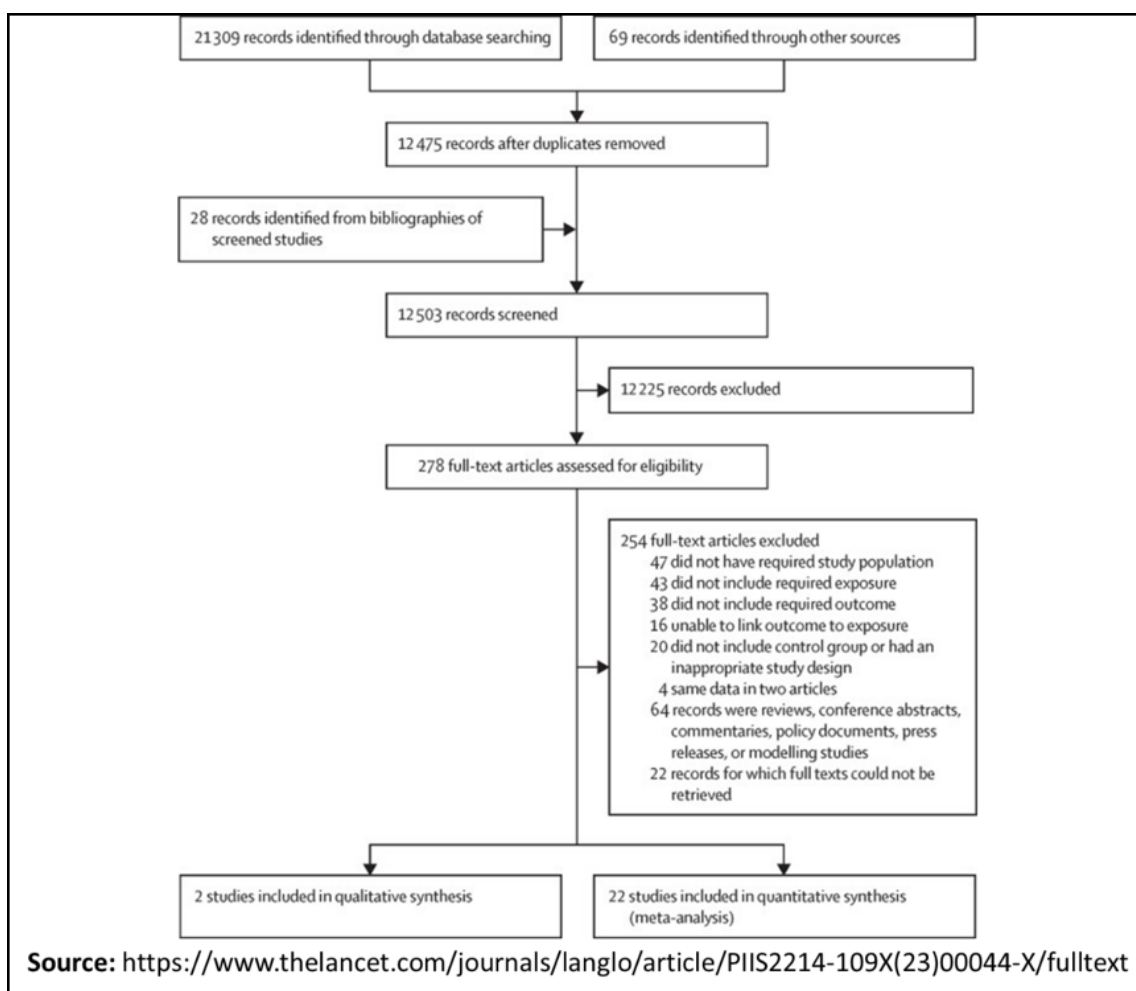
The COVID-19 pandemic has had negative impacts on malaria prevention and control efforts globally, including delayed distributions of insecticidal nets, decreased outpatient attendance, and disruptions to malaria testing and treatment. Duguay C. *et al.* evaluated the impact of COVID-19 on community-level malaria prevention and health-seeking practises in rural Benin using a mixed-methods approach.

Data was collected through cross-sectional surveys with 4,200 households and ten focus group discussions. Logistic regression models were employed to identify variables associated with outcomes such as good COVID-19 knowledge, long-lasting insecticidal nets (LLINs) usage and access, and avoidance of health centres. Receiving information from radios or televisions was significantly associated with good COVID-19 knowledge and avoiding health centres due to the pandemic. Qualitative findings revealed varied changes in health-seeking behaviours, with some participants reporting no change while others visited health centres less or more often.

It was found that LLIN usage and access did not decrease in the [study](#) area despite the pandemic, but an unintended challenge emerged due to families socially distancing in their homes, resulting in a shortage of LLINs. The minimal community-level impacts of the pandemic on malaria prevention and health-seeking behaviours in rural Benin underscore the importance of sustaining malaria control interventions during the COVID-19 crisis.

The study emphasizes the need to continue efforts to prevent and control malaria while also responding to the pandemic. The results provide valuable insights for tailoring malaria prevention and control strategies during future health emergencies.

Messenger LA. et al., *Lancet Glob Health* 2023: Vector control for malaria prevention during humanitarian emergencies: a systematic review and meta-analysis.



Humanitarian emergencies, characterised by population displacement, food insecurity, and disruptions in health systems, often lead to malaria epidemics among individuals with little or no immunity. To assess the impact of vector control interventions on malaria disease burden in such emergencies, a systematic review and meta-analysis were conducted. [Messenger LA. et al.](#) screened 12,475 studies and included 22 studies conducted between 1989 and 2018 in nine countries affected by chronic emergencies, with a total of 616,611 participants.

The analysis evaluated seven different vector control interventions, including insecticide-treated nets (ITNs), indoor residual spraying (IRS), topical repellents, insecticide-treated chaddars, insecticide-treated cattle, and insecticide-treated clothing. The results showed that ITNs significantly reduced the incidence of both *Plasmodium falciparum* and *Plasmodium vivax*. The evidence for the effect of IRS on malaria incidence was of very low certainty. Topical repellents were associated with a reduction in malaria infection risk, and there was moderate-to-high certainty evidence for the effectiveness of insecticide-treated chaddars and insecticide-treated cattle in certain emergency settings. The evidence for insecticide-treated clothing was of very low certainty.

The findings support the World Health Organisation's (WHO) policy recommendations to deploy ITNs during chronic humanitarian emergencies. However, the study highlights the urgent need to evaluate and adopt novel interventions for malaria control in the acute phase of emergencies. Humanitarian emergencies, particularly in malaria-endemic areas, increase the risk of severe malaria epidemics due to population movement, inadequate sanitation, disrupted healthcare, and limited access to treatment and control measures.

Understanding the effectiveness of different vector control interventions in humanitarian emergencies is crucial for guiding decision-making and improving malaria control strategies in these challenging situations.

Malaria Scientists to Watch

An interview with Dr Nitika



[Dr Nitika](#)

Scientist-E,
ICMR-National Institute of Malaria Research,
New Delhi

1. Please share your journey from being a medical student to a Scientist at the National Institute of Malaria Research, New Delhi.

After obtaining an MBBS degree from BRD Medical College Gorakhpur, I joined Community Medicine at AIIMS, New Delhi, and this was the beginning of my research career. This was the time I really got exposure to the public health system. During this time, I got a chance to interact with people from rural backgrounds and urban slums, and I began to realize that the problems and diseases actually being faced by people are more complex and different than what we see in the clinic. There are other aspects, like social factors, economic factors, etc., that contribute to the disease process.

After completing my residency, I joined as a Young Investigator in a non-profit organisation, and there I got the opportunity to work with Dr MK. Bhan. This really shaped my thought process and helped me reaffirm my decision to continue my research. At that time, I was mainly involved with research surrounding maternal and child nutrition. During this period, I acquired skills in managing trials, the basics of developing a good research question, and maintaining perseverance in research.

In 2021, I joined the National Institute of Malaria Research. The Institute is involved in finding solutions to the problems of malaria through basic, applied, and operational research.

2. What are your views on the malaria situation in India and how far are we from achieving the goal of malaria elimination?

In India, the epidemiological scenario of malaria is changing, and with a decreased reported number of cases, the situation is relatively better in comparison to a few years ago. India is slowly progressing towards achieving elimination. However, there are certain pockets of continuing transmission. Also, asymptomatic infections contribute significantly to maintaining transmission. To effectively tackle this last mile, the country will require

expanding the options available for controlling malaria, namely, highly sensitive RDTs, vaccines, roping in the private sector, proper use of recommended antimalarials, etc. The major challenge is interrupting transmission and ensuring that there is no resurgence, with a surveillance system in place so that not even a single case is missed.

3. In India's attempts to prevent and control malaria, what role do community engagement and education play?

Community engagement and education play a pivotal role in the control of any disease, especially malaria. Vector control interventions and the use of LLIN, or mosquito repellants, need a motivated community. Not only in control, efforts directed for effective treatment, be it 14-day primaquine treatment or approaching a registered practitioner for malaria management, need a community aligned to the understanding of the importance of controlling disease.

4. What challenges do you see for women working in STEM?

Considering the socio-cultural milieu in India, there are challenges for women in general, be it attaining quality education, pursuing their field of interest, safe commuting to the workplace, etc. For women working in STEM and for women working in other areas also, the major challenge, I think, is maintaining a work-life balance and ensuring a good upbringing for kids. To ensure this, many times a short break from a career is required. At that time, women scientists are required to hand over their work portfolios to others. And after returning, it sometimes gets difficult to get those opportunities. At that time, maintaining optimism that this is just a phase and will pass may boost morale. Also, certain DST schemes, especially for women and early-career scientists, are a boon for women returning to the field after a gap. In addition, ensuring proper childcare centres at the workplace by the government will help in maintaining work-life balance. Despite these challenges, perseverance and determination to do something big and different will help us achieve success in whatever work we do.

5. In your opinion, how is MERA-India contributing to India's malaria elimination target?

MERA-India is an alliance to bring together research with the programme's and country's agendas to eliminate malaria. Research is an integral part of the elimination agenda, be it establishing the role of asymptomatic infections in maintaining transmission, conducting operational research to make the existing interventions more effective, or conducting vector-bionomics related studies. The knowledge base generated by the MERA-India project is closely aligned with the elimination agenda. Along with this, MERA-India is advocating for the adoption of their findings in policymaking. Also, capacity-building workshops and distinguished lecture series are very useful. In addition to multicentric studies, studies in the national interest by individual scientists can be taken up. Also, studies, especially targeting elimination in certain pockets with continuing transmission, can be taken up.

An interview with Professor Pranjal Sarma



[Professor Pranjal Sarma](#)

Department of Sociology,
Dibrugarh University, Assam

1. Please share your journey with our readers.

As a Sociologist by profession, I have been teaching, doing research, and guiding research scholars in the Department of Sociology, Dibrugarh University, Assam, for the last 25 years. I completed my master's in Sociology from NEHU, Shillong, in 1997, where I was awarded a gold medal based on my performance. I obtained my doctorate in Sociology from the same university in 2003.

I am associated with different government organizations, NGOs, UNICEF, the Red Cross Society and I am affiliated with the Indian Sociological Society. I also serve as an Executive board member of the International Sociological Association and many other reputed institutions of the society. I have supervised 10 MPhil scholars and 8 PhD scholars to date.

My areas of interest are Human Disabilities, Industrial Sociology, Sociology of Management, Medical Sociology, Sociology of Work, Sociology of Leisure and Social Change.

2. Being a professor of sociology, what inspired you to work in the field of malaria?

Malaria is known to be a deadly disease and India has been battling it for a long time. However, in a developing country like India, the problem of malaria has not been entirely eliminated despite the efforts made by the government. This situation intrigued me about malaria. I noticed that human behaviour within the community and their perception of the etiology, treatment, prevention, etc. of malaria play an important role in malaria prevention. People seek medical advice depending on their individual perception of ill health. Fever is still not perceived as a serious symptom. Many community-based studies have proved that knowledge about malaria among the general population is still poor and that there is no promptness in treatment-seeking behaviour among fever cases. People are still unaware of the symptoms of malaria and how it can be prevented. Correct assessment of community attitudes, knowledge, and behaviour can assist in the reformulation of malaria control strategies and form the basis of appropriate health education messages.

We have to develop a module that will change their approach to health services and in turn will increase their participation in the malaria elimination program.

3. Since you are working on community behavioural aspects, how complicated is malaria control in the Northeast region in your opinion?

Socio-cultural practises, attitudes, and beliefs of the population (mainly tribal) of the forest ecosystem due to poor education restrict their compliance with the malaria control and elimination programme. There is an increasing trend in negligence toward following the necessary precautionary measures against malaria. People are no longer afraid of malaria because it is now thought of as a common fever, and even after contracting the disease, they do not experience fear. It has been highlighted in several areas that since most people are poor, they wait for their health to recover naturally or traditionally. Due to the expense of the test, they tend to avoid testing and purchase their medications from pharmacies instead.

There is a problem with language as well. In many interior tribal belts, they do not understand the local or national language, and hence, communicating with them or producing appropriate IEC materials for them becomes a tedious task. Additionally, it is also seen that there are several residential areas that are surrounded by dense forests, making the population very vulnerable to the problem of mosquitoes. Owing to the fact that they cannot cut those forests both legally and morally, the residents find themselves in a contradictory position where they know the presence of mosquito breeding sites in such forests but are unable to do anything about it. They even have to go for their farming and cultivation to earn a living, but due to factors like lack of proper dress, lack of mosquito repellent ointments, etc., they find themselves in a vulnerable position again.

4. Please enlighten the readers about the on-ground gaps in the malaria intervention and suggest ways to fill these gaps.

In some cases, the distance to a CHC or PHC is considerable, and therefore people tend to rely on pharmacists and local practitioners. It has been noted that there are no sub-centres in the area, and the distance to the PHC is very far. Since transportation costs are expensive for the people in the village, most of them cannot avail themselves of the facilities of the PHC.

In the case of Insecticide-treated bed nets, it has been seen that there are issues regarding the size and distribution of the government-provided bed nets, whereas there are cases of misuse of the government-provided bed nets in some cases as well as at the community level. Some use it to protect vegetables from animals as well as for fishing. There seems to be a general acceptance of the concept of the IRS, but there is reluctance to allow it in kitchens and rooms with coloured walls. I would like to mention that the use of IRS has been stopped in Assam as the State's Annual Parasite Index is 0.43.

It is an urgent need that there be designated areas for waste disposal in villages and communities so that the residents can develop the habit of keeping their surroundings clean by disposing of all garbage and waste materials in those designated areas only. In some cases, it has been seen that people do not necessarily use such waste disposal areas even

if they are available, indicating the need for increasing awareness in this regard.

The success of the malaria elimination programmes relies particularly on the cooperation of several parties, including community involvement. However, this requires awareness and good knowledge of societal components. Public awareness helps the community carry out prevention efforts. The important key elements are empowerment and fostering a sense of responsibility among community members regarding the importance of participation in malaria control programs. Many intervention systems neglect this and concentrate mostly on parasites and their vectors. Therefore, we are focusing mainly on BCC Interventions such as Community awareness programs, cultural programs, street plays, school awareness programs, and door-to-door Visits.

5. What significance do you see for MERA-India in achieving India's malaria elimination target?

The MERA-India alliance is very important to the Ministry of Health and Family Welfare because of the country's operational research in a coordinated way to eliminate malaria in India by 2030. MERA-India has been influential in addressing the need for a coordinated approach, research inputs, and tools that can guide the national programme to develop strategies for regular changes in endemicity in the malaria elimination era. The projects under MERA-India give us a unique opportunity to understand the problem of Malaria on a Pan-India scale. It has been instrumental in bringing together researchers working in the field of malaria in the ICMR and non-ICMR Research Institutions, Universities, and National Programs to work on multicentric studies in thematic areas. This can give rise to potential research publications and interventions that can focus on the local level while creating avenues for policy implications on a national level.

Malaria Through the Lens of Researchers

In the current edition, we are featuring one of the shortlisted entries from the MERA-India Image Competition 2022. This captivating entry was submitted by Dr Sumeet Singh, Community Medicine, Armed Forces Medical Services, Pune.

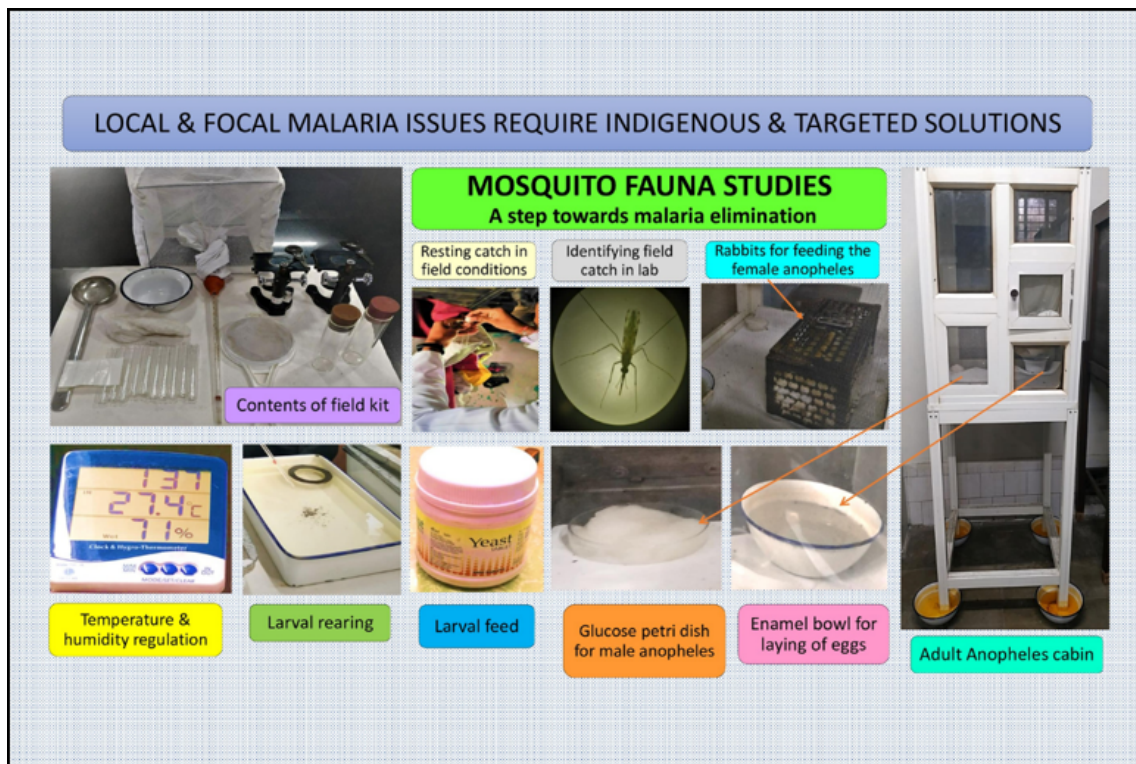


Image title: "Local & Focal Malaria Issues Require Indigenous & Targeted Solutions"

A brief description of the image is as follows:

India embarked on a malaria elimination strategy in 2016 to be achieved by 2030. However, it is impacted by varying vector bionomics and malaria endemicity; hence, a single strategy cannot be generalised to the entire country. It is imperative to identify the focal and local challenges. Mosquito fauna studies should therefore be undertaken in every Medical College to identify the local vector species, the susceptibility status of adults and larvae, delineate regional foci, and identify high transmission months to combat this issue. If implemented in about 600 Medical Colleges in India, it will assuredly augment the National Goal of Malaria Elimination.

Upcoming Event

Lecture Series on Infectious Diseases 2.0 Lecture 07 by Professor Thomas Churcher

ICMR-NIMR and MERA-India are pleased to announce the upcoming seventh lecture in the "Lecture Series on Infectious Diseases 2.0." which will be delivered by Professor Thomas Churcher from Imperial College, London (UK). He is a multidisciplinary expert, specializing in epidemiology, entomology, and mathematical modeling. His primary focus is on investigating and determining the most effective approaches to eradicate vector-borne diseases by targeting the transmission process, particularly through the control of mosquitoes.

The lecture is scheduled to take place on 12th July 2023, and we encourage you to stay updated on the event details through our official website (<https://meraindia.org.in>) and our social media accounts. We look forward to your participation in this informative session.

To receive regular updates about the events being organized by MERA-India, please subscribe at https://www.meraindia.org.in/event_sub.



Copyright © 2022 MERA-INDIA, All rights reserved.

Our mailing address is: meraindiaicmr@gmail.com

MERA-India Secretariat, Room No. 344, ICMR-National Institute of Malaria Research, Sector 8, Dwarka,

New Delhi - 110 077, India

Telephone: [011-25307344](tel:011-25307344)

Website: <https://meraindia.org.in>