

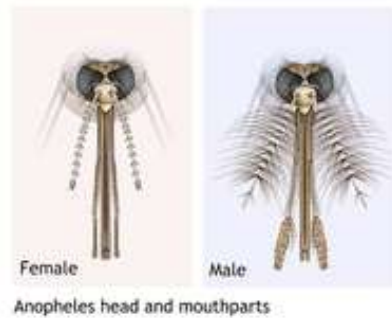
# Malaria Control in India: A blend of Success and Failure

*Dr. Sunita Pande, Lecturer in Zoology, MSJ Govt. PG College, Bharatpur.*

Malaria, one of the oldest and deadliest diseases of mankind, is caused by Plasmodium parasites. The parasites are spread to people through the bites of infected female Anopheles mosquitoes, called "malaria vectors." There are four parasite species that cause malaria in humans namely P. Vivax, P. falciparum, P. malariae and P. ovale. Out of these P. falciparum and P. vivax are the greatest threat.

Malaria has had a long and varied history. Roland Ross, a British Army Officer, belonging to the Indian Medical Service, on August 27, 1897 established that mosquitoes could transmit malaria by first feeding on a patient with malarial parasite in the blood and then biting an uninfected person. On 20 August 1897, while dissecting the stomach tissue of an anopheles mosquito fed four days previously on a malaria patient, Ross found the malaria parasite thus proving the role of Anopheles mosquitoes in the transmission of malaria parasites in human. Plasmodium is transmitted through female anopheles mosquitoes only and not through males. It is simply because male mosquitoes (of any genus whether Anopheles, Culex or Aedes) do not feed on human blood. Their mouth parts are such that they cannot pierce the skin of human beings. Male mosquitoes feed and survive on flower nectar etc. On the other hand female mosquitoes (of any genus) lay eggs to carry forward their progeny and blood proteins are required for the maturation of their eggs. So, female mosquitoes need blood of humans or any other animal (depending on the host they feed on). Female mosquitoes can also thrive on nectar but then their eggs will be sterile. Hence it was established that female Anopheles causes malaria. Since Plasmodium parasite passes asexual stages (schizogony) in human blood those anopheles mosquitoes who prefer to feed on human blood are more likely to get infected by Plasmodium and further transit the Plasmodium to a healthy person. This established that the mosquito play a vital role in causing malaria.





This breakthrough paved the way for the search of methods to eliminate malaria. WHO definition of elimination is as “interruption of local transmission or reduction to zero incidences of indigenous cases of malaria parasite species in a defined geographic area”.

In 1935, as per an estimation, India had an annual 100 million malaria cases and one million deaths. To control this deadly disease, the National Malaria Control Programme (NMCP) was launched in 1953. This malaria control programme had three key activities:

- insecticidal residual spray (IRS) with DDT(dichlorodiphenyltrichloroethane);
- monitoring and surveillance of cases by malaria officers, malaria inspectors, multipurpose health workers, lady health visitors and ANM’s; and
- treatment of patients by quinine and oral chloroquin..

This resulted in significant decrease in morbidity and mortality in India within a few years. Great success was achieved during the 1950s and early 1960s. Enthusiast by the great response, the control programme was converted to National Malaria Eradication Programme (NMEP) in 1958. The death toll declined steeply from one million in 1935 to no deaths and 0.1 million cases in 1965, virtually eliminating the disease from the country. This led to a sense of great satisfaction that the battle against malaria has been won. But in 1976, again a massive resurgence of malaria with more than 6 million cases were reported. This was attributed to:

- (a) Poor health infrastructure
- (b) Sub-optimal monitoring
- (c) Decreased logistics
- (d) Development of resistance to (DDT)
- (e) Resistance to chloroquin

Due to unexpected resurgence of malaria, the modified plan of operations (MPO) was launched in 1977 with a three-point strategy:

- early diagnosis and prompt treatment
- vector control and

- Information Education and Communication(IEC)/Behaviour Change Communication(BCC) with community participation.

The malaria incidence showed a decline again and in 1984 the cases were reduced to about 2 million with 247 deaths. In order to combat malaria in high transmission areas of the country, an Enhanced Malaria Control Project (EMCP) was launched with additional support from the World Bank in 1997 and Intensified Malaria Control Project (IMCP) launched with support of The Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM) in 2005. The malaria control programme and other Vector Borne Diseases namely Dengue, Chikungunya, Kala-azar, Lymphatic Filariasis and Japanese Encephalitis were integrated into the National Vector Borne Disease Control Programme (NVBDCP) in 2002. New tools for malaria prevention and control were introduced under NVBDCP i.e., Monovalent Rapid Diagnostic Tests for P.falciparum detection in 2005; Artemisinin-based Combination Treatments in 2006; Long Lasting Insecticidal Nets in 2009; antigen detecting Bi-valent Rapid Diagnostic Tests for detection of both P. falciparum and P. vivax in 2013; and newer insecticides like malathion, pyrethrins etc. and larvicides and larvicidal fishes like Gambusia in 2014- 15.

In spite of control and eradication programmes, though the number of cases have come down significantly, but malaria still poses serious health hazards. Government and health agencies are playing their role for control of malaria, society also has a part to play. Need of the hour is that everyone should take the following precautions.

1. Water accumulation in and around our houses should be prevented as they are a breeding ground for mosquitoes.
2. To prevent mosquito bites, mosquito repellants should be used.
3. Full sleeved dresses and full pants should be worn to cover most of the exposed body parts.
4. Doors should remain closed in the evening to prevent mosquitoes entering the house.
5. Windows should have gauzed nets to prevent entry of mosquitoes.
6. Rooms should be sprayed with insecticide.