

## The Rise & Fall of malaria – with special reference to Jaffna District

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Malaria is a tropical disease which has dominated the morbidity pattern of the tropical countries of the world including Sri Lanka. Malaria has been known to have affected the destiny of several countries. Even in Sri Lanka the fall of kingdoms in Anuradhapura and Polonnaruwa have been attributed to the epidemics of malaria that followed the construction of large tanks which in turn lead to the increased multiplication of the malaria vector.

Although there are several species of malarial parasites, the four species that have been identified in Sri Lanka are *Plasmodium vivax*, *Pl. falciparum*, *malaria* & *ovale*. The first two are the commoner ones. The latter were identified in the epidemics that occurred during the earlier part of the last century.

Although there are over hundred species of mosquitoes that transmits the malaria parasite, the mosquito that transmits malaria in Sri Lanka is the *Anopheles culicifacies*. Other anophelene species have been also identified by Ranjan Ramasamy (1993). They are *Anopheles subpictus*, *An. tessellates*, *An. Aconitus*, *An. Annularis*, *An hyracannus*, *An. Pallidus*, *An. Vagus*, & *An. Varus*.

Although malaria is suspected to have been prevalent in Sri Lanka for several centuries reliable records are available only since the beginning of the 20<sup>th</sup> century. In 1910/11, 515,590 cases of malaria have been recorded.

There had been several epidemics of malaria in Sri Lanka. The worst recorded epidemic was in 1934-35, when during a period of 8 months a third of the population was affected and an estimated 80,000 people died. The highest incidence was during the monsoon in December 1934 & January 1935.

Indoor spraying with DDT was introduced in 1946 and this together with other control measures, brought down the incidence to 17 cases in 1963. This lead to a reduction of activities of the Anti-malarial campaign and by the end of the 1960s, an epidemic of malaria reappeared. However mortality was lesser. In 1965 there were 468, 202 cases with 1 death and in 1970 there were 400,777 cases with 12 deaths.

Subsequently, the incidence continued to be a problem and mostly confined to the dry zones of Sri Lanka.

With the civil war which started in 1980s and continued for three decades, the anti-malaria activities in the North-eastern parts were curtailed and most of the malaria cases were in the North- eastern provinces and the adjoining provinces, of the country.

In 1996, 31% of the malaria cases in the country were from the North-eastern province. In 1996, 41% of the malaria cases reported was from the North-eastern provinces.

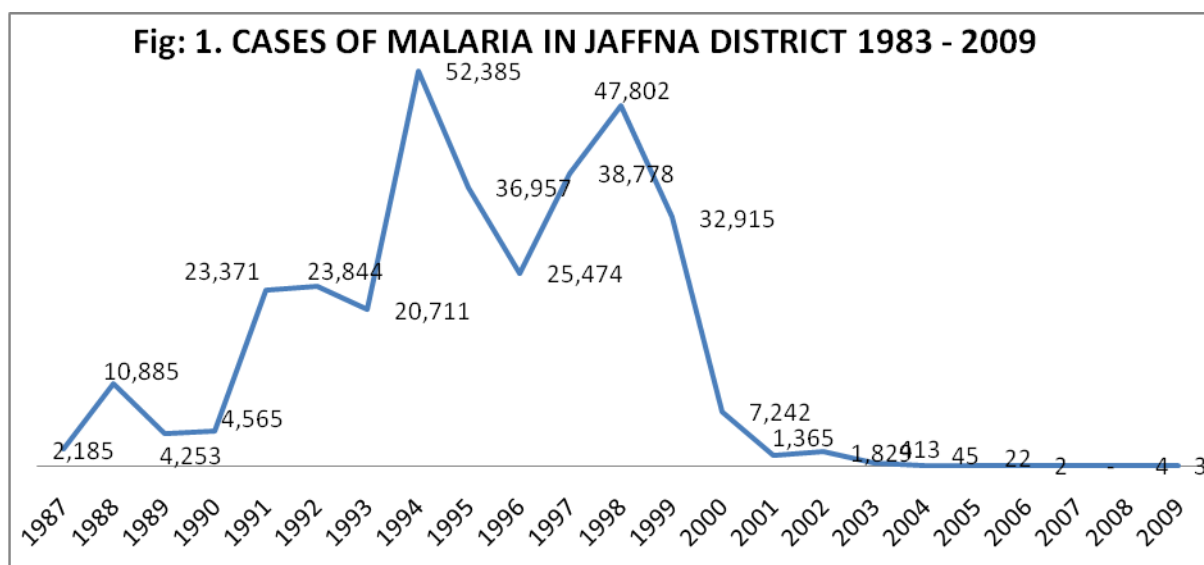
### ***Malaria in Jaffna District***

With the resurgence of malaria in Sri Lanka in 1967, there had been sporadic outbreaks of malaria in the Kilinochchi areas (which was part of the Jaffna District at that time) and the Jaffna peninsula. During the period 1970-73, there was a steady increase of malaria in Sri Lanka and also in the North, probably due to the vector resistance to DDT. In 1976 it was finally proved that *Anopheles* had developed resistance to DDT and malathion was replaced as a residual insecticide for spraying.

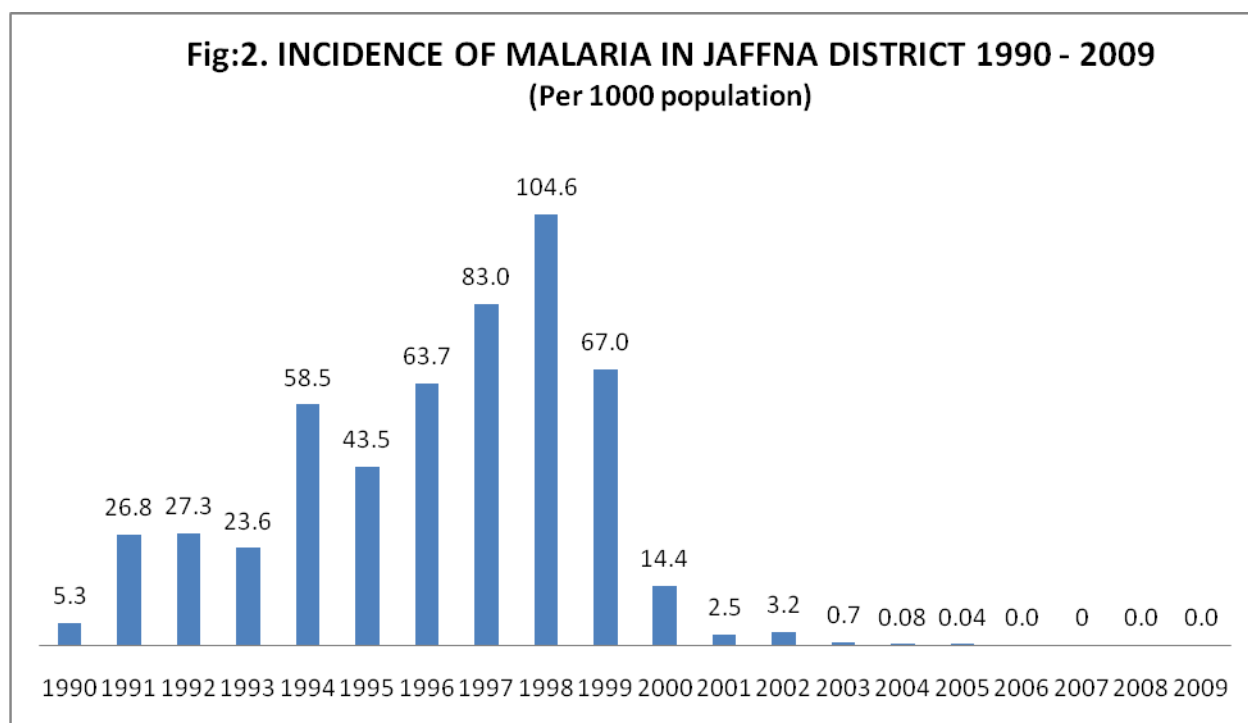
In 1977, Sri Lanka reported 262,460 positive cases of malaria. By 1979 it had dropped to 48,001. This gross reduction is suspected to be due to underreporting.

Prior to 1980, there had been few sporadic cases of malaria in Jaffna District. The cases of malaria that were seen in Jaffna were among residents from the Kilinochchi or Mullaitivu districts (called Wannu districts) or among those who travelled to Kilinochchi or Mullaitivu districts, remained there during the nights and returned to Jaffna. Since *Anopheles* is a night indoor biter, the transmission occurred only among those who spent their nights in the Wannu. It rarely occurred among those who passed through the Wannu districts during the day.

However following the escalation of the war and the closure of the Elephant Pass for civilian traffic in the early 1990s, travelers to and from Colombo had to travel across the lagoon, spending the night at Kilinochchi, Kombaddy & Uriyan. With this change, the incidence of malaria increased in Jaffna. In addition the local transmission of malaria started and since then malaria became endemic in Jaffna district.



The incidence of malaria in Jaffna District from 1987 to 2009 is given in Figure 1. There are two peaks in the incidence of malaria during the past two decades. One was in 1994 (52,385 cases) and again in 1998 (47,802 cases). In 1994 although the absolute number was high the incidence rate was 58.5 per 1,000 population. The estimated population in 1994 was 896,000. In 1998, although the absolute number of malaria cases was lower, the incidence rate was 104.6 per 1,000 population. In 1998, the actual



population of Jaffna had dropped to 457,000 (District Secretariat, Jaffna 2009).

The incidence of malaria per 1000 population is given in Figure 2. The highest incidence of malaria (104.6 per 1000 population) was in 1998. During this year 62.3% of the total cases of malaria in Sri Lanka occurred in Jaffna District.

Since the height of the epidemic in 1998, the epidemic receded and for the past four years (2005-09) there were only 9 cases of malaria reported and confirmed. Most of them were imported cases.

There were several factors and action taken, that contributed to the decline in the cases to almost zero level

- Early diagnosis and treatment made possible by training persons for one month in identification and treatment of malaria and appointing them to areas with high incidence of malaria. The training was provided by the Faculty of medicine, Jaffna
- Early diagnosis and prompt treatment given at medical institutions

- Entomological investigations and follow up action
- Residual spraying
- Chemoprophylaxis of all pregnant women
- Use of impregnated bed nets
- Education of populations

References:

District Secretariat, Jaffna (2009). Jaffna District Statistical Information 2008. District Secretariat. Jaffna

Ranjan Ramasamy & Manthri S Ramasamy (1993). Ceylon Medical journal: **38**, 43-46