


# Economic Burden of Malaria: A National Disease

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## Abstract

*World Health Organization (WHO) stated that Malaria is a life-threatening parasite illness caused by the Genus Plasmodium spreading to human beings through the bites of infected female Anopheles mosquitoes. Malaria disease is curable and preventable. Unawareness of Malaria in non-endemic areas needs specific attention and the need for health awareness through the health care workers should be enhanced usual care in both areas. Despite being aware of the government programs and measures for the control of Malaria and the endless major problem of health disease in India and many other nations. The complexness and the panic preponderance of the disease are governed by multiple limitations as technological, functional, and monetary and therefore go on inflicting heavy socio-economic losses to people.*

**Keywords: Malaria, Records, Economics, Economic burden, Preventive measures**

## Introduction

Malaria is a life-threatening parasite illness caused by the Genus Plasmodium spreading to human beings through the bites of infected female Anopheles mosquitoes. Malaria disease is curable and preventable (World Health Organization). Malaria symptoms are fever, headache, and body ache, rigor, chill, vomiting, and impossible to direct transmission from a Malaria-infected person to a healthy person. Malaria disease is classified into four types there are namely Plasmodium malaria, Plasmodium Vivax, Plasmodium Falciparum, and Plasmodium Ovale. Plasmodium Vivax malaria was highly affected in South Asia, particularly in India. In some cases, the parasites because Malaria enters the body but remains dormant for a long time. Infected Anopheles female mosquitoes carry the parasites flow into the bloodstream, once enter the body to travel to the liver and mature. After several days, the adult parasites enter the bloodstream and begin to infect red blood cells. Exacerbation of the disease can lead to jaundice, meningitis, and kidney damage.

## Malaria: Threatening Disease

There were reported 229 million malaria vector cases in 2019 in 87 countries, reduce from 238 million in 2000. Malaria cases (i.e., cases per 1000 population at risk) decreased from 80 in 2000 to 58 in 2015 and 57 in 2019 world widely. Between 2000 to 2015, worldwide malaria cases declined by 27 percent, and between 2015 and 2019 it declined by less than or equal to 2 percent, at a low rate of decline worldwide widely, malaria died have reduced over the period 2000-2019, from 736000 in 2000 to 409000 in 2019.

The percentage of total malaria death among children. Underage 5 years was 84 percent in 2000 and 67 percent in 2019. The global death of malaria vector diseases caused in 2015, the Global Technical Strategy baseline (GTS) was about 453000 (WHO Report 2020). Unawareness of malaria in non-

endemic areas needs specific attention and the need for health awareness through the health care workers should be enhanced usual care in both areas. Despite being aware of the government programs and measures for the control of malaria.

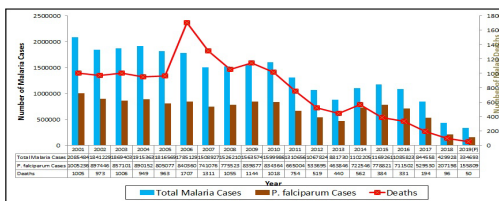
**Table 1: Indicators for Malaria in India (2001-2020)**

Year	Population in Thousand	Blood smear examined	Positive cases	(Pf Cases)	(ABER)	(API)	(SPR)	(SFR)	Deaths
2001	984579	90,389,019	2,085,484	1,005,236	9.18	2.12	2.31	1.11	1005
2002	1013942	91,617,725	1,841,229	897,446	9.04	1.82	2.01	0.98	973
2003	1027157	99,136,143	1,869,403	857,101	9.65	1.82	1.89	0.86	1006
2004	1040939	97,111,526	1,915,363	890,152	9.33	1.84	1.97	0.92	949
2005	1082882	104,143,806	1,816,569	805,077	9.62	1.68	1.74	0.77	963
2006	1072713	106,725,851	1,785,129	840,360	9.95	1.66	1.67	0.79	1707
2007	1087582	94,928,090	1,508,927	741,076	8.73	1.39	1.59	0.78	1311
2008	1119624	97,316,158	1,526,210	775,523	8.69	1.36	1.57	0.80	1055
2009	1150113	103396076	1563,574	839,877	8.99	1.36	1.51	0.81	1144
2010	1167360	10604023	1495817	779549	9.21	1.37	1.41	0.74	1018
2011	1194901	109313294	1310656	665004	9.12	1.10	1.20	0.61	754
2012	1211580	109048884	1067824	533695	9.00	0.88	0.98	0.49	519
2013	1221640	113445106	881730	463846	9.26	0.72	0.78	0.41	440
2014	1234995	124066331	1102205	722546	10.05	0.89	0.89	0.58	562
2015	1265173	121141970	1169261	778821	9.58	0.92	0.97	0.64	384
2016	1283303	124933348	1085823	711502	9.74	0.85	0.87	0.57	331
2017	1315092	125977799	844558	529530	9.58	0.64	0.67	0.42	194
2018	1337617	124475724	429928	207198	9.31	0.32	0.35	0.17	96
2019	1349004	132752934	338513	156937	9.84	0.25	0.25	0.12	77
2020	1337645	16376515	19980	15716	1.22	0.01	0.12	0.10	2

PF: Plasmodium Falciparum; ABER: Annual Blood Examination Rate; API: Annual Parasite Incidence; SPR: Slide positivity rate and SFR: Slide falciparum Rate

Source: National Vector Borne Disease Control Programme (nvbdcp.gov.in)

**Figure 1: Indicators for Malaria in India (2001-2019)**



Source: National Vector Borne Disease Control Programme (nvbdcp.gov.in)

World Health Organization (WHO) report recorded East Asian region accounted for about

3 percent of the burden of malaria cases globally. Malaria cases reduced 73 percent in the region from 23 million in 2000 to about 6.3 million in 2019 and discovered. In India, the fight against malaria with reduction and prevention in case and death of 18 percent and 20 percent respectively over last two years and also recorded a decrease in the number of death from malaria last twenty years. Nearly 25 percent of the population has not received regular indoor residual insecticide spraying, highlighting the need for strengthening the national program (Suresh Balan et al., 2016).

**Table 2: Incidence of Malaria Rural and Urban Area of Tamil Nadu**

Years	State case	Rural case	Chennai case	Chennai percent	Other Urban Cases	Other Urban Percent
2010	17086	6031	9789	57.20	1266	12.90
2011	22171	6602	14927	67.30	642	4.30
2012	18869	7146	11090	58.80	633	3.40
2013	15081	5893	8537	56.60	651	4.30
2014	8729	3708	4669	53.50	352	4.00
2015	5587	2045	3338	59.75	204	3.60
2016	4340	1409	2743	62.40	224	5.20
2017	5449	1360	3895	71.5	194	3.6
2018	3758	806	2823	75.1	129	3.4
2019 till June	583	254	448	61.2	30	3.9

Source: tnhealth.org.in

Malaria incidence rural and urban area of Tamil Nadu 2010-2019 till June malaria cases recorded yearly declining positive economic scale. The urban area in Chennai with a high population of slum people is affected by malaria diseases more than the other urban in Tamil Nadu. Malaria peak years in Tamil Nadu recorded from 2010 to 2012 then after slow down the disease most of the cases all over the Tamil Nadu. As per the Integrated Disease Surveillance Programmes of the National Center for Disease Control, the most number of cases was recorded in Chennai, Tiruvallur, Dharmapuri, Madurai and Viruthunagar, districts.

### **Economic Impact of Malaria Diseases in India**

Information on the economic responsibility of malaria can help to target the interventions efficiently and equitably and to rationalize investment in exploration and custody. Such data can notify our knowledge of the economic and period burdens of disease episodes, the determined migrants, treatment-seeking behavior, and the differential economic impact on community subgroups. Surveys are conventional wisdom all classified as macroeconomic or microeconomic studies. Macroeconomic studies are concerned with the impact at the level of the whole economizing. Apart from Barlow's seminal work publicized in 1967, this area of research has been disregarded until very newly, when two investigations have used malaria as an illustrative variable in economic growth models using cross-country regression analysis, and have

demonstrated a meaningful relationship between improvement in the gross domestic product (GDP) per capita and the burden of malaria. Microeconomic studies are concerned with impact at the level of an efficient unit, such as the household or company. A widespread method of analysis employed in many studies has been to sum the explicit costs of expenditure on deterrence and medication and the indirect costs of productive labor.

More than 90 percent of India's population resides in the malaria alert area. According to national sources, 80 percent of malaria reported in the country is confined space to population residing in the forest. Rural difficult and inaccessible areas using a nationally representative sample the study has estimated the economic burden of malaria in India by applying the cost of illness approach using the information on cost of treatment day cost and earnings foregone from the national sample survey data a sensitivity exploring was carried out by presenting two alternative scenarios of deaths. The results indicate that the total economic burden of malaria in India could be around US dollar 1940 million. The major Economic burden comes from lost earnings 75 percent, while 24 percent comes from treatment costs. Mortality rate decreasing as a report of the past count. In the analysis pattern in public expenditure by the national vector-borne diseases control program (NVBDCP) visible a declining focus of the central government on vector-borne diseases among states does not reflect the burden of malaria, the major vector-borne diseases (Indrani

Gupta and Samik Chowdhary-2014). Vector-Borne Diseases Control Programme (NVBDCP) stated that malaria and other bone in India last few years' death rates gradually declining.

### **Malaria: Preventive Measures**

Elimination of mosquito breeding suggesting mainly proper sealing of overhead tanks, wells and covering all water containers preventing mosquitoes from laying eggs and thereby preventing the mosquitoes breeding. Un-treated Plasmodium falciparum may cause leading to death. At the beginning diagnosis of Malaria fever and taking complete proper treatment will prevent transmission of malaria parasites - mosquitoes breeding source reduction. Anti-adult measures by spray frequently use to operate Malaria-affected areas. Malaria prevention programs conduct frequently and advertise promotions. Environmental factors are mainly responsible for increasing the cases and awareness programs, and preventive measures have helped to decline the cases. Take protective measures to reduce contact with mosquitoes, especially during the day and night. The habit of Anopheles mosquitoes and measures include remaining in well-screened areas using mosquito nets and put on clothes that cover the fullest of the body.

### **Conclusion**

While the exaggerated priority in this paper is on the economic burden and consequences of malaria. The negative impact of malaria on their fore elasticity extends the financial and socio-economic cost to the family and community. The economic cost of the disease may contribute surplus returns to measurement and evaluation of the economic merits of disease prevents control programs. However, the malaria story is infinity. People have our brand of resilience, innovation, and tricks for survival. The economic burden of malaria is more than the socio-economically weak people as compared to rich people in both the study areas which were associated with unhealthy living situations and poor level of schooling. Moreover, the modification of health services is also a requirement for the poor and needy population. Effective health education in schools on preventative measures against malaria, which may

diminish its incidence and help to attain a sharp decrease in its economic burden.

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