



AI Driven Prediction of Mosquito Borne Disease: Malaria

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Abstract:

Mosquito transmit several diseases in human being like Malaria, Dengue, Chikun gunya, Elephantiasis and Yellow fever. Malaria is one of the dreaded disease. Each year several people are affected by Malaria. Year-wise data of malaria patients have been published by Vector Borne Diseases Control Programme (VBDCP). Each year, number of malaria patients has been increasing. There is linear increase in number of malaria patient. So it's become a matter of concern. It is possible to predict number of Malaria patient in upcoming 05 or 10 years by using AI tools and previous year data of malaria patients. In the present work AI driven prediction of malaria patients in upcoming 10 years are predicted.

Keywords: Malaria, Patients, Artificial Intelligence (AI), VBDCP.

Introduction:

Mosquito transmit several diseases in human being like Malaria, Dengue, Chikun gunya, Elephantiasis and Yellow fever. Malaria is one of the dreaded disease occur in human being. Each year several people are affected by Malaria. About 20 million people suffer from this disease annually in India.^[1] Vector Borne Diseases Control Programme (VBDCP) have been publishing year-wise data of malaria patients ^[2]. 10507 patients of malaria was recorded between the period of 1st January 2024 to 7th August 2024 and 12127 patients of malaria was recorded between the period of 1st January 2025 to 7th August 2025 from six district of Maharashtra ^[2]. Each year, number of malaria patients has been increasing. As per the report vector borne disease malaria is under control. Data shows there is linear increase in number of malaria patient. This number mainly increases because of *Anopheles* mosquitoes. Now a days Artificial Intelligence is inveted and widely used in vector borne disease surveillance. Carney used citizen science imagery

to develop artificial intelligence software to automatically identify the species and anatomical regions of mosquitoes ^[3]. There are dedicated mobile apps that allow users to collect geotagged images of mosquitoes to solve the scalability problem through enabling novel community based digital observatories ^[4]. Data regarding number of patients (vector borne disease) is useful to make strategies for effective preventive control of vector. Present study is carried out to predict probable number of vector borne disease (malaria) in upcoming year and ultimately to make strategies for effective preventive control of vector. Several AI tool are using for it purpose ^[5].

Method:

AI tool chatbots (ChatGPT) is used for prediction ^[5]. Probable number of patients with mosquito borne disease: Malaria are predicted in the study. Prediction is expected for upcoming 10 years in specific area. Number of malaria patients detected in the year 2024 and 2025 acrosss five districts of Maharashtra were provided to

ChatGPT as input. With input prompt were made, what will be the probable number of malaria patients in 2035.

Results And Discussion:

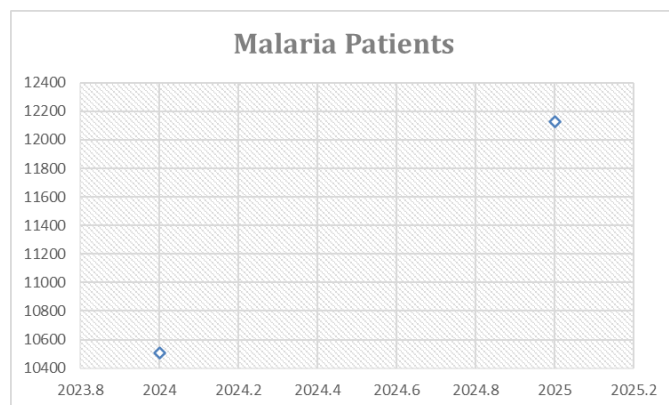
In prompting following data were provided to ChatGPT as input and were asked the probable number of malaria patients in 2035.

Sr. No.	Year	No. of Malaria Patients (In Thousand)
1.	2024	10507
2.	2025	12127

Source: VBDCP Report 2024-25

As per the artificial intelligence, we can calculate probable number of malaria patients by two way.

First way: As per the data, in the year 2024, there was 10507 (Ten thousand five hundred seven) patients of malaria. In the year 2025, detected number of malaria patient was 12127 (Twelve thousand one hundred twenty seven). It shows number of patients get increasing.



AI has made following calculation to determine rate of increase in malaria patients. $(12127 - 10507 = 1620)$. As per AI prediction, each year 1620 (One thousand six hundred twenty) patients will be added. As per the prompt we made for the calculation of probable patients for upcoming 10 years, it made a following calculation.

$$12127 + 1620 \times 10 = 28237$$

Where,

$$12127 = \text{Patients in 2025}$$

$$1620 = \text{Rate of increase}$$

$$10 = \text{Upcoming years}$$

So, the probable number of malaria patients in 2035 will be 28237 (Twenty eight thousand two hundred thirty seven).

Second way: AI has predicted the number by second way i.e. exponential/compound (same % growth each year)

$$\text{Yearly growth rate} = (12127/10507) - 1 = 0.151829$$

42% per year

$$2035 = 12127 \times (1+0.1541829)^{10} = 50874$$

In summarization AI explained if the increase is slow and roughly constant in absolute term the linear estimate (28327) is more realistic and if the current growth rate keeps compounding each year the exponential estimate (50874) applies but that a much faster rise. AI (ChatGPT) is not a substitute for human expertise but an adjunct to support early prediction, prevention and management of future threat. In similar way ten hypothetical filariasis clinical cases were submitted to ChatGPT and its recommendations were evaluated by panel of professionals [6]. Potential of ChatGPT as an AI-assisted diagnostic tool was studied on visceral leishmaniasis [7]. ChatGPT was used for prediction of future pandemics and formulating prevention strategies. It is better approach for predicting and managing infectious disease outbreak. It could predict future pandemics and give suggestions about the prevention strategy [8]. ChatGPT was used for the Preliminary Diagnosis of Dengue [9]. Predictive Accuracy of ChatGPT was studied for forecasting of Influenza Rates [10].

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