

Current Status and Eradication Efforts for *Wuchereria bancrofti* in Endemic Talukas of Yavatmal District, Maharashtra

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Abstract

Lymphatic filariasis caused by *Wuchereria bancrofti* remains a public-health concern in parts of Maharashtra despite repeated mass drug administration (MDA) and other elimination measures. Yavatmal is identified by the Maharashtra health system as a filariasis-affected district; however, published information on the present status of transmission at the taluka level is limited. The present paper examines possible gaps that may affect interruption of *W. bancrofti* transmission in endemic talukas of Yavatmal based on published studies from India and Maharashtra. Although MDA coverage may appear satisfactory, actual drug consumption can be lower because of refusal, fear of adverse effects, inadequate communication, missed households and population mobility. Studies from Maharashtra have also reported evidence of human infection and mosquito infection after repeated MDA. A recent report of chronic *W. bancrofti* infection from rural Yavatmal further highlights the need for continued surveillance. Important areas requiring investigation include taluka-level epidemiological mapping, verification of actual drug consumption, follow-up of positive cases, integration of human and vector surveillance, and assessment of environmental and social factors. A systematic field investigation is therefore required to determine whether these factors contribute to residual transmission in endemic areas of Yavatmal.

Keywords: *Wuchereria bancrofti*; lymphatic filariasis; Yavatmal; Maharashtra; mass drug administration; microfilariemia; xenomonitoring; surveillance; elimination.

Introduction

Lymphatic filariasis (LF) is a mosquito-borne neglected tropical disease that can cause lymphoedema, elephantiasis and hydrocele. *Wuchereria bancrofti* is the principal causative parasite of lymphatic filariasis in India. Infection may remain asymptomatic for a long period, and infected individuals may contribute to transmission without showing obvious clinical symptoms (World Health Organization, 2025).

India has implemented repeated rounds of mass drug administration (MDA), together with morbidity management and disability-prevention activities, to interrupt transmission of lymphatic filariasis. Effective treatment coverage followed by appropriate surveillance is an important component of the elimination programme (World Health Organization, 2023). However, distribution of medicines does not necessarily mean that all individuals actually consume them. Babu and Babu (2014) reported considerable variation between MDA coverage and compliance in India. Similarly, Hussain et al. (2014) identified fear of adverse effects, inadequate awareness and operational difficulties as important reasons for non-compliance. Recent Indian evidence has also indicated that communication, trust in drug distributors and perceptions regarding adverse effects may influence participation in MDA (Abraham et al., 2024).

The final stage of elimination can be particularly challenging because transmission may continue in small geographical pockets even when the overall prevalence has declined. Khatri et al. (2019) detected *W. bancrofti* infection in humans as well as mosquitoes in selected districts of Maharashtra and Karnataka despite repeated MDA. Long-term surveillance from rural Nagpur also demonstrated a marked decline in microfilariemia but emphasised the importance of continued surveillance for residual infection (Mohod et al., 2025).

Yavatmal is recognised by the Maharashtra health system as a filariasis-affected district. However, published information describing the current situation at the taluka and village levels is limited. A recent case report from Kayar in Yavatmal district documented chronic lymphatic filariasis caused by *W. bancrofti*, with microfilariae detected in blood and the characteristic filarial dance sign observed by ultrasonography (Ahamed et al., 2026). Although a single case cannot establish the prevalence or intensity of transmission in the district, it indicates the continued importance of case detection and surveillance.

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Materials and Methods

The present study is a literature-based descriptive assessment of possible lacunae in the eradication of lymphatic filariasis caused by *Wuchereria bancrofti* in endemic talukas of Yavatmal district, Maharashtra. Relevant information was collected from published research articles, review papers, case reports and official reports related to lymphatic filariasis, *W. bancrofti*, mass drug administration (MDA), treatment compliance, residual transmission, vector surveillance and elimination programmes.

Literature was identified using relevant scientific and institutional sources with keywords including *Wuchereria bancrofti*, lymphatic filariasis, India, Maharashtra, Yavatmal, mass drug administration, MDA compliance, microfilariemia, xenomonitoring, vector surveillance and filariasis elimination. Greater emphasis was given to studies conducted in Maharashtra and other endemic regions of India.

Selected literature was examined under major themes, including MDA coverage and compliance, community participation, residual infection, human and vector surveillance, population mobility and environmental factors. Findings from different studies were compared descriptively to identify recurring issues that may be relevant to Yavatmal.

The assessment focuses on identifying possible knowledge and programme-related gaps rather than establishing confirmed deficiencies. No primary clinical, parasitological or entomological data were generated in the present study. The identified gaps are therefore considered areas requiring further field-based investigation in endemic talukas of Yavatmal district.

Result and Discussion

1. Difference between MDA distribution and actual consumption

One possible gap in the elimination programme is the difference between the number of people recorded as receiving MDA medicines and those who actually consume them. Administrative coverage alone may therefore not provide a complete picture of effective treatment coverage. Studies conducted in India have demonstrated this difference (Babu and Babu, 2014; Hussain et al., 2014).

In endemic talukas of Yavatmal, assessment of both drug receipt and actual consumption could provide useful information regarding compliance. Household-level verification and post-MDA assessment may help identify individuals or communities that repeatedly miss treatment.

2. Adverse effects and community communication

Fear of adverse effects can influence participation in repeated MDA rounds. Hussain et al. (2014) identified fear of side effects as an important reason for non-consumption, while Abraham et al. (2024) highlighted the importance of communication and trust.

In Yavatmal, community communication may therefore need to focus not only on the availability of medicines but also on explaining the purpose of MDA, the importance of completing treatment and the management of expected minor adverse reactions.

3. Possibility of residual transmission pockets

Transmission of lymphatic filariasis may not be uniform throughout a district. A district may show an overall decline while individual villages or small geographical pockets continue to harbour infected persons or vectors. Detection of *W. bancrofti* in humans and mosquitoes in selected areas of Maharashtra after repeated MDA supports the need to investigate such possible residual foci (Khatri et al., 2019).

Taluka- and village-level mapping in Yavatmal could therefore help determine whether infection is concentrated in particular locations rather than being uniformly distributed throughout endemic areas.

4. Human and vector surveillance

Human surveillance provides information about the parasite reservoir, whereas mosquito surveillance provides complementary information about transmission. Khatri et al. (2019) demonstrated the usefulness of combining human screening with molecular xenomonitoring.

Comparable taluka-specific information from Yavatmal is limited. Combining human surveillance with mosquito density assessment and, where feasible, molecular xenomonitoring could provide a better understanding of the local transmission situation.

5. Missed and mobile populations

Seasonal agricultural workers and other mobile populations may be missed during household-based MDA. Movement between villages and endemic areas can also complicate treatment records and exposure assessment.

Population mobility should therefore be considered while evaluating possible gaps in MDA coverage in rural Yavatmal. Identifying populations that repeatedly miss treatment may help explain persistence of infection in particular communities.

6. Follow-up of positive cases

Identification of a positive individual should be followed by appropriate clinical evaluation, treatment and epidemiological follow-up. The recent case reported from Yavatmal by Ahamed et al. (2026) demonstrates the importance of detecting chronic infection.

Follow-up of positive individuals and, where appropriate, assessment of surrounding households could help determine whether an identified case represents an isolated infection or an indication of a wider transmission focus.

7. Environmental and vector-related factors

Environmental conditions that support mosquito breeding may contribute to continued transmission. However, the presence of mosquito breeding sites alone does not establish transmission of *W. bancrofti*. Village-level assessment of mosquito density and breeding habitats, together with human infection surveillance, could help identify environmental factors that may be relevant to transmission.

Vector-control measures may complement preventive chemotherapy where they are appropriate to the local vector ecology (World Health Organization, 2025).

8. Lack of taluka-specific epidemiological information

The most important gap identified from the available literature is the limited availability of contemporary, taluka-specific epidemiological information for Yavatmal. Published studies do not provide sufficient information to determine which talukas or villages currently have the highest infection burden, how many eligible individuals actually consume MDA medicines, or whether mosquito infection is concentrated geographically.

These questions cannot be answered reliably by extrapolating results from other districts. Primary field investigation in Yavatmal is therefore necessary to establish the current epidemiological situation.

Overall, the available evidence indicates possible operational and epidemiological gaps, rather than demonstrating failure of the elimination programme in Yavatmal. A focused field study involving household assessment, MDA compliance, parasitological surveillance, clinical examination and entomological investigation could determine whether residual transmission persists and identify the factors associated with it.

Conclusion

Published evidence identifies several areas that require further investigation in the endemic talukas of Yavatmal. These include the difference between MDA distribution and actual consumption, concerns regarding adverse effects, missed and mobile populations, possible residual transmission pockets, limited integration of human and vector surveillance, follow-up of positive cases and environmental factors.

The recent documentation of *W. bancrofti* infection in rural Yavatmal provides a contemporary basis for continued surveillance. However, the available evidence is not sufficient to conclude that any particular factor is responsible for persistent transmission in the district. A taluka-wise investigation combining parasitological, clinical, entomological and programme-related information would help establish the current status of infection and identify the specific gaps that require attention during the final stages of lymphatic filariasis elimination.

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