

# On Neglected tropical disease, prevalent amongst the masses, Filaria.

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**Abstract:** Filariasis is a disease caused by parasitic worms called as filariae. It has been found for centuries, with main symptoms as elephant like swelling of the arms, legs and genitals. The most important filarial disease for humans is lymphatic filariasis in which the adult worm is in the lymphatic system.

## Keywords:

Filariasis, Lymphatic, swelling.

## Introduction:

Filaria is a vector borne disease currently endemic in tropical and sub tropical Africa, Asia, Western pacific and part of America. Filariasis is caused by *W. bancroftii* and *B. malayi*. It spreads by the bite of an infected *Culex* mosquito. *Culex quinquefasciatus* is the main vector for the spread. The disease has a major socio-economic impact. National Filaria control programme was launched in 1955.

District Unnao has known to be endemic for filariasis. No. of cases have been reported in recent past.

LF infection often starts in childhood but disease manifestations occur later in life. Lymphatic damage, once established is shown to be irreversible. LF is better prevented - Primary prevention is through MDA in endemic communities . Secondary prevention - limb hygiene, physical measures to arrest disease progression. LF is a common cause of lymphoedema in endemic countries. Manifestations include asymptomatic microfilaraemia, acute and chronic disease. Adult worms cause damage to lymph vessels early in infection - predisposes to lymphedema. Bacterial infection causes ADLA, which when repeated, aggravates the lymphedema. Lymphatic filariasis (LF) caused by infection with threadlike worms called nematodes of the family Filarioidea. In India 99 % of infections caused by *Wuchereria bancrofti*. Remaining infections caused by *Brugia malayi*. Adult male and female worms lodge in the lymphatics. Fecund females release larvae (microfilaria) which periodically circulate in blood. Microfilaria circulating in the blood ingested by feeding mosquito vectors. Microfilaria get matured (Infective Larvae) in the vector. Mosquitoes then spread

infective larvae to new hosts. The vector of *W. bancrofti* – Mosquito- genus *Culex* (in urban and semi-urban areas). *Anopheles* (in rural areas of Africa and elsewhere). *Aedes* (in islands of the Pacific). The vector of *B. malayi* – Mosquito genus *Mansonia*; in some areas, anopheline. Brugian parasites confined to areas of east and south Asia, notably India, Indonesia, Malaysia and Thailand

### Life cycle:

It requires many infective bites to become the microfilariae carrier. The microfilariae carriers are asymptomatic for 5-6 years. The chronic disease cases are mostly negative for microfilariaemia. The microfilariaemia exhibit nocturnal periodicity in main land India. The incubation interval is nearly 1 year. Size of adult worm female 8-10 cm in length. 0.3 to 0.4 mm in thickness. Male is 2.5-4 cm in length and 0.1 mm in thickness.

- L1 (Sausage stage)-124 to 250 microns in length. 2 days for development
- L2 (Preinfective stage)- 225-330 microns in length. 3-7 days for development
- L3 (Infective stage) – 1500-2000 microns in length. 8-10 days for development.

### SPECIES OF FILARIAL INFECTIONS PREVALENT IN INDIA

*Wuchereria bancrofti* (Nocturnal periodic) transmitted by *Culex quinquefasciatus*

- *W. bancrofti* (Diurnal subperiodic) transmitted by *Aedes (Finlaya) niveus* group of mosquitoes
- ***Brugia malayi* (Nocturnal periodic) transmitted by *Mansonia* mosquitoes**

### Lymphatic Filariasis-Transmission

1. Transmission of LF in a community is determined by
  - Number of infected persons (prevalence)
  - Density of microfilaria in the blood of infected persons
  - Density of vector mosquitoes
  - Characteristics of the vector that affect development of infective larvae and frequency of human-vector contact
  - Man – Natural Host
  - Age – All age , Max: 20-30 years
  - Migration – leading to extension of infection to non-endemic areas

- Associated with Urbanization, Poverty, Industrialization, Illiteracy, Poor sanitation
  - Climate: important factor which influences
  - The breeding of mosquito
  - The development of parasite in the vector
  - Total Population : 1.3 Billion
  - Population at risk : 630 Million (in 16 States & 5 UT's) (Table 3)
  - No. of Hydrocele : 3.8 Lakhs (Table 2.)
  - No. of Lymphoedema : 8.7 Lakhs (Table 1.)
2. National Filariasis Control Programme (NFCCP) launched in the last year of the 1st five years plan i.e. 1955 with objectives-
    - a. To delimit problem of filariasis in country
    - b. To conduct field studies to evaluate the method of control
    - c. To train personnel to manage programme
  3. From 1955 to 1960 the three conventional methods of control used-
    - a. Mass therapy with diethylcarbamazine
    - b. Anti-adult mosquito measures with residual insecticide in rural areas
    - c. Recurrent anti-larval measures at weekly intervals in urban areas
  4. In 1997, The World Health Assembly adopted resolution, WHA 50.29, for Elimination of Lymphatic Filariasis as a global public health problem by 2020
  5. In 2002, National Health Policy set a goal for ELF in India by 2015, further it is extended to 2017
  6. In 2004, ELF was launched covering 202 endemic districts in 20 States/UTs. (Table 4)
  7. Subsequently scaled up to cover all the 256 endemic districts targeting a population of about 630 million

**Results and Discussion:**

Economic impact of LF:

- >2 billion USD loss
- ‘Out-of-pocket’ payments for care
- Costs to health system
- Indirect costs
  - Lost productivity (↓30%)
  - Missed earnings both patient and employer

Morbidity management and disability prevention.

- GOAL: 100% Geographical Coverage
- Health facilities in every district with known *patients*, must be able to provide
  - Treatment of LF infection
  - Treatment of acute attacks
  - Management of lymphoedema
  - Management of / surgery for hydrocele
- Adult worms cause the basic damage to lymph vessels, which is a silent process
- Later repeated bacterial infections produce and perpetuate the swelling of the limbs
- Commonest presentation: Asymptomatic microfilaraemia
- Microfilaria seen in blood of infected persons
- The subject has no symptoms
- No disease manifestations

**Number of Lymphoedema cases**

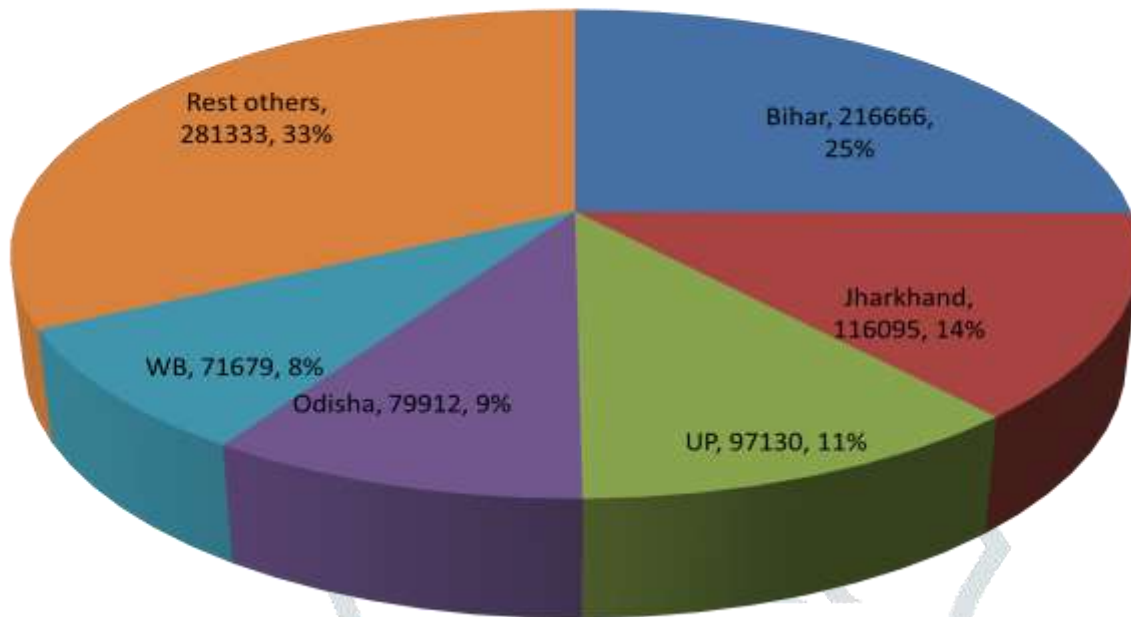
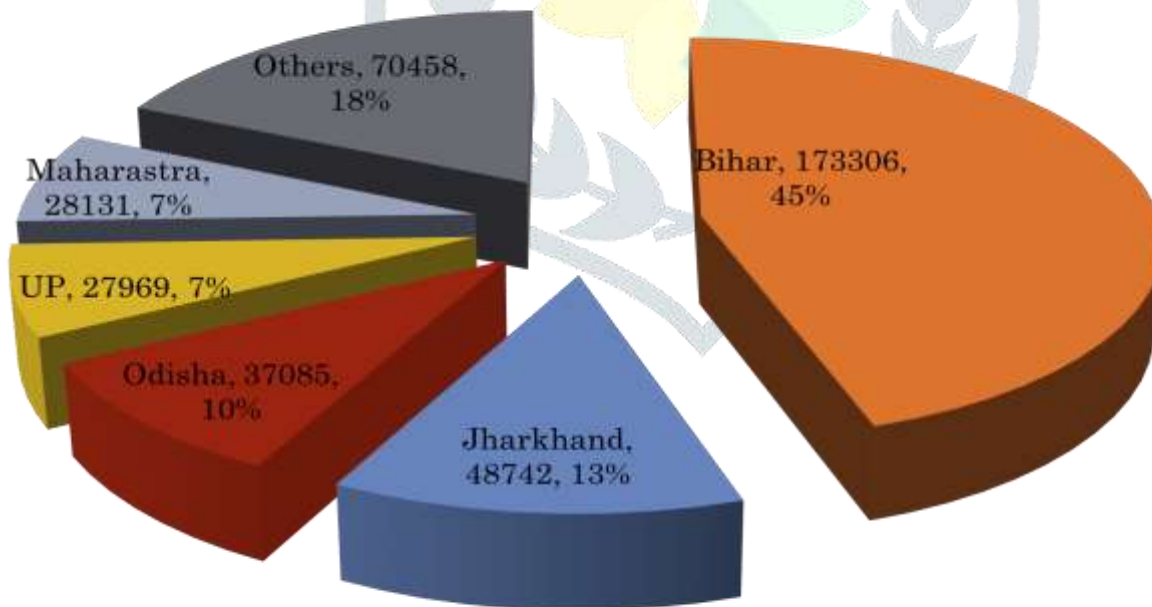


Table 1

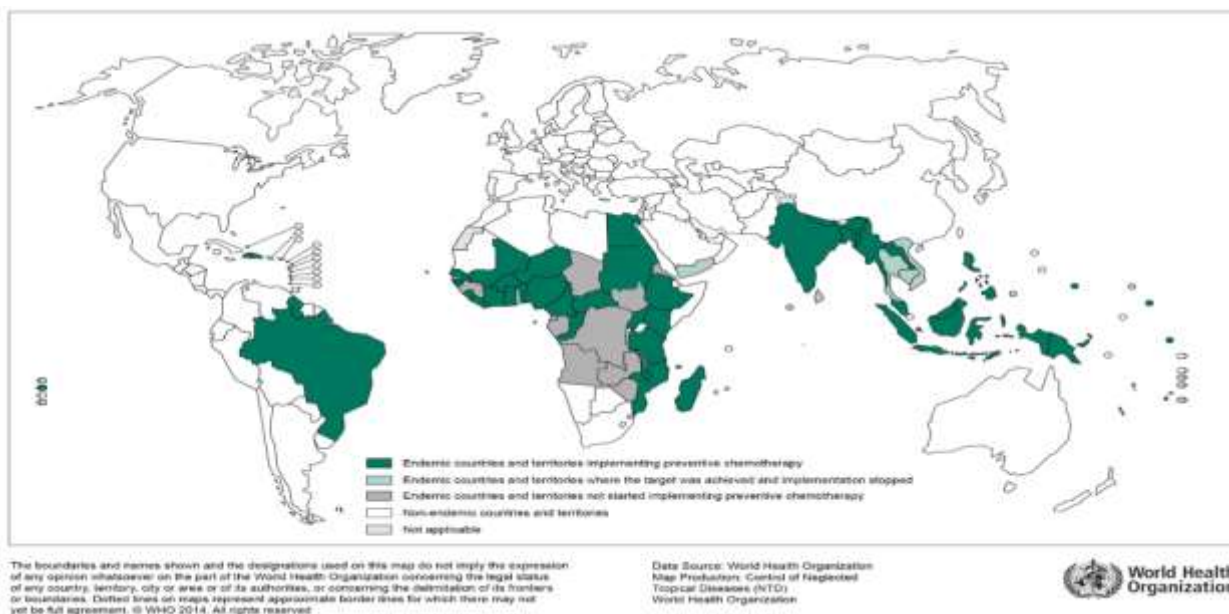
**Hydrocele cases**



Hydrocele surgery undertaken 129572 ( cumulative)

Table 2

# 1.1 billion people in 73 countries worldwide remain threatened by lymphatic filariasis



**No of Hydrocele- 25 Million, No of Lymphoedema cases- 15 Million**

**Global Distribution of LF(Data source : WHO)**

(Table 3)



## Lf Endemic States/UTs in India, 2004

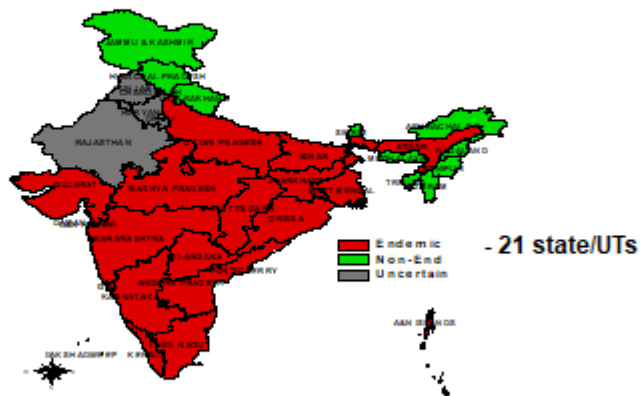


Table 4

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Conflict of Interests: Author states that there is no conflict of interest amongst authors as there is only one corresponding author.

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