

**SUMMARY OF THE PROJECT REPORT**

**on**

**AN EPIDEMIOLOGICAL SURVEY OF FILARIASIS IN SOLAPUR  
DISTRICT, MAHARASHTRA.**

**Under**

**MINOR RESEARCH PROJECT (WRO) PUNE**

**Submitted to**

**UNIVERSITY GRANTS COMMISSION**

**WRO, PUNE**

**Submitted by,**

**Ms. Rokade Asha Uttam**

**(Principal Investigator)**

**Head, Department of Zoology, Sangameshwar College, Solapur-  
413001 (M.S.) India.**

**Dr. Dama Laxmikant Basavraj**

**(Co-Investigator)**

**Head, Department of Zoology, D.B.F. Dayanand College of Arts and  
Science,  
Solapur (M.S.) India.**

**(Affiliated to Solapur University, Solapur)**

**(2014)**

# AN EPIDEMIOLOGICAL SURVEY OF FILARIASIS IN SOLAPUR DISTRICT, MAHARASHTRA.

Ms. Rokade Asha Uttam./File No.-47-1034/09(WRO)Date 06/10/2009.  
Letter No.UGC/MRP/2014-2015/378.02/08/2014.

## SUMMARY OF THE PROJECT

Phylum Arthropoda are A widely distributed of animal groups. Particularly, those within the classes Insecta and Arachnida live in close association with humans. The most important form of arthropods is the blood-sucking habits of ectoparasites such as mosquitoes, bedbugs and fleas. Mosquitoes, act as vectors of various parasites, which are pathogenic to human. More significantly blood-sucking insects transmit the organisms, hence are pathogenical parasitic called as "vectors" causing several debilitating diseases such as filariasis and sometimes fatal diseases such as malaria, dengue, Japanese encephalitis, plague, yellow fever, typhus etc.

Lymphatic filariasis is a major vector borne disease widely distributed throughout the tropical and subtropical regions of the world. It is caused by three-lymph dwelling parasites *Wuchereria bancrofti*, *Brugiamalayi*, *B. timori* affecting more than 120 million people over 80 countries. More than 90% of the cases are caused by *Wuchereria bancrofti*. In 2002, World Health Organization (WHO) has identified filariasis as second leading cause of permanent and long-term disability next only to mood affecting disorder.

Filariasis is one of the major parasitic infections of mankind, which is widely spread throughout the tropics and subtropics. Filariasis is a parasitic and infectious tropical disease, which is caused by thread-like filarial nematode worms. Two species namely *Wuchereria bancrofti* and *Brugia malayi* are prevalent in India and the former contributes 99.4 % problem in the country. In mainland India, the microfilaria (Mf) exhibit nocturnal periodicity, necessitating night blood surveys between 12.00 am and 2.00a.m. Midnight to detect Mf carriers.

The World Health Organization (WHO) estimates that 8.2 million people are infected with *Wuchereria bancrofti* but other estimates are as high as 250 million. Another report of WHO/India has given alarming figures estimate as 374 million living in endemic areas and 45 million infected individuals. The present study includes epidemiologic survey of Filariasis in Solapur District, Maharashtra.

Human filarial nematode worms have a complicated life cycle, which primarily consists of five stages. After the male and female worm mate, the female gives birth to live microfilaria by the thousands. The microfilarias are taken up by the vector insect (intermediate host) during a blood meal. In the intermediate host, the microfilaria moults and develop into 3rd stage (infective) larvae. Upon taking another blood meal the vector

insect injects the infectious larvae into the dermis layer of our skin. After approximately one year the larvae moult through 2 more stages, maturing into to the adult worm.

In India, filariasis has been recognized as disease of National importance because of continuous spread of disease and protracted suffering and disability caused in the affected population. India contributes to 40% cases of bancroftian filariasis in the global scenario. Though the disease is not fatal, it is usually acquired starting from early childhood and can be debilitating leading to disability causing unfold skin, pain, misery and impairment of health.

Filarial nematodes are noted for their longevity in the mammalian host, implying a high degree of sustained resistance to host immunity. Immunomodulation induced by filarial parasite includes primordial participation of the lymphocytes, multiple types of antigen presenting cells (APC) which includes macrophages and its cytokines and chemokines.

### **In Maharashtra state**

The National Filaria Control Programme launched in the state since 1957, based on the findings of one man commission report. National Filaria Control Programme is implemented through following health institutions.

- a. Filaria Survey Units. 06
- b. Filaria Control Units. 16
- c. Filaria Night Clinics. 10
- d. Filaria Training Center 01

Treatment has been given to the Mf positive patients detected through above centers, DEC tab are also available in the Govt. Hospitals, PHCs, Nagar Palika Hospitals, Municipal Hospitals etc. The programme function under the guidance of the Jt. Director of Health Services, (Malaria and Filaria) Pune. On the lines of Directives received from the Director, National Anti-Malaria Programme, Delhi. The Asstt. Director of Health Services, (Filaria) Pune co-ordinate the activities of the National Filaria Control Programme Units. The population covered under National Filaria Control Programme is 53.68 lakhs. The current anti – larval measures, treatment of Mf carriers, mass drug therapy with diethyl carbomazine (DEC) and Hydrocele operation with vasectomy.

#### **A) Filaria Survey Unit**

Filaria Survey Units determines the endemicity by surveying population on random sample basis. State has six survey units (Thane, Pune, Nagpur, Akola, Nasik and Aurangabad) at revenue division headquarters. State has completed all district except Brihan Mumbai. As per directives of third assessment committee survey unit should be engaged for resurvey of the old survey district if routine survey has been completed. So resurvey is started of the old surveyed districts.

#### **B) Filaria Control Unit**

Main activity of Filaria Control Unit is to control vector density by spraying antilarvals, weekly time spray schedule covers all breeding places in jurisdiction. Assessment survey is carried out of confirming the efficacy of anti-larval operations. Detection and Treatment is carried out by Filaria Control Unit.

The National Filaria Control Programme launched in the state since 1957, based on the findings of one man commission report. The Global and National Programs to eliminate Filariasis has been implemented to reduce human microfilaremia to levels low enough to break the transmission of the disease. This study is undertaken in an attempt to shed light on the existence of Filariasis in a previously non-endemic area.

The present study was undertaken during a period of Fifteen months from November 2009 to January 2011, survey was conducted and all available subjects were investigated. The survey was done in Solapur District, Maharashtra State, India.

Filariasis is usually diagnosed by identifying microfilaria on a Giemsa stained thick blood film. Blood must be drawn at night under the guidance of Government medical officer. The microfilaria circulate at night (nocturnal periodicity), when their mosquito vector is most likely to bite. Also, decreased peripheral temperature may attract more microfilaria. Various concentration methods are also applied- i. Membrane filter ii. Knott's concentration method iii. Sedimentation technique. Preliminary surveys conduct by the local health workers revealing the probable existence of the Filariasis. The health education component of the program is strengthening to make the public aware of Filariasis.

**Study area:** The study is conduct in different localities of Solapur Distric. These villages are also known to be endemic for lymphatic Filariasis.

**Sample collection:** A door-to-door survey is conduct in the selected localities of Solapur District to include individuals (adults and children >5 yr) in the study. Informed consent was obtain from Government Medical officers and study individuals (parents in case of minor). Study the host history and diethyl carbamazine citrate (DEC) consumption.

**Collection of Blood sample for Microfilaria (MF) detection:** Study subjects were examined under the supervision and guidance of Government Medical officer: Mf is detect by making two thick blood smears of 20 µl each on a clean glass slide from 20:00 to 00:00 h. Sample Preparation: fixation, storage, staining and mounting of Mf. The smears were air dried, dehaemoglobinised and stained with Wright's stain to detect Mf.

Elephantiasis is more prevalent in males than the females. The blood smear of the collected infected blood showed the filarial worms in figure 3. The filarial infection infected to right leg, left leg, and both legs in male and female patients were shown in figure 4. The Prevalence percentage of the infection is 89% in Male (422) as and 11% (50) in female (figure 2).

Lymphatic filariasis is a painful and profoundly disfiguring disease caused by *Wuchereria bancrofti*. It is the second most important cause of permanent disability. *Wuchereria bancrofti* achieve this longevity despite a vigorous host immune responses and their apparent inability to undergo antigenic variation implying a sustained resistance to or subversion of host immunity.

The present project work helps to reduce and eliminate transmission of LF by Mass Drug Administration. To reduce and prevent morbidity in affected persons, and to strengthen the existing health care services.

To prevent lymphatic filariasis is to avoid mosquito bites. The mosquitoes that carry the microscopic worms usually bite between the hours of dusk and dawn. If you live in an area with lymphatic filariasis then sleep under a mosquito net at night, use mosquito repellent on exposed skin between dusk and dawn and wear long sleeves and trousers.

## REFERENCES

- 1) World Health Organization. Defining the roles of vector control and xenomonitoring in the global programme to eliminate lymphatic filariasis. Geneva (2002); 1- 42.
- 2) Ramaih, K.D., Das,P.K., Michael,E and Guyatt,. H The economic burden of Lymphatic filariasis in India. Parasitol (2002); Today 16: 251 –53.
- 3) [http:// www.filariasis .org/](http://www.filariasis.org/)
- 4) Ottesen E.A. Immunopathology of lymphatic filariasis in man. Springer Semen Immunopathol (1980);2 : 373 – 85.
- 5) Maizels R.M., D.A. Bundy, M.E. Selkirk,D.F.Smith and R.M. Anderson.Immunological modulation and evasion by helminth parasite in human Populations, Nature (1993);365 (6449):797 – 05.
- 6) Maizels R. M., A.Balic, N, Gomez, Escobar, M. Nair, M.D Taylor, J. E Allen.Helminth parasites masters of regulation Immunol (2004); Rev. 201: 89 – 116.
- 7) Vickery A.C., A.L. Vincent and W.A. SodemanJr. Effects of immune reconstitution on resistance to B.phangi in congenitally athymic nude mice. J. Parasitol (1983); 69: 478 – 85.
- 8) Bhadwat V., BoradeV.. Increased lipid peroxidation in lepromatous leprosy. J DermatolVenerol, leprol (2000); 66: 121 – 25.
- 9) Hoerauf A. : New strategies to combat filariasis. *Expert Rev Anti Infect Ther.* (2006). 4:211-222.

- 10) Kumaraswami V. : The clinical manifestations of lymphatic filariasis. TB Nintman *Lymphatic filariasis*. Imperial College Press London. (2000). 103-125
- 11) Shenoy R.K. , T.K. Suma, V. Kumaraswami, et al.:Preliminary findings from a cross-sectional study on lymphatic filariasis in children, in an area of India endemic for *Brugia malayi* infection. *Ann Trop Med Parasitol*. (2007). 101:205-213.
- 12) Ottesen E.A. : Lymphatic filariasis: treatment, control and elimination. *Adv Parasitol*. (2006). 61:395-441.
- 13) Witt C. , and E.A. Ottesen: Lymphatic filariasis: an infection of childhood. *Trop Med Int Health*. (2001). 6:582-606.
  
- 14) Esterbauer H, Schauer RJ, Zollner H .Chemistry and Biochemistry of 4-Hydroxy-nonenal, malonaldehyde and related aldehydes. *Free Radic. Biol and Med*. (1991) ; 11:81-128.
- 15) Esterbauerh. Cytotoxicity and genotoxicity of lipid oxidation products. *Am. J. Clin Nutr* (1993); 57: 7795-865.
- 18) Michael. E, Bunday DAP and Grenfell B. T. Reassessment the global Prevalence and distribution of lymphatic filariasis. *Parasitology* (1996); 112: 409 – 28.
  
- 19) National Institute Of Communicable Diseases. Revised strategy for Control of lymphatic filariasis in India. 4 -- 5 January (1996); New Delhi: Recommendations of the WHO sponsored workshop.
- 20) Subrahmanyam D. Filariasis is spreading science today (1982); 16:17 – 24.