Title: **Malaria and Lymphatic Filariasis: Epidemiology, Associated Factors and Co-infection**

ABSTRACT

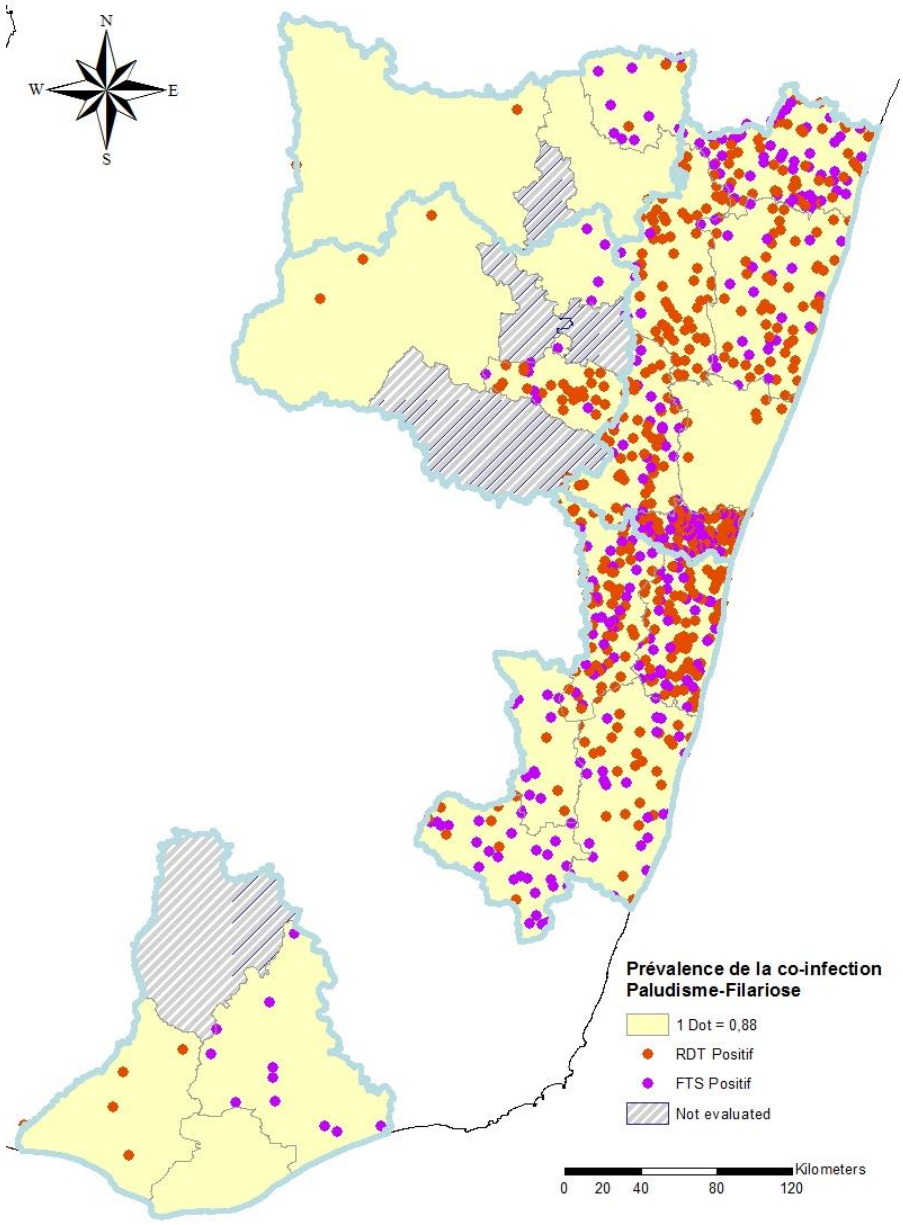
Introduction: Malaria and lymphatic filariasis remain major public health challenges in Madagascar. Malaria is a parasitic disease caused by the parasite of the genus plasmodium transmitted to humans by the bite of anopheles infected. Lymphatic filariasis (LF) is a neglected tropical disease transmitted by mosquitoes and caused by *Wuchereria bancrofti*, *Malay Brugia* and *B. timori*. This parasitic infection can cause significant handicaps. The Global Program for the Elimination of Lymphatic Filariasis targets the elimination of this disease by 2020. Here, we studied the factors associated with these pathologies and the rates of co-infection in the center, south and south-east of Madagascar.

Methods: The subjects were recruited for ages ≥5 years. Diagnosis was made by immuno-chromatographic tests of malaria (RDT) and lymphatic filariasis (FTS). The factors studied were: age, gender, level of education, possession and use of LLINs; and specifically for filariasis, the notion of taking MDA.

Results: Of the 8 644 people recruited, 5.35% are infected with malaria and 3.31% by lymphatic filariasis, found mainly in the region Vatovavy Fitovinany and Atsimo Atsinanana. Malaria risk increased when sleeping irregularly under-LLINs (OR = 2.23) and people aged 14 years and older had lower odds of infection (OR = 0.31). Risk factors for filariasis are illiterate level study (OR = 1.57), not taking MDA in the last 12 months (OR = 1.75), and sleeping under-LLINs irregularly 1-6 times / week (OR = 3.43); 1-4 times / month (OR = 4.30). As expected, we observed higher odds of infection at increasing age: ages 21 - 30 years (OR = 4.46), 31 - 40 years (OR = 8.81), 41 - 50 years (OR = 8.08), 50 years and older (OR = 9.35). The prevalence of co-infection is 0.18% (n = 16) and is mostly located in district of Nosy varika and Vohipeno.

Conclusions: The fight against malaria and filariasis still faces major challenges, especially in the South-East region and the Vatovavy Fitovinany region. Control strategies need to consider risk factors in these areas and integrate different vector control activities to be most effective. The prevalence of co-infection of malaria and lymphatic filariasis is low. Malaria-filariasis co-infection in the Southeast Madagascar Ecozone should not be taken lightly. Further studies need to complete this work especially regarding asymptomatic infections. A common risk factor for malaria and lymphatic filariasis infection is the non-use of LLINs regularly.

Keywords: Co-infection, Epidemiology, Lymphatic filariasis, Madagascar, Malaria



Prevalence of Malaria and Lymphatic Filariasis