Spatial analysis of malaria distribution in the Union of Comoros
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Malaria remains endemic in Comoros. In 2006, malaria was the leading cause of mortality, morbidity and consultation in hospitals. The Government of the Union of the Comoros is committed in the fight against malaria through the establishment of a National Strategic Plan in 2007 that was later updated for the period 2012-2016. The results of these efforts show that the disease is in a pre-elimination phase. Despite a clear decline of malaria several aspects of its epidemiology should be clarified including the identification of endemic areas. The occurrence of malaria shows spatial variations between and within islands. Several factors determine its transmission, including environmental and climatic factors, social conditions, individual behaviors, physical conditions, control actions. This has shown the importance of a spatial and multidisciplinary study of malaria.

Therefore, the purpose of this study is to:
- characterize the spatial and temporal dynamics of malaria,
- describe its ecological and social patterns,
- assess the impact of control actions,
- statistically model its distribution.

The perspectives for this study are:
- to integrate in a statistical model other indicators related to climate, sociological data and control actions.
- to assess locally the environmental patterns and the vulnerability of the populations to the disease (case-control study with interviews);
- to test the ecological analysis shows some environmental indicators that are characteristics of Grande Comore (more urbanized, with more barelands and grasslands).

The decrease of malaria incidence has been driven by different control actions organized since 2010, based on spraying campaigns and the distribution of Long Lasting Insecticidal treated Nets (LLINs). Starting in 2013, the Government conducted a massive distribution campaign of Artequick and Primaquine for all Comorian population.

The fight against malaria action of the Comorian government has achieved its goals. Mohéli and Anjouan are in pre-elimination phase, while Grand Comore is in control phase.

The landscape metrics built from the land cover map can describe the environmental characteristics of each island. We can use them to have a better knowledge of ecological conditions for malaria. At this step, the ecological analysis shows some environmental indicators that are characteristics of Grande Comore (more urbanized, with more barelands and grasslands).

The conclusions for this study are:
- to assess locally the environmental patterns and the vulnerability of the populations to the disease (case-control study with interviews);
- to integrate in a statistical model other indicators related to climate, sociological data and control actions.

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