Climatic and sociodemographic factors predisposing to schistosomiasis in Kaedi (Mauritanie) and Korhogo (Côte d'Ivoire)

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Study context

Like all continents, Africa is affected by climate change (increase of T °, drying up of water sources, flood). This situation has detrimental effects on parasitic diseases the distribution of certain diseases like schistosomiasis which remain predominant in sub-Saharan Africa. A better understanding of transmission factors may help to develop sustainable strategies for the control of the disease. In this respect, relationships between climate, socio-demograpic, economic and environmental factor will are addressed.

Study Site:

Korhogo (North Côte d'Ivoire):
Population: 210 000 Hbts,
Precipitation(mm/a): 1200-1500,Average :1350 mm
T°(min-max): 30 °C [24-36°C]
Presence of a dam and other small water bodies

Kaédi (South Mauritania):
Population: 118 195 Hbts,
Precipitation(mm/a) 300-500 ,Average :400mm
T°(average):28°C [12-44°C]
Located along the Senegal river

Key message / lessons

Important to popularize knowledge about schistosomiasis and

Treatment of water resources

Develop sustainable strategies for the control of the disease

Develop new activities in the climate change

Develop economic activities during for rainy and dry season

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Collaborating Institutions

3 main references related to the study :

1. Dominique, B. (2005). "Conditions climatiques et maladies vectorielles." Environnement, Risques & Santé **4**(2)
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Framework

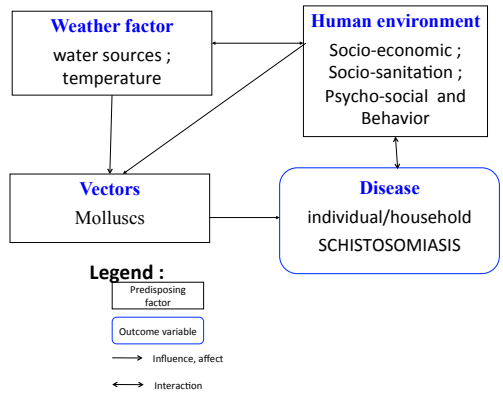

Figure 1 : Conceptual framework predisposing factors for schistosomiasis

Materials & Methods

Study cities :
Data were collected during the dry and rainy season in Korhogo and Kaedi from may 2014 to june 2015.

Statistical analysis :
The chi-square test were used to compare the factors of the 2 cities and Fisher's exact test was used if the chi-square test was not appropriate. Thereafter, one-way analysis of variance was used to compared means of parameters.
The outcome variable were coded in 0 (to indicate no-schistosomiasis) and 1 (for cas of schistosomiasis). Logistic regression will be use for vulnerability modeling.

Software for data interpretation :
Statistical analysis was performed with the SPSS statistics 20 and Stata/IC 10.

Figure 2 : Household activity in the river Senegal, Dry season Kaedi, Mauritanie

Results

Interaction cities and season :
On the whole, there is no association between the seasons and schistosomiasis prevalence in univariate analysis, however there is a SS difference between the seasons and the disease when stratified analysis by city (p <0.05). In Kaedi, prevalence is higher during dry season than rainy season conversly, in Korhogo (south of the Sahelian band) it is the inverse (p <0.05).

Effect of season, gender and age :
At the two cities, the average age of patients was 10,7 years ± 3,03 years; and most vulnerable are young boys 10 years-old-aged and more in Kaedi especially in the dry season.
During rainy season, in korhogo, young girls are more vulnerable than boys and inversely to Kaedi (p <0.05). The dry season analysis shows different results. Indeed, boys are more exposed in korhogo and Kaedi but difference is not SS

Economic :
Households members with no activities or retired get more sick children (NS). During the rainy season in Kaedi, health expenditures of affected households represent 14% of the whole expenditures versus 21% in Korhogo

Demographic :
Demographically, the most numerous are the most vulnerable households. There is a statistically significant difference in the seasons in both cities. The average of household size is higher in rainy season than dry season in both cities. The most vulnerable households are those with high inhabitant.

Behavior :
In households where there are ill persons, a high proportion of women enrolled in the dry season use mostly water points especially in Kaedi (P <0.05), there are around 7 out of 10 women. In Korhogo, it is 3 over 10 women (P> 0.05).

Resilience :
In general, Kaédi households are more resilient than those of Korhogo (46.2% vs 41.7%) but NS except in dry season where the difference is SS (Kaédi 56.5% vs. 47.5% Korhogo).
Among households with at least one patient, the resilience against the disease did not differ statistically between the seasons and cities, but the gap remains non SS.

Summary table

Rainy season		Dry season		p-value
kaedi	korhogo	kaedi	korhogo	
-cas	+cas	+cas	-cas	<0,05
Average age sick person is 10.7 ± 3.03 years*				
		more vulnerable are Young boys of 10 to 15 years		<0,05
Young boys are more vulnerable	Young girls are more vulnerable		Young boys are more exposed	<0,05
		No statistically significant difference between boys and girls		>0,05
	Islamic school children are more at risk		Islamic school children are more at risk	<0,05

* the average of age was calculated over the 2 seasons in both cities.