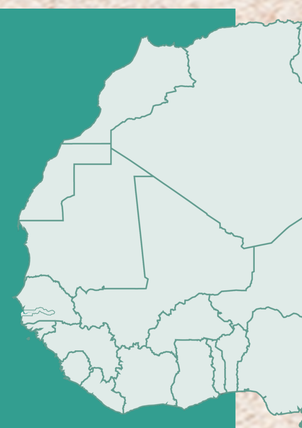
SOCIAL, ENVIRONMENT AND CLIMATE CHANGE IMPACTS ON VECTOR-BORNE DISEASES IN ARID AREAS OF SOUTHERN AFRICA



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ABSTRACT

Botswana, South Africa and Zimbabwe have varying socio-economic and environmental challenges that provide appropriate conditions for malaria and schistosomiasis transmission. Climate change may influence the distribution and intensity of these diseases. MABISA (Malaria and Bilharzia in Southern Africa) Project was conceptualized to assess the added impact of climate change on malaria and schistosomiasis, in specific social-ecological systems of the three countries ,with a view to develop adaptation strategies for reducing population health vulnerabilities to the diseases.

An Eco health approach with descriptive, analytical, qualitative, cross-sectional and experimental methodologies was adopted. The project has yielded outcomes relevant to the stu countries and applicable to similar socio-ecological systems. MABISA project has contributed better understanding of the distribution of malaria and schistosomiasis, and the interact factors on the two diseases, stakeholder-driven adaptation strategies to increase populati resilience to the diseases; and enhanced capacity of affected communities to assess and redu their vulnerabilities . Involvement of departments of health and environment ensure smoo uptake of MABISA findings for control of malaria and schistosomiasis; and policy formulation

AIMS AND OBJECTIVES

AIM: To determine the impacts of socio-economic, environmental, climatic, bionomic and institutional factors on malaria and schistosomiasis Botswana, South Africa and Zimbabwe in arid areas, to develop stakeholder-driven adaptation strategies

OBJECTIVES

1.Determine temporal trends and community perceptions of the influence of climate change on the diseases
2. Determine community perceptions of the influence of climate change on the diseases
3.Establish the influence of socio-economic, environmental, climatic and institutional factors on transmission dynamics
4.Explore, define and recommend stakeholder-driven adaptation strategies to reduce population health vulnerabilities
5.Develop and strengthen capacities of research groups and communities to empower them to assess and mitigate population vulnerabilities

METHODOLOGY

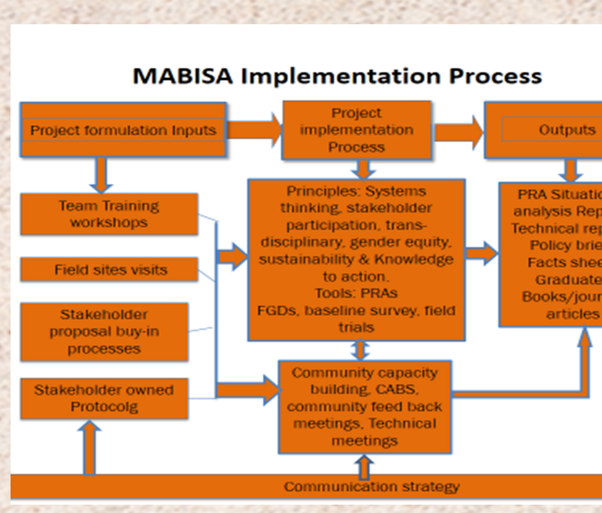
Study Design

An Ecohealth approach was adopted The approach allowed analysis of emerging issues by a diverse group of experts taking into account the prevailing socio- ecological and political perspectives.

Methods

Quantitative and qualitative methods were used for data collection. Quantitative method :questionnaires were administered to school children and urine and stool samples were used to screened for schistosomiasis infections. Sentinel sites were monthly monitored for presence of snails. Adult mosquitoes were samplied using pit traps and the dipping method for mosquito larvae. Periodic mosquito knockdowns were done in selected households. Health information data was collected from local health centres. Climate variables data was collected using remote sensing/earth observations.

Qualitative methods included participatory ru sessions. Focus Group Discussions and inde were held at the project inception and once e subsequent years. Community feedback sess during PRAs used edutainment approaches f dissemination.



RESULTS

Results

Malaria and schistosomiasis budern temporal trends

- *Schistosoma haematobium* was more predominant than *S. mansoni* at all sites,South African site having the highest prevalence (40 %) followed by Botswana (20%) and Zimbawe (6%)
- A mean loss of 1.18 DALYs per malaria episode with a DALY rate of 36.29 DALYs/100000 persons/year in Zimbabwe district was determined
- GPSs for schools, snail survey sentinel sites and households were recorded
- Remote sensing/Earth Observation data - climatic (rainfall and temperature) showed a lag between climatic factors and snail densities
- Malaria trends community perceptions , temperature and rainfall were documented for a period of < 40 years.
- Bulynus. *globosus* and *B. pfeifferi* were found to have good aestivation abilities.

2. Community perceptions of climate change influence on malaria and schistosomiasis

- Perceptions and gender dynamics relating to schistosomiasis were established
- Disease and livelihood calendars showed the relationship between malaria and rainfall and temperature.

Influence of socio-economic, environmental, climatic and institutional factors

- The household economic burden of malaria on vulnerable was established
- Ill preparedness of health facilities in dealing with schistosomiasis suggested the dise
- Socio-economic status and level of knowledge were identified as risk factors
- In Zimbabwe a sectoral framework to support climate change adaptation is in place

Stakeholder-driven adaptation strategies to reduce population health vulnerabilities

- Indigenous knowledge systems on treatment, prevention and prediction of malaria w
- Indigenous indicators for the occurrence of rainfall as a precursor to the occurrence
- A community based committee was established to develop an early warning system f

5. Developing and strengthening of capacities among research groups and communi population health vulnerabilities

- Community Advisory Board members were empowered on community engagement
- Critical mass of post-doctoral and -graduate students was developed
- Key stakeholders for knowledge uptake were identified and engaged
- Levels of knowledge and local understanding of schistosomiasis and malaria were de corrected

CONCLUSIONS

1.Spatial and temporary trends of schistosomiasis were de
2.Perceptions of communities on the influence of climate were determined
3.Influence of socio-economic, environmental, climatic an transmission dynamics were investigated
4.A framework for a stakeholder adaptation strategy to re developed
5.A critical mass of young academics working on climate c created. Communities Advisory Members and Community trained

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