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

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 Ecoshare 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 screen for schistosomiasis infections. Sentinel sites were monitored for the presence of snails. Adult mosquitoes were sampled using pit traps and the dipping method for mosquito larvae. Periodic mosquito knockdowns were used in selected households. Health information data was collected from local health centres. Climate variables data was collected using remote sensing/earth observations.

RESULTS

Malaria and schistosomiasis burden temporal trends
- Schistosoma haematobium was more predominant than S. mansoni at all sites. South African sites having the highest prevalence (40%) followed by Botswana (20%) and Zimbabwe (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, stall 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.
- Bulinus, globosus and B. pfeifferi were found to have good establishment.

- 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 and vulnerable was established.

CONCLUSIONS
1. Spatial and temporal trends of schistosomiasis were determined.
2. Perceptions of communities on the influence of climate and malaria were determined.
3. Influence of socio-economic, environmental, climatic and transmission dynamics were investigated.
4. A framework for a stakeholder adaptation strategy to reduce malaria was developed.
5. A critical mass of young academics working on climate change was created. Communities Advisory Members and Community trainers.

TEAM MEMBERS

PROJECT PARTNERS

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