Community Mobilization, Spatial Mapping and Malaria Control

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East Africa-Tanzania

Kilimanjaro District

Moshi Municipality
Population 143,000 in 2002
The 15 ward (blue lines) and 61 subwards (red lines, 60 of which are residential) boundaries are outlined. Each of the 15 wards and 61 subwards has democratically elected leaders and committee members for health, education and social welfare. Malaria survey was conducted in entire subward (*Pasua relini*, red rectangle with asterisk) but only the center region (yellow dashed circle) was targeted in the community education and mobilization intervention.
The Young Citizens (YC) Program in the Kilimanjaro Region of Tanzania engages young adolescents to work as health agents to build HIV and malaria competence in their communities.

The initial YC HIV Program was based on a curriculum, which provided activities to build citizenship, public deliberation skills and HIV knowledge. It was evaluated in a cluster randomized controlled trial. Both the YCs and their communities were significantly impacted by the 7-month intervention.

More recently, the YC Program has been building malaria competence through community education and mobilization in controlling endemic malaria.

The malaria work has allowed for household level intervention and data mapping not possible with HIV as a highly stigmatized disease.
Moshi Young Citizens as Health Agents

Participants: Random selection of adolescents residents, age 10 to 14, living in geopolitically defined communities with democratically elected leadership

Curriculum: Activities and deliberation around citizenship skills and microbiology of malaria, while working with elected local and municipal health facilities in community

Intervention: Participatory community drama and household visits were used to educate and mobilize community about malaria transmission, prevention, testing and treatment
Survey Results on Malaria Attitudes and Knowledge across *Pasua relini* (n=200)

- 81% said malaria is VERY serious
- 61% had episode of malaria in home in last 3 month
- 74% knew mosquito bite causes malaria
- 78% know mosquitoes breed in stagnant water
- 27% knew that *plasmodium* parasite caused malaria
- 20% knew mosquito who has bitten infected person causes malaria
- 23% had heard of biocontrol or environmental control of malaria
Biocontrol of *Anopheles* Larvae using Larvivorous fish

The Young Citizens worked with CHASE staff to dig experimental ponds in a restricted region of the community, to create maps of ponds and to take weekly larval counts before and after introducing a Tanzanian larval-eating fish to experimental ponds in their neighborhood.
Biocontrol with Larvivorous Fish

- The Tanzanian fish species *Nothobranchius guentheri* is an annual species;
- adults die off yearly, leaving their embryos in a state of suspended animation in dry dirt when the water recedes.
- The embryos hatch when the rainy season begins and feed on the *Anopheles* mosquito larvae, which hatch around the same time.
Daily Larval Counts in Experimental and Control Ponds

*Pasua relini* ponds
(average of 4 experimental and 6 control ponds)
LOCATION OF PONDS
PASUA RELINI
Location of Experimental Ponds with Larvivorous Fish
20% knew mosquito who has bitten infected person causes malaria
27% knew that *plasmodium* parasite causes malaria
23% had heard of biocontrol or environmental control of malaria
A. Female \textit{Anopheles} mosquito bites through skin, transmits \textit{plasmodium} to blood stream, 
B. which infects the liver, 
C. then returns to blood stream, infects red blood cells, 
E. and new mosquito is infected when she bites infected person
Malaria Transmission is Social

infected father to uninfected child
not to mother and child under bed net

HUMAN reservoir
Young Citizens do public education and mobilization through skits of malaria microbiology and transmission
Their skill in collecting GPS data, in combination with the GIS capacities of Africa Map, enables them to develop maps of the households where they provide scientific explanations and demonstrations of environmental management practices.
Young Citizens visit 100s of Households with Malaria Information and Larvae Demonstrations
Spatial data is key to the next phase of this work on the effectiveness of the community education and mobilization around transmission and environmental management of malaria in urban and rural areas of Northern Tanzania.
Summary of biocontrol ponds, community skits, household visits and *Anopheles* larvae located
Moshi Team

CHASE Staff--Juma Tety, John Mmbando, Benward Joseph, Hendry Mhando and *Pasua relini* Young Citizens

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