Understanding Social Networks for Disease Transmission and Information Interventions in rural Madagascar

Bass Connections in Global Health

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Background
- Social contact facilitates spread of diseases4,6
- Contact between individuals can be analyzed using a social network4,6
- Madagascar has high infectious disease burden and limited health infrastructure1,2
- Information interventions curb negative behavior in the short term3,5

Objectives
- Understand key health concerns of the community
- Construct social networks of villager relationships
- Examine homophily and distance on social networks for potential spread of infection and disease prevention information

Methods

**Study Site:**
Mandena, Madagascar

**Population:**
2,700 people in 646 households

**Demographics:**
Rural, small-scale farmers

**Household Survey**
Random sample of 354 individuals in 94 households on:

- Demographics
- Socioeconomics
- Health
- Health Seeking Behaviors

**Social Network Survey**
Snowball sampling of 177 people connected to 746 unique individuals

**Social Network Analysis:**
Distance between connections, gender segregation, connectedness of individuals

Health Concerns
- Fever in Past 3 mo: 40%
- Fever & Sought Care: 61%
- Financial Barrier to Healthcare: 87%
- Physical Barrier to Healthcare: 89%
- No Health Insurance: 59%

Gender Homophily
- Agricultural Relationships: 2.2x more likely to have relationship with person of same gender
- Friend Relationships: 6.5x more likely to have relationship with person of same gender

Social Network
Network colored by relationship; size=connectedness

Distance on Network

Summary
- Fever, financial barriers and physical barriers to healthcare are key health concerns
- Networks with diverse relationships give more accurate depiction of an individual’s contact network
- Networks of different relationships have different gender segregation, connectivity and distance, impacting how infections and information would diffuse

Literature Cited