Bridging Income Generation with Group Integrated Care

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Conceptual Model

**BIGPIC**

**MICROFINANCE GROUPS**
- Health savings
- Increased income
- Financial literacy
- Self-confidence
- Decision-making agency
- Social Support

**GROUP MEDICAL VISTS**
- Efficiency of care delivery
- Improved quality of care
- Clinician-patient trust
- Increased self-efficacy
- Shared experiences
- Peer support

**Intermediate Factors**
- Healthy Diet
- Physical Activity
- Medication Adherence
- Retention in Care

**CVD Risk Reduction**

Specific Aims

1. Contextual factors, barriers, facilitators

2. Evaluate effectiveness
   - Primary outcome: change in SBP
   - Secondary outcome: change in CVD risk score
   - Social network analysis: mediation, moderation

3. Evaluate cost-effectiveness
Cluster RCT

- **Enrollment**
- **Randomization**
- **Allocation**
- **Follow-up**
- **Primary Outcome**
- **Key Secondary Outcome**

**Eligible Participants**

**Randomized at Health Facility Level**

- **UC**
- **MF**
- **GMV**
- **GMV-MF**

**12 Months**

- **Δ SBP**
- **Δ CVD Risk Score**
- **Δ SBP**
- **Δ CVD Risk Score**
- **Δ SBP**
- **Δ CVD Risk Score**
- **Δ SBP**
- **Δ CVD Risk Score**

Social Network Analysis

A

B
## Social Network Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Equation</th>
<th>Measure</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td></td>
<td>Network</td>
<td></td>
</tr>
</tbody>
</table>
| **Degree Centrality \(C_D\)** | \[
C_D = \sum_{i=1}^{N-1} P_i
\]
\(P =\) number of links per node \(i\)
\(N =\) total number of nodes | **Density \(D\)** | \[
D = \frac{L}{N(N-1)}
\]
\(L =\) number of links
\(N =\) network size (total number of nodes) |
| **Closeness Centrality \(C_C\)** | \[
C_C = \sum_{i=1}^{N-1} \frac{1}{D_i}
\]
\(D =\) average distance between node \(i\)
and the rest of the network | **Transitivity \(T\)** | \[
T = \sum (X_{i,j}X_{j,k}X_{i,k})(i \neq j \neq k)
\]
\(X\) is the adjacency matrix
\(i, j, k\) are indicators for distinct nodes |
| **Triadic Closure \(TC\)** | \[
TC = \sum_{i=1}^{N-1} X_{i,j}X_{j,k}X_{i,k}(i \neq j \neq k)
\]
\(X\) is the adjacency matrix
\(i, j, k\) are indicators for distinct nodes | **Cohesion \(Coh\)** | \[
Coh = \frac{\sum 1}{N(N-1)} (i \neq j)
\]
d = distance between nodes
\(N =\) network size (total number of nodes)
i, j are indicators for distinct nodes |
Mediation Models

a. \( I \rightarrow SNC \rightarrow IF \rightarrow \text{CVD Risk} \)

b. \( I \rightarrow SNC \rightarrow IF \rightarrow \text{CVD Risk} \)

c. \( I \rightarrow SNC \rightarrow IF \rightarrow \text{CVD Risk} \)

d. \( I \rightarrow SNC \rightarrow IF \rightarrow \text{CVD Risk} \)
Process Evaluation

The Saunders Framework

Components of Process Evaluation

1. Fidelity (Quality)
2. Dose Delivered
3. Dose Received (Exposure)
4. Dose Received (Satisfaction)
5. Recruitment
6. Reach (Participation Rate)
7. Context
Current status

• **Aim 1- Barriers/Facilitators/Contextual Factors**
  – Manuscript in preparation

• **Aim 1.1- Development of Integrated Group Medical Visit-Microfinance Model**
  – Manuscript under review

• **Aim 2- Cluster RCT**
  – Recruitment completed
  – 3-month follow-up completed
  – 12-month follow-ups nearly complete
  – Process evaluation complete
  – Data analysis ongoing
Current Status

• **Aim 2.1- Mediation & Moderation Analysis**
  – Social Network Survey
    • 12-month data collection nearly complete
  – Analysis ongoing

• **Aim 3- Cost-effectiveness Analysis**
  – Costing Questionnaire Survey
    • 12-month data collection nearly complete
  – Intervention Cost Assessment
    • Nearly complete
BIGPIC Challenges

• Delayed enrollment/implementation
  – National elections 2017
  – Research Assistant under-performance

• Delayed formation of groups
  – Wide geographic coverage
  – Minimum number of participants required

• Unanticipated participant deaths

• Feasibility of f/u visits

• Data management!
BIGPIC Successes

• Enrollment: 2891
  – 69% Women, 31% Men
• Follow ups: 3 months – 2684 (93%)
  12 month – 2201 complete
• Baseline network analysis
• Data management—lessons learned
• Abstracts/Publications
Economic Reality: LARK

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (n=1460)</th>
<th>Usual Care (n=491)</th>
<th>Paper Based (n=500)</th>
<th>Smart Phone (n=469)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>54.2</td>
<td>54.6</td>
<td>53.7</td>
<td>54.3</td>
</tr>
<tr>
<td>Female Gender (%)</td>
<td>58</td>
<td>63</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Unemployed (%)</td>
<td>21</td>
<td>17</td>
<td>16</td>
<td>31</td>
</tr>
<tr>
<td>Monthly Earnings ≤ US$50 per month (%)</td>
<td>49</td>
<td>54</td>
<td>52</td>
<td>42</td>
</tr>
<tr>
<td>National Health Insurance Coverage (%)</td>
<td>15</td>
<td>11</td>
<td>14</td>
<td>19</td>
</tr>
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</table>

Vedanthan et al. (2019) European Society of Cardiology
# Economic Reality: BIGPIC

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Women</th>
<th>Men</th>
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</thead>
<tbody>
<tr>
<td>Unemployed</td>
<td>68%</td>
<td>55%</td>
</tr>
<tr>
<td>Less than Kshs 1000</td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>Kshs 1000-2999</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Kshs 3000-4999</td>
<td>6%</td>
<td>5%</td>
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</table>
# BIGPIC—Process Measures

<table>
<thead>
<tr>
<th>ARM</th>
<th>Clinic attendance (% at least 1 visit)</th>
<th>Average number of clinic visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMV +MF</td>
<td>69.6</td>
<td>8</td>
</tr>
<tr>
<td>GMV</td>
<td>66.3</td>
<td>8</td>
</tr>
<tr>
<td>UC+MF</td>
<td>56.3</td>
<td>7</td>
</tr>
<tr>
<td>UC</td>
<td>41.2</td>
<td>5</td>
</tr>
</tbody>
</table>
Social Network Changes

Baseline

12 months
THANK YOU!