Exploring IPV outcome measures

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Long term goals:

- To deepen our understanding of the impact that our interventions are having through more detailed analysis on existing trial data.

- To explore how measurement issues and coding decisions may affect this assessment.

- This is a work in progress!
Collaborators

- **Sangeeta Chatterji PhD**, Postdoctoral Fellow, Johns Hopkins Bloomberg School of Public Health
- **Jasper Cooper**, PhD, Assistant Professor, UCSD Department of Political Science
- **Christopher Boyd**, Harvard School of Public Health
Take Home Message:
We can reduce violence!
Presentation aims

- How to maximize the information gleaned on the nature and size of the impact that our interventions are achieving
- How to select our outcome measures so as to maximize our ability to detect a real effect when it is there
- What outcomes should we routinely report when evaluating the impact of our interventions
Measures: IPV Questions

- Based on WHO modified Conflict Tactics Scale

  - Controlling behaviors (5-6 Questions)
  - Emotional IPV (4 Questions)
  - Physical (5 Questions)
  - Sexual (3-4 Questions)
  - Economic (4 Questions)
### EXAMPLE: Physical Violence

<table>
<thead>
<tr>
<th>In the past 12 months, how often has your partner...</th>
<th>Never</th>
<th>Once</th>
<th>A few times</th>
<th>Many times</th>
</tr>
</thead>
<tbody>
<tr>
<td>slapped you or thrown something at you that could hurt you?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>pushed you or shoved you or pulled your hair?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>hit you with his fist or with something else that could hurt you?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>kicked you, dragged you or beaten you up?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>choked or burnt you on purpose?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>threatened you with or actually used a gun, knife or other weapon against you?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
How and why is coding important?

- Coding affects what is defined as a “case” of violence.
  - Do you need to experience a “pattern of abuse” before you are considered a case of IPV?
  - Is it appropriate to consider all acts of equal weight in qualifying as a “case” of violence?
  - How does the above affect estimated prevalence of abuse and/or the evaluated impact of interventions?

- Alternatively, can combine frequency and number of acts into an IPV “score,” e.g. 0-24
Outcome options

**Current practice**
- IPV coded as yes/no binary
- Counts all items equally, regardless of severity
- Doesn’t capture “emotional only” or “economic only” violence

**Alternatives**
- Simple score based on count of types of violent acts experienced (e.g. 0-5 for physical IPV)
- Score based on frequency of acts (0-15 for physical IPV)
- Weighted score that takes into account severity of act (e.g. insult ≠ threat)
Exploring differential impacts

<table>
<thead>
<tr>
<th>Binary vs. Score</th>
<th>Prevent new cases?</th>
<th>IPV reduced, ceased, increased?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Effect on women with no IPV in the past 12 months at baseline</td>
<td>Effect on women who were experiencing IPV at baseline</td>
</tr>
<tr>
<td>0 to 24 Intensity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Data: Three What Works Trials

**Indashyikirwa**
21 Session Curriculum
Married couples
Rural Rwanda

**Stepping Stones Creating Futures**
Young unrelated men and women
Gender and economic empowerment curriculum

**Women for Women International**
Women’s economic and social empowerment
Mostly illiterate Afghani women
Indashyikirwa’s couple’s curriculum in rural Rwanda:

Reduced women’s odds of reporting physical and/or sexual IPV by 55%
Cessation vs Reduction among women who reported IPV at baseline

N=913 total, 493 intervention & 420 control

OR = 2.49 (95%CI: 1.83 – 3.39)

OR = 1.77 (95%CI: 1.33 – 2.37)
## Outcomes at 24 months (binary)

<table>
<thead>
<tr>
<th>Country</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rwanda</strong></td>
<td>Sex/Phys Viol</td>
<td>Sex/Phys Viol</td>
</tr>
<tr>
<td></td>
<td>Phys Viol</td>
<td>NS Phys Viol</td>
</tr>
<tr>
<td></td>
<td>Sex Viol</td>
<td>Phys Viol</td>
</tr>
<tr>
<td><strong>South Africa</strong></td>
<td>No effect</td>
<td></td>
</tr>
<tr>
<td><strong>Afghanistan</strong></td>
<td>No effect</td>
<td></td>
</tr>
</tbody>
</table>
## Impact on physical and/or sexual IPV

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Reduction</th>
<th>Cessation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rwanda Women</td>
<td>No</td>
<td>Rwanda Women</td>
</tr>
<tr>
<td>Rwandan Men</td>
<td>No</td>
<td>Rwandan Men</td>
</tr>
<tr>
<td>S. African Women</td>
<td>No</td>
<td>S. African Women</td>
</tr>
<tr>
<td>S. African Men†</td>
<td>0.50**</td>
<td>S. African Men.</td>
</tr>
<tr>
<td>Afghan Women</td>
<td>No</td>
<td>Afghan Women</td>
</tr>
</tbody>
</table>

† sexual only; physical borderline
Even in the absence of intervention, violence appears to dissipate

- In roughly 1/3 of IPV cases at baseline, women report no IPV in the past 12 months
- In roughly 60% of cases of IPV at baseline, women experienced reductions in the intensity of abuse even in the absence of intervention

Natural cessation? Regression to the mean? Secular trend? Measurement instability?
**Indashyikirwra** (at 24 months)

<table>
<thead>
<tr>
<th>IPV Score</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPV Reduced</td>
<td>79 %</td>
<td>58 %</td>
</tr>
<tr>
<td>IPV Ceased</td>
<td>47 %</td>
<td>32 %</td>
</tr>
<tr>
<td>IPV Increased</td>
<td>14 %</td>
<td>31 %</td>
</tr>
</tbody>
</table>
Binary vs Continuous (24 months)

- **Women Rwanda (sex/phys)**
  - Binary
  - Continuous

- **Women South Africa (sex/phys)**
  - Binary
  - Continuous
  - Not Sig
  - Not Sig

- **Men Rwanda**
  - Binary
  - Continuous
  - Not sig

- **Men South Africa**
  - Binary
  - Continuous
  - Not sig

WhatWorks
TO PREVENT VIOLENCE
Both yield unbiased estimates of the true treatment effect, but they estimate different things:

- The binary measure estimates the difference in the proportion who are experiencing any violence over the recall period.
- The continuous measure estimates the mean difference in number and frequency of violent acts experienced over the recall period.
Simulation study

- Designed to explore relative power of binary vs continuous measures based on different modeled treatment effects

- Simulates hypothetical randomized intervention study, using “Declare Design” in R, using a data structure based on empirical data from a trial in Uganda.

- Modeled as a Poisson process governed by a common parameter (lambda) that represents the average rate of violence during the defined recall period.
Scenarios

- **constant** - a constant/homogeneous treatment effect across all 10 acts
- **physical_only** - moderate reductions in all physical violence variables, but no reduction in sexual violence.
- **sexual_only** - moderate reductions in all sexual violence variables, but no reduction in physical violence.
- **moderate_only** - reduction in only slapping and pushing, all other acts are unaffected.
- **divergence** - large reduction in slapping and pushing but increases in more severe violence and small uptick in sexual violence.
Results

- In terms of power, continuous outcome dominates binary when intervention has a constant effect across acts.
- Binary is more powerful when intervention affects acts differently and at the bottom end of the frequency distribution.
Choice of outcome

- Statistical Efficiency
- Structure of data
  - Mix of severe and moderate violence;
  - Mostly moderate, etc.
- Prevalence
  - Binary outcomes are most “noisy” (highest variance) at 50% prevalence

Anticipated impact of intervention
Take home messages:

Interventions have differential impacts on:

- Preventing versus reducing intensity of on-going violence
- Given this, investigators should routinely report an intervention’s impact on:
  - New cases of IPV
  - Cessation and reduction of IPV

Coding of outcome measures affect trial conclusions:

- Choice (binary vs continuous) can affect whether intervention is interpreted as “effective” or not
- Estimated size of impact is likewise affected by how one defines a “case” of IPV
Special thanks to implementing partners, research teams, and participants...

Indashyikirwa
RWMREC, RWN, CARE Rwanda

Research team: Kristin Dunkle, Lori Heise, Erin Stern, Lyndsay McLean

Stepping Stones/Creating Futures
Project Empower

Research team: Andy Gibbs, Yandisa Sikweyiya, Samantha Willan, Rachel Jewkes

Women for Women International
Women for Women International

Research team: Rachel Jewkes, Andy Gibbs, Nwiabisa Shai, Esnat Chirwa, Julienne Corboz
Indashyikirwa Couple’s Results

Kristin Dunkle, L Heise, S Chatterji, E Stern, E. Chirwa

2:30 pm Thursday, Exhibit Hall 10