Meta-analysis on the Effectiveness of HIV Stigma Reduction Programs

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Background

• Global and local initiatives to reduce HIV stigma

• No statistical consolidation on the effectiveness of stigma-reduction efforts

• Identification of active ingredients that enhance stigma reduction effects
HIV stigma

• strong and significant impediment to public health across the globe
• a key obstacle to HIV treatment, prevention, care and support (Mahajan, Sayles, Patel et al., 2008; Valdiserri, 2002)

Programs aimed at reducing stigma and discrimination against PLHIV or people at risk of HIV infection should address the modifiable causes of stigma and discrimination including:

- ignorance about the harm of stigma
- continuing irrational fears of infection
- moral judgment
• Key intervention approach
  – increasing acceptance of PLHIV (Brown, Macintyre, Trujillo, 2003)
  – education about HIV (Mahajan, Sayles, Patel et al., 2008)

• Stigma reduction efforts focus on misconception towards HIV/AIDS (Herek & Capitanio, 1999; Liu, Hu, Stanton, Sylvie, & Yang, 2006)

• Critics argue that knowledge alone does not necessarily lead to decrease in levels of stigma (UNAIDS, 2012)

• Effective stigma programs should also aim at improving participants’ attitudes toward PLHIV
Only systematic reviews have been conducted on HIV stigma reduction programs (Brown et al., 2003; Sengupta et al., 2011)

Systematic quantitative synthesis of the past studies
- effect sizes of the interventions
- possible moderators of the effects

Solid evidence-based conclusions beyond anecdotal reviews and observations
Aims of the study

• Synthesize effectiveness of HIV stigma reduction programs
  – Increase in HIV knowledge
  – Reduction in negative attitudes towards PLHIV

• Identify potential moderators in HIV stigma reduction programs
Methods
Inclusion & Exclusion Criteria

**Inclusion Criteria**
- intervention design
- involved a stigma reduction component
- focused on HIV stigma
- at least one stigma-related outcome

**Exclusion Criteria**
- irrelevant to HIV
- irrelevant to stigma
- non-intervention-based (e.g. qualitative studies, commentary, and literature reviews)
- not written in English

no restrictions on sample size, sample type, use of control group, duration of follow-up, or publication source
Identification of Studies

- Journal articles, book chapters, and dissertations from 4 major online databases:
  - PsycInfo (1967-2012)
  - Sociological Abstracts (earliest-2012)
  - Medline (1950-2012)
  - Education Resources Information Center (ERIC; earliest-2012)

- Key terms: “HIV”, “stigma”, and “reduction”
Data Extraction

• 6 coders; inter-reliability: .82 (Fleiss’ Kappa) and Pearson’s r reached 1.00

• Coding scheme developed by the authors
  – sample characteristics, measurements, intervention characteristics, participants demographics

• Quality assessment
  – randomized assignment
  – concealment method
  – intent-to-treat analysis
  – blinded study
Included Studies

- 4192 citations identified for screening
- 143 articles met the inclusion criteria
- 50 articles were coded
- 15 studies entered in meta-analysis
Studies’ Characteristics

• Participants
  – ~29,000; 96% studies involved both gender; 42% professionals; 32% students; 20% community samples

• Interventions
  – lectures and talks with interactive activities (e.g. group work, experiential activities, Q&A; counselling, contact with PLHIV)
  – 34% single session in 1-2 days; 52% multiple sessions in 2-4 days

• Methodological quality
  – only 58% has control group
  – only 22% has random assignment
  – no intent-to-treat nor allocation concealment
  – non-standardized measures
Results
### Effect sizes of the Interventions

- **Random effect analyses**

<table>
<thead>
<tr>
<th></th>
<th>Knowledge</th>
<th>Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At post-intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with control</td>
<td>1.10 (.49 - 1.71)</td>
<td>.49 (.28 - .69)</td>
</tr>
<tr>
<td>without control</td>
<td>1.13 (.68 - 1.59)</td>
<td>.34 (.17 - .51)</td>
</tr>
<tr>
<td><strong>At follow-up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with control</td>
<td>.72 (.13 - 1.3)</td>
<td>.25 (.11 - .40)</td>
</tr>
<tr>
<td>without control</td>
<td>.64 (.17 - 1.12)</td>
<td>.14 (.35 - .9)</td>
</tr>
</tbody>
</table>

Note: Cohen’s d (95% confidence interval in parentheses)
Publication Bias Analyses

- Rosenthal’s fail-safe N
  how many missing studies with mean zero effect sizes are required to make the effect sizes non-significant

  - For stigmatizing attitudes at follow-up, the fail-safe number was low among studies with control groups (Rosenthal's N = 10)
  
  - For the rest of the outcome variables (both at post-intervention and follow-up and among studies with or without control groups), Rosenthal's N ranged between 101 and 1067
Publication Bias Analyses

- Funnel plots
  uneven distribution in lower part of the funnel, esp. concentration on the right side of the funnel, indicates that studies with favorable results tend to be published and included in meta-analyses

  - asymmetry in lower part of the funnel was observed only in analyses of attitudes at post-intervention and attitudes at follow-up among studies with control groups

  - our review might be biased toward positive results
Publication Bias Analyses

• Duval and Tweedie’s trim and fill method how many studies are missing for funnel plots to be symmetrical and computes the estimated effect size after adjusting the bias

  – for attitudes at post-intervention among studies with control groups, three studies were missing and the imputed effect size was .39 (95% CI = .19–.59)

  – for attitudes at follow-up among studies with control groups, two studies were missing and the imputed effect size was .20 (95% CI = .07–.34)

  – no studies were missing in the remaining outcome variables (both at post-intervention and follow-up and among studies with or without control groups)
Participant

Moderators

- Percentage of male
  - moderated the effect of the interventions on knowledge among studies with control group
  - A smaller effect size among studies with higher % of male
    \( z = -4.60, \ p < .01 \)
• Educational level
  – moderated the effect of the interventions on attitudes among studies without control group
  – A larger effect size among studies with participants having more years of education ($z = .12, p < .05$)
Intervention Moderators

- Interactive components
- Number of sessions
- Intervention duration

- moderated the effect on attitudes among studies with control groups

- A larger effect size among studies
  - with interactive components
  - with two or more sessions
  - lasted longer than 1 week
Discussion

Stigma reduction programs were generally effective in reducing HIV stigma.

- Significant, large effect in increasing participant’s knowledge,
- Significant, medium effect in improving attitudes toward PLHIV,
- Positive results were also observed at follow-up, but the strength of the effects was weaker.
Women generally reported greater acceptance of health messages and greater improvements from health interventions, compared to men (Sikkema, Hansen, Meade, Kochman, & Lee, 2005).

People with more education may have fewer misconceptions about HIV and less fear towards PLHIV:

- more responsive to anti-stigma programs and more likely to report positive attitudinal changes
Contact with PLHIV was not a significant moderator

- Relatively small sample sizes
- Huge variations of the mode, intensity, and level of contact with PLHIV in the studies
Limitations

- Publication bias
  - biased toward positive results
- With a dearth of studies reporting non-significant results
  - unclear what components do not work in reducing stigma and in which population
Limitations

- Many stigma reduction programs were multi-faceted, making it difficult to delineate what were the effective components in reducing stigma.

- Other indicators, such as stigmatizing behaviors, were not included as one of the outcome measures in the present study as very few studies used stigmatizing behaviors as outcomes.
Interventions should involve interactive components in multiple sessions of longer duration

- more intensive
- allow participants to reflect on the skills and concepts learned in the previous sessions, and to apply them in later sessions
- involve exercises that allow participants to practice and apply the skills or concepts
- facilitate message retention and attitudinal change (Stice & Shaw, 2004; Tobler, Roona, Ochshorn, Marshall, Streke, & Stackpole, 2000)
Implications

• Future studies should seek to include other indicators of stigma and conduct a wider review with studies not formally published in the literature.

• High quality stigma reduction programs with psychometrically sound outcome measures are warranted.
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thank you