Injury After Sexual Assault in Latina Women: Moving Towards Health Equity

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SUMR Symposium
Overview

✦ Background

✦ Injury After Sexual Assault Study
  ✦ Greentree Agenda
  ✦ Current Project
  ✦ Discussion
  ✦ Conclusion
  ✦ Acknowledgements
What is Sexual Assault?

- Unwanted or Coerced Sexual Contact
- Attempted Rape
- Rape
Global Statistics

Women ages 15-44 are more at risk for rape and domestic violence than cancer, car crashes, war and malaria.

✶ 1 in 5 women will become a victim of rape or attempted rape in her lifetime.

✶ Rape and sexual violation of women and girls is pervasive as:
- a tactic of war
- result of economic hardship
- widowing
- early marriage
- intimate partner violence

Source: World Bank Data
Sexual Assault & The HIV/AIDS Epidemic

- Inability to negotiate safe or unwanted sex
- Increased chance of injury such as abrasions & bleeding
- Higher prevalence of HIV/AIDS risk & transmission
- Half of new HIV infections worldwide
- Young people 15-24 years of age
  - 60% HIV+ are female

Source: UN Violence Against Women Report, 2009
Practical Significance of Detecting Injury

Healthcare Perspective

- Promote healing
- Relieve discomfort
- Prevent infection
- HIV/AIDS transmission

Legal Standpoint

- Forensic evidence
  - Report
  - File charges
  - Prosecute
Injury After Sexual Assault: The Parent Study

Develop empirically-based methods to determine prevalence, frequency & severity of ano-genital injury following sexual assault.

Create injury descriptors such as shape, location, color, texture, & severity associated with consensual & nonconsensual sex.

New clinical examination techniques to reduce health disparity for women of different skin colors and racial ethnicities.
The Greentree Meeting Agenda

- Scientific Research Planning Meeting by the Social Science Research Council at the Greentree Foundation in New York, March 19–20, 2012

- Interdisciplinary group of researchers, clinicians, and policy makers to identify knowledge needs and gaps in three key areas:

  1. the role of genitoanal injury on HIV transmission, acquisition, and pathogenesis

  2. the influence of sex and age-related anatomic characteristics on HIV transmission, acquisition, and pathogenesis.

  3. the role of heterosexual anal intercourse in HIV transmission

Source: Klot et al, 2012
A Call For New Research Initiatives

- Develop a common system for classifying, detecting, and reporting the patterns, severity, and frequency of genitoanal injuries, using consistent demographic categories, age disaggregation, and the inclusion of various types of anal, oral, digital, and nonsexual injuries.

- Develop a common approach and standard definitions and indicators of sexual violence and its cultural variants as well as associated relationship characteristics and dynamics.

Source: Klot et al, 2012
The Physiology of Sexual Violence and HIV Transmission Risk

Source: Klot et al, 2012
The Current Project: Addressing The Greentree Agenda

**Aim**: To determine the variability in anal, genital, and oral injury in women following consensual sexual intercourse accounted for by hormone-related variables (menstrual phase [follicular, ovulatory, and lethal phase], menopause status, birth control, urine estrone level), controlling for age and intercourse-related variables (lubrication, roughness, length of intercourse).
Design, Participants & Methods

- Longitudinal observational design
- Convenience sample of 393 women >= 21 years
- Participants

Baseline Interview & Questionnaire
Colposcopy gynecological exam
Consensual intercourse w/ male partner
Second interview & exam
Data

- Survey responses to Colposcopy Questionnaire 1
- Questions used for this analysis
  1. Method of birth control (if any)
  2. Period status
  3. Date of last period & average length
Variables In This Study

Menopause Status

- Conflicting Findings
  Postmenopausal women more likely to sustain genital injuries than younger women (Poulos & Sheridan, 2008).

Birth Control

- Produces a regulatory effect on hormones during menses.

Menstrual Phase

- Follicular (days 1-9): concentrations of both estrogen and progesterone are low.
- Ovulatory (days 10-14): mid-cycle surge of estrogen.
- Luteal Phase (days 15-end of cycle): Progesterone levels rise significantly because of secretion by the corpus luteum.
Hormonal Fluctuations During the Menstrual Cycle
**Estrogen**

- Affects soft tissue strength, muscle function, and the central nervous system.
- Both hormones affect many tissues away from the ovarian follicles.

**Progesterone**

- Levels & ratios of hormone secretions change during 28 day menstrual cycle.
- Effects are less well understood.
- Progesterone can act as a central nervous system anesthetic, and relaxin can drastically diminish collagen tension.
Categorizing Variables

- Menopause Status
  - 1 = women self identified as having regular periods
  - 0 = women self identified as being menopausal

- Birth Control

- Systemic vs. Localized

- Menstrual Phase
  - 1 = follicular phase
  - 2 = ovulation
  - 3 = luteal phase
Statistical Analysis

- **Control variable** = injury prevalence (yes/no) or frequency (injury count) at baseline, participant age, self-reported degree of lubrication and roughness during sex (1-10 scale), and duration of sex (in minutes)

- **Primary independent variable** = group membership

- Logistical regression to determine odds ratio for injury prevalence and negative binomial regression to determine rate ratio for injury frequency

- **Initial analysis**: Menstrual group compared to menopausal and hormonal birth control groups

- **Follow-up analysis**: a) menstrual group: injury patterns from each of the three phases; b) hormone birth control group: injury patterns in those using systemic or local birth control
Injury Frequency Across Three Groups

Types of Injury

- EG
- IG
- Oral
- Anal

Groups

- Birth Control
- Menstrual
- Menopause
### Results From Statistical Analysis

<table>
<thead>
<tr>
<th>Group</th>
<th>Finding</th>
<th>Comparison</th>
<th>Rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth control</td>
<td>50% more EG injury</td>
<td>Menstrual</td>
<td>1.42, p &lt; .01</td>
</tr>
<tr>
<td></td>
<td>more than twice anal injury</td>
<td>Menstrual</td>
<td>2.34, p &lt; .01</td>
</tr>
<tr>
<td>Menopause</td>
<td>nearly 4 X more anal injury</td>
<td>Menstrual</td>
<td>3.87, p &lt; .01</td>
</tr>
<tr>
<td>Menstrual*</td>
<td>luteal phase 60 % more injuries</td>
<td>Follicular phase</td>
<td>1.57, p &lt; .05</td>
</tr>
<tr>
<td></td>
<td>3.5 X more likely to have EG injury</td>
<td>Follicular phase</td>
<td>Odds ratio = 3.64, p &lt; .01</td>
</tr>
</tbody>
</table>

* Categorized as menstrual after controlling for birth control & condom use.
Participant Demographics

- Black: 36%
- Hispanic: 16%
- White: 32%
- Other: 16%

n = 393
Mean Age By Group

- Birth Control: 27.5 years
- Menopause: 49.7 years
- Menstrual: 33 years
Hormonal birth control may increase the risk for genital injury after consensual intercourse through physiological mechanisms.

Hormonal birth control findings may be explained by other factors; birth control practices varied by race/ethnicity.

Menopause may lead to rectal and anal skin fragility leading to injury during intercourse.

As hormones vary during the menstrual cycle, injury risk may vary.
Implications For The Greentree Agenda

- Women on hormonal birth control have significantly more genitoanal injury following sexual intercourse than menopausal or menstrual women.

- In the context of HIV prevention, hormonal birth control should be looked at as a potential risk factor.
Current Work In Progress

Paper

- Creatinine & ELISA Assay for urine estrone value
Creatinine Urine Specimen Assay
School of Nursing Lab

Kendra Moore, Penn Med Student
Lessons Learned

- Importance of maintaining connections & teamwork
- Contributing individual areas of expertise
- Data analysis can be tedious but the end results are rewarding
- Merging social and scientific research
- Asking questions
Summer 2013 Research Team

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Ms. Deborah Tiller, Project Manager

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