Opportunities for International Inter-Disciplinary, Cross National Research Collaborations to Improve Health Outcomes for Survivors of Intimate Partner Strangulation

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• **Intimate partner violence (IPV)**\(^1\):
  - A serious, preventable public health problem that affects many millions of women worldwide
  - Refers to physical, sexual, or psychological harm by a current or former partner or spouse
  - Can occur among heterosexual or same-sex couples and does not require marriage, cohabitation or sexual intimacy

• **Annual U.S. incidence of IPV (including stalking):** over 12 million women and men, approximately 24 people per minute\(^2\)
  - Prevalence of severe physical IPV among U.S. adults: 1 in 4 women, 1 in 7 men\(^2\)
  - Significant short-term or long-term health effects experienced by 27% of women and 12% of men in US

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\(^1\) CDC, 2015; \(^2\) Black et al, 2011;
Lifetime prevalence of self-reported severe physical violence, by sex of victim
National Intimate Partner and Sexual Violence Survey, United States, 2011

Generated from Breiding et al. MMWR Surveill Summ. 2014 Sep 5;63(8):1-18
Globally 1 in 3 women (30%) will experience physical and/or sexual violence by an intimate partner.
Life-time prevalence of intimate partner OR non-partner sexual violence: 35.6% globally

Table 5. Lifetime prevalence of intimate partner violence (physical and/or sexual) or non-partner sexual violence or both among all women (15 years and older) by WHO region

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Proportion of women reporting intimate partner violence and/or non-partner sexual violence, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low- and middle-income regions:</td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>45.6</td>
</tr>
<tr>
<td>Americas</td>
<td>36.1</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>36.4</td>
</tr>
<tr>
<td>Europe</td>
<td>27.2</td>
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<tr>
<td>South-East Asia</td>
<td>40.2</td>
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<tr>
<td>Western Pacific</td>
<td>27.9&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>High income</td>
<td>32.7</td>
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</tbody>
</table>
Health consequences of intimate partner violence

**HEALTH IMPACT:** Women exposed to intimate partner violence are

**Mental Health**
- TWICE as likely to experience depression
- ALMOST TWICE as likely to have alcohol use disorders

**Sexual and Reproductive Health**
- 16% more likely to have a low birth-weight baby
- 15 TIMES more likely to acquire HIV and 1.5 times more likely to contract syphilis infection, chlamydia or gonorrhoea

**Death and Injury**
- 42% of women who have experienced physical or sexual violence at the hands of a partner have experienced injuries as a result
- 38% of all murders of women globally were reported as being committed by their intimate partners

*World Health Organization*
38% of female homicides are perpetrated by a partner

Median prevalence of intimate partner homicides out of all female homicides by WHO Region

- South-East Asia Region: 59%
- High income countries: 41%
- African region: 40%
- Region of Americas: 40.5%
- Western-Pacific: 19%
- Eastern-Mediterranean: 14%

USA – 11.9% of women murdered by an intimate partner strangled to death

Strangulation

- **Definition**
  - External pressure to the neck that closes blood vessels and/or air passages and deprives person of oxygen (Savageau & 2010)

- **Various Types**
  - Manual/”Throttling”/”Choking”
  - Ligature
  - Hanging
  - Postural

- **Extent of injury depends on:**
  - Exact anatomical location of applied pressure
  - Amount of pressure
  - Duration of pressure
  - Surface area of pressure zone

- If to unconsciousness – will be incontinent – also anoxia - difficulty remembering – px for criminal justice medical exam more important

- Can result in death within 24-48 hours – from stroke or asphyxiation – choking on own vomitus

- Increasing recognition of near lethality in US – criminal justice systems increasing charges

- Pressure needed to occlude:
  - 2 kg for jugular veins
  - 5 kg for carotid arteries
  - Total constriction of carotids
    - 5-10 seconds: loss of consciousness
    - Death in minutes
Non-fatal Intimate Partner Strangulation (IPS)

- **Definition:** strangulation of a current or former intimate partner, not resulting in death
- **Prevalence**
  - Lifetime: 3.0%-9.7% international; 9.7% U.S.
  - Past-year: 0.4%-2.4% international; 0.6%-2.4% U.S.
- **Health Outcomes/Morbidity**
  - Acute injuries
  - Long-term or delayed presentation injuries – if to unconsciousness – increased risk of neurological Sx from anoxia – “difficulty concentrating” “memory problems”
- Women often experience multiple strangulations - & if so - associated with increased reports of physical and psychological symptoms and even greater increased risk of homicide
- Prior non-fatal IP strangulation of women associated with significantly increased odds of attempted homicide (aOR 6.7, 95% CI: 3.91-11.49) and completed homicide (OR 7.48, 95% CI: 4.53-12.35)
  - Many reporting strangulation have no external visible injuries

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1 Sorenson et al. (2014); 2 Wilbur et al. (2001); 3 Sheridan & Nash, (2007); 4 Campbell et al ‘(2017); 5 Messing et al (2016); 6 Glass et al., (2008); 7 Holbrook & Jackson (2013)
Gaps/Limits of Current Scientific Knowledge

- Existing literature limited:
  - case reports
  - descriptive studies with relatively small sample sizes
  - outside of US studies fewer – comparisons difficult
  - need for interdisciplinary collaborations – nursing, medicine, social work, domestic violence service organizations, criminal justice
- Those abused frequently do not seek health care and may not seek criminal remedies
- No solid understanding of women’s health care experiences when seeking emergency care after non-fatal IPS
- Opportunities for cross national, interdisciplinary collaborations – needed to increase science
Intimate partner violence in the UK

• 1.8 million described themselves as victims of domestic abuse in England and Wales.¹

• 58,104 cases of domestic abuse in Scotland 2015/2016.²

• 1 in 4 women and 1 in 5 men in the UK will experience domestic abuse in their lifetime.³
Strangulation in the UK

• Following assault on Nigella Lawson, UK charity Refuge reported 50% of domestic abuse survivors suffered strangulation in 2012.\(^4\)
• In Scotland, 22.7% of abuse survivors of 16 report strangulation attacks.\(^5\)
• Strangulation accounted for 23% of female domestic homicides in England and Wales between 2013 to 2015.
• A crime under the Offences Against the Person Act 1861 England & Wales and Northern Ireland.
• Qualifies as common law assault in Scotland.
• Clinical organisations have been relatively quiet on the subject.

Sunday People, 16\(^{th}\) June 2012
Recognition & next steps

- DASH model now includes strangulation as indicator of high risk abuse
- Medical assessment of non-fatal strangulation victims
- Establish prevalence
- Tackle non-disclosure
- Consider amendments in law
- Improve understandings of how survivors interact with health services

Conjugal disharmony: a hitherto unrecognised cause of strokes

N Milligan, Milne Anderson

“No inevitable commensurate relationship between signs of injury and the degree of force used” - Professor Susan Edwards

Prevalence and Associated Characteristics of Emergency Department Visits by Women After Non-Fatal Intimate Partner Strangulation and Subsequent Diagnostic and Treatment Experiences: A Proposed Mixed Methods Study

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Johns Hopkins School of Nursing
The Diagnostic Process for Non-fatal IPS


Nursing an important part of diagnostic process – as is family input according to National Academy of Medicine Report
Study Purpose

• To provide a more comprehensive understanding of this critical public health and safety issue through:

  – national-level estimates of ED visits by women that are coded as strangulation
  – Exploration of characteristics and experiences of strangled women who sought care from an emergency department

• To add to the current science on strangulation care, in order to increase diagnostic accuracy and improved treatment for this population.

• The innovative use of national survey data in combination with interviews to explore characteristics and experiences of strangled women will improve our collective understanding of this critical public health and safety issue.
Specific Aims

Specific Aim #1:
• Estimate prevalence and associated characteristics of non-fatal, non-self-inflicted strangulation-related visits by women ages 18 and older to a U.S. emergency department between 2006 and 2014.

Specific Aim #2:
• Explore care-seeking behaviors, the context of the care seeking, treatment expectations and perceived diagnosis and risk in a sample of women ages 18 and older who present to a U.S. emergency department and report being strangled.

Specific Aim #3:
• Merge and synthesize findings from both the quantitative and qualitative strands to provide a more complete understanding of post-strangulation emergency care of women.
Study Design Overview

- Quantitative secondary data analysis
- Qualitative data collection and analysis

Compare or relate

Interpretation

Procedures:
• Obtain NEDS databases 2006-2014
• Data preparation

**QUANtitative Data Procurement**

**QUANtitative Data Analysis**

Products:
• Visit variables

Procedures:
• Calculate visit prevalence
• Descriptive statistics
• Logistic Regression

Procedures:
• Recruit 10-20 participants
• Individual semi-structured interviews
• Medical record abstraction

**QUALitative Data Collection**

**QUALitative Data Analysis**

Products:
• Transcripts
• Medical record data

Procedures:
• Recruit 10-20 participants
• Individual semi-structured interviews
• Medical record abstraction

Procedures:
• Constant comparative thematic analysis
• Concordance, discordance of interviews and medical record data

Products:
• Joint display relating qual themes and quant variables

Procedures:
• Conduct merging analysis
Create side-by-side display of quant results and qual themes

Products:
• Discussion

Procedures:
• Describe and elaborate on how merged results produce fuller understanding of strangled women’s health care visits

Adapted from Wittink et al. (2006) diagram in Creswell & Plano-Clark (2011)
Specific Aim 1

- **Design:** Cross-sectional analysis of 2006-13 Nationwide ED Sample (NEDS) data, from the AHRQ Healthcare cost and Utilization Project (HCUP)
- **Outcome:** Strangulation, defined by ICD-9-CM codes:
  - 994.7 (“asphyxiation and strangulation”)
  - E963 (“assault by hanging and suffocation”)
  - E983.8 (“strangulation or suffocation by other specified means undetermined whether accidentally or purposely inflicted”)
  - E983.9 (“strangulation or suffocation by unspecified means undetermined whether accidentally or purposely inflicted”)
- **Exposure:**
  - Age, payer type, urban-rural setting, admission source, discharge status, trauma center designation
  - Neurological injury (e.g. Concussion, TBI, anoxic/hypoxic brain injury, stroke, headache)
  - Musculoskeletal or skin injury (e.g. contusion of face/scalp/neck, abrasion or friction burn of face/neck/scalp, hyoid fracture)
  - Psychiatric condition (e.g. depressive disorder, acute stress reaction, post-traumatic stress disorder, anxiety disorder)
- **Inclusion Criteria:** ED visits between 2006-2013 by women 18 & older, at least one ICD-9-CM strangulation code; **Exclusion** ED visits with ICD-9-CM code E953: “Suicide and self-inflicted injury by hanging, strangulation and suffocation”
- **Analysis** – Calculate % of women with codes; Estimate odds ratios (OR) of strangulation and corresponding 95% CIs, progressively adjusting for potential confounders
Specific Aim 2

- **Design:** Narrative descriptive approach, with semi-structured individual interviews to saturation and medical record reviews

- **Data Source/Inclusion Criteria:** Women 18 years and older presenting for care at an urban, academic medical center’s emergency department and reporting strangulation as a reason for their visit; able to speak English

- **Exclusion Criteria:** Self-inflicted strangulation/injury

- **Setting:** Mercy Medical Center’s Emergency Department

- **Exposure:** Non-fatal strangulation by a current or former intimate partner
Specific Aim2

- **Outcome:** Women’s experiences with seeking health care after being strangled
  - Interview guide to be developed iteratively to explore:
    - Motivators to seek health care treatment after being strangled
    - Expectations for health care response
    - Understanding of diagnosis and risk (immediate, ongoing) after evaluation by health care team
    - Treatments, follow-ups, referrals, other interventions completed by participants, and effect of health care team on decision to complete
  - Medical record reviews to explore:
    - Demographics, payment source
    - Clinical history and interview
    - Physical examination
    - Working and final diagnoses
    - Diagnostic testing
    - Progress and treatment notes
    - Referrals and consultations
    - Admission/discharge/transfer status
    - Communication of the diagnosis and plan (e.g. patient education, discharge teaching)

**Analysis:** Interview data: line-by-line coding, axial coding, themes identified
Case study analysis – merging medical records with interviews to identify diagnostic accuracy, communication with patient, triangulation strategies as well as integration of data – medical records to address gaps in interview data and vice versa
Specific Aim #3

• Present convergent and divergent findings in a merged data analysis display

• Qualitative data used to fill knowledge gap remaining from quantitative analysis, and explain and contextualize findings

• Triangulation of quantitative and qualitative data to examine different dimensions of intimate partner strangulation and health care response/experience

• Quantitative and qualitative data integrated for more comprehensive results and to generate research questions for future studies
• **Strengths:**
  – Use of nationally representative sample from all-payer database
  – Innovative mixing of quantitative data and detailed qualitative analysis of women’s experiences with health care system after non-fatal strangulation

• **Limitations:**
  – Cross sectional data limits establishing temporality and inferring causality
  – Potential recall or response bias
  – Potential for coding errors from participating hospitals
  – Combination terms in coding limits precision
  – Potential selection bias due to purposive sampling in Aim 2 – also just one hospital experience
  – Potential interviewer bias in Aim 2
A Potential Cross National Interdisciplinary Study

• Purpose: To provide a more comprehensive understanding of this critical public health and safety issue through:
  – Establish prevalence and medical effects of strangulation among UK survivors using mixed methodology
  – Find national-level data set in UK estimates of ED visits by women that are coded as strangulation
  – Exploration and comparison of characteristics and experiences of strangled women who sought care from an emergency department (A & E) in the UK with strangled women in the US

• Use data as foundational to propose a larger cross national, interdisciplinary study comparing UK with US and other selected nations on importance of quality health care for strangled women -
References


22. Farr KA. Battered women who were "being killed and survived it": Straight talk from survivors. Violence Vict 2002;17:267-81.


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