Family Influences on Maternal and Child Health: Research from the US and Abroad

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Family influences on health

- Family roles and relationships central to everyday life
  - For family members, a *context* that shapes health
    - e.g., caregiving, belonging, shared events, conflict
- Family is a fundamental unit of social organization
  - For family members, a *conduit* for resources for health
    - e.g., income, need-based programs, social capital
- Families have a profound impact on health in all societies, but the mechanisms in a particular society depend on the economic, social and cultural meanings of “family”
Overview – Research Related to Families and Maternal and Child Health

- Examples from my research:
  - Life events/family circumstances within the family
    - Part 1: Stillbirth/neonatal death effects on maternal depressive symptoms
  - Family relationships
    - Part 2: Maternal depressive symptoms and its relation to children’s growth
  - Family roles and the power of culture in shaping relationships, health, and futures
    - Part 3: Research on young Nepali widows
Overview – Effects of the familial context on health

- **Part 1:** Adverse perinatal events and postnatal depression
- **Example:** Family circumstances, child death influences maternal health
Prior Studies: Effects of stillbirth on mental health

- Women who experienced stillbirth
  - have a two-fold higher risk of anxiety (Rådestad et al. 1996)
  - have more symptoms of depression and anxiety during the next pregnancy (Hughes et al. 1999)
- Some evidence that children from later pregnancies are exposed to less optimal interaction with their mothers (Turton et al. 2009)
  - Possibly mediated by maternal depression/family breakdown
Methods

- **Setting:** rural Bangladesh
- **Data:** JaViTa-1
- **Sampling:** Census
  - Married women, ages 13-44, not menopausal or sterilized
  - Gaibanda and Rangpur districts
- **Data collection:** Prospective
Methods

- **Study Population**
  - **125,257** Women under pregnancy surveillance (every 5 weeks)
  - **60,294** Pregnant women identified through surveillance
    - 628 (1.04%) refused or lost to follow-up
  - **59,666** Pregnant women consenting to the study with known pregnancy outcome
  - **41,348** With singleton livebirths and stillbirths
Key variables

**Outcome:** Depressive symptoms at six months after delivery

**Items:** Sadness all the time, more forgetful, crying all the time, thoughts of hurting oneself, and not wanting to bathe or eat for several days (Cronbach alpha 0.72)

**Exposure:** Maternal education level, child gender

**Effect modifiers:**

- Pregnancy
- Birth
- Neonatal

- 28 weeks
- 0
- 7 days
- 28 days
- 180 days

Time
Analysis

- **Outcome: Depressive symptoms**
  - No symptoms [reference group], 1-2 symptoms, 3-5 symptoms

- **Statistical approach:**
  - Multinomial logistic regression
  - Crude and Adjusted Relative Risk Ratio

- **Covariates:**
  - maternal age, parity, maternal education, living standard index, religion, number of children ($\leq 12$ years), mid-upper arm circumference (MUAC) at third trimester, anemia during pregnancy, infection, vitamin supplementation group, and village cluster
Pregnancy Outcome & Postpartum Depression at Six Months

Prevalence of 3-5 depressive symptoms=14%

<table>
<thead>
<tr>
<th>Pregnancy outcome variables</th>
<th>Total, n (%)</th>
<th>Number of Depressive Symptoms</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Zero</td>
<td>1 to 2</td>
<td>3 to 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Live birth</td>
<td>37,080 (89.68)</td>
<td>18,632 (50.25)</td>
<td>13,679 (36.89)</td>
<td>4,769 (12.86)</td>
<td></td>
</tr>
<tr>
<td>Stillbirth (28 weeks gestation to delivery)</td>
<td>1,914 (4.63)</td>
<td>812 (42.42)</td>
<td>715 (37.36)</td>
<td>387 (20.22)</td>
<td></td>
</tr>
<tr>
<td>Early neonatal death (0-7 days)</td>
<td>1,550 (3.75)</td>
<td>543 (35.03)</td>
<td>664 (42.84)</td>
<td>343 (22.13)</td>
<td></td>
</tr>
<tr>
<td>Late neonatal death (8-28 days)</td>
<td>413 (1.00)</td>
<td>150 (36.32)</td>
<td>181 (43.83)</td>
<td>82 (19.85)</td>
<td></td>
</tr>
<tr>
<td>Early post neonatal death (29-180 days)</td>
<td>391 (0.95)</td>
<td>125 (31.97)</td>
<td>55 (39.64)</td>
<td>111 (28.39)</td>
<td></td>
</tr>
</tbody>
</table>
### Adjusted Relative Risk of Postpartum Depression at Six Months after Birth Following Pregnancy Outcome

<table>
<thead>
<tr>
<th>Pregnancy outcome variables</th>
<th>Adjusted Relative Risk Ratio$^{a,b}$ (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-2 symptoms</td>
</tr>
<tr>
<td>Live birth</td>
<td>1.00</td>
</tr>
<tr>
<td>Stillbirth (28 weeks gestation to delivery)</td>
<td>1.22 (1.09-1.35)</td>
</tr>
<tr>
<td>Early neonatal death (0-7 days)</td>
<td>1.73 (1.52-1.95)</td>
</tr>
<tr>
<td>Late neonatal death (8-28 days)</td>
<td>1.66 (1.33-2.07)</td>
</tr>
<tr>
<td>Early post neonatal death (29-180 days)</td>
<td>1.67 (1.32-2.12)</td>
</tr>
</tbody>
</table>

$^a$ Reference Group = Women with no symptoms of depression

$^b$ Analyses adjusted for maternal age, parity, maternal education, living standard index, religion, number of children (0-12yrs) in the household, mid upper arm circumference at third trimester, anemia during pregnancy, infection, vitamin supplementation group, and village cluster. Child sex was not significant.

**Adjusted model N=41,087.**
Conclusions

- In rural Bangladesh where stillbirth, neonatal and post-neonatal death is non-uncommon, mothers had a high likelihood of multiple depressive symptoms during the 6 months after their loss.
- The longer the child lived, the greater the likelihood of significant depressive symptoms.
- In this study, unable to evaluate the effect of the loss or of mothers’ depressive symptoms on other family members.
Overview – Familial Context on Health

• **Part 2:** Maternal depressive symptoms and child growth

• *Example:* Relationships between the mother and child reciprocally influence each others’ health
Postpartum Depressive Symptoms And Consequences for Child Health

- **Study 1**: Meta-analysis in low- and middle-income countries
- **Study 2**: Impact of maternal depressive symptoms on growth of preschool- and school-aged children
Meta-analysis Of Maternal Depression and Child Growth  
(Surkan et al Bull WHO, 2012)

Maternal depression and early childhood growth in developing countries: systematic review and meta-analysis

Pamela J Surkan, Caitlin E Kennedy, Kristen M Hurley & Maureen M Black

Objective To investigate the relationship between maternal depression and child growth in developing countries through a systematic literature review and meta-analysis.

Methods Six databases were searched for studies from developing countries on maternal depression and child growth published up until 2010. Standard meta-analytical methods were followed and pooled odds ratios (ORs) for underweight and stunting in the children of depressed mothers were calculated using random effects models for all studies and for subsets of studies that met strict criteria on study design, exposure to maternal depression and outcome variables. The population attributable risk (PAR) was estimated for selected studies.

Findings Seventeen studies including a total of 13 923 mother and child pairs from 11 countries met inclusion criteria. The children of mothers with depression or depressive symptoms were more likely to be underweight (OR: 1.5; 95% confidence interval, CI: 1.2–1.8) or stunted (OR: 1.4; 95% CI: 1.2–1.7). Subanalysis of three longitudinal studies showed a stronger effect: the OR for underweight was 2.2 (95% CI: 1.5–3.2) and for stunting, 2.0 (95% CI: 1.0–3.9). The PAR for selected studies indicated that if the infant population were entirely unexposed to maternal depressive symptoms 23% to 29% fewer children would be underweight or stunted.

Conclusion Maternal depression was associated with early childhood underweight and stunting. Rigorous prospective studies are needed to identify mechanisms and causes. Early identification, treatment and prevention of maternal depression may help reduce child stunting and underweight in developing countries.
Objective: To estimate associations between maternal postpartum depressive symptoms/depression and child growth outcomes
Methods

- **Inclusion criteria**
  - Studies that evaluated the relation between postpartum depressive symptoms or depression and children’s
    - Short stature
    - Underweight
  - In lower- or middle- income countries
  - Published until April 2010
Methods

- **Meta-analysis**
  - Estimates converted to odds ratios
  - We reanalyzed original data from two studies

- **Six databases used**
  - Pubmed, PsychInfo, CINAHL Plus, Web of Science, SCOPUS, EMBASE

- **17 studies included**
  - Africa=4, South America/Caribbean=6, Asia=7
  - Cross-sectional=7, Case-control=6, Longitudinal=4
## Underweight: Results from 17 studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Time point</th>
<th>Odds ratio</th>
<th>Lower limit</th>
<th>Upper limit</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adewuya et al. 2008</td>
<td>Nigeria</td>
<td>9 months</td>
<td>2.840</td>
<td>0.979</td>
<td>8.235</td>
<td>0.055</td>
</tr>
<tr>
<td>Anoop et al. 2004</td>
<td>India</td>
<td>6-12 months</td>
<td>7.400</td>
<td>1.509</td>
<td>36.300</td>
<td>0.014</td>
</tr>
<tr>
<td>Baker-Henningham et al. 2003</td>
<td>Jamaica</td>
<td>9-30 months</td>
<td>1.385</td>
<td>1.081</td>
<td>1.773</td>
<td>0.010</td>
</tr>
<tr>
<td>Black et al. 2009</td>
<td>Bangladesh</td>
<td>12 months</td>
<td>0.723</td>
<td>0.412</td>
<td>1.269</td>
<td>0.259</td>
</tr>
<tr>
<td>Carvalheas et al. 2002</td>
<td>Brazil</td>
<td>12-23 months</td>
<td>3.100</td>
<td>0.966</td>
<td>9.949</td>
<td>0.057</td>
</tr>
<tr>
<td>de Miranda et al. 1996</td>
<td>Brazil</td>
<td>&lt;24 months</td>
<td>2.900</td>
<td>1.268</td>
<td>6.633</td>
<td>0.012</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>Ethiopia</td>
<td>6-18 months</td>
<td>1.100</td>
<td>0.872</td>
<td>1.387</td>
<td>0.421</td>
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<td>1.100</td>
<td>0.872</td>
<td>1.387</td>
<td>0.421</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>Peru</td>
<td>6-18 months</td>
<td>0.900</td>
<td>0.667</td>
<td>1.214</td>
<td>0.490</td>
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<tr>
<td>Harpham et al. 2005</td>
<td>Vietnam</td>
<td>6-18 months</td>
<td>1.400</td>
<td>1.094</td>
<td>1.791</td>
<td>0.007</td>
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<tr>
<td>Patel et al. 2003</td>
<td>India</td>
<td>6 months</td>
<td>2.800</td>
<td>1.087</td>
<td>7.213</td>
<td>0.033</td>
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<tr>
<td>Rahman et al. 2004 (urban)</td>
<td>Pakistan</td>
<td>12 months</td>
<td>2.800</td>
<td>1.176</td>
<td>6.665</td>
<td>0.020</td>
</tr>
<tr>
<td>Rahman et al. 2004 (rural)</td>
<td>Pakistan</td>
<td>12 months</td>
<td>3.000</td>
<td>1.500</td>
<td>6.000</td>
<td>0.002</td>
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<tr>
<td>Santos et al. 2010</td>
<td>Brazil</td>
<td>48 months</td>
<td>1.500</td>
<td>0.802</td>
<td>2.806</td>
<td>0.205</td>
</tr>
<tr>
<td>Stewart et al. 2008</td>
<td>Malawi</td>
<td>9.9 months (median)</td>
<td>1.313</td>
<td>0.804</td>
<td>2.145</td>
<td>0.277</td>
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<tr>
<td>Surkan et al. 2008</td>
<td>Brazil</td>
<td>6-24 months</td>
<td>1.800</td>
<td>0.595</td>
<td>5.450</td>
<td>0.298</td>
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<tr>
<td>Tomilson et al. 2006</td>
<td>South Africa</td>
<td>18 months</td>
<td>2.320</td>
<td>0.899</td>
<td>5.990</td>
<td>0.082</td>
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<tr>
<td><strong>Combined Estimate</strong></td>
<td></td>
<td></td>
<td>1.472</td>
<td>1.215</td>
<td>1.782</td>
<td>0.000</td>
</tr>
</tbody>
</table>

# Short Stature: Results from 15 studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Time point</th>
<th>Odds ratio</th>
<th>Lower limit</th>
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<td>2.840</td>
<td>0.979</td>
<td>8.235</td>
<td>0.055</td>
</tr>
<tr>
<td>Black et al. 2009</td>
<td>Bangladesh</td>
<td>12 months</td>
<td>2.317</td>
<td>1.147</td>
<td>4.681</td>
<td>0.019</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>Ethiopia</td>
<td>6-18 months</td>
<td>0.900</td>
<td>0.682</td>
<td>1.187</td>
<td>0.455</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>India</td>
<td>6-18 months</td>
<td>1.400</td>
<td>1.217</td>
<td>1.610</td>
<td>0.000</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>Peru</td>
<td>6-18 months</td>
<td>1.100</td>
<td>0.872</td>
<td>1.387</td>
<td>0.421</td>
</tr>
<tr>
<td>Harpham et al. 2005</td>
<td>Vietnam</td>
<td>6-18 months</td>
<td>1.300</td>
<td>0.982</td>
<td>1.721</td>
<td>0.067</td>
</tr>
<tr>
<td>Patel et al. 2003</td>
<td>India</td>
<td>6 months</td>
<td>3.200</td>
<td>1.125</td>
<td>9.102</td>
<td>0.029</td>
</tr>
<tr>
<td>Rahman et al. 2004</td>
<td>Pakistan</td>
<td>12 months</td>
<td>2.800</td>
<td>1.293</td>
<td>6.065</td>
<td>0.009</td>
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<tr>
<td>Santos et al. 2010</td>
<td>Brazil</td>
<td>48 months</td>
<td>1.000</td>
<td>0.658</td>
<td>1.519</td>
<td>1.000</td>
</tr>
<tr>
<td>Stewart et al. 2008</td>
<td>Malawi</td>
<td>9.9 months (median)</td>
<td>1.628</td>
<td>0.924</td>
<td>2.869</td>
<td>0.092</td>
</tr>
<tr>
<td>Surkan et al. 2008</td>
<td>Brazil</td>
<td>6-24 months</td>
<td>1.800</td>
<td>1.109</td>
<td>2.923</td>
<td>0.017</td>
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<tr>
<td>Tomilson et al. 2006</td>
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<td>18 months</td>
<td>2.520</td>
<td>0.981</td>
<td>6.475</td>
<td>0.055</td>
</tr>
<tr>
<td><strong>Combined estimate</strong></td>
<td></td>
<td></td>
<td>1.416</td>
<td>1.177</td>
<td>1.704</td>
<td>0.000</td>
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</tbody>
</table>

Research to date

- Maternal depressive symptoms are inversely associated with early child growth in LMIC countries
- Less research exists from developed countries
- Few studies with longitudinal design
Impact of Maternal Depressive Symptoms on Growth of Preschool- and School-Aged Children

AUTHORS: Pamela J. Surkan, ScD,a,b Anna K. Ettinger, MSW, MPH,b Saifuddin Ahmed, MBBS, PhD,b Cynthia S. Minkovitz, MD, MPP,b and Donna Strobino, PhDb

Departments of aInternational Health and bPopulation, Family and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland

KEY WORDS
maternal depressive symptoms, child growth, mother-child relations

WHAT'S KNOWN ON THIS SUBJECT: Few longitudinal studies from developing countries have assessed the relation between early maternal depressive symptoms and child growth beyond age 2. The results of these studies have been inconclusive.

WHAT THIS STUDY ADDS: Early maternal depressive symptoms were related to higher odds of deficits in stature but not to deficits in weight among preschool- and school-aged children. Well-child care provides opportunities to identify maternal depressive symptoms to prevent future child growth delays.

ABBREVIATIONS
CAPI—computer-assisted personal interviews
CES-D—Center for Epidemiological Studies, Depression Scale
CI—confidence interval
ECLS-B—Early Childhood Longitudinal Study, Birth Cohort
Objective

• To examine the relation between maternal depressive symptoms when child was age 9 months old with child physical growth outcomes at ages 4 and 5 years
Key Variables

Predictors:

• 12-item Center for Epidemiologic Studies Depression Scale (CES-D)
  • Categorized:
    • Score of 0-4 (No depression)
    • Score of 5-9 (Mild depressive symptoms)
    • Score of ≥10 (Moderate/severe depressive symptoms)

Outcomes:

• Child physical growth: ≤10\textsuperscript{th} % height-for-age, weight-for-height, weight-for-age z-scores
Methods

- Early Childhood Longitudinal Study - Birth Cohort (ECLS-B)
- 6550 singleton children followed from birth to five years
- Logistic regression models
- Covariates:
  - income, maternal age, employment, family structure, maternal race, maternal pre-pregnancy weight, pregnancy weight gain, maternal smoking, child health status, gestational age at birth, birthweight status
- Weighted to account for oversampling in the study design and non-response over time
Prevalence of Maternal Depressive Symptoms at Child Age 9 Months

- No depression, 59.7%
- Mild depression, 23.4%
- Moderate or severe depression, 16.9%
# Adjusted Odds Of Growth Outcomes at 4 And 5 Years By Early Maternal Depressive Symptoms

<table>
<thead>
<tr>
<th>Depressive symptoms</th>
<th>4 years (preschool)</th>
<th>5 years (kindergarten)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio (95% CI)</td>
<td>Odds Ratio (95% CI)</td>
</tr>
<tr>
<td>≤10% height-for-age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1.39 (1.08, 1.80)</td>
<td>1.22 (0.83, 1.78)</td>
</tr>
<tr>
<td>Mild</td>
<td>1.40 (1.04, 1.89)</td>
<td>1.48 (1.03, 2.13)</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>≤10% weight-for-height</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1.09 (0.75, 1.58)</td>
<td>1.31 (0.86, 1.99)</td>
</tr>
<tr>
<td>Mild</td>
<td>1.21 (0.82, 1.77)</td>
<td>1.26 (0.74, 2.15)</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>≤10% weight-for-age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1.24 (0.90, 1.71)</td>
<td>1.08 (0.70, 1.68)</td>
</tr>
<tr>
<td>Mild</td>
<td>0.95 (0.61, 1.47)</td>
<td>0.90 (0.58, 1.39)</td>
</tr>
<tr>
<td>Moderate/severe</td>
<td>Reference</td>
<td>Reference</td>
</tr>
</tbody>
</table>

*Adjusted for household income, housing situation, maternal age, maternal employment, family structure, maternal race, pre-pregnancy weight, pregnancy weight gain, plurality, maternal smoking, child health status, gestational age, and birthweight.
Conclusions

- Maternal depressive symptoms appear to affect both short-term and long-term growth of children
- More research is needed to understand mechanisms
Example of structural cultural context of families on health

- **Part 3:** Nepali widow’s study (qualitative)
  - *Example:* Family structure and cultural norms around young widows (influence maternal and child health)
Nepali Widow’s Study

- Partnership with Nepali NGO, Women for Human Rights, a single women group (WHR)
- 3 masters students in the field (2 data collection waves)
Background – Nepali Widows

- Patriarchal society
  - Women’s position in society is often considered secondary to men’s
  - Upon getting married a woman becomes part of her husband’s family and often moves in with the in-law family

- Marginalized group
  - “Husband Eaters”
  - Considered inauspicious
  - Socially excluded
  - Often in poverty and economically dependent
Background

• Many ‘young’ Nepali widows
  • Unprecedented increase in number of widows after civil war ending in 2006
  • ‘Conflict affected’ widows
Objectives

• Main:
  • Explore how a woman’s marital status and human rights violations as a widow \([\text{family structure}]\) impact her health and children’s health

• Unanticipated findings:
  • Exposure to violence
    • ‘emerged’ as themes (not explicitly asked about)
  • Concealment of widowhood (not explicitly asked about)
Methods

- **Sample:**
  - 51 women interviewed, 6 focus groups, 5 key informant interviews
  - Widow members of WHR
  - Mostly high-caste and ethnic minority women
    - *Some analyses used a subset of the collected data*

- **Sites:**
  - Kathmandu, Chitwan, Surkhet, Kavre districts
Methods

- Qualitative data analysis
- Thematic content analysis, with techniques adapted from grounded theory
- Used analytic memos
- Development of a codebook applied to all transcripts using Atlas-ti
Results: Accessing Sexual and Reproductive Health Care

- Regardless of the gynecological problem, sexual relationships may be implicated

“For example, if she goes on to tell her mother-in-law, or anyone else who she can approach, people will generally think that the woman has relations [sexual] with other people, which is why she is experiencing problems like white discharge.”

-Age 29, Brahmin, widow for 2 years
Results: Accessing Sexual and Reproductive Health Care

• Widows fear being suspected of having a sexual relationship

“I don’t take these preventive injections…. my friends who use these three month injections -- they have put on weight. When I say “I guess I need to use this injection to gain some weight” they say “who do you want to sleep with?”

-Age 30, Chhetri, widow for 4 years
Results: Accessing Sexual and Reproductive Health Care

• Concern about sexual harassment from providers

“and if I tell the doctor that I don’t have a husband then right away he might take it in a negative way. Like he might try and take advantage of me. He might say if you don’t have much money on you then its fine, I’ll take you to my personal clinic and treat you there. And there he might try and attempt rape on me.”

-Age 30, Brahmin, widow for 12 years
Results: Concealment as a Strategy to Get Better Care

• (continued from last participant)

“If I go for a check-up then chances are that this might happen to me as well. But if I go without disclosing my marital status, as if I were anyone else, then it [attempted rape] probably wouldn’t happen either.”

-Age 30, Brahmin, widow for 12 years
Concealment: Non-Disclosure of Widowhood to Community Members

- Often try to avoid disclosing they are single
  - “You normally won’t say that you are single… I shouldn’t say that. If I tell people that I am single then they will look down on me and demean me. … People speak to me in a mean way -- they even shout at me sometimes. Those kinds of things make me feel mistreated.”
  (Age 30 Brahmin, widow for 12 years)
Results: Avoidance of Discussing Widowhood with Children

- Non-disclosure to ‘protect children’: worry about psychological well being
  - “It will be difficult to make children understand …. I don’t talk much about her father with her. She also does not like it, the elders also do not like it and she is also small……I think - why hurt her heart? I feel like this.”(SKT_FGD_02)

- “About my son, if I talk with him then he starts to cry……as he has memory of his father.”(KTM_FGD_01)
Discussion: Avoidance of Discussing Widowhood with Children

- Appears to be common among women in Nepal
- Little is known about disclosure of sensitive information to children in Nepal
- Recommended not to withhold information about a parent’s death (in western settings)
  - May lead to distress and inadequate emotional support for the children
  - Can be psychologically harmful to children by fostering mistrust, and interfering with children’s effective coping
Significance

- Family status ‘widowhood’ is a highly stressful in its own right.
- In Nepali culture, even more stressful, not only impacting health directly but also access to health care.
  - Many widows are not getting needed healthcare due to discrimination and violence (or fear of it) due to cultural mores.
  - Widowed mothers’ emotional and mental health and inability to communicate openly with children likely to have powerful impacts on children’s health and functioning.
Summary

- These examples illustrate ways in which
  - Health of one family member influences the others, and whole family
    - Experience of child death
  - Families influence health
    - Family member depressive symptoms affects children
  - Society influences the health of families
    - How Nepali widows and their children’s well being affected by culture and extended family’s practices
Corresponding publications

Maternal Depression and Child Health


Study of Nepali Widows Health


Funding

- **Bangladesh Study**
  - Funding for analysis: R03 HD069731
  - For data collection: Bill & Melinda Gates Foundation (Grant 614), Seattle, WA, USA US Agency for International Development (USAID), Washington DC, USA

- **LMIC Meta-analysis** (no funding)

- **ECLS-B Longitudinal follow ups study:**
  - Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Research Program (MCHB): R40MC17175-01-00
  - Hopkins Population Center: R24-HD042854

- **Nepal studies:** Center for Public Health and Human Rights (pilot grant)
Thank you! Questions?