# The Stressor in Adolescence of Menstruation:
# Economic Analysis of Effective Coping Strategies

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# Introduction

- Menstrual hygiene management (MHM) is a growing subfield of WASH research in developing world
  - Girls often face confusion and surprise, coupled with cultural taboos/stigmas
  - Lack of knowledge, hygienic behavior, and supporting infrastructure/access
  - Links have been found between reproductive tract infections (RTIs) & poor menstrual hygiene (Anand, Singh, and Unisa 2015; Ranabhat et al. 2015)
  - Missed opportunities at school, including dropping-out (WHO, 2014)

- Lack of quantitative evidence in research on MHM & lack of specific focus on **emotional** consequences
  - This work attempts to fill some of these gaps by examining emotional/psychological wellbeing (not just attendance rates or knowledge)
  - Framed by the Transactional Model of Stress & Coping

# BACKGROUND

# Menstruation & Emotional Wellbeing

- Gap in MHM literature with regard to cognitive experiences
  - Usually appears as side note or is analyzed from psychology/sociological perspective from afar
  - Kenya → girls missed school due to fears of embarrassment/harassment and this "emotional geography" serves to only reinforce gender inequalities (Jewitt & Ryley, 2014)
  - Females adopt a sexualization of women from society and internalize it to make menstruation "bad", e.g. "Objectification Theory" (Grose & Grabe, 2014)

- Is evidence of emotional damage during menstruation
  - Reported shame & fear of menstruation occurring at school (McMahon et al, 2011)
  - Evidence that feeling of depression, irritability, and stress reduced with health education intervention (Haque et al, 2014)

# Context & Research in Nepal

- Strong cultural taboos surrounding menstruation, due to superstitions surrounding impurity of blood
  - *Chhaupadi* : practice of requiring menstruating girls/women live in a separate hut during menstruation (Katz, 2014)
  - Limitations on cooking, worshiping, and visiting family/friends

- Prior Research on MHM
  - 92% of girls heard of menarche prior to start, but not details → first menstruation a shock (WaterAid, 2009; Adhikari et al, 2007)
  - 50% of girls missed school and 82% did not participate in cultural functions (Auemaneekul et al, 2013)
  - 36% of schools have a separate toilet for girls (Sommer et al, 2012)

- Key series of <u>quantitative</u> work is by Oster & Thornton (2009, 2011) focused on random provision of sanitary supplies in rural Nepal
  - Found no significant impact on attendance rates (!)

# DATA & METHODOLOGY

# Data

- Primary Survey Data (May 2016 & December 2017)
    - May → Bhairahawa (aka Siddharthnagar), 2 Schools
    - December → Purkot, 1 School
    - N = 310

- Collected by Pratiman-Neema Memorial Foundation (PNMF) in conjunction with non-profit Women2Be who provided reusable feminine hygiene kits
    - Demographics
    - Current Knowledge & Menstrual Hygiene Practices
    - Current School Infrastructure (Perceived)
    - Cultural Practices During Menstruation
    - "Do [girls] feel lonely and sad during menstruation cycle?"

# Conceptual Framework- Transactional Model of Stress & Coping

- Positions stressful life events as "person-environment transactions" (R.S. Lazarus, 1966; R. S. Lazarus & Cohen, 1977)

- Four Key Constructs
  - Primary Appraisal
    - Evaluation of the stressor itself & consideration of susceptibility/severity and motivational relevance
  - Secondary Appraisal
    - Evaluation of the controllability of the stressor & person's coping resources (includes self-efficacy)
  - Coping Efforts
    - Problem-Management → changing situation itself (active coping, problem solving, information seeking)
    - Emotional-Regulation → changing feelings surrounding stressor (venting, social support seeking, denial/avoidance)
  - Coping Outcomes
    - Health behaviors, functional status, or **emotional wellbeing**

# Figure 1: Transactional Model of Stress & Coping
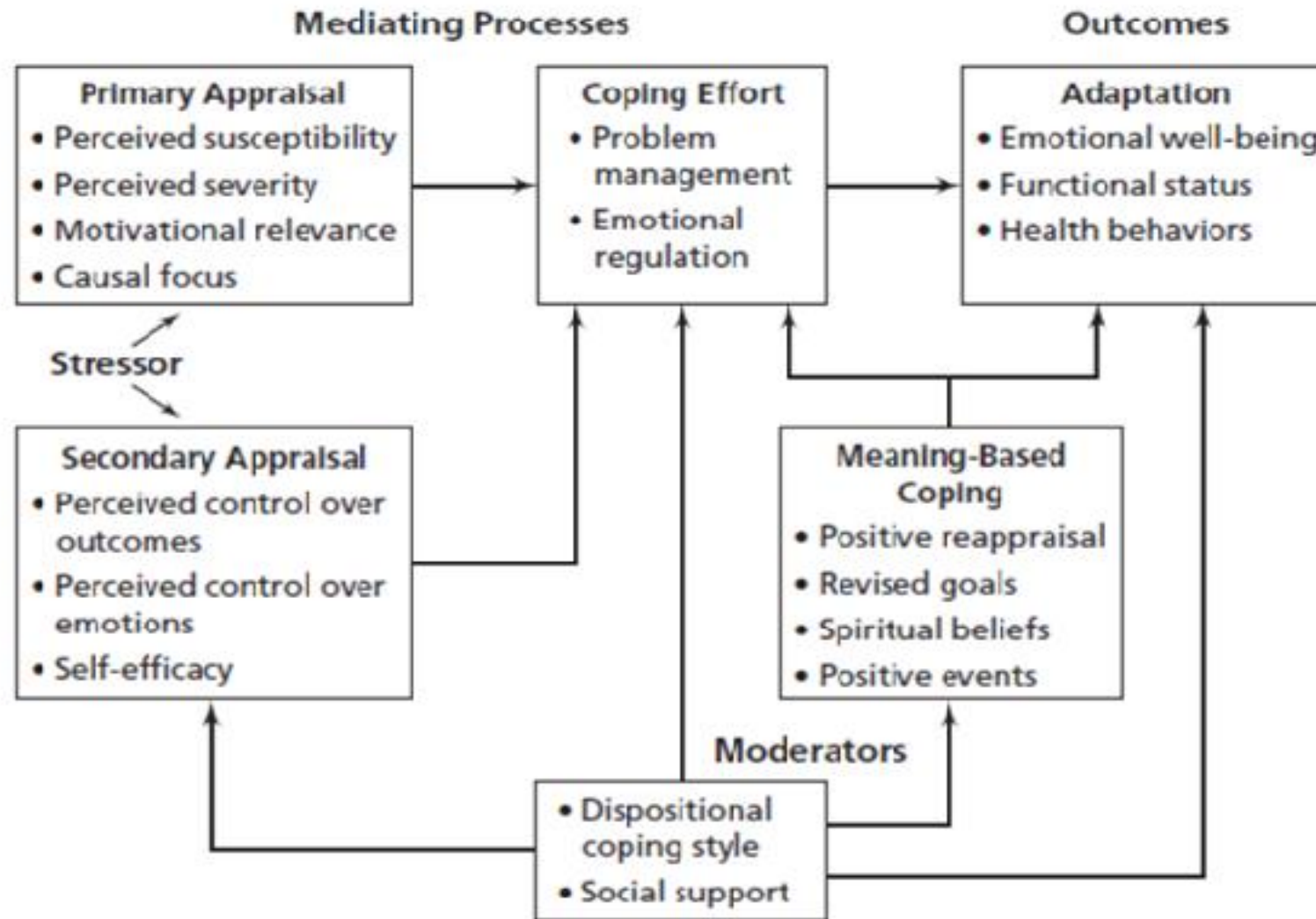


Source: Glanz, Rimer, and Viswanath, "Companion Materials." (2008)

# Hypotheses

▶ ***Hypothesis # 1***: *The presence of infrastructure and education to support hygiene in schools will help adolescent females to feel less lonely or sad during menstruation.*

  ▶ Perceptions of tools necessary to deal with the stressor (menstruation) will impact self-efficacy beliefs, influence coping efforts, and impact emotional wellbeing

▶ ***Hypothesis #2:*** *Strong cultural norms which restrict adolescent girl's mobility and freedom during menstruation will lead them to experience more negative emotional wellbeing.*

  ▶ Social support is a key moderator of the model, and has been shown to be a "stress-buffer" (Heitzmann & Kaplan, 1988; Cohen & Wills, 1985; Christian & Stoney, 2006)

  ▶ The lack of social support found with isolation and behavior restrictions could remove these buffering benefits

  ▶ Avoidance/Denial coping strategies been shown to be maladaptive and increase adverse psychosocial outcomes (Carver et al, 1993; Schwartz et al, 1995; Cordova et al, 2001; Zakowski et al, 2004)

  ▶ Prior evidence in literature of gender-focused cultural limitations surrounding stressful life events leading to lower mental/emotional wellbeing

# Empirical Specification

$$PWB_i^* = \begin{cases} 1 & if \quad \beta_0 + \beta_1 SchEnv_i + \beta_2 CultFactors_i + \beta_3 Age_i + \beta_4 AgeSq_i + \beta_5 X_i + \varepsilon_i > 0 \\ 0 & Otherwise \end{cases}$$

Where:

▶ *PWB = Binary DV of feeling sad/lonely*

▶ *SchEnv = Index representing perceptions of school environment/infrastructure presence*

▶ *CultFactors = Two indices representing perceptions of the community & family culture environment*

▶ *X = Vector of socioeconomic & demographic controls*

    ▶ *Married, Wealth Index, Current Type of Hygiene Product Use*

# Empirical Approach

- Index Building
  - Used principle component analysis (PCA) & confirmed findings with multiple correspondence analysis (MCA)
  - School:
    - One component meets Kaiser rule (Rabe-Hesketh & Everitt, 2004) for eigenvalue >1 → heavily loaded with hard infrastructure (bin, soap, hygiene kits)

  - Culture:
    - Two components with eigenvalue >1 → factor loadings based on community & family behavioral restrictions
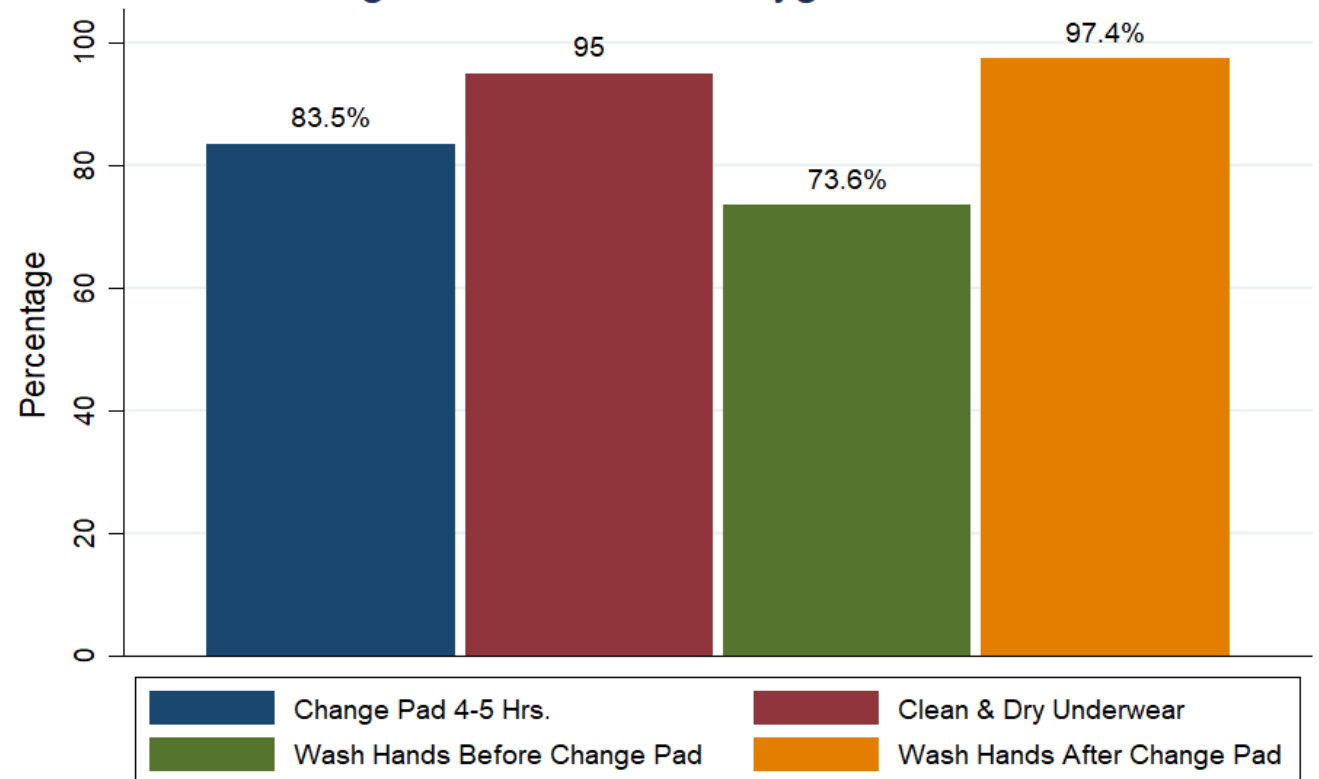
- Logistic Regression
  - Explored inclusion of fixed effects, caste dummies, and controls vector
  - Robustness Checking (outlier removal, bootstrapping, inclusion of additional school binary for counseling)

# RESULTS

# Basic Statistics

- Average Age = 17.6

- 21.6% use old rags/cloths, 12.9% reusable

- 58.9% report pain, but less than 30% take actions to alleviate

- 9.6% use antiseptic when washing products

- 42.3% know of drop-out

- 33.8% missed school for menses
  - 30% miss more than a day (max 7)

- 68.9% claim life hard/very hard during menstruation

## Figure 2: Menstrual Hygiene Practices



Source: Nepal Study Center, UNM. 2016-2017

# Table 2: Marginal Effects of Logistic Regression - Impact of Perceived Support on Psychological Wellbeing

| VARIABLES | (1) Base Model | (2) Model 2 | (3) Model 3 | (4) Model 4 | (5) Model 5 | (6) Model 6 | (7) Model 7 |
|---|---|---|---|---|---|---|---|
| Community Cultural Environ. | 0.0425* | 0.0502** | 0.0442* | 0.0482** | 0.0520** | 0.0409* | 0.0457* |
| | (0.0230) | (0.0232) | (0.0235) | (0.0232) | (0.0232) | (0.0234) | (0.0235) |
| Family Cultural Environ. | 0.0370 | 0.0352 | 0.0405 | 0.0337 | 0.0328 | 0.0386 | 0.0383 |
| | (0.0269) | (0.0257) | (0.0252) | (0.0268) | (0.0257) | (0.0264) | (0.0254) |
| School Support Environ. | -0.0343* | -0.0713** | -0.0845*** | -0.0567** | -0.0782** | -0.0636*** | -0.0885*** |
| | (0.0201) | (0.0308) | (0.0308) | (0.0222) | (0.0311) | (0.0231) | (0.0310) |
| Age | 0.234** | 0.216* | 0.214* | 0.226** | 0.201 | 0.213** | 0.200* |
| | (0.0977) | (0.124) | (0.117) | (0.103) | (0.125) | (0.104) | (0.122) |
| Age Sq. | -0.00667** | -0.00673* | -0.00679** | -0.00629** | -0.00606* | -0.00607** | -0.00619* |
| | (0.00277) | (0.00348) | (0.00327) | (0.00295) | (0.00353) | (0.00292) | (0.00343) |
| Fixed Effects[ii] | No | Yes | Yes | No | Yes | No | Yes |
| Caste[iii] | No | No | Yes | No | No | Yes | Yes |
| Control[iv] | No | No | No | Yes | Yes | Yes | Yes |
| Observations | 310 | 310 | 310 | 310 | 310 | 310 | 310 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## TABLE 3A: Robustness Checks on Marginal Effects of Model 2

| VARIABLES | (1) Model 2 | (2) Remove Older Outliers | (3) Remove DBETA >0.6 | (4) Remove DBETA >0.6 & Older Outliers |
|---|---|---|---|---|
| Community Cultural Environ. | 0.0502** | 0.0511** | 0.0488** | 0.0496** |
|  | (0.0232) | (0.0242) | (0.0229) | (0.0238) |
| Family Cultural Environ. | 0.0352 | 0.0361 | 0.0270 | 0.0276 |
|  | (0.0257) | (0.0267) | (0.0256) | (0.0266) |
| School Support Environ. | -0.0713** | -0.0731** | -0.0855*** | -0.0878*** |
|  | (0.0308) | (0.0322) | (0.0310) | (0.0324) |
| Age | 0.216* | 0.190 | 0.232* | 0.206 |
|  | (0.124) | (0.154) | (0.122) | (0.154) |
| Age Sq. | -0.00673* | -0.00592 | -0.00712** | -0.00631 |
|  | (0.00348) | (0.00448) | (0.00343) | (0.00448) |
| Fixed Effects[1] | Yes | Yes | Yes | Yes |
| Caste[2] | No | No | No | No |
| Control[3] | No | No | No | No |
| Observations | 310 | 298 | 303 | 291 |

Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

## TABLE 3B: Robustness Checks on Marginal Effects of Model 3

| VARIABLES | (1) Model 3 | (2) Remove Older Outliers | (3) Remove DBETA >0.6 | (4) Remove DBETA >0.6 & Older Outliers |
|---|---|---|---|---|
| Community Cultural Environ. | 0.0442* | 0.0445* | 0.0421* | 0.0422* |
| | (0.0235) | (0.0245) | (0.0232) | (0.0243) |
| Family Cultural Environ. | 0.0405 | 0.0416 | 0.0334 | 0.0342 |
| | (0.0252) | (0.0262) | (0.0252) | (0.0261) |
| School Support Environ. | -0.0845*** | -0.0872*** | -0.0972*** | -0.100*** |
| | (0.0308) | (0.0322) | (0.0312) | (0.0326) |
| Age | 0.214* | 0.189 | 0.229** | 0.202 |
| | (0.117) | (0.145) | (0.115) | (0.145) |
| Age Sq. | -0.00679** | -0.00602 | -0.00713** | -0.00630 |
| | 0.214* | 0.189 | 0.229** | (0.00419) |
| Fixed Effects[1] | Yes | Yes | Yes | Yes |
| Caste[2] | Yes | Yes | Yes | Yes |
| Control[3] | No | No | No | No |
| Observations | 310 | 298 | 304 | 292 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

# Discussion/Conclusion

# Discussion & Policy Implications

- Marginal effects of school environment are double the magnitude of those for culture

  - Culture/taboos hard to change, but School may be good source to implement policy changes

  - Need to consider synergistic role of education & infrastructure (Garg et al, 2012; Dolan, 2014)

  - Need to consider role of men, as they often hold the keys to get things done (Fishman, 2014)

  - Younger people are "change makers" (Snel & Shordt, 2005)

- Limitations

  - Self-reported answers (but model based on *perceptions*)

  - Have not evaluated extensions to model including coping styles, optimism, "info, seekers vs. blunters"

  - Heterogeneity of Sample (still face a bimodality issue not completely accounted for with FEs or Caste)

  - Do not account for stage of menstrual cycle & hormonal fluctuations (Jang & Elfenbein, 2018; Brock et al, 2016)

# Conclusions

- There is a call in MHM research to bring quantitative work & address gaps in coverage of emotional consequences

  - We used primary data from 3 schools in different regions of Western Nepal

  - Focused on emotional wellbeing using the Transactional Model of Stress and Coping as a conceptual framework

  - Performed empirical analysis, getting results robust to multiple specifications

- Results show that the <u>cultural environment</u> Nepalese girls perceive **increases** their probability of feeling lonely/sad during menstruation, while the perceived presence of <u>school infrastructure</u> to support menstrual hygiene **reduces** these feelings

- "Two-steps forward with one-step back" – aim policies at **schools & improving** <u>infrastructure</u>

# Thank You!!



Source: https://www.daysforgirls.org/dfg-kits