

Monk Prayogshala Working
Paper # 2022-02

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February, 2022

THE EFFECT OF WOMEN'S EMPOWERMENT ON INTIMATE PARTNER VIOLENCE AND CHILD NUTRITION OUTCOMES IN INDIA, NEPAL AND PAKISTAN

The Effect of Women's Empowerment on Intimate Partner Violence and Child Nutrition Outcomes in India, Nepal and Pakistan

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The authors thank Vergard Iversen, two anonymous referees, Hansika Kapoor, Anchal Khandelwal for helpful comments and suggestions, and the research team at SNEHA for preliminary discussions that informed this manuscript. This study was approved by the Monk Prayogshala Institutional Review Board (#019-024). All errors are sole responsibility of the authors.

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Abstract

This study explores the relationship between women's empowerment, intimate partner violence (IPV), and child nutritional outcomes (CNOs) using nationally representative datasets (Demographic and Health Surveys) from three South Asian countries - India, Pakistan, and Nepal. This study hypothesizes that lower empowerment or autonomy of women in select South Asian countries affects child nutritional outcomes directly, and also via an increased exposure to IPV, accounting for potential country-level variations. This study uses a multivariate probit approach to investigate a direct and indirect effect of women's empowerment and autonomy on child malnourishment (stunting, wasting, and underweight). Across the three countries analyzed we find a strong statistically significant effect of improvements in decision-making power on increase in likelihood of facing certain types of IPV. A strong negative relationship between facing less severe violence in particular and CNOs across all countries was found, indicating that such violence experienced by mothers was found to be detrimental to CNOs. Increasing women's decision-making power within the household can help ameliorate adverse CNOs, and in India particularly, this increase in decision-making autonomy reduced the incidence of stunting and underweight children. The study concludes with limitations and directions for future work.

Keywords: intimate partner violence, child nutrition, women's empowerment, South Asia

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1. Introduction

Various terms, including “status,” “autonomy,” and “empowerment” have been used in literature to illustrate gender equality in the household and community. “Status” was often confused with “prestige” or “esteem” in the eyes of men, while “empowerment” referred to a more dynamic process of challenging existing power relations and gaining greater control over sources of power (Agarwala & Lynch, 2006). The United Nations asserted in 1995 that women's autonomy is essential to human dignity and must be considered a basic human right (UNDP, 1995).

Women's status is defined as relative to men, rather than absolute or relative to other women. It is founded on the concept of power: the ability to make choices and is exercised through decision-making. A person's control over resources such as money, food, water, or sanitation allows them the power to make decisions even in the face of opposition. Customs and norms also play a vital role in determining women's status, and thus decision-making capacity within the household (intrahousehold) and also outside the household (extra household) (Smith, Ramakrishnan, Ndiaye, Haddad, & Martorell, 2003).

In particular, when studying women who are mothers, the concept of empowerment has also been employed by several studies to capture behaviors such as decision-making and mobility that may or may not be under the mother's control with specific reference to resources directed toward child care. Mothers are more likely to use scarce resources for the benefit of their child if they are free to decide to do so (M. R. Shroff et al., 2012). For example, Mistry *et al.* (2009) found that mothers make greater use of pregnancy services if they have the ability to make decisions. Decision-making ability is often exercised through higher financial autonomy (Wayack Pambè, Gnomou, &

Kaboré, 2013). Financial autonomy allows for women to have higher negotiation power which affects purchasing decisions and resource allocation to food and childcare, particularly in resource-poor settings (Cunningham et al., 2015; Jejeebhoy & Cook, 1997).

A mother who needs permission to go to the market may not be granted the permission as regularly as someone who does not require it; thus, her potential to interact with people and gain potentially useful advice would be limited (Jejeebhoy, 1997). Freedom to access healthcare settings has also been found to have a significant impact on child nutritional outcomes (CNO) (Gabrysch, McMahon, Siling, Kenward, & Campbell, 2016; Pandey, Singh, & Yadav, 2008).

In various studies, women's empowerment has also been reflected in intra-household resources allocation, greater power of decision-making, absence of domestic violence, or a combination of these factors (Kumar et al., 2018). In this paper, we examine the effect of women's empowerment on the odds of facing emotional, physical, and sexual intimate partner violence among married women with children in select South Asian countries (India, Nepal, and Pakistan). Furthermore, we assess the direct and indirect effects of empowerment on CNOs in these countries, as well as the association of empowerment and CNOs in select South Asian countries. Below, we outline the literature in this domain, and proceed to motivate the main aims of this paper.

Women's Empowerment (WE) and Intimate Partner Violence (IPV)

The association between women's empowerment and IPV is a two-way process. Whether a woman has experienced IPV or not provides insight about the ability of her household to promote her empowerment, whereas knowing whether or not she has a say in decision-making tells us something about the extent to which she is already empowered within the household (Wayack Pambè et al., 2013). Studies have also found that greater control over resources by wives was associated with a

significantly lower risk of domestic violence (Jejeebhoy & Cook, 1997; Koenig, Ahmed, Hossain, Mozumder, & Khorshed, 2003).

Patriarchal social norms and gender relations are important to the South Asian context. Family systems and societies designate men as providers and enforce compliance of women to patriarchal norms (Solotaro & Pande, 2014). However, educated women are less likely to suffer from domestic violence. A study in West Bengal noted that educated women were better able to deal with violent husbands, suggesting that access to higher levels of education may have an important role in contributing to women's sense of self-esteem and importance (Kabeer, 2005).

Schuler et al. (2017) from their study in four villages in Bangladesh find that there are various factors that discourage IPV. These factors include the recognition and value of women's potential and actual economic contributions. This factor was also seen as supporting women's empowerment in the villages. However, they also found that women's empowerment might be a risk to them especially if their empowerment was social in nature without being economically empowering.

Women earning income was associated significantly with experience of higher physical violence in India and rural Bangladesh. Also, in India, women who were responsible for household expenses, when compared to when male partners were responsible for household expenses, experienced higher levels of physical violence, while joint responsibility invited significantly lower violence. In India, woman's ownership of a house or land was significantly associated with lower levels of violence experienced by them (Vyas & Watts, 2009).

Panda and Agarwal (2005) in their analysis of 500 households among urban and rural areas of Kerala, India, found that among women who did not own property or land, 49% experienced physical violence and 84% experienced psychological violence. In contrast, women who owned both experienced less physical and psychological violence, and when the woman owned either a house or land the incidence of violence was much lower than if she owned neither.

Using seven dimensions to assess the level of women's empowerment, including asset ownership and involvement in household decision making, Jamal (2017) analyses the relationship between women's empowerment and spousal physical violence in Pakistan. The study finds that empowerment dimensions such as women's involvement in household decision making may increase the risk of violence. Women's ownership of land and house is negatively associated with risk of violence.

In a systematic review of literature globally, Waltermaurer (2012) finds that in Nepal the prevalence of IPV justification was below 10%, and, for females, arguing back was one reason. However, a quarter of Nepalese females and males felt IPV was justified when the issue of child neglect took place. Additionally, in India infidelity justified IPV equally or less than when a woman goes out without her husband's permission.

Women's Empowerment and Child Nutritional Outcomes

In their seminal paper, Ramalingaswami, Jonsson, and Rohde (1996) proposed that the extremely low status of women is a key factor responsible for the high rates of child undernutrition. They hypothesized that women's low status not only comprises maternal physical health, resulting in low infant birth weight, but may also lead to a subsequent decline in quality of care provided during infancy and childhood. The implication is that even a woman with sufficient knowledge or resources, accrued because of her education or socio-economic status, would be unable to employ these skills to her child's benefit if she is not empowered to do so. The authors suggested that if women's status (i.e., empowerment status) were improved, there would be subsequent improvements in the nutritional status of their children. They argue that the low quality of care given to girls and women by their families are a major determinant of the high levels of child malnutrition in South Asia as compared to global CNOs (Ramalingaswami et al., 1996).

The reason why maternal empowerment can determine CNO lies in the tradition of mothers being the primary caregivers in most developing countries. The autonomy of the mother allows her to access, gain control of, and make more use of resources that provide effective nutrition and thus impact child growth. Several studies have observed specific dimensions of women's empowerment impacting child growth and survival (Bhagowalia, Menon, Quisumbing, & Soundararajan, 2012; Burroway, 2016; Carlson, Kordas, & Murray-Kolb, 2015; M. R. Shroff et al., 2012).

Similarly, Engle (1993) found that mothers with a higher contribution of money to the family income had children with significantly better nutritional status, while Shroff *et al.* (2012) note the strong positive influence of the mother's financial autonomy on child stunting.

Consequences of IPV on CNO

International research has provided increasing evidence of the prevalence of violence against women, particularly physical violence perpetrated by intimate male partners (Garcia-Moreno et al., 2006). According to the World Health Organization (WHO), 1 in 3 women worldwide have experienced physical and/or sexual IPV in their lifetime (World Health Organization, 2017). IPV affects women's social and economic development, as well as their capacity for self-determination (Koenig, Ahmed, Hossain, & Mozumder, 2003). Recent research has focused on the antecedents of intimate partner violence (IPV), with poor women's empowerment being highlighted as an important cause. Limited access to or lower levels of empowerment factors make women more tolerant of IPV, hence perpetuating a cycle of violence and abuse (Simona, Muchindu, & Ntalasha, 2015). Furthermore, IPV is more likely in early marriage and pregnancy (Kishor & Johnson, 2004), and young children, who rely on their mothers as primary caretakers, are likely to be exposed. Silverman et al. (2009a) in their study on maternal experiences of IPV and their effects on child morbidity in Bangladesh find that maternal experiences of IPV are associated with leading causes of

childhood mortality. This suggests that the IPV not only affects women but their ability to look after the wellbeing and provide for their children as well.

More recently, Chai et al. (2016) conducted a comprehensive study of domestic violence on CNOs in low and middle-income countries on which DHS data is available. They find that exposure to IPV in any form increased the odds of child stunting in a sample of 29 countries, including data from India (2005) and Nepal (2011). Notably, this study did not examine the role of women's empowerment as protective factors for IPV. From a study in Pakistan using nationally representative data, it was found that there is a significant positive association between malnutrition in children under 5 years and emotional violence experienced by the mother. This relationship was evident for being underweight and for stunting among children and women in rural areas had children with higher levels of malnutrition, due to a higher incidence of IPV (Shaukat, Iqbal, & Khan, 2018).

Violence affects a woman's emotional and physical health, which leads to diminished incentives to pursue appropriate maternal healthcare (Simona et al., 2015). The health consequences of IPV extend beyond mothers and translate into health consequences for their children. Many researchers consider this to be an important causal factor for poor CNOs across the world (Leland K. Ackerson & Subramanian, 2008; Rico, Fenn, Abramsky, & Watts, 2011; Ziaei, Naved, & Ekström, 2014). Additionally, poor maternal autonomy and empowerment has also been seen to have a negative consequence on the child's health. Women with fewer resources and low autonomy do not have the bargaining power to allocate resources to their child's development (Engle, 1993; M. R. Shroff et al., 2012); this is likely to be compounded in violence-complicated relationships.

Interlinkages between IPV, CNO, and Women's Empowerment

Negative consequences of IPV against women may also affect their children's health through direct and indirect pathways. IPV can negatively affect a child's health indirectly by impairing maternal

caretaking abilities. A wide range of physical and psychological problems induced by IPV can make abused mothers less physically and emotionally capable of providing their children's basic needs (Ziaei et al., 2014). Despite the growing recognition of IPV, there are not enough studies that explore the relationship between IPV and CNO especially in developing countries (Rico et al., 2011).

Ackerson and Subramanian (2008) found that maternal exposure to multiple incidences of physical family violence in previous years was associated with stunting, wasting and underweight among their 12–35-month old children. They provide a reason for this association: as domestic violence is strongly associated with a woman's inability to make decisions for herself and her family, this has an impact on the decisions she makes about the types and quantities of food that she prepares as she cares for herself and her children (Ackerson & Subramanian, 2008). In a cross-country analysis using Demographic and Health Survey (DHS) data, Rico et al. (2011) found that when IPV was considered by type, associations remained with stunting and malnutrition. Although there were no consistent trends whereby specific types of violence were more strongly associated than others with the child nutritional outcomes.

Finally, women's empowerment, as measured through justifications of domestic violence, also has significant associations with child mortality levels (Kravdal, 2004). Ackerson and Subramanian (2008) describe intimate partner violence as an indication of weak bargaining power of wives against husbands and note the increased prevalence of stunted children in violence-affected families. Thus, a child's health is linked to the health environment in which the child lives, but ultimately it is dependent on the caregiver's use of facilities and services to optimize the child's health. The ability of caretakers, usually their mothers, to provide care to children ultimately rests upon the quality of the care they receive (Smith et al., 2003). In our study we used measures of malnourishment such as wasting, stunting and underweight for children under five years of age, collectively referred to as CNOs.

This study aims to provide crucial insight into the pathways that influence CNOs through the mother's empowerment status and IPV faced by her. This study acknowledges the importance of the role that women play in the household as mothers and caregivers for the family and builds a link between mothers' experience of violence and her child's resultant health. It is also important to understand the effects of the violence that mothers experience on their children's nutritional outcomes..

Conceptual Model

This study explores the relationship between empowerment, IPV, and child nutritional outcomes using the nationally representative datasets of three South Asian countries - India, Pakistan, and Nepal. Lower empowerment or autonomy of women in select South Asian countries affect child nutritional outcomes directly, and indirectly via an exposure to IPV.

Child malnutrition and gender equality (which includes women's empowerment and IPV faced by women) are key issues addressed in the United Nations Sustainable Development Goals (UNSDGs) 3 and 5, respectively. To understand and effectively work towards attainment of the UNSDGs, the pathways that connect women's empowerment, IPV, and CNOs must be better understood. This study proposes to test a new conceptual framework in which women's experiences of IPV and their children's nutritional status are both influenced by the level of autonomy or empowerment the woman possesses.

This importance is echoed by Yount et al. (2011) in their conceptual review of the pathways of influence between domestic violence and its influence on child nutrition: DHS data on women and children could be matched to construct retrospective cohorts in multiple countries. Although the DHS data lack some potential mediators (maternal mental health) and confounders (co-occurring child maltreatment), partial path models could be estimated. Ultimately, large, population-based

intergenerational studies of diverse populations are needed to assess fully the pathways by which domestic violence affects the nutrition and growth of children.

The literature highlights complex direct and indirect pathways between WE, IPV, and CNOs. However, no holistic understanding is presently available of the interlinkages between these variables. Therefore, this study proposes to address the following research questions:

RQ1: What is the effect of women's empowerment on the odds of facing emotional, physical, and sexual intimate partner violence among married women with children in select South Asian countries?

RQ2: How does the experience of facing any form of intimate partner violence affect child nutritional outcomes in terms of stunting, wasting, and being underweight?

RQ3: Are there additional effects of women's empowerment on child nutritional outcomes, over and above those via changes in odds of facing intimate partner violence?

A conceptual framework was developed to represent the possible linkages among the different sets of variables included in the study (Figure 1). The main outcomes of interest were child health outcomes, with nutritional status of children as the main indicator. The model conceptualized the health of children to be determined through the interplay of a set of covariates such as household and individual characteristics, maternal empowerment indicators, and reporting of IPV. It is important to note that there is a possibility of reverse causality in this framework. For example, exposure to violence may lead to changes in women's empowerment indicators. However, recent work examining the links between these two variables, particularly in the Indian context suggest that women who are more empowered are less likely to be subject to intimate partner violence (Ahmad, Khan, & Mozumdar, 2019; Panda & Agarwal, 2005), and that exposure to this varies by alcohol consumption by the husband (Parekh, Tagat, Kapoor, & Nadkarni, 2021). However, this evidence

varies on the definition of empowerment, which has been highly variable studies mainly due to differing theoretical foundations. Furthermore, it is also important to acknowledge that CNOs and exposure to IPV may have a common source (e.g. socioeconomic status or poverty), and that we are able to control for this using a proxy for wealth as detailed in the next section.

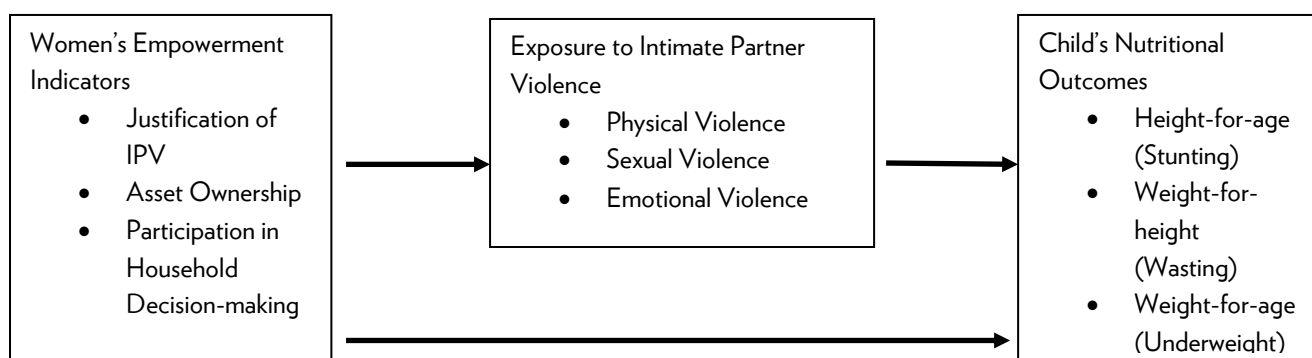


Figure 1: Conceptual framework of the pathway linking women's empowerment indicators to exposure to IPV and subsequent nutritional status of children.

Methods

The study's empirical analysis aimed to identify and test the pathway of mother's empowerment indicators and experiences of IPV on the child's nutritional status, using nationally representative household data from three South Asian countries. We use mother-level data at the household, combined with aggregate child outcomes and other individual and household characteristics.

Data

The study used data from the latest round of the Demographic and Health Surveys (DHS) of three developing countries in South Asia – India (2015-2016), Pakistan (2011), and Nepal (2011-2012). The datasets were accessed via DHS data portal. These countries are considered a part of South Asia and satisfy criteria for data availability of relevant variables from the DHS. Other countries in the South Asian region where DHS data is available includes Afghanistan, Bangladesh, and Maldives.

However, these surveys did not have data on either violence faced by women or child nutrition outcomes, and hence were not included in this analysis.

The surveys use a standardized multistage sampling procedure with weighting to reproduce nationally representative data on maternal and child health. More information on methodology and data collection protocols are available at the respective DHS report. The analysis is carried out at the level of the household, including only those households where a mother and child were present and fulfilled the inclusion criteria. Data on the indicators in Figure 1 were obtained from the individual recode, domestic violence, and child level questionnaires. Table 1 indicates the number of observations available for each country.

Table 1. Number of observations, by country, available in the latest rounds of the DHS.

| Country | Number of Respondents interviewed for Domestic Violence Module | Number of children for Anthropometric measures |
|----------|--|--|
| Pakistan | 3,475 | 4,226 |
| Nepal | 1,938 | 2,379 |
| India | 34,350 | 2,36,455 |

Source: Country Demographic and Health Surveys (DHS)

Explanatory Variables

Factors indicating women's empowerment included variables assessing ownership of financial assets (land or property held in the female's name), justification of violence, and decision-making power (i.e., the person who usually decides how to spend respondent's money – alone and/or with other v/s other). This grouping of variables is similar to Kabeer's (1999) proposed three inter-related dimensions of empowerment that is the ability to exercise choice: 1. Resources (preconditions); 2. Agency (process); 3. Achievements (outcomes). Jones et al. (2019) uses Kabeer's (1999) framework

to analyse DHA surveys in Ethiopia, Kenya, Rwanda, Tanzania, and Uganda, which is a different socio-cultural context from South Asia.

Participation in household decision-making was measured as an aggregate of variables assessing responses to items such as person who usually decides on respondent's healthcare, person who usually decides on large household purchases, and person who usually decides on visits to family or relatives. The responses were coded as 'yes' if the woman has answered "self" or "self and other" for all the items (yes v/s no). Justification of IPV was an (inverse) measure of women's empowerment and was measured as an aggregate of 5 variables assessing women's justification of wife beating in different scenarios. Several studies construct indices that aggregate various indicators of women's empowerment, to minimize using a large number of variables in analyses. However, it is often challenging to find theoretically cohesive measures of women's empowerment that include these variables. Additionally, it is statistically challenging to determine reliability of a composite measure. In our dataset, we attempted to construct a composite index encompassing measures of women's empowerment but find a low Cronbach's α across countries as well as in the pooled sample ($\alpha_{Ind} = 0.08$; $\alpha_{Nep} = 0.26$; $\alpha_{Pak} = 0.12$; $\alpha_{overall} = 0.15$), indicating low statistical reliability.¹ We thus retain the variables as individual measures for our analyses.

The domestic violence module of the DHS is administered to one, randomly selected, woman per household. The Modified Conflict Tactics Scale (CTS) is used to collect data on physical, emotional, and sexual violence. The respondents are asked questions about their experiences of specific acts of physical, sexual, and emotional violence perpetrated by a current or former partner. Questions vary slightly by country, but largely cover similar aspects of the different

¹ Cronbach's α is a measure of statistical reliability that indicates how well individual components or variables are correlated with each other as well as to some overall common construct or measure (Cronbach, 1951). A higher α indicates a greater reliability of the common measure, implying that individual variables may be used to form an index or composite measure. In this case, the low α suggests that a composite measure may not be appropriate.

types of violence. Three aggregated variables of incidence of violence were employed in the analysis: experiences of sexual violence, severe physical violence, and emotional violence in the preceding 12 months.

Outcome Variables

This paper employed three standardized indicators of child nutrition based on anthropometric measures computed for children between 0 and 5 years of age: (i) height for age (stunting), (ii) weight for height (wasting) and (iii) weight for age (underweight). These scores were standardized to z-scores and measure standard deviations (SD) from the median of a reference population (WHO Child Growth Standards). Children were considered as 'severely stunted' if height-for-age Z-scores were below -2 SD. Similarly, Z-scores below -2 SD for weight-for-height were considered as 'severely wasted' and 'severely underweight' for weight-for-age. In each household, we compute average z-scores for each measure (and child characteristics) for all children for the corresponding mother.

Covariates/Confounding Variables

Keeping in line with Ramalingaswami et al.'s (1997) commentary, this study employed the mother's educational status as well as the husband's educational status as covariates. Additionally, the mother's health has been found to be another determinant of child's nutritional status; children of those mothers who have poor health as expressed by low body mass index (BMI) are more likely to be nutritionally poor (Sethuraman, Lansdown, & Sullivan, 2006). Thus, maternal BMI was also included as a confounding variable to represent mother's health status. A priori confounds such as

household position on the country's wealth index², number of children under the age of 5 years in the household, and urban or rural residence were included due to their relation to CNO, based on previous findings (Ahmed, Creanga, Gillespie, & Tsui, 2010; Frongillo, de Onis, & Hanson, 1997; Imai, Annim, Kulkarni, & Gaiha, 2014; Pongou, Ezzati, & Salomon, 2006; Rico et al., 2011; M. Shroff, Griffiths, Suchindran, & Bentley, 2009; Sinha & Chattopadhyay, 2017; Smith et al., 2003; Underwood, 2002). We also include a variable that captures whether the mother is currently working or not. This is because female labor force participation can affect CNOs through higher incomes as well as financial autonomy (see Sangwan and Kumar, 2021).³ The summary statistics for all variables can be found in Table 2.

Table 2. Summary statistics across countries on dependent, explanatory, and control variables

| | India | | Nepal | | Pakistan | |
|--|-------|-------|-------|-------|----------|-------|
| | Mean | SD | Mean | SD | Mean | SD |
| <i>Control variables</i> | | | | | | |
| Age | 27.56 | 5.041 | 26.63 | 5.447 | 29.65 | 6.084 |
| Household size | 5.755 | 2.211 | 5.373 | 2.118 | 8.027 | 3.710 |
| Number of children 5 and under | 1.659 | 0.847 | 1.518 | 0.754 | 2.125 | 1.192 |
| Educational attainment | 2.124 | 1.684 | 2.001 | 1.831 | 1.634 | 1.952 |
| Wealth index | 2.664 | 1.373 | 2.625 | 1.346 | 2.733 | 1.375 |
| Age at 1 st birth | 21.30 | 3.701 | 19.89 | 3.441 | 21.15 | 3.938 |
| Marriage to first birth interval (months) | 43.18 | 127.3 | 32.50 | 78.87 | 31.60 | 89.68 |
| Proportion currently working | 0.178 | 0.382 | 0.550 | 0.498 | 0.123 | 0.329 |
| Husband's educational attainment (years) | 7.85 | 7.23 | 6.74 | 5.63 | 7.13 | 6.59 |
| <i>Interpersonal violence</i> | | | | | | |
| Proportion experienced any emotional violence | 0.127 | 0.333 | 0.130 | 0.336 | 0.341 | 0.474 |
| Proportion experienced any less severe violence by husband/partner | 0.293 | 0.455 | 0.220 | 0.414 | 0.284 | 0.451 |

² It is unclear and undocumented whether dowry constitutes part of the household's wealth and therefore its position in the wealth index. Earlier literature suggests that violence is often used as a mechanism to extract dowry and bride price (Bloch & Rao, 2002), something that we are not able to account for in our analysis. The only household-level dataset to explicitly account for dowry is the Rural Economic and Demographic Survey (REDS), which provides transfers at the time of marriage distinct from other household wealth.

³ We are grateful to a reviewer for this suggestion.

| | | | | | | |
|---|--------|-------|--------|-------|--------|-------|
| Proportion experienced any severe violence by husband/partner | 0.0822 | 0.275 | 0.0996 | 0.300 | 0.0723 | 0.259 |
| Proportion experienced any sexual violence by husband/partner | 0.0731 | 0.260 | 0.0831 | 0.276 | 0.0487 | 0.215 |
| <i>Empowerment indicators</i> | | | | | | |
| Proportion owning property alone or jointly | 0.316 | 0.465 | 0.0748 | 0.263 | 0.0167 | 0.128 |
| Average decision-making domains for wife | 0.161 | 0.395 | 0.740 | 0.337 | 0.289 | 0.246 |
| Average justification of violence | 1.152 | 1.406 | 0.531 | 0.303 | 1.625 | 1.031 |
| <i>Child characteristics and nutrition outcomes</i> | | | | | | |
| Proportion of female children | 0.479 | 0.500 | 0.486 | 0.500 | 0.501 | 0.500 |
| Average age of children | 2.063 | 1.400 | 2.067 | 1.406 | 2.056 | 1.411 |
| Proportion stunted (WHO, height-for-age) | 0.336 | 0.472 | 0.344 | 0.475 | 0.335 | 0.472 |
| Proportion wasted (WHO, weight-for-height) | 0.178 | 0.382 | 0.0867 | 0.281 | 0.0696 | 0.255 |
| Proportion underweight (WHO, weight-for-age) | 0.301 | 0.459 | 0.251 | 0.434 | 0.207 | 0.405 |
| Observations | 34,350 | | 1,938 | | 3,475 | |

Source: Country Demographic and Health Surveys (DHS)

Empirical Framework

The study used a multivariate probit approach to investigate a direct and indirect effect of women's empowerment and autonomy on child malnourishment (Figure 1). The estimation framework allowed WE to affect child malnourishment via IPV as well as independent of IPV, and assumes implicitly that all types of violence can simultaneously (rather than individually) be associated with adverse CNOs.

The binary discrete variable(s) are given by $Violence_i$, indicating whether or not a women faced the i^{th} type of violence:

$$Violence_{iww} = 1 \quad \text{if } \gamma Z_{iww} + \mu_{iww} > 0; \quad i = (E, LS, S, SE)$$

$$Violence_{iww} = 0 \quad \text{if } \gamma Z_{iww} + \mu_{iww} \leq 0$$

Where, the i^{th} type of violence (E refers to Emotional, LS refers to Less severe, S refers to Severe, and SE refers to Sexual) is faced by the w^{th} woman residing in the v^{th} household. We wish to examine the effects of facing violence on CNOs, which we also describe as a vector of binary variable below:

$$\begin{aligned} Child_{1iww}^* &= \beta_1 X_{1iww} + \epsilon_{1iww} & Child_{1iww} &= I(Child_{1iww}^* > 0) \\ Child_{0iww}^* &= \beta_1 X_{0iww} + \epsilon_{0iww} & Child_{0iww} &= I(Child_{0iww}^* > 0) \end{aligned}$$

Note that we wish to link this to the outcomes associated with IPV. Thus,

$$\begin{aligned} Child_{iww} &= Child_{1iww} \text{ if } Violence_{iww} = 1 \\ Child_{iww} &= Child_{0iww} \text{ if } Violence_{iww} = 0 \end{aligned}$$

In any multivariate probit specification, we assume that the error terms are correlated and follow a specific covariance matrix structure with mean zero and some correlations, typically a multivariate normal distribution (Ramful & Zhao, 2009). The univariate marginal probability (i.e., the chances of facing a particular type of violence) is given by:

$$P(Child_{kiww} = 1 | Violence_{iww}) = \Phi_1(Violence_{iww}' \beta_{iww}); (i = E, LS, S, SE)$$

Where, Φ_1 is the cumulative univariate normal distribution function for the standard normal distribution. Similarly, multivariate joint probabilities can be derived from these, and we refer the reader to Ramful and Zhao (2009) for more details. The reduced (simplified) form of the estimating equations is given below:

$$Violence_{iv} = \alpha + \beta_1 WE_{iv} + \beta_2 X_{iv} + \eta_{iv} \quad (1)$$

$$Child_{iv} = \delta + \gamma_1 Violence_{iv} + \gamma_2 K_{iv} + \gamma_3 WE_{iv} + \epsilon_{iv} \quad (2)$$

Where, $Violence_{iv}$ is a vector of binary variables that indicate if a woman faced physical, sexual, or emotional abuse; WE_{iv} is a vector of variables that proxy for women's autonomy and empowerment; X_{iv} is the vector of covariate variables that identify Equation (1) uniquely - these could include household specific characteristics that do not directly affect $Child_{iv}$ such as household size, wealth, and location of residence (rural or urban). As mentioned previously, these

are her educational attainment, her partner's educational attainment, her age, household; $Child_{iv}$ is the vector of child stunting / malnourishment variables, K_{iv} is the vector of child-specific and mother-specific characteristics that uniquely identify Equation (2). This includes number of other children (under 5 years of age in the household), whether the mother currently works, mother's age at the time of birth of first child, time between marriage to birth of first child, and sex and age of children under five for whom CNO data is available. η_{iv} and ϵ_{iv} are error terms and assumed to be correlated. Since the effect of WE_{iv} enters in both equations, it is important to identify the causal pathways through which its effects can be decomposed via $Violence_{iv}$ and its direct impact on $Child_{iv}$. These models were fitted separately to data from each country and then overall for all countries. Part of the identification issue relies on having additional confounders in equation (1) from those in equation (2) to ensure robustness of estimates. To check for robustness of the specification, we check for correlation between the errors to justify the use of the multivariate probit model.⁴

Results

The results of the multivariate probit estimations are reported in Tables 3a, b, and c for India, Nepal, and Pakistan, respectively. The pooled estimate using country fixed effects for the South Asia sample can be found in Table 4. Since these are probit coefficients, the interpretation is not straightforward. Generating marginal effects for these coefficients was computationally intractable, and hence could not be generated in a reasonable time frame. .

⁴ Our study is unable to test a valid counterfactual of the impacts of violence on CNOs for women *not* involved in household decision-making, or other aspects of WE. This would necessitate a control function approach, but there is little literature on specifications that would interact WE with violence and use it to explain incidence of CNOs within the household. We are grateful to the anonymous reviewer for suggesting this, and leave this for future work.

Table 3a: Multivariate probit estimation results of women's empowerment, IPV, and CNOs in India

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|-----------------------|----------------------|---------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | Stunting | E | LS | S | SE | Wasting | E | LS | S | SE | Underweight | E | LS | S | SE |
| Emotional violence | 0.319*** (0.06) | | | | | 0.084 (0.073) | | | | | 0.249*** (0.064) | | | | |
| Less severe violence | 0.641*** (0.054) | | | | | 0.235*** (0.078) | | | | | 0.665*** (0.054) | | | | |
| Severe violence | 0.306*** (0.069) | | | | | 0.128 (0.112) | | | | | 0.368*** (0.07) | | | | |
| Sexual violence | 0.367*** (0.073) | | | | | 0.247** (0.117) | | | | | 0.299*** (0.075) | | | | |
| Decision-making power | -0.102*** (0.031) | 0.165*** (0.037) | 0.155*** (0.032) | 0.121*** (0.041) | 0.176*** (0.04) | -0.036 (0.042) | 0.165*** (0.038) | 0.148*** (0.033) | 0.114*** (0.042) | 0.168*** (0.041) | -0.075** (0.035) | 0.165*** (0.038) | 0.152*** (0.033) | 0.117*** (0.041) | 0.171*** (0.041) |
| Justifying violence | -0.023** (0.009) | 0.112*** (0.013) | 0.106*** (0.01) | 0.119*** (0.012) | 0.099*** (0.013) | -0.041*** (0.013) | 0.114*** (0.013) | 0.108*** (0.011) | 0.122*** (0.012) | 0.102*** (0.013) | -0.049*** (0.01) | 0.112*** (0.013) | 0.106*** (0.011) | 0.121*** (0.012) | 0.1*** (0.013) |
| Owens property | 0.076*** (0.028) | -0.02 (0.043) | -0.084*** (0.032) | -0.002 (0.042) | -0.04 (0.045) | -0.05 (0.033) | -0.012 (0.043) | -0.078** (0.033) | 0.005 (0.042) | -0.034 (0.046) | 0.092*** (0.029) | -0.015 (0.043) | -0.08** (0.032) | 0.007 (0.042) | -0.031 (0.045) |
| Chi-squared | | | 1862.07*** | | | | | 953.66*** | | | | | 1587.48*** | | |
| Observations | | | | | | | | 30394 | | | | | | | |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise; Stunting, Wasting, and Underweight are binary variables that take a value of 1 if *any* child in the household was stunted, wasted, or underweight by WHO standards. Additional controls for violence included are educational status of partner (husband), state / region of residence, type of place of residence (urban/rural), educational attainment, wealth index, number of household members, and age. Additional controls for CNOs included are marriage to first birth interval (months), sex and age of the child, whether respondent was currently working, number of children 5 and under in household. All regressions are weighted by sample weights provided by DHS for India. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3b: Multivariate probit estimation results of women's empowerment, IPV, and CNOs in Nepal

| VARIABLES | (1) Stunting | (2) E | (3) LS | (4) S | (5) SE | (6) Wasting | (7) E | (8) LS | (9) S | (10) SE | (11) Underweight | (12) E | (13) LS | (14) S | (15) SE |
|-----------------------|---------------------|-------------------|----------------------|----------------------|---------------------|-------------------|--------------------|----------------------|----------------------|--------------------|---------------------|-------------------|----------------------|----------------------|-------------------|
| Emotional violence | -0.155 (0.314) | | | | | 0.474 (0.458) | | | | | -0.196 (0.493) | | | | |
| Less severe violence | 0.983*** (0.358) | | | | | 0.66* (0.363) | | | | | 0.108 (0.792) | | | | |
| Severe violence | 0.229 (0.554) | | | | | 0.224 (0.371) | | | | | 0.367 (0.979) | | | | |
| Sexual violence | 0.243 (0.549) | | | | | 0.815* (0.472) | | | | | -0.229 (2.343) | | | | |
| Decision-making power | 0.056 (0.252) | -0.364 (0.224) | -0.586*** (0.221) | -0.895*** (0.245) | -0.767** (0.344) | -0.281 (0.257) | -0.397* (0.218) | -0.634*** (0.213) | -0.866*** (0.248) | -0.787** (0.34) | -0.615* (0.336) | -0.377 (0.25) | -0.611*** (0.235) | -0.878*** (0.271) | -0.766 (0.557) |
| Justifying violence | 0.017 (0.232) | 0.387* (0.22) | 0.269 (0.247) | 0.197 (0.268) | 0.289 (0.312) | 0.015 (0.311) | 0.409* (0.214) | 0.316 (0.236) | 0.232 (0.253) | 0.327 (0.292) | 0.259 (0.338) | 0.434* (0.238) | 0.339 (0.275) | 0.276 (0.307) | 0.355 (0.339) |
| Owens property | -0.237 (0.293) | -0.339 (0.238) | -0.356** (0.181) | -0.08 (0.234) | 0.623 (0.419) | -0.334 (0.204) | -0.325 (0.235) | -0.321* (0.174) | -0.091 (0.235) | 0.669 (0.414) | -0.031 (0.293) | -0.347 (0.292) | -0.377 (0.306) | -0.096 (0.356) | 0.617 (0.656) |
| Chi-squared | | | 351.49*** | | | | | 683.24*** | | | | | 412.95*** | | |
| Observations | | | | | | | | 3646 | | | | | | | |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise; Stunting, Wasting, and Underweight are binary variables that take a value of 1 if *any* child in the household was stunted, wasted, or underweight by WHO standards. Additional controls for violence included are educational status of partner (husband), state / region of residence, type of place of residence (urban/rural), educational attainment, wealth index, number of household members, and age. Additional controls for CNOs included are marriage to first birth interval (months), sex and age of the child, whether respondent was currently working, number of children 5 and under in household. All regressions are weighted by sample weights provided by DHS for Nepal. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3c: Multivariate probit estimation results of women's empowerment, IPV, and CNOs in Pakistan

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|-----------------------|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------|--------------------|---------------------|----------------------|-------------------|--------------------|--------------------|---------------------|----------------------|-------------------|
| | Stunting | E | LS | S | SE | Wasting | E | LS | S | SE | Underweight | E | LS | S | SE |
| Emotional violence | 0.104 (0.243) | | | | | -0.133 (0.192) | | | | | 0.048 (0.264) | | | | |
| Less severe violence | 0.928*** (0.183) | | | | | 0.086 (0.231) | | | | | 0.752*** (0.22) | | | | |
| Severe violence | 0.137 (0.251) | | | | | -0.113 (0.25) | | | | | 0.131 (0.376) | | | | |
| Sexual violence | -0.123 (0.348) | | | | | 0.304 (0.415) | | | | | 0.139 (0.441) | | | | |
| Decision-making power | -0.044 (0.183) | 0.444* (0.233) | 0.297 (0.222) | 0.174 (0.198) | -0.174 (0.251) | -0.279 (0.186) | 0.4* (0.235) | 0.219 (0.229) | 0.103 (0.199) | -0.188 (0.243) | -0.253 (0.248) | 0.461** (0.234) | 0.307 (0.231) | 0.197 (0.207) | -0.123 (0.246) |
| Justifying violence | 0.093 (0.066) | 0.156** (0.078) | 0.021 (0.071) | 0.017 (0.091) | -0.024 (0.07) | 0.004 (0.082) | 0.178** (0.077) | 0.044 (0.07) | 0.037 (0.089) | -0.009 (0.068) | 0.081 (0.076) | 0.158** (0.079) | 0.021 (0.069) | 0.019 (0.09) | -0.024 (0.071) |
| Owens property | -0.278 (0.349) | -0.041 (0.505) | -1.134*** (0.392) | -1.019*** (0.321) | -0.459 (0.457) | -0.227 (0.501) | -0.081 (0.489) | -1.29*** (0.387) | -1.261*** (0.324) | -0.527 (0.452) | -0.594 (0.391) | -0.046 (0.498) | -1.17*** (0.395) | -1.116*** (0.343) | -0.467 (0.454) |
| Chi-squared | | | 360.43*** | | | | | 199.75*** | | | | | 259.19*** | | |
| Observations | | | | | | | | 3088 | | | | | | | |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise; Stunting, Wasting, and Underweight are binary variables that take a value of 1 if *any* child in the household was stunted, wasted, or underweight by WHO standards. Additional controls for violence included are educational status of partner (husband), state / region of residence, type of place of residence (urban/rural), educational attainment, wealth index, number of household members, and age. Additional controls for CNOs included are marriage to first birth interval (months), sex and age of the child, whether respondent was currently working, number of children 5 and under in household. All regressions are weighted by sample weights provided by DHS for Pakistan. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Women's Empowerment and IPV

In India, we find a strong statistically significant association between improvements in decision-making power and likelihood of facing *any* type of intimate partner violence. This is a backlash effect that is also observable in the pooled estimates (Table 4). However, greater decision-making power for women in Nepal is associated with lower likelihood of facing physical violence (but not emotional violence). There are no statistically significant coefficients of decision-making power on facing violence in Pakistan, with the notable exception of a positive association with facing emotional violence, significant at the 10% level. Notably, property ownership is associated with lower incidence of less severe violence in India, Nepal, and Pakistan, but no significant effects exist on the incidence of other types of violence. In Pakistan, owning property also has protective effects associated with facing severe violence. In the pooled estimates for all countries, owning property is associated with lower likelihood of facing less severe violence, but no statistically significant effects for any other type of violence.⁵

In India, justification of IPV by the wife is also positively associated with the likelihood of facing all types of violence. In Nepal and Pakistan, however, it is only positively associated with the likelihood of facing emotional violence. In the pooled estimates for South Asia, the justification of IPV by the woman is strongly positively associated with facing all types of violence, and is the strongest for severe violence in terms of magnitude of the coefficients.

Finally, we note that the association between owning assets (land or property) and incidence of emotional and less severe violence in India is small and negative. It is possible that this is on account of sparse data on land and asset ownership, due to poor or informal record-keeping in developing South Asian countries (Jamal, 2017).

⁵ Additional results on estimation of Equation (1) on violence faced by women is available in the Appendix, tables A.1 and A.2.

IPV and Child Nutrition Outcomes

The results of the effects of IPV on CNOs are unequivocal and suggest a strong and statistically significant negative relationship across countries, types of violence, and all CNOs in Tables 3a, 3b, 3c, and 4. In India, the results of facing all types of violence have statistically significant and positive associations with stunting and a child being underweight. In the case of child wasting in India, facing less severe and sexual violence in particular suggest a threat. Thus, when the mother of a child under five faced violence in India, it is associated with a strong increase in the likelihood that her children may be stunted or underweight, and in some instances suffer from wasting as well. In contrast, in Nepal, we find ambiguous results; facing less severe violence is associated with an increase in likelihood of child stunting and wasting (the coefficient is significant only at the 10% level in the latter case), but not in terms of a child being underweight. There is an increase in the risk of a child being wasted if the mother faced sexual violence in the past 12 months, and this effect is significant at the 10% level. We find no statistically significant association when all types of violence are simultaneously assumed to explain likelihood of adverse CNOs in Nepal. In the case of Pakistan, we find results similar to Nepal, except that increase in likelihood of facing less severe violence was associated with an increase in the rates of stunting and children under five being underweight. There was no statistically significant association with wasting, as well as no statistically significant associations of facing any other type of violence on other CNOs, suggesting that facing less severe violence is a significant threat to child health in India, Nepal, and Pakistan, especially when dealing with child stunting. In our overall pooled results, we find that all types of violence are harmful to child outcomes, except for child wasting. In the case of a child being underweight as well as stunting, the incidence is highest when the mother has faced less severe violence in the past 12 months.⁶

⁶ It is also important to note that given the computationally intensive nature of multivariate probit models for four distinct datasets (India, Nepal, Pakistan, and pooled), we are unable to present estimates of heterogeneity by child

Table 4: Multivariate probit estimation of experience of IPV and women's empowerment on child nutrition outcomes (pooled estimates)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|-----------------------|------------------------|----------------------|------------------------|----------------------|-----------------------|-----------------------|----------------------|------------------------|----------------------|-----------------------|------------------------|----------------------|------------------------|----------------------|-----------------------|
| | Stunting | E | LS | S | SE | Wasting | E | LS | S | SE | Underweight | E | LS | S | SE |
| Emotional violence | 0.268*** (0.0627) | | | | | 0.0549 (0.0681) | | | | | 0.245*** (0.0705) | | | | |
| Less severe violence | 0.696*** (0.0521) | | | | | 0.102 (0.0737) | | | | | 0.655*** (0.0616) | | | | |
| Severe violence | 0.286*** (0.0756) | | | | | 0.0582 (0.0978) | | | | | 0.369*** (0.0812) | | | | |
| Sexual violence | 0.313*** (0.0777) | | | | | 0.0364 (0.0953) | | | | | 0.227** (0.0887) | | | | |
| Decision-making power | -0.0893*** (0.0324) | 0.155*** (0.0378) | 0.140*** (0.0331) | 0.0897** (0.0414) | 0.152*** (0.0418) | -0.0476 (0.0418) | 0.148*** (0.0378) | 0.128*** (0.0334) | 0.0858** (0.0420) | 0.144*** (0.0420) | -0.101*** (0.0345) | 0.151*** (0.0379) | 0.134*** (0.0333) | 0.0858** (0.0417) | 0.145*** (0.0423) |
| Justifying violence | -0.0181* (0.00958) | 0.111*** (0.0127) | 0.100*** (0.0107) | 0.113*** (0.0120) | 0.0926*** (0.0130) | -0.0261** (0.0126) | 0.115*** (0.0127) | 0.105*** (0.0108) | 0.118*** (0.0120) | 0.0977*** (0.0130) | -0.0385*** (0.0101) | 0.112*** (0.0127) | 0.101*** (0.0108) | 0.114*** (0.0119) | 0.0945*** (0.0131) |
| Owns property | 0.0702** (0.0288) | -0.0298 (0.0424) | -0.0976*** (0.0318) | -0.0115 (0.0411) | -0.000335 (0.0580) | -0.0630* (0.0329) | -0.0230 (0.0424) | -0.0912*** (0.0319) | -0.00377 (0.0411) | 0.00781 (0.0599) | 0.0889*** (0.0293) | -0.0235 (0.0423) | -0.0898*** (0.0317) | -0.00228 (0.0407) | 0.0150 (0.0620) |
| Constant | -0.374*** (0.108) | -0.815*** (0.162) | -0.0350 (0.148) | -1.103*** (0.197) | -1.064*** (0.205) | -0.618*** (0.138) | -0.855*** (0.163) | -0.0690 (0.153) | -1.142*** (0.196) | -1.101*** (0.207) | -0.514*** (0.109) | -0.796*** (0.162) | -0.00608 (0.146) | -1.086*** (0.198) | -1.042*** (0.200) |
| Chi-squared | | | 1844.32*** | | | | | 1073.79*** | | | | | 1502.24*** | | |
| Observations | | | | | | | | 37,128 | | | | | | | |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise; Stunting, Wasting, and Underweight are binary variables that take a value of 1 if any child in the household was stunted, wasted, or underweight by WHO standards. Additional controls for violence included are educational status of partner (husband), state / region of residence, type of place of residence (urban/rural), educational attainment, wealth index, number of household members, and age. Additional controls for CNOs included are marriage to first birth interval (months), sex and age of the child, whether respondent was currently working, number of children 5 and under in household. All regressions are weighted by sample weights provided by DHS and include country fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Women's Empowerment and CNOs

Results from the overall South Asia regression as well as country-specific results suggest that improvements in women's decision-making power within the household are particularly beneficial in reducing the incidence of adverse child nutritional outcomes (with the exception of child wasting in the pooled estimates). Although we do not find any statistically significant effects in Nepal and Pakistan, women who have greater decision-making power were associated with lower incidence of underweight children in Nepal.

In contrast, justifying violence was also associated with a reduction in CNOs, and the coefficients in the pooled estimates suggest that these are small but statistically significant associations. Interestingly, land ownership is associated with small increases in incidence of stunting and underweight children in India, although the effects are only statistically significant in India and overall South Asia sample. It is less clear what the potential channels for such effects could be.

Discussion

This study used a multivariate probit approach to investigate a direct and indirect effect of women's empowerment and autonomy on child malnourishment (Figure 1) in South Asia. The estimation framework allowed WE to affect child malnourishment via IPV as well as independent of IPV. We find that the indirect impact of WE is critical in being protective of women at risk of facing different types of violence, but in particular less severe violence. Owning property, for example, can reduce the likelihood of facing less severe violence, which contributes significantly to childhood stunting and children being underweight on average. In contrast, the direct impact of owning property on CNOs is actually negative, since property ownership among women was associated with a higher incidence of stunting and children being underweight, although it was associated with less wasting. As van der Meulen Rodgers and Kassens (2018) suggest, there could be unobserved characteristics

(such as preferences) that are driving both land ownership as well as CNOs at the same time, which cannot be adequately accounted for. As Swaminathan et al. (2012) suggest, ownership may not reduce household chores or change control over household incomes in certain circumstances, and therefore may detract from caregiving responsibilities.

In India, and to some extent Pakistan, we find a strong statistically significant effect of improvements in decision making power with an increase in likelihood of facing different types of IPV. This is in line with findings from Schuler et al. (2017) where it was found that a moderate level of women's empowerment may provoke IPV, as women begin to behave in ways that are contradictory to traditional gender norms. Similarly, Vyas and Watts (2009) find that women solely responsible for household expenses experienced higher levels of physical violence in India. However, the results find an exception in Nepal, where an increase in household decision making is associated with lower likelihood of facing physical forms of violence (severe and less severe). To corroborate this finding, Atteraya, Gnawali, and Song (2015) find that in Nepal, married women are at a greater risk of experiencing IPV when they are illiterate, are raised in families where violence is present, and when they lack decision making autonomy within their households.

The importance of justification of IPV plays a crucial role in determining whether the victim, often a woman, reports the act (Waltermauer, 2012). If the woman feels that violence witnessed by her is justified, she is less likely to report it. In our study, we found that justification of IPV by the wife is positively associated with the likelihood of experiencing violence, especially emotional violence in Nepal and Pakistan. In South Asian countries, it is possible that cultural beliefs and social norms around intimate-partner violence are driving some of these results (Solotaro & Pande, 2014). Women may not disclose or seek care when they have experienced any form of violence even in situations where formal and informal mechanisms exist. For some women, violence is considered an inevitable element of marriage and women also do not disclose instances of violence fearing

reprisal or additional violence, or due to stigma and shame associated with it. From studies in six districts in Pakistan, 35 percent of women mentioned that they were not allowed to seek medical care for injuries sustained during IPV. Women may also not reveal or disclose experiencing violence because of apathy and the belief that revealing events might not resolve anything (Solotaro & Pande, 2014). Thus, there lies inherent challenges in obtaining accurate data on violence experienced by women. There are several challenges that lie in variations in definitions and methodology in the survey (Bishwajit, Sarker, & Yaya, 2016).

Maternal health is impacted by IPV and thus the mother's ability to take care of her children is negatively affected which leads to poor CNOs. In our study, we find a strong negative relationship between IPV and CNOs across all countries. All types of violence experienced by the mothers were found to be harmful to CNOs. Particularly, less severe violence is associated with nearly a large increase in incidence of stunting. The incidence of a child being underweight is the highest when the mother has experienced less severe violence in the past year in India as well as in the pooled estimates. Notably, the results are strongest for India and Nepal, and for stunting and child underweight. In Pakistan, we found no statistically significant association between facing violence and child wasting. This evidence is broadly in line with past work that suggests facing *physical* violence in particular can hinder a mother's child care abilities, and potentially result in poor child outcomes (Ackerson & Subramanian, 2009; Kishor & Johnson, 2004; Silverman et al., 2011, 2009a; Simona et al., 2015; Yount et al., 2011; Ziaei et al., 2014).

Women's empowerment ensures that a woman is able to make better decisions for herself and for her children which leads to positive CNOs. In our study, it was found that women's decision-making power within the household is particularly beneficial in reducing adverse CNOs (independent of whether the woman faced any IPV), and in India particularly, this increase in decision-making autonomy reduced the incidence of stunting and child underweight. Interestingly,

justification of IPV among mothers is also associated with a lower incidence of stunting and underweight children, with results for India suggesting that a household where the mother justifies IPV is less likely to have a stunted child. Although the effects are very small (one-tenth of the positive association between decision-making power and reduced adverse CNOs), it is possible that these are because of justification of IPV among both genders when the child is neglected, especially in Asian cultures where family is valued over the individual (Waltermaurer, 2012). Surprisingly, we find that property ownership and wealthier women are likely to have higher incidence of stunting and underweight children, a finding that is potentially driven by the large Indian sample. This finding runs contrary to the literature found in this domain. For example, Swaminathan et al. (2012) find that property ownership among women in a south Indian state boosts their decision-making power, and suggest that it is important for child nutrition outcomes. Pande (2003) finds that property ownership significantly reduced the odds of stunting for children in India between 1992-93. At the same time, there are null results in South Asian countries such as Bangladesh that suggest that the relationship may not be as straightforward (e.g., Bhagowalia et al., 2012)

Conclusion

This study explores the relationship between Women's empowerment, IPV, and child nutritional outcomes using the nationally representative datasets of three South Asian countries - India, Pakistan, and Nepal. Lower empowerment or autonomy of women in South Asian countries affects child nutritional outcomes directly, and via an increased exposure to IPV. Our study points toward important differences between countries in the relationship between IPV and child nutritional outcomes. For example, in Nepal, having higher decision-making autonomy and owning wealth for women is associated with lower odds of facing certain types of violence, which could be an important channel through which to ameliorate CNOs.

One of the major limitations of this study is the overrepresentation of an Indian sample in our analysis. As Indian households comprised more than 85% of our sample, extending these findings to South Asia is a challenge. One of the major barriers in this regard was the lack of availability of data from DHS on IPV or women's empowerment or CNOs for other South Asia countries such as Bangladesh and Sri Lanka. Adding this data will help improve the generalizability of the findings of the study, and accordingly help focus on any differences between countries. Second, we are unable to comment on specific pass-through effects that might accumulate as a result of women's empowerment, exposure to IPV, and changes in CNOs. Future work in this domain can specify empirical frameworks that are suited to establishing the robustness of these impact pathways. Furthermore, our empirical framework does not account for potential reverse causality between experiencing IPV and women's empowerment indicators in South Asia. It is possible that the directional associations are difficult to disentangle using the current data, and future work can look at previous episodes of IPV to account for this. Finally, the study implicitly assumes that gender norms, childcare, other social norms are similar in India, Nepal, and Pakistan, which may not necessarily be uniform. The authors acknowledge that data related to gender norms, childcare and other social norms are not present in the DHS data and remain unaccounted for in terms of their role in measuring women's empowerment and CNOs in the countries selected for the study. More data on how these vary can be incorporated to explain country-level variegations in IPV as well as CNOs. The role that sanitation, infrastructure and ecosystem in the locality such as the health system plays in determining CNOs is not present in DHS data. The authors note this lack of data as a limitation of this paper.

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Appendix

Table A.1: Determinants of violence faced by women from Equation (1) – Combined

| VARIABLES | (1) E | (2) LS | (3) S | (4) SE |
|------------------------------|------------------------|------------------------|------------------------|-----------------------|
| Decision-making power | 0.155*** (0.0378) | 0.140*** (0.0331) | 0.0897** (0.0414) | 0.152*** (0.0418) |
| Justifying violence | 0.111*** (0.0127) | 0.100*** (0.0107) | 0.113*** (0.0120) | 0.0926*** (0.0130) |
| Owens property | -0.0298 (0.0424) | -0.0976*** (0.0318) | -0.0115 (0.0411) | -0.000335 (0.0580) |
| Educational attainment | -0.0977*** (0.0133) | -0.122*** (0.0133) | -0.127*** (0.0153) | -0.103*** (0.0211) |
| Husband's years of education | -0.000245 (0.00164) | -0.00156 (0.00164) | -0.00378* (0.00211) | 0.00188 (0.00186) |
| Wealth index | -0.0766*** (0.0207) | -0.127*** (0.0168) | -0.119*** (0.0246) | -0.106*** (0.0256) |
| Household size | -0.00332 (0.00792) | 0.00139 (0.00809) | -0.0114 (0.00835) | 0.00775 (0.00919) |
| Age | 0.00145 (0.00344) | 0.00220 (0.00324) | 0.00527 (0.00404) | -0.00444 (0.00485) |
| Rural residence | -0.0417 (0.0513) | -0.0295 (0.0456) | 0.0460 (0.0599) | -0.00175 (0.0604) |
| Constant | -0.815*** (0.162) | -0.0350 (0.148) | -1.103*** (0.197) | -1.064*** (0.205) |
| Observations | 37,128 | 37,128 | 37,128 | 37,128 |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise. Country fixed effects included. The identifying variables are husband's years of education and type of place of residence (rural or urban). All regressions are weighted by sample weights provided by DHS for India. *** p < 0.01, ** p < 0.05, * p < 0.1

Appendix for The Effect of Women's Empowerment on Intimate Partner Violence and Child Nutrition Outcomes in India, Nepal and Pakistan

Table A.2: Determinants of violence faced by women from Equation (1) – by country

| VARIABLES | India | | | | Nepal | | | | Pakistan | | | |
|------------------------------|------------------------|------------------------|--------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|------------------------|----------------------|-----------------------|
| | (1) E | (2) LS | (3) S | (4) SE | (1) E | (2) LS | (3) S | (4) SE | (1) E | (2) LS | (3) S | (4) SE |
| Decision-making power | 0.168*** (0.0367) | 0.162*** (0.0325) | 0.132*** (0.0395) | 0.184*** (0.0397) | -0.449* (0.231) | -0.660*** (0.226) | -0.905*** (0.256) | -0.509 (0.369) | 0.333 (0.238) | 0.195 (0.222) | 0.119 (0.193) | -0.0708 (0.241) |
| Justifying violence | 0.117*** (0.0125) | 0.110*** (0.0106) | 0.129*** (0.0123) | 0.107*** (0.0134) | 0.481** (0.220) | 0.414 (0.258) | 0.398 (0.268) | 0.421 (0.294) | 0.143* (0.0753) | 0.0363 (0.0704) | 0.0248 (0.0900) | 0.00474 (0.0708) |
| Owns property | -0.0220 (0.0433) | -0.0841*** (0.0325) | -0.00628 (0.0421) | -0.0396 (0.0457) | -0.459* (0.235) | -0.585*** (0.194) | -0.370 (0.230) | 0.515 (0.435) | -0.108 (0.473) | -1.299*** (0.383) | -1.241*** (0.293) | -0.556 (0.460) |
| Educational attainment | -0.0822*** (0.0134) | -0.110*** (0.0110) | -0.108*** (0.0137) | -0.0804*** (0.0155) | -0.198*** (0.0485) | -0.175*** (0.0526) | -0.199*** (0.0493) | -0.195*** (0.0695) | -0.0387 (0.0385) | -0.0683 (0.0443) | -0.0282 (0.0599) | -0.00395 (0.0603) |
| Husband's years of education | -0.00249 (0.00189) | -0.00149 (0.00177) | -0.00707*** (0.00236) | 0.000549 (0.00211) | 0.00461 (0.00458) | -0.00498 (0.00652) | -0.00605 (0.00546) | 0.00506 (0.00466) | 0.00715 (0.00450) | -0.000806 (0.00475) | 0.00543 (0.00568) | 0.00759* (0.00458) |
| Wealth index | -0.0840*** (0.0175) | -0.135*** (0.0146) | -0.132*** (0.0185) | -0.138*** (0.0209) | 0.0112 (0.0840) | -0.0463 (0.0733) | -0.0558 (0.0949) | 0.142 (0.0915) | -0.00828 (0.0683) | -0.0121 (0.0702) | -0.102 (0.0856) | -0.103 (0.0888) |
| Household size | -0.0134* (0.00769) | -0.0153** (0.00665) | -0.0212** (0.00836) | 0.0111 (0.00875) | -0.00973 (0.0452) | -0.000710 (0.0378) | -0.0389 (0.0356) | -0.0835** (0.0386) | 0.00758 (0.0165) | 0.0369* (0.0195) | -0.00622 (0.0181) | 0.0333** (0.0156) |
| Age | -0.000679 (0.00316) | 0.00287 (0.00285) | 0.00539 (0.00354) | -0.00245 (0.00360) | -0.00270 (0.0152) | -0.0325** (0.0164) | -0.0165 (0.0201) | -0.0203 (0.0228) | 0.00848 (0.00896) | 0.0156 (0.00999) | 0.00787 (0.0117) | -0.00878 (0.0121) |
| Rural residence | -0.0763 (0.0518) | -0.0472 (0.0438) | 0.00138 (0.0544) | -0.0139 (0.0586) | -0.231 (0.213) | -0.298 (0.197) | -0.103 (0.232) | -0.154 (0.236) | 0.0307 (0.143) | 0.139 (0.159) | 0.159 (0.180) | 0.145 (0.186) |
| Constant | -0.653*** (0.147) | 0.0394 (0.134) | -0.989*** (0.166) | -1.092*** (0.169) | -0.277 (0.756) | 1.377** (0.666) | 0.460 (0.844) | -0.161 (0.875) | -1.202*** (0.451) | -1.603*** (0.531) | -1.803*** (0.690) | -1.690*** (0.596) |
| Observations | 32,025 | 32,025 | 32,025 | 32,025 | 3,753 | 3,753 | 3,753 | 3,753 | 3,259 | 3,259 | 3,259 | 3,259 |

Note: E – Emotional violence; LS – Less Severe violence; S – Severe violence; SE – Sexual violence. Coefficients reported are probit coefficients, with clustered standard errors in parentheses. Violence is a binary variable that takes a value of 1 if the woman faced violence from her partner and zero otherwise. Location fixed effects within each country included. The identifying variables are husband's years of education and type of place of residence (rural or urban). All regressions are weighted by sample weights provided by DHS for India. *** p < 0.01, ** p < 0.05, * p < 0.1