Maternal exposure to intimate partner violence and child health in India: Evidence of an association from NFHS-3

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Abstract

Using data from the third National Family Health Survey (NFHS-3-2005-2006) on currently married women with at least one child and logistic regression models, this study examines the little known association between women's exposure to intimate partner violence (IPV) and child health in India. The main exposure was women's experience of any act of physical, emotional and or sexual violence by an intimate current or former partner versus none. We considered three child health outcome measures namely, height-for age, weight-for-height and weight-for-age. Our results indicate that after adjusting for potential confounders, women's experience of any violence and or physical violence was strongly and significantly associated with increased odds of stunting and underweight. Emotional and sexual IPV was less strongly associated with stunting and underweight. We did not find any association between any form of IPV and wasting. Our results have public health implications for improving child nutrition in developing countries including India.

1. Introduction

The prevalence of underweight children in India is among the highest in the world and is nearly double that of Sub-Saharan Africa (Gragnolati, Shekar, Das Gupta, Caryn Bredenkamp, & Lee, 2005). India has one of the highest rates of undernourished children in the world: 48% of children under 5 years of age are short for their age (stunted) and 43% children are underweight (International Institute for Population Sciences and ORC Macro, 2007). Child malnutrition is a leading cause of child and adult morbidity accounting for 22.4 percent of India's total burden of disease (Gragnolati et al., 2005). While several socioeconomic and other risk factors for child malnutrition (e.g., food insecurity and maternal malnutrition) have been identified and studies (Black et al., 2008; Pasricha & Biggs, 2010; Subramanian, Kawachi, & Smith, 2007), the role of maternal exposure to Intimate partner violence (IPV) to child malnutrition remains understudied. Intimate partner violence, defined as any act of physical, sexual and emotional abuse by a current of former partner whether cohabitating or not (Krug, Dahlberg, & Mercy, 20002), can adversely affect child nutrition through impairing the capacity of the mother to care for the child (Yount, DiGirolamo, & Ramakrishnan, 2011), inadequate diet resulting from withholding of food through physiological or emotional abuse (Ackerson & Subramanian, 2008).

In spite of being a worldwide problem due to its pervasive and debilitating nature, the issue of IPV has only received minimum systematic research attention globally. This is surprising given the evidence that IPV causes significant damage to women, and children health and

mortality (World Health Organisation, 2002). In patriarchal Asian societies, women, and children depend on men and parents respectively for their economic and social support and are especially vulnerable to violence or abuse. However, research on IPV related harm to child health is scarce. This is a serious deficiency not least because child malnutrition is one of the key Millennium Development Goals with specific objective to halve malnutrition rates by 2015 but not doing so hides the interactive character of whole range of harm related to domestic violence.

Even lesser attention has been paid to this issue in India. We came across only two studies that examined the association between IPV and child malnutrition (Ackerson & Subramanian, 2008; Sethuraman, Lansdown, & Sullivan, 2006). Of these, only one study was based on nationally representative data from India (Ackerson & Subramanian, 2008). However, in that study IPV measure was based on only physical violence because the information on sexual and emotional violence was not available in the data set that they used. Sexual and emotional abuse constitute a substantial proportion of all domestic violence incidents (Krug et al., 20002). This study aims to address the knowledge gap in literature by directly assessing whether IPV is associated with child malnutrition. We use the term 'IPV' interchangeably with 'spousal violence' and 'domestic violence'. We overcome the limitations of previous studies by including physical, sexual and emotional violence and using the latest nationally representative data set from India. Additionally, we also examine separately the association of different dimensions of IPV (physical, sexual and emotional) with child nutrition.

2. Data and Methodology

Data

The data for this paper come from the third National Family Health Survey (NFHS-3), undertaken in 2005-2006. The NFHS-3 is a nationally representative survey, which was conducted in 29 Indian States using a format very similar to that of the Demographic and

Health Surveys (DHS), modified to meet Indian conditions and the needs of policy makers and programme planners. The survey covered representative sample of 124,385 women of age group 15-49 from 109,041 households.

Data collection was carried out in NFHS-3 using systematic stratified random sampling and by adopting a three stage design in urban areas (selection of towns in first stage, followed by selecting urban blocks, and then households) and two stage design in rural areas (villages were first selected using Probability Proportional to Size (PPS) sampling and is followed by selection of households). Further details of methodology of collecting data in NFHS-3 can be found elsewhere (MacroInternational, 2007). The analyses for this paper are based on data from a sub sample of 12,416 women in NFHS-3, each having a child aged between 12 to 35 months at the time of NFHS 3. The selection of present study respondents was shown in Figure 1. The NFHS-3 provides high-quality, up-to-date information on all of the key variables required for the analysis. It has collected self-reported information on socio-economic characteristics, health, and spousal violence. Compared with previously available data, the survey permits substantial expansion of the examination of the issue of spousal violence.

Outcome variable

The main outcome variables used in this study are anthropometrics among children.

Anthropometrics among children: The NFHS-3 provides information on three summary indices of nutritional status: weight-for –age (underweight), height- for-age (stunted), and weight-for-height (malnourished). These three indices of nutritional status (weight-for-age and height-for-age) are expressed in standard deviation units (z-score) from the median for the international reference population. For logistic regression analyses, the nutritional status variables (weight-for -age, height- for-age, and weight-for-height) which are continuous variables, were treated as dichotomous , with two values 'well-nourished' and 'under-nourished'. In order to assess malnutrition, cut-off points need to be used to estimate the prevalence of anthropometric abnormality. The conventional cut-

off point, which is applied in the present study, is -2 standard deviation units (z-score) from the median reference population. Children whose z-score falls below -2 standard deviation units are classified as under-nourished (coded 1) and those above -2 standard deviation as well nourished (coded 0).

Measuring IPV

Experience of IPV, the main exposure variable in this study, was measured by constructing a variable based on detailed information collected on the experience of specific acts of physical, sexual and emotional violence by a current (last) husband. We defined our exposure for the analysis: any physical/sexual/emotional violence versus none. We also examined separately the association of different dimensions of IPV (physical, sexual and emotional) with child nutrition.

Covariates

The other independent variables, both at the individual and household levels that have been found to influence child health were included in the models. These include age of the respondent (used as a continuous variable), sex of the child, total number of surviving children (used as a continuous variable), region (north, north east, east, central, west and south), education of woman (no education, primary, secondary and higher), education of spouse, women's work status (not working, agriculture and non-agriculture worker), caste (not reported/no caste, Schedules Caste/ Scheduled Tribe (SC/ST), Other Backward Castes (OBC), Others (Non SC/ST/OBC)), religion (Hindu, Muslim, Christian and others), place of residence (urban/rural), wealth index- a measure of household level poverty (poorest/poorer, middle, richer/richest), exposure to media (used as a continuous variable), exposure to media (used as a continuous variable) and woman autonomy (used as a continuous variable). The categorisation of the independent variables was based on theoretical grounds, as well as on the basis of the distribution of cases with respect to the different variables.

Methods

Given the dichotomous nature of the dependent variable (0, 1), we used binary-logistic regression to estimates the association between spousal violence and child health. For the analysis of the undernourished children, the dependent variable was equal to 1 if the child's z-score was below -2 standard deviation units (under-nourished child) and equal to 0 if a z-score falls above -2 standard deviation (well nourished child). Coefficients are estimated using the maximum likelihood method (MLM) of estimation. All the analysis was carried out using Statistical Analysis System (SAS) package version 9.3.

Results

Descriptive analysis

Table 1 shows characteristics of the study respondents and their children. Spousal violence experience of the women considered in this study are shown in Table 2. On the whole about 37% of the women had ever experienced some form of spousal violence. Physical violence is relatively the commonest form of violence women ever experience from their spouse (32%), followed by emotional violence (14%) and sexual violence (8%). Slapping is the commonest form physical violence with over 96% of the women who ever experienced any form of physical violence have experienced slapping (Table 2). A similar pattern was found in terms of experience of spousal violence in the last 12 months, with about 28% of all the considered women experiencing some form of spousal violence in the last 12 months, 23% experiencing physical violence, 11% experiencing emotional violence and 7% experiencing sexual violence.

Table 3 shows bivariate associations between type of spousal violence experienced by mother and her child's nutritional status. Children of women who have experienced different forms of spousal violence in the last 12 months or have ever experienced them were more likely to be stunted (57% to 58%) than the children of women who did not have experienced various forms of spousal violence in the last 12 months or never in life (46% to 50%). Similarly, Children of women who have experienced various forms of spousal violence in the last 12 months or have ever experienced them were more likely to be underweight and wasted than the children of women who have never experienced various forms of spousal violence in the last 12 months or have never experienced them.

Results of the regression analysis

Table 4 shows results of the regression analysis. In all the regression models age of child, sex of child, number of surviving children, region, place of residence, caste, religion, age of mother,

level of education of mother, level of education of father, occupation of mother, wealth index of household, household structure, mother's media exposure and mother's level of autonomy are the confounder variables (control variables).

After adjusting for these confounding variables, our results showed that children of women who have experienced any type of spousal violence in the last 12 months have significantly higher odds of being stunted (Odds Ratio (OR) =1.16; CI = 1.07-1.26) and higher odds of being underweight (OR=1.09; CI= 1.00-1.19) than the children of women who have not experienced any form of spousal violence in the last 12 months. Same conclusion applies to children of women who have ever experienced any form of spousal violence and children of women who ever experienced any form of physical violence. Similarly, we found mother's experience of physical violence in the last 12 months is associated child stunting and mother's experience of emotional violence in the last 12 months is associated with the underweight status of her child. But, we did not find any association between sexual violence experience of mother (ever experience or experience in the last 12 months) with the stunting and underweight status of her child. We also did not find any association between mother's experiences of various forms of spousal violence with the wasting status of child.

Conclusion

Very little evidence exists on the relationship between woman experiencing domestic violence and the health of their children. This study adds to the limited literature on the role of IPV on child nutrition. We found that domestic violence was associated with high child malnutrition, and stunting. The association was strong and significant. While maternal experience of physical IPV was associated with increased odds of stunting and underweight, emotional and sexual IPV was less strongly associated with stunting, underweight and or wasting. Our results indicate that children carry a heavy burden of health harm related to domestic violence. Further research should look into the possible underlying mechanism through which domestic violence influences child health.

Table 1: Characteristics of present study respondents

Characteristic	Number	Percent/ Mean
(Categorical)		**Percent**
Age of child in months		
12-23	6271	50.51
24-35	6145	49.49
Sex of child		
Male	6575	52.96
Female	5841	47.04
Region		
North	2158	17.38
South	1794	14.45
East	1996	16.08
West	1378	11.10
Central	2625	21.14
Northeast	2465	19.85
Place of residence		
Urban	4690	37.77
Rural	7726	62.23
Caste		
Scheduled Caste (SC) or Scheduled Tribe (ST)	4234	34.10
Other Backward Caste (OBC)	3961	31.90
Others	3678	29.62
No caste/Not known	543	4.37
Religion		
Hindu	8571	69.03
Muslim	1984	15.98
Christian	1299	10.46
Others	562	4.53
Level of education of mother		
No education	4973	40.05
Primary	1775	14.30
Secondary	4710	37.93
Higher	958	7.72
Level of education of father (as reported by mother)		
No education	2910	23.44
Primary	1922	15.48
Secondary	6014	48.44
Higher	1490	12.00
Do not know	80	0.64
Wealth index		
Poor	4647	37.43
Middle	2608	21.01
Rich	5161	41.57
Mother's work status		
Not working	8158	65.71
Agriculture	2600	20.94
Non-Agriculture	1658	13.35
Type of family		
Nuclear	6625	53.36
Non-nuclear	5298	42.67
Not de-jure resident	493	3.97
		Mean
(discrete or continuous)		
Number of surviving children	12416	2.58
Current age of mother	12416	26.51
Media exposure index	12416	3.04
Autonomy	12416	9.00
Total	**12416**	**100.00**

Table 2: Per cent of women experienced various forms of spousal violence (number of women in this study is 12,416)

Type of violence	Experienced during the last 12 months	Ever experienced
Physical violence (one or more of the following seven)	**23.26**	**32.43**
Spouse ever pushed, shook or threw something	8.45	11.75
Spouse ever slapped	21.74	31.16
Spouse ever punched with fist or something harmful	6.39	8.92
Spouse ever kicked or dragged	6.62	9.31
Spouse ever tried to strangle or burn	1.25	1.66
Spouse ever threatened or attacked with knife/gun or other weapon	0.71	0.95
Spouse ever twisted her arm or pull her hair	9.08	12.46
Emotional violence (one or more of the following three)	**11.11**	**13.84**
Spouse ever humiliated her	8.57	10.85
Spouse ever threatened her with harm	3.47	4.49
Spouse ever insult or make feel bad	5.78	7.29
Experience of sexual violence (one or both of the following two)	**7.43**	**9.15**
Spouse ever physically forced sex when not wanted	6.93	8.56
Spouse ever forced other sexual acts when not wanted	3.37	4.08
Experienced spousal violence (experienced at least one of above violence)	**28.24**	**36.91**

Table 3: Woman's experience of various types of spousal violence and the nutritional status of her child

Type of spousal violence experienced	Nutritional status of child		
	Per cent stunted	Per cent underweight	Per cent wasted
Experienced in the last 12 months			
Any type of violence			
No	47.30	36.61	17.34
Yes	57.27	45.77	19.51
Physical violence			
No	47.64	37.05	17.50
Yes	58.37	46.36	19.49
Emotional violence			
No	49.26	38.24	17.68
Yes	57.34	47.22	20.23
Sexual violence			
No	49.54	38.62	17.64
Yes	57.80	46.78	21.93
Ever experienced			
Any type of violence			
No	46.07	35.22	16.94
Yes	56.94	45.90	19.65
Physical violence			
No	46.39	35.62	17.03
Yes	57.80	46.57	19.85
Emotional violence			
No	49.09	38.02	17.55
Yes	56.82	46.79	20.50
Sexual violence			
No	49.35	38.44	17.55
Yes	58.03	47.07	21.92

Note: All the bivariate associations were tested by using chi-square tests and we found all the associations were statistically significant at 5% level of significance.

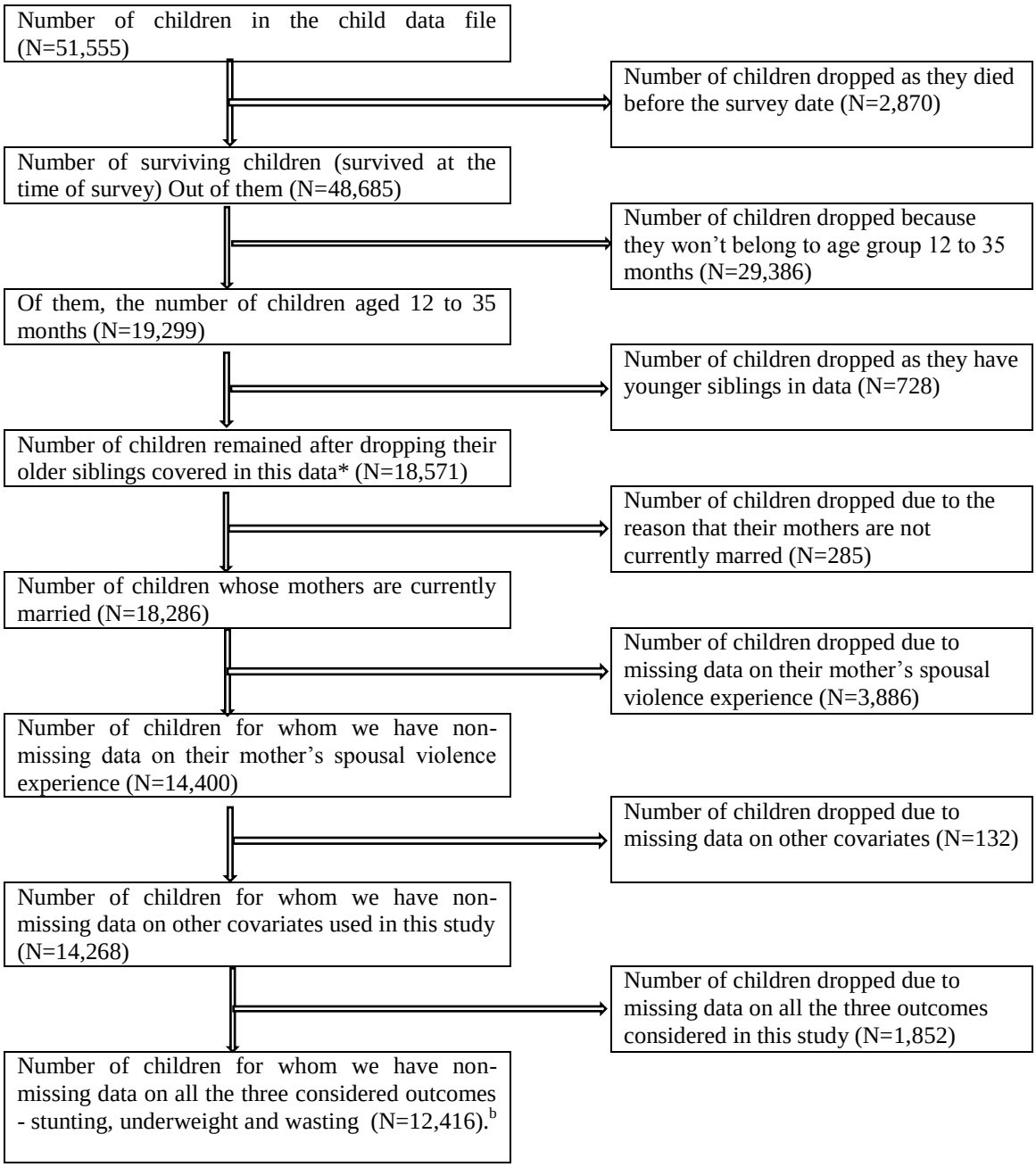
Table 4: Logistic regression results showing the effect of various types of spousal violence experienced by women on her child's nutritional status[a]

Type of experience of spousal violence	Odds ratio of being stunted		Odds ratio of being underweight		Odds ratio of being wasted	
	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Experienced violence in the last 12 months						
Experienced any type of Spousal violence in the last 12 months	1.16**	(1.07, 1.26)	1.09*	(1.00, 1.19)	0.94	(0.85, 1.05)
Experienced physical violence in the last 12 months	1.19**	(1.09, 1.31)	1.09	(1.00, 1.19)	0.93	(0.83, 1.04)
Experienced emotional violence in the last 12 months	1.10	(0.98, 1.24)	1.13*	(1.00, 1.27)	1.00	(0.87, 1.16)
Experienced sexual violence in the last 12 months	1.10	(0.95, 1.26)	1.02	(0.89, 1.18)	1.07	(0.90, 1.26)
Ever experienced violence						
Ever experienced any type of Spousal violence	1.13**	(1.04, 1.22)	1.09*	(1.01, 1.18)	0.95	(0.86, 1.05)
Ever experienced physical violence	1.15**	(1.06, 1.25)	1.09*	(1.01, 1.19)	0.95	(0.86, 1.05)
Ever experienced emotional violence	1.06	(0.95, 1.18)	1.09	(0.98, 1.22)	1.02	(0.89, 1.16)
Ever experienced sexual violence	1.09	(0.96, 1.24)	1.02	(0.90, 1.16)	1.07	(0.92, 1.24)

Note: * denote significant at 5% (or $p<0.05$) and ** denote significant at 1% level of significance (or $p<0.01$).

[a]All models were controlled for 1) age of child, 2) sex of child, 3) number of surviving children, 4) region, 5) place of residence, 6) caste, 7) religion, 8) age of mother, 9) level of education of mother, 10) level of education of father, 11) occupation of mother, 12) wealth index of household, 13) household structure, 14) mother's media exposure and 15) mother's level of autonomy.

Figure 1: Flow chart of selection of present study respondents



Note: * if a woman has more than one eligible kid (aged 12-35 months) then only the youngest one was kept by dropping older children. This is to avoid clustering of child characteristics. [b] We have as many mothers as the number of children are. Hence we can say the criterion of selection of present study children is equivalent to the selection of present study women respondents.

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