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Association of Intimate Partner Physical and Sexual Violence with Childhood Morbidity in Bangladesh

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1. Introduction

Although Bangladesh is on track to achieve Millennium Development Goal 4 (MDG4: reduce child mortality, approximately less than 50 per 1000 live births by 2015) (International Center for Diarrheal Disease Research, Bangladesh [ICDDR, B], 2007), child mortality rate still remains very high in this country. In Bangladesh, the mortality rate of under-five children was 65 per 1000 live births in 2007 and diarrhea (20%), acute respiratory infections (ARI) (18%) accounted for 38 % of the under-five deaths (United Nations International Children's Emergency Fund [UNICEF], 2010). Fever, is another symptom of acute infections and malaria among children in Bangladesh and contributes to high levels of malnutrition and mortality (National Institute of Population Research and Training [NIPORT], 2009; Rayhan, Khan, & Shahidullah, 2007).

Although clinical (Haque et al., 2003), nutritional (Daniel et al., 2008; Tomkins, Dunn, & Hayes, 1989), household environmental (Gasana et al., 2002; Cairncross et al., 2010) and socio-demographic (Barros et al., 2010; Rayhan, Khan, & Shahidullah, 2007) risk factors of ARI, diarrhea, and fever are well documented, research has only begun to investigate the influence of other aspects of the social environment. Intimate partner violence (IPV) is defined as the range of sexually, psychologically, and physically coercive acts used against women by current or former male intimate partners (World Health Organization [WHO], 1997). Intimate partner violence is considered to be one of the psychosocial factors that might influence child morbidity status (Campbell 2002). It can affect child morbidity status through psychological stress of the child, resulting from observing IPV; stress in turn can exert an effect on immune reactivity and link to increase vulnerability to illness (Friedman & David, 2002). Besides, IPV can affect child health outcome through direct violence, injury, and mistreatment of children from fathers who abuse their female partners (Herrenkohl et al., 2008; Christian et al., 1997), or through physical or psychological maternal health outcomes such as stress and depression, suicidal thoughts and infectious diseases including HIV/AIDS (Ellsberg et al., 2008; Sutherland, Bybee, & Sullivan, 1998; Coker et al., 2002; Silverman et al., 2007; Silverman et al., 2008) or through diminishing mother's autonomy, social isolation, and lack of control over financial resources (Ellsberg et al., 2008; Smith & Martin, 1995; Forte et al., 1996), that can prevent proper care of the child.

Within and outside of South Asia, increasing evidence has shown a linkage between high rates of IPV among women (IPV; 18%-66%) (Bates et al., 2004; Bhuiya, Sharmin & Hanifi, 2003; Jain et al., 2004) and poor child health outcomes, such as miscarriage (Silverman et al., 2007; Bair-Merritt, Blackstone, & Feudtner, 2006), child under-nutrition (Ackerson & Subramanian, 2008; Hasselmann & Reichenheim, 2006), and infant and child mortality (Jejeebhoy, 1998; Ahmed, Koenig, & Stephenson, 2006; Leland KA & Subramanian, 2009). However, the literature on consequences of IPV on young children's morbidity pattern is limited, and weaknesses in methodology. Within South Asia a recent investigation in India indicates an association between IPV and childhood asthma (Subramanian, Ackerson, & Subramanyam, 2007). Another study found that young children of Bangladeshi women abused by their husbands were more likely to be at risk of ARI and diarrhea diseases (Silverman et al., 2009). Outside the region of South Asia, a recent study in Uganda supports that the history of women subjected to IPV predicts the risk of diarrhea and overall illness of the infant (Karamagi et al., 2007). However, most of these studies have some methodological weaknesses such as based on community specific small samples or based on husband's report of IPV or measured only the physical type of IPV by using single global question. This lack has limited our understanding of the extent to which childhood morbidity may be affected by the physical and sexual IPV, using the multiple, behaviorally specific questions based on women's report of IPV. Thus, this study, aimed to examine the association of physical and sexual forms of IPV with childhood fever, ARI, and diarrheal morbidity in a nationally representative sample in Bangladesh.

2. Methods

2.1 Data sources

The present study used data from the 2007 Bangladesh Demographic Health Survey (BDHS), conducted by the National Institute for Population Research and Training of the Ministry of Health and Family Welfare of Bangladesh from March 24 to August 11, 2007. The BDHS sample was drawn from Bangladeshi adults residing in private dwellings. A stratified, multistage cluster sample of 361 primary sampling units was constructed (134 in urban areas and 227 in rural areas). The primary sampling units were sourced from a sampling frame created for the 2001 census of Bangladesh, in which they were termed "enumeration areas".

The 2007 BDHS used five questionnaires. Of the 11,178 women deemed eligible to participate in the women's questionnaire on maternal and child health behaviors and outcomes, 10,996 participated (98.4% response rate). One woman from each household was selected at random for the domestic violence module to answer an additional set of questions regarding IPV perpetrated by her husband. Out of 4,489 women eligible to respond to the domestic violence module, only seven had to be excluded due to lack of privacy. An additional 15 women were not interviewed for other reasons. The present analyses included only currently married women aged 15-49 years with at least one singleton child below five years of age living with the respondent (n=1851) (**Figure 1**).

2.2 Outcome measures

To provide an assessment of child morbidity outcomes we analyzed three common childhood illness: diarrhea, ARI and fever, assessed via responses to the BDHS questionnaire given to women. For each child under five years of age, women indicated

whether the child had been ill with fever, experienced an episode of diarrhea, and ill with a cough accompanied by short, rapid breathing in the 2 weeks prior to the survey. A symptom of ARI was defined as report of cough accompanied by short, rapid breathing. Binary variables were created to define diarrhea, ARI and fever, which indicated the presence of each of these outcomes among the children in the past 2 weeks. A binary variable was also created to assess the overall level of illness in the child, which was dichotomized into “0” no illness and “1” as illness (combined fever, ARI and diarrhea).

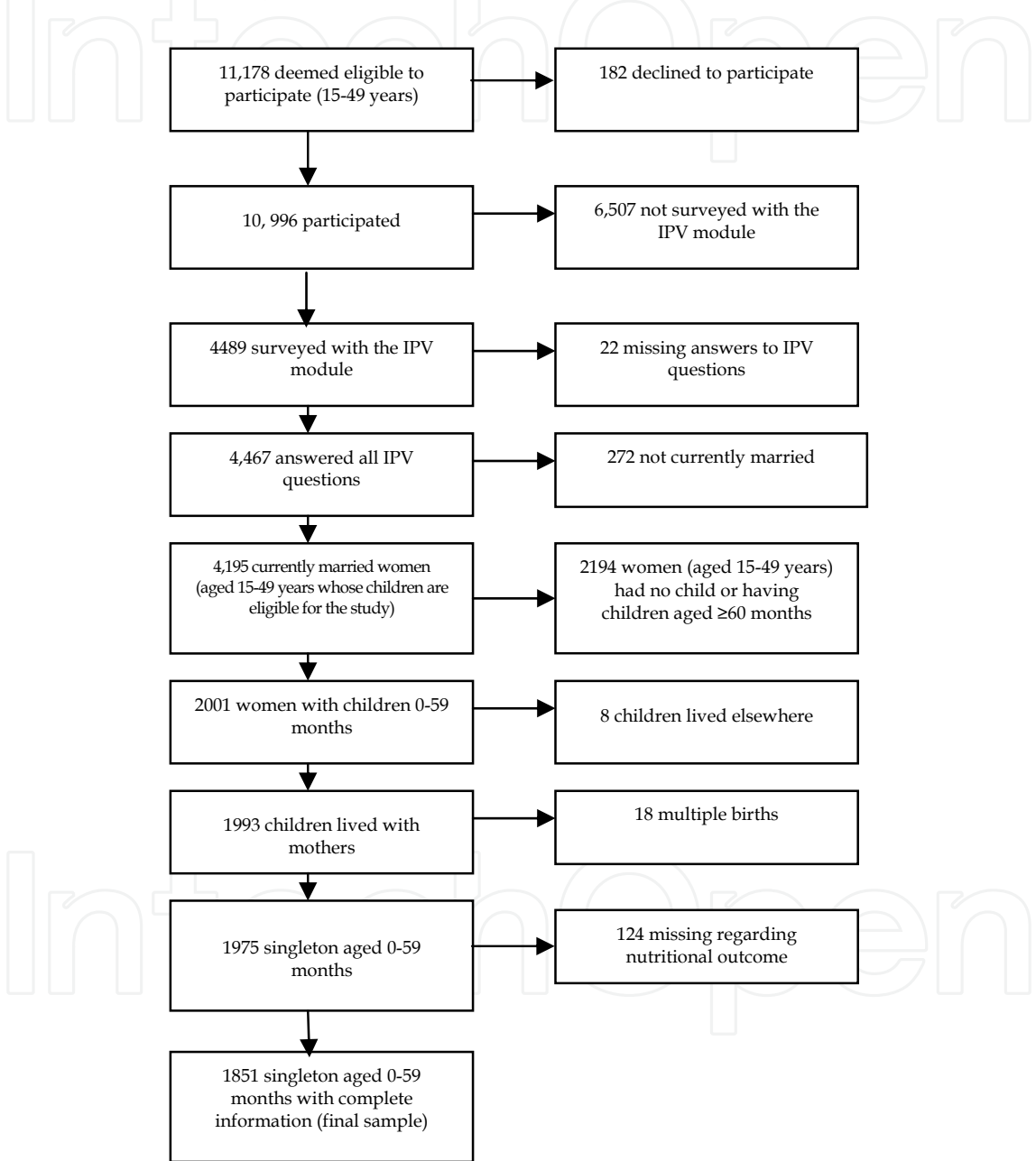


Fig. 1. Selection of sample

2.3 Exposures

Women’s experience of IPV was the main exposure of interest in this study. The BDHS measured IPV using a shortened and modified Conflict Tactics Scale (CTS) (Straus, 1979;

Straus & Gelles, 1990). Perpetration of IPV by the husband in the year prior to the survey was assessed via 8 items included in the survey given to the women. A positive response to any one of the following behaviors indicated the perpetration of physical IPV: (1) pushing, shaking, or throwing an object; (2) slapping; (3) twisting her arm or pulling her hair; (4) punching or hitting with a fist or something harmful; (5) kicking or dragging; (6) choking or burning; or (7) threatening or attacking with a knife or gun. Perpetration of sexual IPV was indicated by a positive response to 'physically forcing her to have sexual intercourse even when she did not want to'. These assessments were recorded to create a four-level categorical variable reflecting the experiences of three categories of IPV: physical IPV only, sexual IPV only, and both physical and sexual IPV. The fourth category was a referent group of no IPV perpetration of either form. We also created a binary variable measuring whether a mother reported any form of IPV (physical, sexual or both); this was termed "any IPV". Though psychological violence is one of the important indicators of all IPV incidents (Leland & Subramanian, 2009) this information was not available in the current study, as it was not collected in the BDHS.

2.4 Covariates

We included several socio-demographic, environmental and nutritional variables theoretically and empirically linked to IPV (Uthman, Lawoko, & Moradi T, 2009; Bates et al., 2004) and common childhood illness (Rayhan, Khan, & Shahidullah, 2007; Daniel et al., 2008; Tomkins, Dunn, & Hayes, 1989; Gasana et al., 2002; Cairncross et al., 2010; Barros et al., 2010). These variables included: maternal age (15-24 years, 25-34 years or 35-49 years), maternal education (no education, primary or secondary and higher), maternal decision making autonomy, mother's occupation (unemployed or agriculture/non-manual or manual), mother's BMI (thin, normal or overweight), residence (rural or urban), household members (2-4, 5-6 or 7+), parity (1, 2 or 3+), wealth index, type of cooking fuel (biomass/charcoal or LPG/natural gas/biogas), child sex (male or female), child's age (0-11 months, 12-23 months, 24-35 months or 36-59 months), initiation of breastfeeding (early or late), and duration of breastfeeding (0-11 months, 12-23 months or ≥ 24 months). We used BDHS wealth index as a proxy indicator for socioeconomic position. The BDHS wealth index was constructed from data on household assets, including ownership of durable goods (such as televisions and bicycles) and dwelling characteristics (such as source of drinking water, sanitation facilities, and construction materials). Principal components analysis was used to assign individual household wealth scores. These weighted values were then summed and rescaled to range from 0 to 1, and each household was assigned to either the poorest, middle, or richest tertials.

2.5 Statistical analyses

We calculated descriptive statistics for socio-demographic, environmental, IPV, nutritional, and morbidity characteristics for our sample. Demographic and socio-economic differences of any physical or sexual IPV perpetration were assessed by χ^2 analyses. The 2-tailed significance level for all analyses was $p < .05$. We created 2 fully adjusted models to analyze the appropriate binary for each morbidity outcome of diarrhea, ARI, fever, and any illness (any vs. no IPV; and the separate effects of physical only, sexual only and both physical and sexual IPV). We entered all covariates simultaneously in the multiple regression models. Adjusted odds ratios (AOR) were estimated to understand the strength of the associations

while 95% confidence intervals (95% CI) were estimated for significance testing. Multicollinearity in the logistic regression analyses was checked by examining the standard errors for the regression coefficients. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity among the independent variables (Chan, 2004). In this study, all of the independent variables in the two models for each nutritional outcome had a standard error <0.90 indicating an absence of multicollinearity. Stata, version 9.0 (Stata Corp., College Station, TX, USA) with survey commands was used to account for stratification, clustered sampling, and weighing provided by the BDHS to reproduce the national population.

2.6 Ethical considerations

Data collection procedures for the BDHS were approved by the ORC Macro Institutional Review Board. Several specific protections based on WHO's ethical and safety recommendations for research on domestic violence were built into the 2007 BDHS (Straus, 1979; WHO, 2001). For the domestic violence section, respondents were read an additional statement informing them that the questions to follow could be sensitive and reassuring them of the confidentiality of their responses (NIPORT, 2009). Interviews were conducted under the most private conditions afforded by the environments encountered. If privacy could not be ensured, the interviewer was instructed to skip the module.

3. Results

3.1 Descriptive statistics

Nearly half of the women (49.1%) were 15-24 years old, 29.2% were uneducated, and 78.5% lived in rural areas (**Table 1**). About 11% of the respondents had no decision-making autonomy. Regarding nutritional status, 60.3% women were considered to have normal BMI; 32.0% were undernourished or thin (BMI less than 18.5); and 7.5% were overweight or obese (BMI 25 or higher). From the total sample population, 69.9% of children were below three years of age, nearly half were female and 42.8% of the children were breastfed for 24 months or more, and only 8.8% used LPG/natural gas/biogas as cooking fuel.

The prevalence of underweight, stunting, and wasting was 40.8%, 42.0%, and 19.0% respectively, while the prevalence of diarrhea, fever, and ARI was 10.1%, 38.7%, and 13.3% respectively. Overall, 45.6% children were suffering from any type of illness (diarrhea or ARI or fever) two weeks before the survey. Substantial numbers of mothers (29.0%) reported that they had suffered any IPV in the year prior to the survey; 15.5% of mothers indicated that they had experienced only physical IPV, 6.2% indicated that they had experienced only sexual IPV, and 7.3% indicated that they had experienced both types of IPV (**Table 1**).

In bivariate analysis, several significant differences were observed in the prevalence of IPV perpetration across various socio-demographic groups (**Table 2**). Specifically, significantly a higher prevalence of perpetration of any form of IPV, physical IPV only and both physical and sexual IPV was identified among younger women (aged 15-24 years) and women who used LPG/natural gas/biogas as cooking fuel compared with older women and women used Biomass/charcoal as cooking fuel. Regarding educational status, significantly a higher prevalence of any form of IPV and past-year perpetration of both physical and sexual IPV was identified among women having no education. Significantly a higher prevalence of any form of IPV and past-year perpetration of both physical and sexual IPV was also identified among women having children suffering from any types of recent illness.

Characteristics	n*	% (95% CI)†
Maternal age		
15-24 y	816	49.0 (46.2-51.9)
25-34 y	840	41.2 (38.5-44.1)
35-49 y	195	9.7 (8.2-11.4)
Maternal education		
No education	565	29.2 (26.7-31.9)
Primary	511	27.0 (24.6-29.6)
Secondary and higher	775	43.8 (41.0-46.6)
Maternal decision making autonomy (aspects)*		
0	223	11.0 (9.-13.0)
1	126	6.9 (5.5-8.4)
2	199	11.8 (9.9-14.1)
3	272	15.1 (12.9-17.4)
4	308	16.3 (14.4-18.5)
5	721	38.9 (36.0-41.9)
Missing data	2	
Mother's BMI		
Thin (BMI<18.5)	591	32.0 (29.3-34.9)
Normal (BMI 18.5-24.9)	1088	60.4 (57.7-63.2)
Overweight/obese (BMI≥25)	167	7.6 (6.2-9.8)
Missing data	5	
Residence		
Rural	1200	78.5 (76.3-80.6)
Urban	651	21.5 (19.4-23.7)
Household members (tertiles)		
2-4	627	30.4 (27.8-33.1)
5-6	716	36.6 (33.8-39.6)
7+	508	33.0 (30.1-35.9)
Parity		
1	546	33.7 (30.9-36.6)
2	556	28.7 (26.4-31.3)
3+	749	37.5 (35.1-40.1)
Occupation of respondents		
Unemployed	1322	69.6 (66.9-72.3)
Agriculture/non-manual labor	369	22.7 (20.4-25.2)
Manual works	157	7.7 (6.2-9.1)
Missing data	3	
Type of cooking fuel		
Biomass/charcoal	1621	91.2 (89.9-92.7)
LPG/natural gas/biogas	224	8.8 (7.3-10.6)
Missing data	6	
Wealth index		
Poor	812	46.0 (43.1-49.0)
Middle	317	16.7 (14.8-18.8)
Rich	722	37.3 (34.4-40.2)

Characteristics	n*	% (95% CI)†
Child age		
0-11 m	440	24.5 (22.1-27.1)
12-23 m	436	24.4 (22.0-26.9)
24-35 m	394	21.0 (18.9-23.3)
36-59 m	581	30.1 (27.6-32.8)
Child sex		
Female	931	49.9 (47.0-52.8)
Male	920	50.1 (47.2-53.0)
Initiation of breastfeeding‡		
Early	635	34.2 (31.6-36.8)
Late	1212	65.8 (63.2-68.4)
Missing data	4	
Duration of breastfeeding		
0-11 m	497	27.7 (25.2-30.2)
12-23 m	528	29.5 (27.0-32.2)
≥24 m	824	42.8 (40.2-45.5)
Missing data	2	
Diarrhea in the past 2 weeks		
No	1665	89.9 (88.2-91.4)
Yes	195	10.1 (8.6-11.8)
Fever in the past 2 weeks		
No	1140	61.3 (58.4-64.2)
Yes	711	38.7 (35.8-41.6)
Symptoms of ARI		
No	592	86.7 (84.6-88.4)
Yes	259	13.3 (11.6-15.4)
Any illness		
No	1007	54.4 (51.3-57.3)
Yes	844	45.6 (42.7-48.9)
Stunting		
No	1081	58.0 (55.4-61.1)
Yes	770	42.0 (38.8-44.5)
Underweight		
No	1099	59.2 (56.3-62.2)
Yes	752	40.8 (38.0-43.7)
Wasting		
No	1504	81.0 (78.4-83.3)
Yes	347	19.0 (16.7-21.6)
Any physical or sexual IPV		
No	1290	71.0 (68.4-73.4)
Yes	559	29.0 (26.6-31.6)
Missing data	2	
Types of IPV		
None	1290	71.0 (68.4-73.4)
Physical only	315	15.5 (13.6-17.6)
Sexual only	106	6.2 (5.0-7.8)
Both physical and sexual	138	7.3 (5.9-8.9)
Missing data	2	

† Unweighted n’s and † weighted percentages (% , 95% CI) presented
* Number of decisions in which women could participate: alone or jointly with husband/ partner or other person
‡ Early: initiation of breastfeeding within one hour of birth

Table 1. Socio-demographic, Nutritional, and IPV Characteristics of Currently Married Mothers of Under-five Children (n=1851)

Across wealth categories, wealthier married women were less likely to report past-year perpetration of any form of IPV, physical IPV alone, sexual IPV alone, and past-year perpetration of both physical and sexual IPV. Significantly, a higher prevalence of any form of IPV and physical IPV alone was observed among women considered to have thin BMI and mothers with household’s member size 2-4. In addition, lower proportion of experiencing any form of IPV and sexual IPV alone was observed among unemployed women. A higher prevalence of perpetration of any form of IPV in the past year was identified among women having five aspects of decision-making autonomy, but these differences were not significant for the three mutually exclusive categories of violence assessed (**Table 2**).

Characteristics	Any form of IPV % (95% CI)	Physical IPV only % (95% CI)	Sexual IPV only % (95% CI)	Both physical and sexual % (95% CI)
Maternal age				
15-24 y	33.8 (29.7-38.1)	18.0 (14.9-21.6)	6.9 (4.9-9.7)	8.9 (6.6-11.8)
25-34 y	24.6 (21.5-27.9)	14.0 (11.5-16.9)	5.6 (4.0-7.6)	5.1 (3.6-7.9)
35-49 y	24.1 (17.6-31.9)	9.5 (5.9-15.0)	5.8 (2.7-12.0)	8.7 (5.1-14.6)
p value	0.001	0.018	0.652	0.031
Maternal education				
No education	34.8 (30.5-39.4)	18.4 (15.1-22.2)	6.8 (4.6-9.9)	9.6 (6.9-13.2)
Primary	28.1 (23.5-33.2)	15.2 (11.6-19.7)	5.1 (3.2-8.1)	7.7 (5.3-11.2)
Secondary and higher	25.8 (22.0-30.0)	13.8 (11.0-17.1)	6.6 (4.6-9.4)	5.4 (3.6-8.1)
p value	0.014	0.17	0.635	0.048
Maternal decision making autonomy (aspects)				
0	29.9 (22.6-38.5)	13.8 (8.6-21.3)	8.0 (4.1-15.0)	8.1 (4.7-13.7)
1	38.9 (28.7-50.2)	17.8 (10.9-27.7)	11.7 (6.4-20.7)	9.4 (4.2-19.7)
2	28.0 (20.4-37.1)	16.7 (10.5-25.6)	2.9 (12.9-6.5)	8.3 (4.4-15.1)
3	31.2 (24.5-38.7)	15.6 (11.3-21.1)	6.4 (3.6-11.1)	9.1 (5.4-14.9)
4	34.6 (28.7-41.2)	18.9 (14.6-24.0)	8.3 (4.8-14.1)	7.5 (4.4-12.3)
5	24.2 (20.8-28.1)	13.8 (11.2-16.9)	4.9 (3.2-7.3)	5.6 (3.9-7.9)
p value	0.038	0.617	0.081	0.621
Mother’s BMI				
Thin (BMI<18.5)	33.4 (29.1-37.9)	18.5 (15.4-22.0)	7.6 (5.3-10.7)	7.3 (5.2-10.2)
Normal (BMI 18.5-24.9)	28.5 (25.1-32.2)	14.9 (12.3-17.9)	5.8 (4.2-7.9)	7.9 (6.0-10.3)
Overweight/obese (BMI≥25)	15.1 (9.5-23.2)	8.4 (4.4-15.3)	4.7 (1.8-11.6)	2.1 (0.9-4.8)
p value	0.002	0.030	0.421	0.062
Residence				
Rural	30.1 (27.4-33.0)	16.0 (13.8-18.4)	6.7 (5.2-8.7)	7.4 (5.8-9.4)
Urban	25.1 (21.0-29.6)	13.8 (11.0-17.3)	4.4 (2.9-6.8)	6.8 (4.6-9.9)
p value	0.050	0.266	0.104	0.701
Household members (tertiles)				
2-4	36.7 (31.9-41.8)	23.1 (19.1-27.5)	4.9 (3.2-7.5)	8.7 (6.3-12.0)
5-6	28.3 (24.5-32.3)	15.1 (12.4-18.4)	5.7 (4.0-8.0)	7.4 (5.3-10.4)
7+	22.8 (18.3-27.9)	8.9 (6.4-12.4)	8.0 (5.3-12.1)	5.8 (3.6-9.1)
p value	<0.001	<0.001	0.208	0.336
Parity				
1	32.2 (27.3-37.6)	17.8 (14.0-22.4)	6.6 (4.2-10.3)	7.9 (5.6-10.9)
2	28.9 (24.6-33.6)	15.2 (12.0-19.1)	5.7 (3.8-8.5)	7.8 (5.1-11.6)
3+	26.3 (22.8-30.1)	13.6 (11.1-16.7)	6.3 (4.5-8.8)	6.4 (4.6-8.8)
p value	0.169	0.235	0.885	0.642
Occupation of respondents				
Unemployed	26.8 (24.1-29.7)	15.1 (12.8-17.7)	4.5 (3.2-6.2)	7.3 (5.7-9.2)
Agriculture/non-manual labor	35.8 (29.9-42.3)	18.6 (14.5-23.5)	9.7 (6.6-14.1)	7.5 (4.5-12.1)
Manual works	28.4 (20.1-37.9)	10.4 (6.6-15.8)	11.4 (6.4-19.7)	6.7 (2.3-14.6)
p value	0.018	0.083	0.001	0.970

Characteristics	Any form of IPV % (95% CI)	Physical IPV only % (95% CI)	Sexual IPV only % (95% CI)	Both physical and sexual % (95% CI)
Wealth index				
Poor	35.6 (31.9-39.5)	18.5 (15.8-21.5)	7.8 (5.9-10.4)	9.3 (7.0-12.2)
Middle	27.4 (22.1-33.4)	15.6 (11.6-20.7)	4.1 (2.2-7.8)	7.6 (4.7-12.3)
Rich	21.7 (17.9-26.1)	11.8 (9.1-15.3)	5.2 (3.3-8.1)	4.6 (2.9-7.2)
p value	<0.001	0.007	0.049	0.025
Type of cooking fuel				
Biomass/charcoal	30.8 (28.0-33.6)	17.3 (15.1-19.7)	5.2 (4.6-6.7)	8.3 (6.7-10.2)
LPG/natural gas/biogas	15.0 (9.7-22.5)	7.9 (4.8-12.7)	6.5 (2.9-14.2)	0.57 (0.08-3.9)
p value	<0.001	0.001	0.589	<0.001
Child sex				
Female	26.9 (23.7-30.4)	14.7 (12.2-17.7)	5.5 (3.9-7.7)	6.7 (5.0-9.0)
Male	31.1 (27.5-35.0)	16.3 (13.4-19.6)	7.0 (5.1-9.4)	7.8 (5.8-10.6)
p value	0.105	0.478	0.303	0.485
Child age				
0-11 m	27.3 (22.3-33.0)	13.4 (10.3-17.2)	8.0 (5.0-12.5)	6.0 (3.7-9.4)
12-23 m	33.6 (28.3-39.4)	18.1 (14.1-22.9)	6.7 (4.1-10.8)	8.8 (5.7-13.4)
24-35 m	26.6 (21.8-32.1)	17.8 (13.8-22.7)	3.2 (1.7-6.0)	5.6 (3.7-8.4)
36-49 m	28.4 (23.8-33.6)	13.6 (10.3-17.7)	6.6 (4.7-9.2)	8.2 (5.8-11.5)
p value	0.274	0.177	0.162	0.333
Initiation of breastfeeding				
Early	28.6 (25.6-31.7)	15.8 (12.5-19.7)	7.1 (5.1-9.8)	7.1 (5.0-9.9)
Late	30.0 (25.9-34.4)	15.3 (13.1-17.8)	5.8 (4.3-7.8)	7.4 (5.7-9.6)
p value	0.594	0.833	0.348	0.816
Duration of breastfeeding				
0-11 m	26.2 (21.6-31.5)	12.8 (9.9-16.3)	7.4 (4.7-11.5)	6.1 (3.9-9.4)
12-23 m	30.9 (26.2-36.0)	16.6 (13.2-20.7)	5.4 (3.3-8.7)	8.9 (6.1-12.7)
≥24 m	29.3 (25.5-33.4)	16.6 (13.6-20.1)	5.8 (4.3-7.9)	6.9 (5.0-9.5)
p value	0.429	0.227	0.579	0.398
Total	29.0 (26.6-31.6)	15.5 (13.6-17.6)	6.2 (5.0-7.8)	7.3 (5.9-8.9)

Table 2. Descriptive Statistics According to Different Forms of IPV of Currently Married Mothers of Under-five Children (n=1851)

4. Association between IPV and child morbidity

4.1 IPV and diarrheal morbidity

Maternal experience of any physical or sexual IPV (AOR: 1.50; 95% CI: 1.04–2.27) was associated childhood diarrheal morbidity; as were physical IPV only (AOR: 1.35; 95% CI: 1.01–2.30) and both physical and sexual IPV (AOR: 2.38; 95% CI: 1.32-4.31) (Table 3).

4.2 IPV and symptoms of ARI

Maternal experience of any physical or sexual IPV (AOR: 1.46; 95% CI: 1.02–2.12) was associated with ARI morbidity; as were physical IPV only (AOR: 1.72; 95% CI: 1.13-2.64) and both physical and sexual IPV (AOR: 1.83; 95% CI: 1.03-3.37) (Table 3).

4.3 IPV and childhood fever

Maternal experience of any physical or sexual IPV (AOR: 1.30; 95% CI: 1.00–1.72) and both physical and sexual IPV (AOR: 1.90; 95% CI: 1.19-3.03) were associated with fever among children (Table 3).

4.4 IPV and any childhood illness

Maternal experience of any physical or sexual IPV (AOR: 1.38; 95% CI: 1.05–1.80) and both physical and sexual IPV (AOR: 2.21; 95% CI: 1.37-3.60) were associated with any illness among children (Table 3).

Measure of Maternal IPV	AOR (95% CI)			
	Diarrhea	ARI	Fever	Any illness
Types of IPV				
None (reference)	1.00	1.00	1.00	1.00
Any physical or sexual	1.50 (1.04-2.27)	1.46 (1.02-2.12)	1.30 (1.00-1.72)	1.38 (1.05-1.80)
Physical only	1.35 (1.01-2.30)	1.72 (1.13-2.64)	1.21 (0.87-1.68)	1.28 (0.93-1.77)
Sexual only	0.97 (0.43-2.20)	0.59 (0.28-1.25)	1.00 (0.57-1.76)	0.97 (0.56-1.66)
Both physical and sexual violence	2.38 (1.32-4.31)	1.83 (1.03-3.37)	1.90 (1.19-3.03)	2.21 (1.37-3.60)

Models were adjusted for maternal age, maternal education, maternal decision making autonomy, mother’s occupation, mother’s BMI, parity, residence, household members, child sex, child age, initiation of breastfeeding, duration of breastfeeding,, types of cooking fuel, stunting, underweight, wasting, and wealth index.

Table 3. Adjusted ORs and 95% CIs for Associations between Different Aspects of Maternal IPV and Morbidity Status for Children Under-five Years (n=1851)

5. Discussion

The findings of this study revealed that approximately one-third (29.0%) of currently married Bangladeshi women with children below the age of five years experienced any form of physical or sexual IPV in the past year. In Bangladesh, maternal experience of any physical or sexual IPV was associated with increased risk of diarrhea, ARI, fever, and any illness in children aged younger than five years. The findings of an increased risk of childhood diarrhea and ARI of abused women was in accordance with previous reports in Bangladesh (Silverman et al., 2009) of an association between physical or sexual partner violence and diarrhea and ARI of the child. Other study outside South Asia (Karamagi et al., 2007) found mixed evidence for an association between maternal lifetime IPV and common childhood illness. The current research expands on these previous two studies by using a large national sample from Bangladesh and added information on the association between maternal physical or sexual IPV and all common childhood illness. Another important new finding was that a combination of both physical and sexual IPV appeared to have more profound consequences on the outcome measured. Previous studies found that experienced of both physical and sexual IPV are stronger predictors of long-term negative physical and mental health outcomes of mothers (Ferri et al., 2007; Peter, 2004; Cripe et al., 2008; Bizu et al., 2010). Its impact on mental health can be as serious as its physical impact, and may be equally long lasting. Evidence has shown that such negative

physical and mental health outcomes reduce a mother's ability to cope with the everyday needs of a small child and diminish the quality of different care-giving behaviors; this in turn leads to the negative health consequences for her children (Marie, Carol, & Armar-Klemesu, 1999; Stewart, 2007). Our results, therefore, indicate that the prevention of both physical and sexual violence from husbands is important for the improvement of childhood morbidity status in Bangladesh.

Currently identified associations of any physical or sexual IPV with all common childhood illness provide a critical context for the elevated rates of infant and early childhood deaths demonstrated in prior work (Jejeebhoy, 1998; Ahmed, Koenig, Stephenson, 2006; Leland & Subramanian, 2009) among women who experience IPV (i.e., the currently documented increased rates of diarrhea, ARI and fever likely relate to increased risk of child death).

Some limitations should be considered when interpreting our findings. First, the current analyses are cross-sectional and, thus, do not allow for assessment of the chronology of the associated events or inferences regarding causality. Longitudinal research regarding the relations of IPV to childhood morbidity outcomes is needed to provide clarity regarding these concerns. Second, though psychological violence is an important fact of IPV (Leland & Subramanian, 2009), this information was not available in the current study. Finally, the possibility of underreporting must also be considered; because IPV is by nature a private phenomenon and one that is often stigmatized, women may be reluctant to reveal their abuse status. However, the personal interview method used in this study is widely used for this type of IPV research (Fried et al., 2006). In addition, to ascertain physical and sexual IPV, this study used multiple, behaviorally-specific questions, which are considered the best, methodologically, for eliciting correct responses (Leland & Subramanian, 2009; Straus, 1979). Moreover, according to the BDHS interviewers were provided training for implementing the domestic violence module based on a training manual specially developed to enable the field staff to collect violence data in a secure, confidential, and ethical manner, in order to create a safe atmosphere in which respondents would feel comfortable discussing this issue (NIPORT, 2009). In addition, the domestic violence module was administered at the end of the interview, so that both interviewers and respondents become well acquainted with each other by the time they reach the section on domestic violence.

6. Conclusion

In conclusion any physical or sexual IPV was associated with the increased risk of all common childhood illness namely, diarrhea, ARI and fever among children below five years of age in Bangladesh. In interventions aimed at improving child morbidity status, efforts are needed to protect women from the physical and sexual violence of their husbands. These findings may be relevant in other resource-limited settings as well where the prevalence of child morbidity is high and may be of interest to clinicians when assessing children with different problems related to morbidity status. Future longitudinal studies, however, are needed for assessment of the chronology of the associated child morbidity or inferences regard.

7. Financial disclosure

The authors have indicated they have no financial relationships relevant to this article to disclose.

8. Conflict of interest

None

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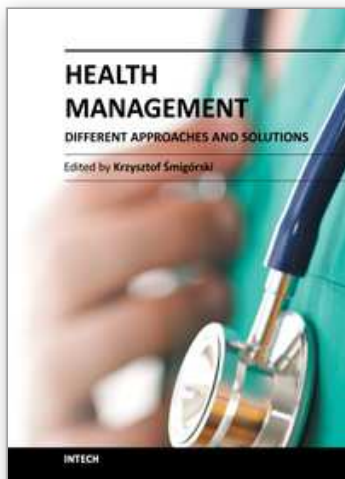
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