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Associations of Intimate Partner Violence with Unintended Pregnancy and Pre-Pregnancy Contraceptive Use in South Asia

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Abstract

Objective—To assess associations of intimate partner violence (IPV) with pregnancy intendedness and pre-pregnancy contraceptive use among pregnant women in South Asia.

Study Design—Cross-sectional analyses were conducted using most recent Demographic and Health Surveys (DHS) from Bangladesh, India and Nepal for married, pregnant women aged 15–49 years who responded to IPV assessments specific to current marriage (N=4738). Adjusted logistic and multinomial regression analyses were conducted with pooled data to assess associations of IPV ever (sexual only, physical only, sexual plus physical, none) with the outcomes of pregnancy intendedness (wanted, mistimed or unwanted) and pre-pregnancy contraceptive use (no, traditional, or modern), for the current pregnancy.

Results—IPV was not associated with a mistimed or unwanted pregnancy. Sexual IPV was associated with pre-pregnancy modern contraceptive use (aOR=2.32, 95% CI=1.24, 4.36); sexual plus physical IPV was associated with pre-pregnancy traditional contraceptive use (aOR=1.85, 95% CI=1.12, 3.07). Post-hoc analysis of reasons for pre-pregnancy contraceptive discontinuation revealed that women with a history of IPV, particularly sexual IPV, had higher prevalence of contraceptive failure (sexual only: 37.3%, sexual plus physical: 30.9%, physical only: 22.6%, no IPV: 13.6%).

Conclusion—Pregnant women who experienced sexual IPV from husbands were more likely to use contraceptives pre-pregnancy but had no reduced risk unintended pregnancy, possibly due to higher rates of pre-pregnancy contraceptive failure among those with this history. These findings

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suggest that victims of sexual IPV are able to acquire and use family planning services, but require more support to sustain effective contraceptive use.

Implications—Family planning services are reaching women affected by sexual IPV, and programs should be sensitive to this concern and the heightened vulnerability to contraceptive failure these women face. Long-acting reversible contraception could be beneficial by allowing women to have greater reproductive control in situations of compromised sexual autonomy.

Keywords

intimate partner violence; unintended pregnancy; contraceptive use; South Asia

Introduction

South Asia, which includes the sub-Himalayan and neighboring nations of Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka, has among the highest rates of intimate partner violence (IPV) in the world, with one in three women reporting sexual and/or physical IPV, predominantly from a husband [1]. Studies from the region also document that such IPV is associated with increased risk for unintended pregnancy [2–7], which in turn compromises maternal, infant and child health [8]. Much of this work is cross-sectional, limiting assumptions of causality. Nonetheless, it is presumed that poorer reproductive control among women contending with IPV impedes pregnancy prevention in the form of contraceptive use, thereby increasing risk for unintended pregnancy [1, 7, 9]. Studies from diverse regions have found that women reporting IPV are less likely to use contraception, supporting this hypothesis [2, 6, 7, 9, 10, 11]. However, there is conflicting evidence on this point, with recent research from South Asia indicating that IPV is associated with greater likelihood of contraceptive use [12, 13]. Little research has quantitatively examined how IPV affects contraception and *subsequent* unwanted pregnancy; such work would help support considerations of causality.

The purpose of this study is to assess associations of IPV with pregnancy intendedness and pre-pregnancy contraception, specific to the current pregnancy, among a representative sample of pregnant women from South Asian nations with population-level data available on the issue: Bangladesh, India and Nepal. These three countries of focus all have public health systems that include reproductive health and family planning services, as well as free contraceptives; legal access to safe abortion is also available. Contraceptive prevalence is comparable across the three countries, with only approximately half of the women of childbearing age in Bangladesh (52%), India (49%), and Nepal (43%) reporting modern contraceptive use; the majority of these contraceptors used public health services to acquire their contraceptives, at no or low cost [14–16]. Findings from this work can help clarify prior conflicting research on this topic in the context of South Asia, and guide family planning programs on approaches that attend to IPV.

Methods

Sample

This study uses data from the Demographic and Health Surveys, which are nationally representative household surveys assessing various measures of population health and nutrition. Data were limited to the most recent standard DHS from countries in South Asia that included a domestic violence module assessing both physical and sexual violence, and was thus inclusive of Bangladesh (2007) [14], India (2005–06) [15] and Nepal (2011) [16]. Pakistan's 2012–13 DHS [17] could not be used as it did not collect data on sexual partner violence. Eligible women response rates were above 94% in all three surveys [14–16]. The sample was further restricted to currently married women who were pregnant at the time of survey, had completed the domestic violence module, and had responses for all dependent and independent variables (n=4,738).

Measures

The primary dependent variables were intendedness of current pregnancy and pre-pregnancy contraceptive use, specific to the current pregnancy. Intendedness of current pregnancy was categorized as wanted (intended at current time) vs. mistimed (wanted later) vs. unwanted (not wanted at all). Pre-pregnancy contraceptive use, derived from the reproductive calendar, was defined as the use of modern contraceptives (pill, IUD, injections, diaphragm, condom, implant, female condom, foam/jelly), traditional contraception (lactational amenorrhea, periodic abstinence, withdrawal, abstinence or other traditional methods) or no contraception. Usage had to be prior to the most recent pregnancy and subsequent to the penultimate pregnancy, or 5 years before to the interview, whichever window was shorter. Modern pre-pregnancy contraception was also broken down by method for descriptive analyses using data from India and Nepal; these data were not available for Bangladesh.

The primary independent variable was ever having experienced sexual and/or physical IPV in current marital relationship (sexual only/physical only/sexual plus physical/none). Sexual IPV was defined as having ever been physically forced to have sex or to perform sexual acts against one's will (2 items, summated and dichotomized as yes/no). Physical IPV was defined as having ever been pushed, shaken or had something thrown at you, slapped, had one's arm twisted or hair pulled, punched, kicked, dragged or beaten up, choked or burned, or threatened with a weapon (6 items, summated and dichotomized as yes/no). Sexual and physical IPV variables were then used to create the outcome variable as a combination score.

Covariates included: number of living children (0/1/2/3 or more), months elapsed since the commencement of the index pregnancy, age at interview (15–19/20–24/25–29/30–49), education and spousal education (none/primary/secondary or higher), age at marriage (<15/15–17/ 18), relationship to household head (head/wife/daughter/daughter-in-law/ other), household wealth quintile and urban/rural residence. Household wealth quintile is a relative measure computed based on a principal components analysis of household assets and housing characteristics [18].

Data Analysis

Descriptive frequencies were calculated for all covariates. Unadjusted and adjusted logistic regressions were modeled for each dependent variable. All models included country fixed effects. Adjusted models also included all variables that were significant at $p < 0.20$ in unadjusted regressions, as well as contraception for the unintended pregnancy model. No multicollinearity was detected in the final model using a tolerance cutoff of 0.30. All analyses accounted for complex survey design and were weighted using denormalized individual weights to account for variation in country size. Analyses were conducted using SAS 9.3. An exploratory analysis of the reasons for contraceptive discontinuation was conducted among women who provided these data in India and Nepal ($n=1,032$); Bangladesh did not collect this information.

Results

One-fourth (24.6%) of women reported a history of only physical IPV; 2.8% reported a history of only sexual IPV, and 8.6% of women reported both sexual and physical IPV. (Table 1.) One-fourth (25.7%) reported their current pregnancy as unintended; 15.8% reported wanting the pregnancy later, and 9.9% reported not wanting the pregnancy at all. Most participants (76.0%) reported no contraceptive use prior to their current pregnancy; 16.8% reported a modern method, and 7.2% reported a traditional method. Pill and condom were the most common forms of modern contraception reported (8.5% and 7.4%, respectively).

History of sexual and/or physical IPV from spouse were not associated with mistimed or unwanted pregnancy in adjusted analyses. Pre-pregnancy modern contraceptive use, however, was positively associated with both mistimed pregnancy (aOR=1.42, 95% CI=1.01, 2.00) and unwanted pregnancy (aOR=2.20, 95% CI=1.48, 3.26) in adjusted analyses (Table 2). Additional covariates associated with mistimed pregnancy were: greater number of children, younger age, secondary or higher relative to no education, older age at marriage, and having an “other” position in the household (e.g., not being head of household, or wife, daughter or daughter-in-law of head of household). Additional covariates associated with unwanted pregnancy were: greater number of children, education, and having a household role of head, wife of head or “other” (relative to being the daughter in law of the household).

Relative to women reporting no IPV, women with a history of sexual IPV alone (no physical IPV) were more likely to report use of pre-pregnancy modern contraceptive use (aOR=2.32, 95% CI=1.24, 4.36), and those reporting sexual plus physical IPV were more likely to report use of pre-pregnancy traditional contraceptive use (aOR=1.85, 95% CI=1.12, 3.07) (Table 3). Covariates associated with modern relative to no contraceptive use included having more children and more education, being the daughter rather than the daughter-in-law of the household, and being in the richest wealth quintile. Covariates associated with traditional relative to no contraceptive use included having more children, younger gestational age but older maternal age at interview, and having secondary or greater education level.

To understand why pre-pregnancy modern contraception was more likely in cases of sexual IPV alone (i.e., absent physical IPV) and unintended (mistimed and unwanted) pregnancy, we conducted a descriptive analysis of reasons for discontinuation of modern contraception prior to current pregnancy among participants from India and Nepal (n=1032), where such data were available. Analyses were conducted for the total subsample, as well as by IPV and pregnancy intendedness categories. For the total subsample of contraceptors, most (61.9%) discontinued contraception prior to the current pregnancy due to a desire to become pregnant; 18.1% reported method failure, and 11.9% reported concerns with methods (e.g., side effects, inconvenience). (Table 4.) Only 4.2% reported husband disapproval as the reason for discontinuation. Analysis of IPV revealed that those who reported sexual IPV, alone or with physical IPV, were more likely to report contraceptive failure than those reporting no IPV (37.3% and 30.9%, respectively versus 13.6%); overlapping confidence intervals suggest a trend rather than significant differences in these prevalence estimates. Analysis of pregnancy intendedness revealed that those reporting their current pregnancy as mistimed or unwanted were significantly (based on non-overlapping confidence intervals) more likely to report contraceptive failure than did those reporting a wanted pregnancy (39.6% and 40.3%, respectively, versus 7.9%).

Discussion

Current findings suggest that for these South Asian nations of focus: Bangladesh, India and Nepal, more than one in four pregnancies is unintended, comprised of 16% mistimed and 10% unwanted pregnancies. While this is less than the global estimate of 41% of pregnancies being unintended [19, 20], it is still far higher than desirable, and may contribute to ongoing high rates of maternal and child health concerns in the region [7, 8]. Contrary to prior research [2–6, 10], however, this study found that IPV does not increase women's risk for unintended pregnancy. Crude findings of the current study indicate associations between physical IPV (alone and with sexual IPV) and unintended pregnancy, but these results were lost after accounting for covariates such as higher parity, which is also associated with IPV [7, 9, 21]. Assessment of intendedness of current pregnancy may have contributed to the different findings for our study; prior research focused on ever having had an unintended pregnancy [2–6, 10] whereas this study is specific to current pregnancy. Notably, modern contraceptive use prior to the current pregnancy was associated with greater likelihood of current pregnancy being unintended, possibly because 38% of the pre-pregnancy contraceptors reported problems or concerns with their contraception. Similar results have been seen in the United States, where inconsistent and incorrect use of contraception accounts for 43% of unintended pregnancies [22].

While physical and/or sexual IPV were not associated with unintended pregnancy, sexual IPV alone was associated with increased likelihood of pre-pregnancy modern contraceptive use, and sexual plus physical IPV was associated with increased likelihood of pre-pregnancy traditional contraceptive use. Heightened use of contraceptives among women reporting sexual IPV may be due to their attempts to establish reproductive control in the absence of sexual autonomy. Further research is needed to understand why there are differential associations between sexual IPV and the type of contraceptives used based on whether physical IPV is also occurring.

Findings also document that higher rates of pre-pregnancy contraceptive use among sexual IPV-affected women do not garner them greater protection against unintended pregnancy, perhaps due to their higher rates of contraceptive failure. Pill and condom are the most commonly used forms of modern contraception in the region, and they are more easily disrupted than the less frequently used IUD and injection methods. Longer-term contraception, such as IUDs, may be more useful for women contending with sexual IPV from husbands. Prior research documents lower likelihood of condoms and greater likelihood of sabotage of oral contraceptive pill intake among abused women [3, 23]; this reinforces the need for supporting use of long-acting reversible contraceptives (LARC) that are not under male control. A recent study from the United States demonstrates that while discontinuation of contraception is more likely for women with a history of violence, effect of abuse history on LARC methods is less than that seen on non-long-acting methods [24]. Very low use of LARC methods in this sample suggests that greater awareness and availability of these methods are likely needed.

While current findings expand our understanding of whether IPV affects contraception and subsequent unintended pregnancy, they must be considered in light of certain important limitations. Findings are based on use of only three countries in South Asia, limiting generalizability of findings regionally and globally, though representative data sets were used from three of the largest nations in the region. Measures of IPV were limited to those collected across assessed countries, and therefore omitted other important aspects of partner violence, including emotional abuse which has also been linked to unintended pregnancy [25]. Data utilized were the most recent data available that included IPV data for the three countries, but they were not collected within the same timeframe. In addition, data were pooled and results of these pooled analyses may not be consistent with findings based on analyses limited to individual nations included in the current study. Further, disproportionate representation of India in the pooled data set may skew data toward findings specific to India; analyses were weighted to account for variation in country size. Pooled regional analysis was required to explore effects that may be insufficiently powered for analysis at the country-level, particularly those for sexual IPV. These data are based on self-report and are thus susceptible to social desirability and recall bias. Analyses are cross-sectional in nature; thus, causal relationships between variables cannot be inferred, though use of chronological data regarding pre-pregnancy contraceptive use and current intendedness of pregnancy offers some insight.

Conclusion

The current study documents that marital sexual IPV absent physical IPV is not uncommon and is associated with increased likelihood of modern contraceptive use prior to pregnancy in South Asia, possibly as a means of reproductive control in the absence of sexual autonomy. However, such use does not reduce risk for subsequent unintended pregnancy among sexual IPV-affected women, possibly due to the higher rates of contraceptive failure for these women. Findings highlight the need for further research on vulnerabilities for contraceptive failure among women with a history of IPV as well as the need for more tailored family planning support for women contending with IPV, particularly sexual IPV.

Data suggesting growing rates of sexual violence in the region reinforce the need for such an approach [26].

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Table 1
Descriptive characteristics of currently pregnant women in Bangladesh (2007), India (2005–06) and Nepal (2011) (n=4,738).

	Total		Current pregnancy wanted		Current pregnancy mistimed		Current pregnancy unwanted	
	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)
Total	4,738	-	3,513	74.3% (72.5, 76.2)	724	15.8% (14.2, 17.4)	501	9.9% (8.6, 11.1)
Country								
Bangladesh	292	9.5% (8.2, 10.7)	181	8.1% (6.7, 9.5)	64	14.2% (10.2, 18.2)	47	12.1% (8.4, 15.9)
India	4,234	89.5% (88.3, 90.8)	3,190	91.0% (89.6, 92.4)	629	84.7% (80.6, 88.7)	415	86.2% (82.4, 90.0)
Nepal	212	1.0% (0.8, 1.2)	142	0.9% (0.7, 1.1)	31	1.1% (0.5, 1.7)	39	1.7% (1.0, 2.3)
Pre-pregnancy contraceptive use								
None	3,479	76.0% (74.1, 77.8)	2,666	79.2% (77.2, 81.1)	486	67.9% (62.6, 73.1)	327	64.9% (58.8, 71.1)
Traditional	339	7.2% (6.1, 8.3)	246	6.7% (5.5, 8.0)	58	9.5% (6.1, 12.9)	35	7.1% (4.0, 10.1)
Modern	920	16.8% (15.3, 18.3)	601	14.1% (12.5, 15.6)	180	22.7% (18.0, 27.3)	139	28.0% (22.2, 33.8)
Pre-pregnancy modern contraceptive use by method*								
Pill	424	8.5% (7.3, 9.6)	248	6.4% (5.3, 7.6)	101	14.2% (10.3, 18.1)	75	14.8% (10.8, 18.7)
IUD	107	1.3% (0.9, 1.7)	84	1.3% (0.9, 1.7)	9	0.9% (0.0, 1.7)	14	2.4% (0.8, 4.1)
Injections	87	1.6% (1.2, 2.1)	48	1.1% (0.6, 1.5)	12	2.0% (0.5, 3.4)	27	5.4% (2.9, 7.9)
Condom	401	7.4% (6.4, 8.5)	275	6.7% (5.6, 7.9)	87	9.9% (6.8, 13.0)	39	8.9% (4.1, 13.7)
Implants	2	0.0% (0.0, 0.0)	2	0.0% (0.0, 0.0)	0	-	0	-
Ever IPV								
None	3,274	63.9% (61.8, 66.0)	2,525	66.4% (64.0, 68.8)	487	61.4% (56.0, 66.7)	262	49.3% (43.2, 55.4)
Sexual only	112	2.8% (2.1, 3.6)	73	2.8% (1.8, 3.7)	22	3.7% (1.8, 5.6)	17	2.0% (0.8, 3.3)
Physical only	1,030	24.6% (22.7, 26.5)	714	23.1% (20.9, 25.3)	152	24.8% (20.0, 29.6)	164	35.6% (30.0, 41.3)
Sexual and physical	322	8.6% (7.4, 9.9)	201	7.7% (6.3, 9.1)	63	10.2% (6.7, 13.6)	58	13.0% (8.6, 17.4)
Number of living children								
0	1,584	36.4% (34.3, 38.5)	1,377	42.1% (39.6, 44.6)	193	30.2% (25.0, 35.3)	14	2.9% (0.5, 5.3)
1	1,427	29.2% (27.3, 31.1)	1,092	29.4% (27.2, 31.6)	282	40.8% (35.6, 46.0)	53	9.3% (6.0, 12.6)
2	831	16.3% (14.8, 17.9)	567	15.4% (13.6, 17.2)	135	15.0% (11.6, 18.4)	129	25.4% (19.6, 31.3)
3 or more	896	18.1% (16.6, 19.6)	477	13.1% (11.5, 14.6)	114	14.0% (10.6, 17.4)	305	62.4% (56.1, 68.7)

	Total		Current pregnancy wanted		Current pregnancy mistimed		Current pregnancy unwanted	
	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)
Months since first month of index pregnancy	4,738	5.4 (5.3, 5.5) [/]	3,513	5.5 (5.3, 5.6) [/]	724	5.1 (4.8, 5.4) [/]	501	5.6 (5.3, 5.9)
Age at interview								
15-19	729	21.5% (19.6, 23.5)	561	22.6% (20.4, 24.9)	157	27.7% (22.7, 32.7)	11	3.6% (0.9, 6.3)
20-24	1,879	42.8% (40.8, 44.8)	1,447	44.1% (41.7, 46.4)	319	46.4% (41.0, 51.7)	113	27.4% (21.8, 33.1)
25-29	1,325	23.2% (21.5, 24.9)	965	22.6% (20.6, 24.5)	175	20.1% (16.2, 24.1)	185	33.1% (27.6, 38.5)
30-49	805	12.4% (11.2, 13.7)	540	10.7% (9.4, 12.1)	73	5.8% (3.7, 8.0)	192	35.9% (30.2, 41.7)
Education level								
None	1,796	44.3% (42.1, 46.6)	1,296	44.7% (42.0, 47.4)	240	35.4% (30.3, 40.5)	260	48.2% (42.8, 53.7)
Primary	718	15.3% (13.8, 16.8)	503	14.7% (12.9, 16.4)	117	16.4% (12.3, 20.4)	98	18.4% (13.7, 23.0)
Secondary or higher	2,224	40.4% (38.2, 42.6)	1,714	40.7% (38.1, 43.2)	367	48.2% (42.8, 53.7)	143	25.7% (20.2, 31.2)
Spousal education level								
None	1,137	27.5% (25.4, 29.6)	815	26.9% (24.7, 29.2)	157	24.6% (19.8, 29.4)	165	36.7% (30.6, 42.8)
Primary	792	16.6% (15.1, 18.2)	530	15.4% (13.7, 17.2)	155	21.4% (17.0, 25.8)	107	17.9% (13.3, 22.5)
Secondary or higher	2,809	55.9% (53.7, 58.1)	2,168	57.6% (55.2, 60.1)	412	54.0% (48.5, 59.5)	229	45.4% (39.1, 51.7)
Age at marriage								
<15	697	19.0% (17.2, 20.7)	484	18.3% (16.4, 20.3)	90	13.1% (9.8, 16.4)	123	33.5% (27.2, 39.8)
15-17	1,572	39.3% (37.3, 41.4)	1,133	39.0% (36.6, 41.4)	247	41.8% (36.2, 47.4)	192	37.5% (31.7, 43.2)
18	2,469	41.7% (39.6, 43.8)	1,896	42.6% (40.2, 45.1)	387	45.1% (39.6, 50.6)	186	29.1% (23.3, 34.8)
Relationship to household head								
Head	160	3.5% (2.8, 4.3)	106	3.2% (2.4, 4.0)	22	2.4% (1.0, 3.8)	32	8.1% (4.6, 11.5)
Wife	2,722	44.3% (42.1, 46.4)	1,974	42.3% (40.0, 44.7)	378	40.0% (35.0, 44.9)	370	65.7% (59.1, 72.3)
Daughter	332	12.2% (10.5, 13.8)	262	13.1% (11.2, 15.1)	57	12.3% (8.3, 16.4)	13	4.4% (1.5, 7.2)
Daughter-in-law	1,328	33.6% (31.4, 35.8)	1,026	35.4% (33.0, 37.9)	228	35.3% (30.1, 40.6)	74	17.0% (11.7, 22.2)
Other	196	6.4% (5.2, 7.7)	145	5.9% (4.5, 7.3)	39	10.0% (6.4, 13.6)	12	4.9% (1.1, 8.8)
Wealth quintile								
Poorest	893	24.6% (22.6, 26.6)	634	25.1% (22.8, 27.4)	117	19.4% (15.4, 23.4)	142	29.4% (23.9, 34.8)
Poorer	885	22.2% (20.3, 24.1)	623	21.4% (19.2, 23.6)	152	23.9% (19.1, 28.7)	110	25.5% (19.8, 31.1)
Middle	966	19.8% (18.0, 21.6)	688	18.7% (16.8, 20.7)	169	23.1% (18.5, 27.8)	109	22.3% (16.8, 27.8)

	Total		Current pregnancy wanted		Current pregnancy mistimed		Current pregnancy unwanted	
	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)	Unwtd N	% (95% CI)
Richer	1,051	19.3% (17.5, 21.0)	792	19.5% (17.5, 21.6)	173	21.1% (16.4, 25.8)	86	14.4% (10.3, 18.5)
Richest	943	14.1% (12.7, 15.5)	776	15.2% (13.5, 16.9)	113	12.5% (9.2, 15.8)	54	8.4% (4.6, 12.3)
Residence								
Rural	2,931	75.4% (73.6, 77.2)	2,160	76.0% (74.0, 78.1)	444	74.0% (69.6, 78.5)	327	73.3% (67.4, 79.1)
Urban	1,807	24.6% (22.8, 26.4)	1,353	24.0% (21.9, 26.0)	280	26.0% (21.5, 30.4)	174	26.7% (20.9, 32.6)

Note: Percentages are weighted.

I _{Mean} (95% CI)

* Assessment of forms of pre-pregnancy contraception also included options of diaphragm, female condom and foam/jelly; no respondents reported use of these forms.

Table 2

Unadjusted and adjusted models assessing odds of mistimed and unwanted pregnancies (compared to wanted pregnancies) among currently pregnant women living in Bangladesh, India and Nepal (n=4,738).

	Current pregnancy mistimed	Current pregnancy unwanted	Current pregnancy mistimed	Current pregnancy unwanted
	OR ¹ (95% CI)	OR ¹ (95% CI)	aOR ² (95% CI)	aOR ² (95% CI)
Ever IPV				
None	1.00	1.00	1.00	1.00
Sexual only	1.40 (0.71, 2.76)	0.97 (0.47, 2.02)	1.37 (0.72, 2.63)	1.20 (0.54, 2.66)
Physical only	1.15 (0.87, 1.53)	2.08 (1.55, 2.79)	1.17 (0.86, 1.58)	1.30 (0.94, 1.81)
Sexual and Physical	1.38 (0.91, 2.09)	2.22 (1.40, 3.54)	1.41 (0.89, 2.22)	1.38 (0.87, 2.20)
Pre-Pregnancy Contraception				
None	1.00	1.00	1.00	1.00
Traditional	1.64 (1.05, 2.56)	1.28 (0.76, 2.14)	1.53 (0.96, 2.43)	1.18 (0.67, 2.06)
Modern	1.67 (1.21, 2.30)	2.35 (1.69, 3.29)	1.42 (1.01, 2.00)	2.20 (1.48, 3.26)
Number of living children				
0	1.00	1.00	1.00	1.00
1	1.95 (1.45, 2.62)	4.65 (1.82, 11.87)	3.11 (2.20, 4.38)	4.14 (1.67, 10.26)
2	1.36 (0.95, 1.94)	24.20 (9.63, 60.82)	3.52 (2.23, 5.54)	25.97 (10.62, 63.52)
3 or more	1.56 (1.08, 2.25)	73.25 (30.35, 176.83)	7.28 (4.27, 12.40)	93.22 (37.45, 232.07)
Time since first month of index pregnancy (months)	0.95 (0.90, 0.997)	1.03 (0.97, 1.10)	0.96 (0.91, 1.01)	1.00 (0.93, 1.07)
Age at interview				
15–19	1.00	1.00	1.00	1.00
20–24	0.90 (0.67, 1.21)	4.12 (1.80, 9.42)	0.43 (0.30, 0.62)	0.87 (0.39, 1.93)
25–29	0.76 (0.54, 1.06)	9.68 (4.22, 22.18)	0.26 (0.16, 0.41)	0.68 (0.29, 1.60)
30–49	0.46 (0.29, 0.74)	22.03 (9.72, 49.97)	0.13 (0.07, 0.24)	0.90 (0.37, 2.18)
Education level				
None	1.00	1.00	1.00	1.00
Primary	1.28 (0.89, 1.85)	0.92 (0.64, 1.32)	1.31 (0.90, 1.92)	1.85 (1.21, 2.81)
Secondary or higher	1.43 (1.10, 1.87)	0.49 (0.35, 0.67)	1.82 (1.24, 2.67)	1.78 (1.14, 2.78)
Spousal education level				
None	1.00	1.00	1.00	1.00
Primary	1.47 (1.03, 2.10)	0.83 (0.57, 1.21)	1.22 (0.84, 1.78)	0.93 (0.60, 1.44)
Secondary or higher	1.06 (0.79, 1.42)	0.59 (0.44, 0.79)	0.80 (0.55, 1.15)	1.07 (0.74, 1.55)
Age at marriage				
<15	1.00	1.00	1.00	1.00
15–17	1.59 (1.11, 2.27)	0.53 (0.39, 0.74)	1.73 (1.18, 2.54)	0.83 (0.58, 1.18)
18	1.64 (1.17, 2.31)	0.38 (0.27, 0.56)	3.14 (2.01, 4.90)	0.96 (0.63, 1.46)
Relationship to household head				

	Current pregnancy mistimed	Current pregnancy unwanted	Current pregnancy mistimed	Current pregnancy unwanted
	OR ¹ (95% CI)	OR ¹ (95% CI)	aOR ² (95% CI)	aOR ² (95% CI)
Daughter-in-law	1.00	1.00	1.00	1.00
Head	0.73 (0.38, 1.42)	5.18 (2.85, 9.40)	0.83 (0.41, 1.71)	1.99 (1.01, 3.90)
Wife	0.89 (0.69, 1.15)	3.17 (2.15, 4.68)	0.89 (0.67, 1.17)	1.59 (1.03, 2.45)
Daughter	0.90 (0.58, 1.42)	0.68 (0.31, 1.48)	1.10 (0.69, 1.74)	1.25 (0.58, 2.68)
Other	1.64 (0.996, 2.69)	1.74 (0.71, 4.23)	1.70 (1.04, 2.77)	2.67 (1.05, 6.78)
Wealth quintile				
Poorest	1.00	1.00	1.00	1.00
Poorer	1.43 (0.995, 2.06)	1.01 (0.70, 1.46)	1.31 (0.90, 1.89)	1.16 (0.79, 1.70)
Middle	1.59 (1.13, 2.26)	1.01 (0.70, 1.48)	1.30 (0.87, 1.94)	1.54 (1.00, 2.36)
Richer	1.40 (0.98, 2.01)	0.63 (0.43, 0.94)	1.08 (0.70, 1.66)	1.10 (0.64, 1.88)
Richest	1.03 (0.70, 1.52)	0.47 (0.27, 0.81)	0.80 (0.49, 1.32)	1.14 (0.62, 2.10)
Residence				
Rural	1.00	1.00	-	-
Urban	1.14 (0.88, 1.47)	1.18 (0.86, 1.62)	-	-

Bold indicates p<0.05. Reference category is wanted pregnancies.

¹ Adjusted for country fixed effects.

² Adjusted for country fixed effects and all variables shown excluding urban/rural residence.

Table 3

Unadjusted and adjusted models assessing odds of pre-pregnancy contraceptive use among currently pregnant women living in Bangladesh, India and Nepal (n=4,738).

	Traditional OR ¹ (95% CI)	Modern OR ¹ (95% CI)	Traditional aOR ² (95% CI)	Modern aOR ² (95% CI)
Ever IPV				
None	1.00	1.00	1.00	1.00
Sexual only	1.60 (0.63, 4.03)	1.37 (0.73, 2.56)	1.97 (0.74, 5.23)	2.32 (1.24, 4.36)
Physical only	0.95 (0.65, 1.39)	0.85 (0.64, 1.12)	0.85 (0.56, 1.28)	0.95 (0.69, 1.31)
Sexual and physical	2.10 (1.33, 3.32)	1.03 (0.66, 1.61)	1.85 (1.12, 3.07)	1.62 (0.98, 2.66)
Number of living children				
0	1.00	1.00	1.00	1.00
1	3.37 (2.17, 5.26)	4.07 (2.98, 5.55)	3.32 (2.03, 5.41)	4.75 (3.31, 6.81)
2	2.55 (1.57, 4.14)	2.94 (2.04, 4.25)	2.42 (1.37, 4.25)	4.89 (3.01, 7.96)
3 or more	1.82 (1.09, 3.07)	2.18 (1.52, 3.13)	1.66 (0.86, 3.22)	5.20 (3.10, 8.71)
Time since first month of index pregnancy (months)	0.92 (0.86, 0.99)	1.00 (0.95, 1.06)	0.90 (0.83, 0.97)	1.00 (0.95, 1.06)
Age at interview				
15–19	1.00	1.00	1.00	1.00
20–24	2.45 (1.50, 4.00)	2.48 (1.70, 3.64)	1.91 (1.10, 3.33)	1.16 (0.76, 1.75)
25–29	1.92 (1.15, 3.20)	2.96 (1.99, 4.40)	1.57 (0.87, 2.87)	1.15 (0.72, 1.82)
30–49	2.82 (1.60, 4.99)	3.07 (1.98, 4.76)	2.83 (1.34, 5.95)	1.13 (0.65, 1.97)
Education level				
None	1.00	1.00	1.00	1.00
Primary	1.02 (0.63, 1.66)	1.58 (1.08, 2.31)	1.22 (0.73, 2.07)	1.67 (1.10, 2.52)
Secondary or higher	1.20 (0.83, 1.73)	3.29 (2.54, 4.26)	1.69 (1.02, 2.80)	2.97 (2.08, 4.23)
Spousal education level				
None	1.00	1.00	1.00	1.00
Primary	0.88 (0.53, 1.48)	1.69 (1.16, 2.48)	0.95 (0.56, 1.61)	1.33 (0.87, 2.03)
Secondary or higher	1.01 (0.67, 1.53)	2.77 (2.02, 3.81)	0.98 (0.58, 1.66)	1.45 (0.97, 2.18)
Age at marriage				
<15	1.00	1.00	1.00	1.00
15–17	1.11 (0.71, 1.75)	1.34 (0.96, 1.86)	1.08 (0.68, 1.73)	1.19 (0.83, 1.71)
18	1.10 (0.71, 1.69)	2.03 (1.47, 2.79)	1.08 (0.64, 1.81)	1.42 (0.96, 2.10)
Relationship to household head				
Daughter-in-law	1.00	1.00	1.00	1.00
Head	0.67 (0.25, 1.82)	0.46 (0.23, 0.95)	0.50 (0.17, 1.48)	0.58 (0.27, 1.26)
Wife	1.04 (0.73, 1.49)	1.11 (0.85, 1.43)	0.83 (0.56, 1.24)	1.12 (0.84, 1.50)
Daughter	1.05 (0.54, 2.06)	0.40 (0.24, 0.67)	1.25 (0.63, 2.49)	0.44 (0.25, 0.75)
Other	0.32 (0.11, 0.95)	1.10 (0.59, 2.05)	0.35 (0.12, 1.07)	1.12 (0.62, 2.01)

	Traditional	Modern	Traditional	Modern
	OR ¹ (95% CI)	OR ¹ (95% CI)	aOR ² (95% CI)	aOR ² (95% CI)
Wealth quintile				
Poorest	1.00	1.00	1.00	1.00
Poorer	1.06 (0.67, 1.68)	1.54 (1.06, 2.23)	1.00 (0.61, 1.62)	1.32 (0.88, 1.99)
Middle	0.88 (0.51, 1.51)	1.64 (1.10, 2.44)	0.70 (0.36, 1.35)	1.15 (0.73, 1.80)
Richer	0.85 (0.51, 1.42)	2.82 (1.97, 4.05)	0.58 (0.30, 1.11)	1.58 (0.98, 2.53)
Richest	0.96 (0.56, 1.64)	4.94 (3.35, 7.30)	0.57 (0.26, 1.28)	2.41 (1.42, 4.09)
Residence				
Rural	1.00	1.00	1.00	1.00
Urban	1.07 (0.73, 1.55)	2.29 (1.79, 2.92)	1.19 (0.77, 1.85)	1.28 (0.95, 1.72)

Bold indicates $p < 0.05$. Reference category is no pre-pregnancy contraceptive use.

¹ Adjusted for country fixed effects.

² Adjusted for country fixed effects and all variables shown.

Table 4

Descriptive analysis of reasons for pre-pregnancy contraceptive discontinuation among currently pregnant women living in India and Nepal (n=1,032).

	Total		Ever IPV				Intendedness of current pregnancy		
	Unwtd N	% (95% CI)	None % (95% CI)	Sexual only % (95% CI)	Physical only % (95% CI)	Sexual and physical % (95% CI)	Wanted % (95% CI)	Mistimed % (95% CI)	Unwanted % (95% CI)
Method failure	157	18.1% (14.1, 22.1)	13.6% (9.0, 18.2)	37.3% (12.0, 62.5)	22.6% (14.9, 30.2)	30.9% (17.8, 44.0)	7.9% (4.7, 11.1)	39.6% (28.4, 50.8)	40.3% (26.1, 54.6)
Wanted to become pregnant	664	61.9% (57.0, 66.8)	67.8% (61.9, 73.6)	45.1% (19.4, 70.8)	51.8% (41.4, 62.2)	50.4% (36.3, 64.6)	75.8% (70.9, 80.8)	35.5% (24.5, 46.5)	27.2% (13.3, 41.1)
Husband disapproved	31	4.2% (2.1, 6.2)	3.1% (1.0, 5.2)	5.1% (0.0, 14.9)	7.5% (1.0, 14.0)	4.2% (0.0, 10.2)	2.5% (0.5, 4.4)	10.2% (3.0, 17.4)	3.8% (0.0, 7.9)
Method concerns ¹	138	11.9% (9.0, 14.7)	12.6% (8.9, 16.4)	12.5% (0.0, 29.5)	11.5% (5.6, 17.5)	7.4% (0.5, 14.4)	10.4% (7.0, 13.9)	10.4% (4.5, 16.2),	22.1% (11.8, 32.4)
Access barriers ²	9	0.9% (0.1, 1.7)	0.0% (0.0, 0.1)	-	2.9% (0.0, 5.7)	2.7% (0.0, 7.8)	0.5% (0.0, 1.1)	-	4.7% (0.0, 10.1)
Other ³	33	3.1% (1.4, 4.7)	2.8% (0.7, 5.0)	-	3.7% (0.4, 7.0)	4.3% (0.0, 10.4)	2.9% (0.7, 5.1)	4.3% (0.6, 7.9)	1.8% (0.0, 4.4)

Note: Percentages are weighted.

¹ Includes wanting a more effective method, health concerns/side effects and inconvenience of use.

² Includes lack of access/too far, and costing too much.

³ Includes infrequent sex/husband away, marital dissolution/separation and other.