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# Effects of Individual and Proximate Educational Context on Intimate Partner Violence: A Population-Based Study of Women in India

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Intimate partner violence (IPV) is an important global public health concern<sup>1–3</sup> related to adverse outcomes such as physical trauma, mental illness, psychosomatic illness, poor health-related behaviors, poor birth outcomes, suicide, and murder.<sup>2,4</sup> Recent international estimates indicate that the percentage of women with a lifetime experience of IPV is as high as 71% (rural Ethiopia)<sup>2</sup> and falls between 21% and 47% in the majority of countries.<sup>1</sup> IPV is acute in South Asia, a region where issues related to basic gender equity have been much discussed.<sup>5–8</sup> In India, which accounts for 16% of the global female population and 76% of the South Asian female population, some 40% of women have reported being physically abused by their husbands during their adult lives.<sup>9</sup>

We investigated the role of proximate educational context in women's likelihood of experiencing IPV. We hypothesized not only that a woman's own educational attainment is protective against IPV, but that both the household and the communitywide educational contexts of a woman are a factor in IPV. The need to consider proximate educational context—which can be conceptualized as the level of education among all people near to each woman (e.g., partner's level of education, educational differential between woman and partner, level of education in the community of residence)—is crucial, given the costs and benefits associated with education of women and of people generally.

In the United States, there is a growing body of evidence of the relation between neighborhood context and domestic violence. This research, theoretically grounded in the concepts of social disorganization<sup>10</sup> and collective efficacy,<sup>11</sup> has found that women who live in areas marked by high levels of poverty,<sup>12,13</sup> unemployment,<sup>14</sup> and neighborhood disadvantage<sup>15</sup> are more likely to experience IPV. This work has been extended to India, with one study finding that IPV is associated with the district murder rate in Uttar Pradesh.<sup>16</sup> These

**Objectives.** We examined the role of women's education and proximate educational context on intimate partner violence (IPV).

**Methods.** We examined a sample of 83 627 married women aged 15 to 49 years from the 1998 to 1999 Indian National Family Health Survey. We used multilevel multiple logistic regression modeling to estimate the relative effect of women's and their husband's levels of education, spousal education differential, and community-level literacy on women's risk of recent and lifetime IPV.

**Results.** In adjusted models, odds of recent IPV among women without any education were 5.61 times (95% confidence interval [CI]=3.53, 8.92) those of college-educated women, and odds among wives of uneducated men were 1.84 times (95% CI=1.44, 2.35) those of wives of college-educated men. Women with more education than their husbands were more likely than those with educational parity to report recent IPV (odds ratio [OR]=1.18; 95% CI=1.05, 1.33). The results were similar for lifetime IPV. After we controlled for individual factors, as community male and female literacy levels increased, likelihood of IPV declined.

**Conclusions.** Although increasing women's levels of education is crucial to reducing IPV for women, proximate educational context is also an important factor in reducing this public health burden. (*Am J Public Health.* 2008;98:507–514. doi:10.2105/AJPH.2007.113738)

findings of area effects on IPV suggest that area educational levels could be both an independent determinant of a woman's likelihood of experiencing IPV and a potential modifier of the relation between her own education and her likelihood of experiencing IPV. Indeed, education is related to norms of the acceptability of IPV,<sup>17</sup> which in turn influences a woman's likelihood of being abused.<sup>18–20</sup>

Findings from this research can inform advocates and policymakers of the need to focus attention and financial resources on education in the drive to reduce IPV in India. Using the most recent nationally representative population-based data from India, we examined the relative importance of a woman's education and proximate educational context in IPV.

## METHODS

### Data

We used the 1998 to 1999 Indian National Family Health Survey (INFHS), a nationally representative cross-sectional study of 92 447 households.<sup>21</sup> Trained data collectors

interviewed an adult member in each selected household to obtain socioeconomic and demographic information about the household and its family members, achieving a household response rate of 98%. Data collectors performed face-to-face interviews with 90 303 ever-married women aged 15 to 49 years from responding households. The women's survey had a response rate of 96% and provided information on IPV. Given the sensitive nature of the women's survey, extensive efforts were made to protect the participants and to ensure the quality of the data collected.<sup>22</sup>

We restricted the analysis to married women and excluded divorced, widowed, or separated women (n=5441); we also excluded 1235 women because of missing information on IPV and other predictor variables, yielding a final analytic sample of 83 627 women. These women were located in 3215 primary sampling units in 440 districts in the 26 Indian states. Primary sampling units, hereafter termed neighborhoods, were villages or village clusters in rural areas and census enumeration districts in urban areas.

## Outcome Measures

We analyzed 2 outcome measures: lifetime IPV and recent IPV. A screening question asked, “Since you completed 15 years of age, have you been beaten or mistreated physically by any person?” Two follow-up questions asked “Who has beaten you or mistreated you physically?” and “How often have you been beaten or mistreated physically in the last 12 months: once, a few times, many times, or not at all?” A woman was considered to have experienced lifetime IPV if she reported ever being physically abused by her husband since age 15. A woman was considered to have experienced recent IPV if she reported being physically abused by her husband in the previous 12 months.

## Exposure

Individual and proximate educational context for each woman was defined in the following ways. First, we recorded the educational attainment of the woman in terms of the following categories, each representing significant milestones in the formal Indian education system: 0 years, 1–5 years, 6–8 years, 9–10 years, 11–12 years, or 13 or more years. Second, we considered the educational attainment of the spouse in the same manner. Third, we analyzed the educational discrepancy between spouses with 3 categories in which (1) the husband had achieved a higher educational milestone, (2) the wife had achieved a higher educational milestone, or (3) the couple had educational parity. Finally, a woman’s community educational context was conceptualized as neighborhood (i.e., community-level) male and female literacy levels and defined as the proportion in each woman’s residential neighborhood of respondents of each gender (15 years or older) that had completed at least 1 year of formal education. Area-level literacy measures were calculated from the INFHS household survey data set, which contained 333 835 men and women 15 or older residing in 3215 neighborhoods, and were specified as tertiles for analysis. Tertiles for female literacy were specified with the following percentage ranges: 0%–35.44%, 35.45%–63.99%, and 64%–100%. Tertiles for male literacy were specified with these percentage ranges: 3%–69.39%, 69.40%–86.29%, and 86.30%–100%.

## Covariates

We included several socioeconomic and demographic variables: age in years, age at marriage, religion, social caste, standard of living, employment status, and location of neighborhood (Table 1). Ages were grouped in 5-year ranges, and age at marriage was categorized as under 15, 15 to 17, 18 to 20, and over 20 years. Religion was recorded as Hindu, Muslim, Christian, Sikh, or Other. Caste was determined according to the identification of the head of the household as belonging to a scheduled caste, scheduled tribe, other backward class, or the general class.

Briefly, scheduled castes are those with members in the lowest level of the caste system and who have suffered the greatest burden of deprivation.<sup>23</sup> Scheduled tribes are approximately 700 officially recognized social groups characterized by their geographic isolation and limited social and economic interaction with the rest of India.<sup>24</sup> “Other backward class” is a legislatively defined group representing those who have historically suffered significant social deprivation not as severe as that suffered by scheduled castes and tribes. Thus, the general class is a residual caste grouping that traditionally has been viewed as better off than the above groupings.

Standard of living, defined in terms of living environment and material possessions, is a reliable and valid measure of household material well-being or wealth.<sup>25</sup> Each person was assigned a standard of living score based on a linear combination of scores for 19 different household characteristics, such as quality of the home, type of fuel used for cooking, and ownership of a bicycle or television, weighted according to a factor-analysis procedure.<sup>26</sup> The analytic models used quintiles of these weighted scores. Employment was classified according to whether the woman was not working, performing unpaid work, or working for pay in a manual, non-manual, or agricultural profession. Finally, information from the 1991 Indian National Census was used to create categories defining whether each neighborhood was in an urban area of more than 1 million people (large city), an urban area of between 100 000 and 1 million people (small city),

an urban area of less than 100 000 people (town), or a rural area (village). The Indian National Census defines a rural area as having at least 1 of 3 characteristics: (1) fewer than 5000 residents, (2) population density less than 1000/sq mi, or (3) at least 25% of the adult male population being employed in agriculture.

## Statistical Analysis

Data were analyzed with logistic multi-level modeling procedures,<sup>27</sup> the strengths and relevance of which have previously been described.<sup>28–30</sup> We specified a 4-level model for each binary response  $y$ , reporting lifetime or recent IPV or not, for individuals  $i$  living in neighborhood  $j$  in district  $k$  in state  $l$  of the form

$$(1) \quad \pi_{ijkl} : y_{ijkl} \sim \text{Bernoulli}(1, \pi_{ijkl})$$

Probability was related to a set of categorical predictors  $X$  and a random effect for each level by a logit-link function as

$$(2) \quad \text{logit}(\pi_{ijkl}) = \log[\pi_{ijkl}/(1 - \pi_{ijkl})] = \beta_0 + \beta X + u_{0jkl} + v_{0kl} + f_{0l}$$

The linear predictor on the right-hand side of the equation consisted of a fixed part ( $\beta_0 + \beta X$ ) estimating the conditional coefficients for the exposure variable (and covariates) and 3 random intercepts attributable to neighborhoods ( $u_{0jkl}$ ), districts ( $v_{0kl}$ ), and states ( $f_{0l}$ ), with each assumed to have an independent and identical distribution and variance estimated at each level. All models were created by penalized quasi-likelihood approximation with second-order Taylor linearization as implemented in MLwiN version 2.02.<sup>31,32</sup>

## RESULTS

Sixteen percent and 9.3% of women reported lifetime IPV and recent IPV, respectively (Table 1). Nearly half of all women had no formal education, and just over 5% had 13 or more years of education. By contrast, 25% of the respondents’ husbands had no formal education and 11% had 13 or more years of education. Approximately 40% of the women had the same level of education as did their husband, 9% had a higher level of education, and half had a lesser level.

**TABLE 1—Descriptive Characteristics of Married Women (N = 83 627): Indian National Family Health Survey, 1998–1999**

	Sample, No. (%) <sup>a</sup>	Lifetime IPV, No. (%) <sup>b</sup>	Recent IPV, No. (%) <sup>c</sup>
Total	83 627 (100.0)	13 460 (16.1)	7 749 (9.3)
Location of neighborhood <sup>d</sup>			
Large City	9 213 (11.0)	993 (10.8)	556 (6.0)
Small City	5 319 (6.4)	689 (13.0)	361 (6.8)
Town	11 465 (13.7)	1 464 (12.8)	776 (6.8)
Village	57 630 (68.9)	10 314 (17.9)	6 056 (10.5)
Age, y			
45–49	7 205 (8.6)	1 047 (14.5)	394 (5.5)
40–44	9 742 (11.7)	1 584 (16.3)	706 (7.3)
35–39	12 640 (15.1)	2 193 (17.4)	1 139 (9.0)
30–34	14 865 (17.8)	2 675 (18.0)	1 525 (10.3)
25–29	17 272 (20.7)	2 964 (17.2)	1 844 (10.7)
20–24	15 316 (18.3)	2 249 (14.7)	1 539 (10.1)
15–19	6 587 (7.9)	748 (11.4)	602 (9.1)
Age at wedding, y			
≥21	13 335 (16.0)	1 029 (7.7)	562 (4.2)
18–20	23 688 (28.3)	2 992 (12.6)	1 721 (7.3)
15–17	31 554 (37.7)	5 721 (18.1)	3 369 (10.7)
<15	15 050 (18.0)	3 718 (24.7)	2 097 (13.9)
Religion			
Hindu	65 167 (77.9)	10 721 (16.5)	6 153 (9.4)
Muslim	9 921 (11.9)	1 769 (17.8)	1 018 (10.3)
Christian	4 506 (5.4)	497 (11.0)	283 (6.3)
Sikh	1 988 (2.4)	217 (10.9)	127 (6.4)
Other/missing religion	2 045 (2.5)	256 (12.5)	168 (8.2)
Caste <sup>e</sup>			
General	35 159 (42.0)	3 992 (11.4)	2 199 (6.3)
Scheduled caste	14 174 (17.0)	3 213 (22.7)	1 972 (13.9)
Scheduled tribe	9 967 (11.9)	1 669 (16.8)	1 009 (10.1)
Other backward class	24 327 (29.1)	4 586 (18.9)	2 569 (10.6)
Employment			
Not working	54 159 (64.8)	6 919 (12.8)	2 199 (6.3)
Unpaid	8 704 (10.4)	1 667 (19.2)	1 972 (13.9)
Paid nonmanual	3 693 (4.4)	375 (10.2)	1 009 (10.1)
Paid agricultural	10 603 (12.7)	2 870 (27.1)	2 569 (10.6)
Paid manual	6 468 (7.7)	1 629 (25.2)	2 199 (6.3)
Living standard, quintile			
Fifth (highest)	17 124 (20.5)	987 (5.8)	455 (2.7)
Fourth	17 264 (20.6)	2 017 (11.7)	1 065 (6.2)
Third	16 896 (20.2)	2 843 (16.8)	1 530 (9.1)
Second	16 676 (20.0)	3 517 (21.1)	2 101 (12.6)
First (lowest)	15 667 (18.7)	4 096 (26.1)	2 598 (16.6)
Woman's education, y			
≥13	4 374 (5.2)	74 (1.7)	29 (0.7)
11–12	3 678 (4.4)	203 (5.5)	96 (2.6)
9–10	9 838 (11.8)	711 (7.2)	402 (4.1)
6–8	10 520 (12.6)	1 273 (12.1)	1 239 (6.8)
1–5	13 666 (16.3)	2 330 (17.1)	1 239 (9.1)
No formal schooling	41 551 (49.7)	8 869 (21.3)	5 265 (12.7)

Continued

### Woman's Education

The analyses, adjusted for age, revealed an inverse relation between lifetime or recent IPV and a woman's educational attainment (Table 2). This relation was attenuated substantially after adjustment for covariates but remained statistically significant ( $P < .001$ ). Women with no formal education were 4.5 times more likely (95% confidence interval [CI]=3.37, 6.25) to report lifetime IPV and 5.6 times more likely (95% CI=3.53, 8.92) to report recent IPV compared with those schooled for more than 12 years.

### Husband's Education

Educational gradients in lifetime and recent IPV were also observed when we analyzed husbands' education. Higher educational levels for husbands were associated with lower odds of lifetime and recent IPV (Table 2). Even after adjustment for covariates and a woman's own education, we observed that women married to husbands with no formal education were much more likely to report lifetime IPV (odds ratio [OR]=1.82; 95% CI=1.50, 2.20) or recent IPV (OR=1.84; 95% CI=1.44, 2.35) than were those married to husbands who were college educated ( $P < .001$ ).

### Spousal Education Differential

Spousal education differential was a strong predictor of women's likelihood of reporting lifetime IPV ( $P = .002$ ) and recent IPV ( $P = .01$ ) in models adjusted for women's and husbands' education as well as other covariates (Table 2). Women who were more educated than their husbands were more likely to report lifetime (OR=1.18; 95% CI=1.07, 1.29) and recent IPV (OR=1.18; 95% CI=1.05, 1.29). Women with educational levels lower than their husband's were not substantially different from the parity group (the reference group).

The strength of the association between women's education and IPV declined by one fourth between models that adjusted for individual characteristics excluding husband's education and education differential, and models that adjusted for all individual sociodemographic and education variables as well as contextual education variables.

TABLE 1—Continued

Husband's education, y			
≥13	9 313 (11.1)	425 (4.6)	226 (2.4)
11–12	7 002 (8.4)	627 (9.0)	334 (4.8)
9–10	17 263 (20.6)	2 030 (11.8)	1 154 (6.7)
6–8	13 745 (16.4)	2 196 (16.0)	1 258 (9.2)
1–5	14 936 (17.9)	3 095 (20.7)	1 696 (11.4)
No formal schooling	21 368 (25.6)	5 087 (23.8)	3 081 (14.4)
Spousal education differential			
Same level	33 897 (40.5)	6 023 (17.8)	3 538 (10.4)
Wife is more educated	7 722 (9.2)	1 084 (14.0)	609 (7.9)
Husband is more educated	42 008 (50.2)	6 353 (15.1)	3 602 (8.6)
Neighborhood female literacy, tertile			
Highest	26 695 (31.9)	2 565 (9.6)	1 297 (4.9)
Middle	27 792 (33.2)	4 852 (17.5)	2 721 (9.8)
Lowest	29 140 (34.8)	6 043 (20.7)	3 731 (12.8)
Neighborhood male literacy, tertile			
Highest	26 970 (32.0)	2 804 (10.4)	1 441 (5.3)
Middle	28 242 (33.8)	4 727 (16.7)	2 638 (9.3)
Lowest	28 415 (34.0)	5 929 (20.9)	3 670 (12.9)

Note. IPV = intimate partner violence.

<sup>a</sup>Number and percentage of women with that descriptive characteristic out of the total sample.

<sup>b</sup>Number and percentage of women with the characteristic who have experienced IPV since age 15 years.

<sup>c</sup>Number and percentage of women with the characteristic who have experienced IPV in the past year.

<sup>d</sup>A large city was defined as having of more than 1 million people, a small city as having between 100 000 and 1 million people, and a town as an urban area with less than 100 000 people. A village was a rural area that had at least 1 of 3 characteristics: fewer than 5 000 residents, population density less than 1 000/sq mi, or at least 25% of the adult male population being employed in agriculture.

<sup>e</sup>Scheduled castes are those with members in the lowest level of the caste system. Scheduled tribes are approximately 700 officially recognized social groups characterized by their geographic isolation and limited social and economic interaction with the rest of India. "Other backward class" is a legislatively defined group representing those who have historically suffered significant social deprivation not as severe as that suffered by scheduled castes and tribes.

### Neighborhood Literacy

Even after adjustment for woman's and husband's education, spousal educational differential, and the covariates, there remained substantial variation in both lifetime and recent IPV at the neighborhood level, suggesting the potential importance of neighborhood-level factors for IPV. Using the latent variable approach to estimate the intraclass correlation,<sup>33</sup> we found that 5% ( $P < .001$ ) of the total variation in lifetime IPV and 6% ( $P < .001$ ) of the total variation in recent IPV was attributable to neighborhood-level factors. Neighborhood male and female literacy were inversely related to lifetime and recent IPV (Table 3). We observed a graded relation between lifetime IPV and neighborhood male literacy. The

odds for lifetime IPV of women living in neighborhoods in the middle and lowest tertiles of male literacy were 1.08 (95% CI=1.00, 1.18) and 1.12 (95% CI=1.01, 1.23) times greater, respectively, than those of women living in the highest-tertile neighborhoods. The odds for lifetime IPV of women living in neighborhoods in the middle and lowest tertiles of female literacy were 1.18 (95% CI=1.07, 1.29) and 1.10 (95% CI=0.99, 1.24) times greater, respectively, than those of women living in the highest-tertile neighborhoods. Although the 2 lower tertiles of neighborhood female literacy were associated with higher odds of lifetime IPV, the observed odds were not consistent with a dose-response group relationship. The observed relations between neighborhood

literacy and recent IPV were similar to those between neighborhood literacy and lifetime IPV.

We also tested for interactions between neighborhood literacy levels and woman's education (Figure 1). The tests revealed that the overall protective effect of living in neighborhoods with high literacy levels was stronger for women with higher levels of education (>6 years). The gradient between woman's education and risk of lifetime IPV was substantially weaker in low-literacy neighborhoods. In other words, women with lesser levels of education gain very little if anything in terms of lifetime IPV risk by living in high-literacy neighborhoods, but highly educated women appeared to lose much of the protection their education provides if they live in low-literacy neighborhoods.

### DISCUSSION

Our study yielded 4 key findings. First, we found independent effects of a woman's and husband's educational attainment on the woman's likelihood of reporting IPV, with the effects being stronger for the woman's education but their husbands' education still capturing about 40% of the woman's educational effects. Second, women whose educational attainment was higher than their husband's were more likely to report IPV. Third, neighborhood male and female literacy were inversely associated with IPV, independent of individual-level factors. Finally, neighborhood literacy modified the relation between a woman's education and IPV so that the protective effects of neighborhood literacy were stronger for women with a middle to high level of education.

The findings concerning the protective effects of a woman's education against IPV, based as they are on a large nationally representative data set after control for a range of socioeconomic and demographic risk factors, is an important corroboration of previous findings,<sup>16,34</sup> because several other studies reported a null association.<sup>35–38</sup> The link between a woman's education and risk of IPV can be made through a number of pathways. Because IPV in India is associated with economic disadvantage,<sup>16,39</sup> individual education could provide a woman with skills and

**TABLE 2—Age-Adjusted and Fully Adjusted Models of Lifetime and Recent Intimate Partner Violence, by Sample Education Characteristics: Indian National Family Health Survey, 1998–1999**

	Lifetime IPV		Recent IPV	
	Age Adjusted, <sup>a</sup> OR (95% CI)	Fully Adjusted, <sup>b</sup> OR (95% CI)	Age Adjusted, <sup>a</sup> OR (95% CI)	Fully Adjusted, <sup>b</sup> OR (95% CI)
Woman's education, y				
≥ 13 (Ref)	1.00	1.00	1.00	1.00
11–12	3.23 (2.43, 4.29)	2.59 (1.93, 3.48)	3.64 (2.33, 5.69)	2.84 (1.80, 4.49)
9–10	4.55 (3.52, 5.89)	2.94 (2.23, 3.88)	6.04 (4.02, 9.06)	3.75 (2.45, 5.76)
6–8	7.89 (6.13, 10.16)	3.91 (2.94, 5.20)	10.07 (6.75, 15.03)	4.77 (3.08, 7.39)
1–5	11.72 (9.13, 15.04)	4.60 (3.43, 6.17)	14.18 (9.53, 21.10)	5.33 (3.41, 8.33)
No formal schooling	15.24 (11.90, 19.51)	4.59 (3.37, 6.25)	19.59 (13.21, 29.06)	5.61 (3.53, 8.92)
Husband's education, y				
≥ 13 (Ref)	1.00	1.00	1.00	1.00
11–12	2.02 (1.76, 2.31)	1.27 (1.10, 1.47)	1.91 (1.59, 2.29)	1.18 (0.97, 1.42)
9–10	2.96 (2.64, 3.33)	1.47 (1.29, 1.68)	2.93 (2.51, 3.43)	1.43 (1.20, 1.69)
6–8	4.15 (3.70, 4.66)	1.64 (1.43, 1.88)	4.08 (3.49, 4.76)	1.58 (1.32, 1.90)
1–5	5.46 (4.87, 6.12)	1.83 (1.57, 2.12)	5.19 (4.45, 6.05)	1.72 (1.42, 2.09)
No formal schooling	6.12 (5.47, 6.85)	1.82 (1.50, 2.20)	6.15 (5.29, 7.15)	1.84 (1.44, 2.35)
Spouse education differential				
Same level (Ref)	1.00	1.00	1.00	1.00
Wife is more educated	0.91 (0.84, 0.98)	1.18 (1.07, 1.29)	0.89 (0.80, 0.98)	1.18 (1.05, 1.33)
Husband is more educated	0.84 (0.81, 0.88)	1.01 (0.93, 1.10)	0.82 (0.78, 0.86)	1.04 (0.93, 1.17)

Note. IPV = intimate partner violence; OR = odds ratio; CI = confidence interval.

<sup>a</sup>Each age-adjusted model included age in years and 1 education variable: woman's education, husband's education, or spousal education differential.

<sup>b</sup>Models included location, current age in years, age at wedding, religion, caste, employment, living standard, woman's education, husband's education, and spousal education differential.

**TABLE 3—Odds Ratios (ORs; with 95% Confidence Intervals [CIs]) for Reported Intimate Partner Violence and Neighborhood Literacy: Indian National Family Health Survey, 1998–1999**

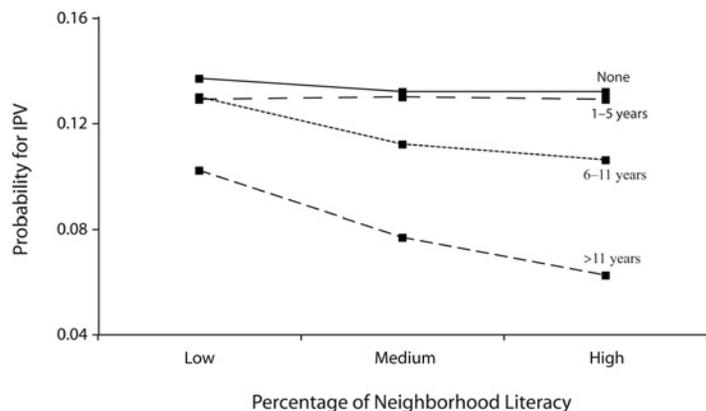
	Lifetime IPV, OR (95% CI)	Recent IPV, OR (95% CI)
Neighborhood female literacy, tertile, %		
Highest (Ref)	1.00	1.00
Middle	1.18 (1.07, 1.29)	1.20 (1.07, 1.35)
Lowest	1.10 (0.99, 1.24)	1.14 (0.99, 1.31)
Neighborhood male literacy, tertile, %		
Highest (Ref)	1.00	1.00
Middle	1.08 (1.00, 1.18)	1.07 (0.96, 1.19)
Lowest	1.12 (1.01, 1.23)	1.14 (1.01, 1.28)

Note. IPV = intimate partner violence. One contextual education variable was modeled at a time. Models include location, current age in years, age at wedding, religion, caste, employment, living standard, woman's education, husband's education, and spousal education differential.

knowledge that improve her ability to manage a household despite reduced economic resources and thereby decrease her risk of IPV. Furthermore, education could provide a woman with more opportunities for financial independence, allowing her to leave an abusive husband<sup>20</sup> and providing her husband with an incentive to refrain from abusing her. Apart from the knowledge that abusing an educated wife could spur her to leave him, a husband may also value and respect an educated wife more than he would an uneducated wife, thus, providing her additional protection from abuse.<sup>36</sup>

The attenuation in the relation between woman's education and IPV after adjustment for husband's education, spousal education differential, and neighborhood literacy indicates the importance of women's educational context in relation to risk of abuse. Although our finding of an inverse relation between husband's education and risk of IPV has some precedent in the literature from India,<sup>16,17,35,37,39</sup> other researchers have also found a null association<sup>34</sup> or even a direct association.<sup>38</sup> Qualitative research suggests that men abuse their wives when they do not have socially acceptable ways to vent their frustrations in public.<sup>20</sup> Educated men may be more adept at preventing or coping with these frustrations if their education provides them with economic security and social status among their peers. Education may also allow men to avoid other behaviors and conditions, such as substance abuse,<sup>35,37</sup> gambling,<sup>34</sup> and sexual dysfunction,<sup>34</sup> that have been linked with domestic violence. Additionally, because some men use IPV as a means of asserting their authority over women,<sup>20</sup> those with less education are more likely to believe that they are justified in controlling the actions of their wives and in using physical force to accomplish this domination.<sup>17</sup>

Although our finding that women who are more educated than their husbands are at higher risk of abuse corroborates similar findings from other developing countries,<sup>40,41</sup> it is unique in India, because previous studies found no relation between spousal education differential and IPV.<sup>36,42</sup> Although we recognize the limited effect of educational differential in relation to the additive effects of women's and husband's education, we believe



Note. The model included location, current age in years, age at wedding, religion, caste, employment, living standard, husband's education, and spousal education differential.

**FIGURE 1—Predicted probability of report of lifetime experience of intimate partner violence (IPV), by woman's educational attainment in years and percentage of neighborhood literacy (in tertiles): Indian National Family Health Survey, 1998–1999.**

that this association highlights the relationships between gender and power that are key to understanding the problem of IPV. One reason that educational differential may be related to IPV risk involves a man's sense of his own masculinity, which may be derived from perceptions of personal power<sup>43</sup> and domination over his wife.<sup>20</sup> Thus, a man with less education than his wife may be more likely than other men to commit abuse if he is threatened by any status that his wife's education may confer on her.<sup>44</sup>

The large differences in domestic violence victimization trends between states, districts, and neighborhoods, even after accounting for individual sociodemographic characteristics, emphasize the role that community context plays in IPV across India. Our study found neighborhood literacy to be associated with IPV and to modify the association between individual education and IPV. Previous research suggests that violence against women is associated with community attitudes that either are accepting of or indifferent to IPV,<sup>16</sup> and that the social norms underlying these attitudes are unevenly distributed across the country's geography.<sup>45</sup> Because education is an important factor in determining the acceptability of abuse,<sup>17</sup> a community's level of education may contribute to a woman's risk of abuse by influencing a husband to view

IPV as either normative or nonnormative behavior. Community education could also act through social norms to influence the institutional resources and interpersonal support that are available to assist abused women.<sup>46</sup> In this way, neighborhood literacy could also interact with a woman's individual education, because even if she is highly educated and able to support herself financially, strong community social norms prohibiting divorce in a low-literacy area may prevent an abused woman from leaving her husband.

### Limitations

The global measure of domestic violence used in the INFHS has been found to be less likely to elicit a report of violence victimization than measures that include multiple behaviorally specific questions about what types of abuse the respondent has experienced.<sup>47</sup> This partially accounts for why the prevalence of abuse reported in our study is smaller than that reported in previous research with Indian women.<sup>9</sup> In fact, previous research in Nicaragua that used a global measure of IPV similar to the one we used found an inverse relation between education and abuse, and the tool using multiple behaviorally specific questions found no relation, in a similar population.<sup>47</sup> Because it is impossible to know whether women in our study were

underreporting their experiences of abuse—and if so, which women they were—it is impossible to rule out the possibility that the inverse association between education and IPV has been inflated in this study. However, the cultural norms related to IPV in India, as evidenced by the high rate of IPV<sup>9</sup> and the professed level of tolerance of many Indians toward IPV,<sup>17</sup> suggest that the stigma against discussing personal experiences of IPV is likely not yet very strong in India. Given this and the very strong association observed between education and IPV in the current study, a differential attitude among sociocultural groups toward reporting IPV is unlikely to account for the observed differences in IPV risk.

Another limitation of this study is the lack of a dose–response group relationship found in the relation between neighborhood female literacy and IPV. Our results indicate that women living in neighborhoods of moderate literacy are at higher risk of IPV than those living in high-literacy or low-literacy neighborhoods. Findings in neighboring Bangladesh suggest that IPV often temporarily increases when women-focused development programs are introduced into a community, because of the threat husbands perceive to their hegemony, before dropping below baseline levels.<sup>48,49</sup> Similarly, men who live in neighborhoods in which the female literacy rate has just started to rise may feel threatened and respond with violence.

### Conclusions

To our knowledge, our study was the first study of a nationally representative sample to investigate the relation between multiple aspects of the educational context and IPV in India. IPV remains a problem of critical importance in India associated with poor reproductive outcomes,<sup>50,51</sup> asthma,<sup>52</sup> injury,<sup>46</sup> psychological dysfunction,<sup>9</sup> suicide,<sup>53</sup> and murder.<sup>54</sup> Our findings affirm the important independent effects of a woman's own education and her proximate educational context on IPV, and provide a basis for considering the importance to women's health of costs and benefits associated with others' education. Although our study cannot establish a causal relationship, it does suggest that educating girls could provide them with significant protection against IPV as adults, above and

beyond the benefits that accrue in terms of earning potential and quality of life. The need to also explicitly consider the role of proximate educational context emphasizes that interventions aimed only at educating women may not be sufficient to make a significant impact on IPV. Interventions aimed at eliminating IPV should pay significant attention to educating men and raising levels of education in communities in general. ■

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### Contributors

L. Ackerson and S. V. Subramanian originated the study and designed the analysis. L. Ackerson led the analysis, interpretation, and writing. S. V. Subramanian contributed to the interpretation of the results and writing. I. Kawachi and E. Barbeau contributed to the interpretation of the results.

### Human Participant Protection

This study was approved by the Harvard School of Public Health human participants committee.

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