Table S1. Characteristics of the 22 Demographic and Health Surveys included in the analysis, women only

Country	Year	Sampling plan	Response rate (%)	No. women	No. sexually active women
Benin	2006	2-stage cluster, self-weighting within strata	93.6	17,794	15,970
Burkina Faso	2003	2-stage cluster, not self-weighting	95.7	12,477	10,846
Cameroon	2004	2-stage cluster, self-weighting within strata, 1 selected PSU not covered due to remoteness	92.0	10,656	9,334
Democratic Republic of the Congo	2007	2-stage urban, 3-stage rural cluster	96.0	9,995	8,727
Ethiopia	2005	2-stage cluster, not self-weighting, 2 regions with nomadic populations not covered	94.2	14,070	5,136
Ghana	2008	2-stage cluster	95.1	4,916	4,120
Guinea	2005	2-stage cluster	92.6	7,954	7,180
Kenya	2008	2-stage cluster, not self-weighting	96.3	8,444	7,012
Lesotho	2009	2-stage cluster	97.9	7,624	6,421
Liberia	2007	2-stage cluster, not self-weighting	92.5	7,092	6,739
Malawi	2004	2-stage cluster, not self-weighting	93.6	11,698	10,468
Mozambique	2003	2-stage cluster	86.2	12,418	11,646
Namibia	2006-07	2-stage cluster	92.6	9,804	8,294
Nigeria	2008	2-stage cluster	96.5	33,385	28,353
Rwanda	2005	2-stage cluster, not self-weighting	97.9	11,321	7,778
Senegal	2005	2-stage cluster	92.3	14,602	10,954
Sierra Leone	2008	2-stage cluster	94.0	7,374	6,607
Swaziland	2006-07	2-stage cluster	89.2	4,987	4,117
Tanzania	2004-05	2-stage cluster, not self-weighting	96.1	10,329	8,641
Uganda	2006	2-stage cluster, not self-weighting	92.3	8,531	7,222
Zambia	2007	2-stage cluster	94.4	7,146	6,204
Zimbabwe	2005-06	2-stage cluster, not self-weighting	85.6	8,907	7,037
			Totals	241,524	198,806

Table S2. DHS survey questions measuring beliefs about violence against women

"Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or beating his wife in the following situations...."

    1. ...If she goes out without telling him?
    2. ...If she neglects the children?
    3. ...If she argues with him?
    4. ...If she refuses to have sex with him?
    5. ...If she burns the food?

Participants were coded as agreeing with the question if s/he responded "yes."

Table S3. Distribution of contextual norms about violence against women, among women vs. men

Country	No. PSUs	Women's norms about violence against women, median (IQR)	Men's norms about violence against women, median (IQR)
Benin	750	1.42 (0.58-2.32)	0 (0-0.5)
Burkina Faso	400	2.25 (1.71-2.86)	0.78 (0.33-1.40)
Cameroon	466	1.29 (0.84-1.84)	n/a
Democratic Republic of the Congo	300	2.19 (1.61-2.83)	n/a
Ethiopia	535	2.81 (1.86-3.38)	1.23 (0.50-1.91)
Ghana	411	0.80 (0.36-1.36)	0.33 (0.10-0.60)
Guinea	295	3.18 (2.57-3.63)	n/a
Kenya	400	1.13 (0.67-1.86)	0.89 (0.44-1.36)
Lesotho	400	0.82 (0.52-1.28)	1.08 (0.67-1.63)
Liberia	298	1.50 (0.83-2.35)	0.67 (0.33-1.11)
Malawi	521	0.52 (0.29-0.95)	0.10 (0-0.50)
Mozambique	604	1.55 (1.14-2.06)	0.75 (0.14-1.50)
Namibia	500	0.69 (0.26-1.33)	0.63 (0.19-1.29)
Nigeria	886	1.24 (0.66-1.93)	0.62 (0.25-1.21)
Rwanda	462	0.83 (0.53-1.32)	0.42 (0.17-0.73)
Senegal	376	2.28 (1.51-3.08)	n/a
Sierra Leone	353	1.88 (1.21-2.92)	1.33 (0.83-2.13)
Swaziland	275	0.38 (0.14-0.58)	0.55 (0.29-0.80)
Tanzania	475	1.70 (1.13-2.35)	1.00 (0.38-1.50)
Uganda	368	2.02 (1.45-2.71)	1.50 (0.83-2.20)
Zambia	319	1.93 (1.21-2.80)	1.24 (0.75-1.76)
Zimbabwe	398	1.30 (0.65-1.83)	0.71 (0.36-1.13)

Table S4. Summary statistics for the pooled sample of women

	No. (%) or median (interquartile range)
Condom use at last sexual intercourse	15,654/166,787 (9.4%)
Among non-married	9,802/29,339 (33.4%)
Among married	5,852/137,448 (4.3%)
With marital partner	5,550/136,184 (4.1%)
With non-marital partner	302/1,239 (24.4%)
Individual belief about the appropriateness of wife beating	
Agreed with wife beating under no scenario	89,652/198,806 (45.1%)
Agreed with wife beating under 1 scenario	21,368/198,806 (10.8%)
Agreed with wife beating under 2 scenarios	22,744/198,806 (11.4%)
Agreed with wife beating under 3 scenarios	23,286/198,806 (11.7%)
Agreed with wife beating under 4 scenarios	19,375/198,806 (9.8%)
Agreed with wife beating under 5 scenarios	22,381/198,806 (11.3%)
Norms about wife-beating among women in respondent's PSU	1.5 (0.79-2.33)
Age, years	29 (23-37)
Married	151,989/198,806 (76.5%)
Head of household	29,164/198,800 (14.7%)
Preference for kids	120,277/198,806 (60.5%)
Urban residence	66,083/198,806 (33.2%)
Professional occupation	27,488/198,806 (13.8%)
Educational attainment	
None	79,170/198,796 (39.8%)
Primary	68,365/198,796 (34.4%)
Secondary	44,670/198,796 (22.5%)
Higher	6,591/198,796 (3.3%)
Asset wealth quintile	
Poorest	39,698/198,806 (20.0%)
Poorer	38,030/198,806 (19.1%)
Middle	39,377/198,806 (19.8%)
Richer	39,996/198,806 (20.1%)
Richest	41,705/198,806 (21.0%)
Religion	
Christian	113,658/179,732 (63.2%)
Muslim	33,239/179,732 (18.5%)
Other	32,835/179,732 (18.3%)

Table S5. Country-specific unadjusted and adjusted odds ratios and 95% confidence intervals for the association between condom use and contextual norms about violence against women

Country	Proportion of women reporting condom use at last sexual intercourse	Norms about the appropriateness of wife-beating, among women in respondent's PSU		Predicted probability of condom use, evaluated at covariate means	
		Unadjusted odds ratio (95% confidence interval [CI])	Adjusted odds ratio (95% CI) *	25th percentile of agreement with gender-unequal norms	75th percentile of agreement with gender-unequal norms
Benin	585/13,291	0.54 (0.48-0.61)	0.80 (0.69-0.92)	2.2%	1.5%
Burkina Faso	679/7,924	0.48 (0.40-0.58)	0.79 (0.67-0.94)	3.8%	3.0%
Cameroon	1,200/7,977	0.53 (0.45-0.63)	0.86 (0.74-1.00)	7.9%	6.9%
Democratic Republic of the Congo	405/7,386	0.65 (0.52-0.81)	0.82 (0.60-1.11)	3.6%	2.8%
Ethiopia	73/4,203	0.37 (0.28-0.51)	1.34 (0.82-2.20) †	0.5%	0.7%
Ghana	276/3,328	0.72 (0.58-0.89)	1.02 (0.80-1.28) †	3.6%	3.6%
Guinea	229/5,266	0.46 (0.37-0.57)	0.55 (0.42-0.73)	1.2%	0.7%
Kenya	538/5,995	0.69 (0.58-0.82)	1.03 (0.84-1.25)	4.0%	4.1%
Lesotho	1,877/5,524	0.74 (0.60-0.91)	0.83 (0.69-1.01)	3.3%	3.0%
Liberia	338/5,789	0.50 (0.43-0.59)	0.98 (0.79-1.21)	3.3%	3.2%
Malawi	440/9,169	1.20 (0.98-1.48)	1.61 (1.29-2.01)	2.3%	3.1%
Mozambique	761/9,744	0.38 (0.31-0.48)	0.84 (0.70-1.01)	1.9%	1.6%
Namibia	2,540/6,585	0.71 (0.65-0.78)	0.79 (0.70-0.89)	38.9%	33.2%
Nigeria	1,551/25,483	0.46 (0.41-0.52)	0.78 (0.70-0.88)	2.7%	2.0%
Rwanda	179/5,853	0.64 (0.46-0.91)	0.98 (0.67-1.43)	1.1%	1.1%
Senegal	331/9,443	0.55 (0.46-0.65)	0.76 (0.63-0.92)	1.7%	1.1%
Sierra Leone	144/5,270	0.81 (0.70-0.95)	0.99 (0.79-1.23)	1.4%	1.4%
Swaziland	1,278/3,465	0.46 (0.36-0.60)	0.80 (0.61-1.05)	36.2%	34.0%
Tanzania	563/7,705	1.05 (0.90-1.22)	1.28 (1.10-1.50)	3.2%	4.3%
Uganda	482/6,221	0.60 (0.52-0.71)	1.18 (0.98-1.42)	3.4%	4.2%
Zambia	692/5,320	0.65 (0.58-0.74)	0.81 (0.72-0.92)	10.7%	7.9%
Zimbabwe	494/5,846	0.66 (0.56-0.78)	1.11 (0.88-1.39)	4.2%	4.7%

* Odds ratios are adjusted for individual beliefs about the appropriateness of wife beating and the following socio-demographic variables: age, domestic partnership status, household headship, fertility preferences, urban residence, professional occupation status, educational attainment, household asset wealth, and religion.

† Because there were no Muslims who reported condom use in Ethiopia or Ghana, the religion variable was concatenated into a variable with only 2 categories, "Christian" vs. "Other".

Table S6. Sensitivity analyses to ascertain the robustness of the primary findings reported in **Table 1** and **Table S5**.

Sensitivity analysis	Result
Assess interaction between contextual norms and educational attainment	Educational attainment had a moderating influence on the effect of gender-unequal contextual norms about violence against women: contextual norms were most strongly associated with condom use among women with no education (AOR=0.83; 95% CI, 0.76-0.91; P<0.001), primary education (AOR=0.89; 95% CI, 0.84-0.95; P=0.001), and secondary education (AOR=0.89; 95% CI, 0.84-0.94; P<0.001), compared to women with higher education (AOR=0.91; 95% CI, 0.79-1.05; P=0.20). A Wald-type F-test rejected the null hypothesis that the interaction terms lacked joint statistical significance (P<0.001)
Assess interaction between contextual norms and domestic partnership status/relationship of last sexual partner	The prevalence of condom use varied by marital status and by partner relationship status: 9,802/29,339 non-married women (33.4%) reported condom use, 5,550/136,184 married women reported condom use with a marital partner (4.1%), and 302/1,239 married women reported condom use with a non-marital partner (24.4%). In multivariable regression models, gender-unequal contextual norms were negatively associated with condom use among non-married women (AOR=0.89; 95% CI, 0.85-0.94; P<0.001) and condom use with marital partners among married women (AOR=0.90; 95% CI, 0.85-0.94; P<0.001). Evaluated at the mean of the other covariates, an increase in gender-unequal contextual norms across the interquartile range of intensity resulted in a 9.8% relative decrease in the predicted probability of condom use among *non-married* women (from 30.5% to 27.5%) and a 42.3% relative decrease in the predicted probability of condom use with *marital* partners among *married* women (from 3.7% to 2.1%). We also observed that an increase in gender-unequal contextual norms across the interquartile range of intensity resulted in a 34.1% relative decrease in the predicted probability of condom use with *non-marital* partners among *married* women, but the estimated association was not statistically significant (AOR=0.82; 95% CI, 0.63-1.08; P=0.16).
Use more stringently defined dependent variable (consistent condom use)	Consistent condom use was measured by the respondent's self-report of having used a condom "every time" she had sexual intercourse with the last sexual partner. We substituted consistent condom use as the outcome variable and re-fit the pooled regression model to the data from 73,957 participants living in 8 countries for which this variable was available. The estimated effect of gender-unequal contextual norms was not statistically significant (AOR=0.94; 95% CI, 0.85-1.03; P=0.16).
Consider potential confounding by alcohol use at last sexual intercourse	The respondent was asked whether she drank alcohol at last sexual intercourse. We added this variable to the model and re-fit the pooled regression model to the data from 119,736 participants living in 14 countries for which this variable was available. Addition of alcohol use at last sexual intercourse to the multivariable regression model attenuated the estimated effect of contextual norms by approximately 0.1%.

Include woman's history of intimate partner violence as an explanatory variable	We incorporated data from the domestic violence module, which was administered through the DHS to a subset of ever-married women in selected countries. In our sample, this restriction corresponded to data from 63,872 ever-married women in 11 countries [26]. Among these women, lifetime exposure to intimate partner violence was measured with a modified Conflict Tactics Scale [27], which inquired about 15 different acts of physical and sexual violence ranging from being pushed or slapped to being burned or forced to have sexual intercourse. We generated two dummy variables indicating that the respondent reported ever personally experiencing any act of violence, or any act of sexual violence, from an intimate partner. First we restricted estimation of the original regression model to the subset of ever-married women in 11 countries who responded to the domestic violence module; in this subsample, the effect of contextual norms was not statistically significant (AOR=0.94; 95% CI, 0.87-1.00; P=0.06). We then added either history of any intimate partner violence or history of any sexual violence to the regression model, but these variables only attenuated the estimated effect of contextual norms by approximately 0.1%.
Use alternative derived variable for contextual norms about violence against women (based on men's responses)	Men were asked the same five questions about the appropriateness of a husband beating his wife. To measure the proximate context of men's norms about violence against women, we created a derived PSU-level variable by averaging the absolute value of the scale across all men in the PSU. We then re-fit the pooled regression model after adding the contextual variable for men's norms. Because data on men's norms were not available in the Cameroon, Democratic Republic of the Congo, Guinea, and Senegal DHS, this pooled regression model excluded 36,195 participants from these countries and was based on the remaining 162,611 participants. In all of the countries, with the exception of Lesotho and Swaziland, men agreed with the appropriateness of wife beating in *fewer* scenarios compared to women (Table S2). The proximate context of men's norms about violence against women had a statistically significant univariable association with condom use (AOR=0.72; 95% CI, 0.69-0.75; P<0.001). However, when it was entered into the multivariable model, the estimated effect was no longer statistically significant (AOR=0.98; 95% CI, 0.94-1.02; P=0.34) whereas the estimated contextual effect of women's norms about violence against women remained statistically significant (AOR=0.89; 95% CI, 0.85-0.93; P<0.001).
Consider potential confounding by contextual-level women's education and professional occupation	We created two derived PSU-level variables for the percentage of women in the PSU who had achieved at least a secondary education and the percentage of women in the PSU who were in professional occupations. We then re-fit the regression models after adding these two contextual-level variables. The effects of the proximate context of women's education (AOR=1.88; 95% CI, 1.62-2.19) and proxiate context of professional-status women (AOR=1.62; 95% CI, 1.28-2.05) were statistically significant. The effect of contextual norms was attenuated but remained statistically significant (AOR=0.93; 95% CI, 0.89-0.97).