Social norms and women's risk of intimate partner violence in Nepal

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ABSTRACT

Social norms increasingly are the focus of intimate partner violence (IPV) prevention strategies but are among the least examined contextual factors in quantitative violence research. This study assesses the within-community, between-community, and contextual effect of a new measure of social norms (PVNS: Partner Violence Norms Scale) on women's risk of IPV. Data come from baseline surveys collected from 1435 female, married, reproductive-age participants, residing in 72 wards in three districts (Chitwan, Kapilvastu, Nawalparasi) in Nepal who were enrolled in a cluster randomized trial testing the impact of a social behavioral change communication intervention designed to prevent IPV. Results of unconditional multilevel logistic regression models indicated that there was cluster-level variability in the 12-month prevalence of physical (ICC = 0.07) and sexual (ICC = 0.05) IPV. Mean PVNS scores also varied across wards. When modeled simultaneously, PVNS scores aggregated to the ward-level and at the individual-level were associated with higher odds of physical (OR_{ind} = 1.12, CI = 1.04, 1.20; OR_{ward} = 1.40, CI = 1.15, 1.72) and sexual (OR_{ind} = 1.15, CI = 1.08, 1.24; OR_{ward} = 1.47, CI = 1.24, 1.74) IPV. The contextual effect was significant in the physical (0.23, se = 0.11, t = 2.12) and sexual (0.24, se = 0.09, t = 2.64) IPV models, suggesting that the ward-level association was larger than that at the individual-level. Adjustment for covariates slightly attenuated the ward-level association and eliminated the contextual association, suggesting that individual perceptions and the collective community phenomena were equally strong predictors of women's risk of IPV and should be taken into consideration when planning interventions. PVNS is a promising measure of social norms underpinning women's risk of IPV and warrants further psychometric testing.

1. Introduction

Intimate partner violence (IPV) is a global public health crisis, with approximately 30% of women aged 15 or older experiencing lifetime physical and/or sexual IPV. Regional estimates range from 16% in East Asia to 66% in Central Sub-Saharan Africa (Devries et al., 2013). Compared to unexposed individuals, survivors of IPV exhibit higher rates of adverse health conditions, including poorer mental and physical health, damaging coping behaviors and sexual and reproductive health conditions (Beydoun et al., 2012; Dillon et al., 2013; Clark et al., 2014; Clark et al., 2016; Stewart et al., 2016). The cost of IPV has been estimated at 5% of world gross domestic product (GDP), higher than any other form of collective or interpersonal violence, with economic effects ranging from 3% of GDP in high-income countries to nearly 15% of GDP in Sub-Saharan Africa (Hoeffler and Fearon, 2014).

Globally attention has been drawn to the need for better statistics on the prevalence, causes, and consequences of IPV against women as a precursor to its elimination (United Nations Department of Economic and Social Affairs Statistics Division, 2014). The Change Starts at Home project (hereafter, *Change*) has begun to address this need by examining the epidemiology of IPV in Nepal and by testing a social behavioral change communication intervention designed to change norms and

ultimately behavior to prevent the occurrence of IPV (Clark et al., 2017). Using baseline data from the *Change* project, this manuscript examines the association of social norms with individual women's experiences of IPV and provides preliminary psychometric characteristics of the Partner Violence Norms Scale (PVNS).

Social norms are informal rules derived from social systems that prescribe what behavior is expected, allowed, or sanctioned in particular circumstances. Individuals follows such a rule for behavior when they 1) perceive that a sufficient number of others follow the rule, 2) perceive that others expect the rule to be followed, and 3) recognize rewards for following the rule or social consequences of being perceived as deviating from the rule (e.g., the rule has legitimacy) (Bicchieri, 2006; Paluck and Ball, 2010; Mackie and Moneti, 2012). In other words, social norms have several necessary (but in themselves not sufficient) elements, including collective practices or *descriptive expectations*, which capture how people in a given community behave, and *normative expectations*, which capture social expectations that a behavior should be practiced. An important third element of social norms for some theorists is the idea that an individual's perception of the social expectation for behavior also matter for adherence (Bicchieri, 2017). Social expectations are differentiated from personal beliefs or attitudes and may not align (Mackie and Moneti, 2012; Bicchieri, 2017). Community aggregates of individual behaviors and attitudes about the acceptability or justification of IPV have been examined extensively in IPV research as proxies for social norms about IPV (Roof et al., unpublished; Naved and Persson, 2005; Koenig et al., 2006; Boyle et al., 2009; Uthman et al., 2011; Linos et al., 2013; VanderEnde et al., 2014; Heise and Kotsadam, 2015; Abramsky et al., 2016; Vyas and Heise, 2016; Yount et al., 2018; James-Hawkins et al., 2017; Roof et al., unpublished); however, these measures differ from social norms, which focus on individual perceptions of collective practices and of the community's social expectations for such practices. As a result, social norms, as defined above, are among the least examined contextual factors associated with IPV in quantitative research.

Much of the extant knowledge on IPV-specific norms derives from early cross-cultural analyses of anthropological data (Sanday, 1981; Levinson, 1989; Counts et al., 1999) and feminist scholarship (Dobash and Dobash, 1979; Kersti. 1993). Numerous social norms have been identified that may jointly influence women's risk of experiencing IPV, including men's dominance and superiority over women, men's ownership of their wives through bride wealth, acceptance of wife beating (and the unacceptability of women seeking help), appropriateness of violence to resolve conflict, men's right to discipline or control women's behavior, men's entitlement to sex, acceptability of mobility and restrictions on the freedoms of women, women's responsibilities to maintain the marriage and family, family privacy, stigma and shame associated with divorce or being unmarried, and men's or family honor being linked to women's purity (Heise, 1998; World Health Organization and Liverpool John Moores University Centre for Public Health, 2009; Heise, 2011). These norms have rarely been examined jointly in quantitative research, although research on contextual factors is growing (Clark, 2013; Beyer et al., 2015).

Prior studies in Nepal (Palladium, 2016; Ghimire and Samuels, 2017; Nwokolo et al., under review), including baseline qualitative data from the *Change* trial (Nwokolo et al., under review), find support for many of these norms in Nepal. Attributes of masculinity remain associated with strength and aggression; men rarely deviate from traditional gender roles, and they hold primary decision-making power within marriage (Nanda et al., 2012; United Nations Development Programme, 2014; Deuba et al., 2016). Men are socially expected to provide for and protect their families, are entitled to respect and obedience, and may exert control or force to fulfill their roles (Ghimire and Samuels, 2017). Nepali girls and women often are ascribed more conservative gender roles, experience less agency and have restricted access to education and employment. Practices such as child marriage, the dowry system, son preference and polygamy also contribute to the prevalence of IPV

(Gurung and Thapa, 2016; Male and Wodon, 2016; Ghimire and Samuels, 2017). The acceptability of IPV is generally high among men and women throughout Nepal, particularly in the Terai region. One study found that over 75% of men and women either completely or partially agreed that men are naturally aggressive, and nearly a quarter of men completely or partially agreed that it was a shame if a man could not or did not beat his wife (United Nations Development Programme, 2014). This acceptability may be due to the high visibility of IPV in Nepal, as 93% of people living within the Terai region reported that they had seen women being beaten or scolded by men, 27% of whom reported they witnessed this frequently (United Nations Development Programme, 2014). Population-based studies (Lamichhane et al., 2011; Puri et al., 2011; Nanda et al., 2012) underscore the high prevalence of IPV within Nepal. According to the Demographic and Health Survey, 28% of women reported lifetime exposure to physical and/or sexual IPV, and half of these women (14%) reported exposure in the prior 12 months. However, only 23% report help-seeking (Ministry of Health and Population (MOHP) [Nepal], New Era et al., 2012); non-disclosure may be linked to desire to maintain family honor and privacy, fear of disrupting family relations, fear of further abuse, and limited faith in the justice system (Joshi et al., 2008; Gurung and Thapa, 2016).

To date little quantitative research in Nepal has examined the relationship between social norms and risk of IPV. Normative expectations related to the acceptability of violence have been associated with increased individual-level risk of IPV in India (Koenig et al., 2006; Boyle et al., 2009), Nigeria (Uthman et al., 2011; Linos et al., 2013) and Tanzania (Vyas and Heise, 2016), as well as unmarried girls' risk of violence in Bangladesh (VanderEnde et al., 2014). Normative expectations on the acceptability of IPV were the strongest mediator in a successful intervention to prevent IPV in Uganda (Abramsky et al., 2016) and a measure containing items on gender equity and violence acceptability was associated with higher individual-level risks of controlling behavior, justification of IPV, and male perpetration of IPV in Bangladesh (Yount et al., 2018). In contrast, another study in Bangladesh showed that a measure of traditional gender roles was not associated with women's victimization (Naved and Persson, 2005), likely because the measure did not contain any items on the acceptability of IPV which is more consistently associated with IPV. The only multi-country investigation of the social norms/IPV relationship found that men's authority over women, but not wife beating justification, was predictive of higher area-level rates of IPV. Neither measure, however, was associated with women's individual risk of IPV, possibly due in part to the adjustment for attitudes which the authors note may be on the causal pathway (Heise and Kotsadam, 2015; Roof et al., unpublished). To date, almost no research in Nepal has examined normative expectations as a potential predictor of IPV. The one existing study did not find normative expectations to be associated with men's perpetration of violence against women (Roof et al., unpublished).

Using baseline data from the *Change* project, this study builds upon prior research in Nepal and globally by examining the association of a new measure of social norms on women's experiences of IPV. Specifically, this study assesses the within-community, between-community and contextual effect of the PVNS on women's risk of IPV and whether this measure adds any additional information than that garnered from a measure of aggregated attitudes, which is the most frequently used proxy for collective normative expectations.

2. Materials and methods

2.1. Overview

The *Change* project is a pair-matched, repeated cross-sectional 2-armed, single-blinded cluster trial (N = 36 clusters), comparing a social behavior change communication strategy to radio programming alone for its impact on physical and/or sexual IPV at the end of programming (12 and 24 months post-baseline). *Change* is a multi-component social

behavior change communication strategy designed to shift attitudes, social norms and behaviors that underpin the power imbalances which increase Nepali women's vulnerability to marital IPV. Recognizing the social ecology of IPV (Heise, 2011; C-Change, 2012), the intervention engages actors across multiple domains of influence, including family members and community leaders, in addition to the primary target audience of reproductive age women and their husbands. As a social behavior change strategy, the intervention approaches IPV prevention through three key approaches: advocacy, social mobilization, and behavior change communication (C-Change, 2012). The behavior change communication component is a 9-month, weekly radio drama with listener engagement through interactive voice response (IVR) and short message service (SMS), to which the intervention and control conditions are exposed. The intervention communities are further engaged in radio Listening and Discussion Groups (LDGs), through which the men and women participants meet to reflect critically on the content of the radio episode through a curriculum-based process of guided discussion, in-group and home-based activities. LDGs serve as venues for life skills building and act as a platform through which community outreach activities are planned and executed, alongside local leaders who receive training and support to act as advocates in the community for more equitable social norms. Further details on the study protocol and trial are published elsewhere (Clark et al., 2017).

2.2. Study setting and sample

The present study is set in three districts, Nawalparasi, Kapilvastu, and Chitwan, of the Terai region, which has the highest prevalence of IPV in Nepal (Ministry of Health and Population (MOHP) [Nepal], New Era et al., 2012). The populations in all three districts are more than 80% Hindu, while ages at first marriage, levels of women's land ownership, and levels of women's literacy differ somewhat (Fig. 1) (Central Bureau of Statistics [Nepal] 2013; Central Bureau of Statistics [Nepal] 2014a). Within each district, 12 village development committees (VDCs) were selected purposely where the implementing partner, Vijaya Development Resource Center, had extensive contacts and a strong reputation necessary to implement the project. Eligible VDCs had to be at least 30–40 km in distance from one another and have separate major

markets and major health centers. VDCs were pair-matched within district according to caste and language using data from the Central Bureau of Statistics (Central Bureau of Statistics [Nepal] 2014b; Central Bureau of Statistics [Nepal] 2014c; Central Bureau of Statistics [Nepal] 2014d) and after consultation with the implementing partner, who had a more nuanced understanding of socio-cultural differences and similarities across VDCs. Within the VDC, two wards (N = 72) were selected using probability proportionate to size methodology among eligible wards, defined as having a total household population between 100 and 550, a size assumed appropriate for project activities. Simple random sampling using a sampling frame developed for the study was employed to recruit 20 eligible women from each ward to take part in the survey (N = 1440). Eligible respondents were 18–49 years old, had a husband at least 18 years old, lived regularly in the study area, and lived a majority of the year with their husband. Only five observations included missing data among study variables, leaving 1435 for analysis. Participants underwent an in-person interview, conducted through a professional survey firm, in a private location lasting between 45 min and 1 h. Institutional Review Board (IRB) approval was received from Anonymous University (IRB00091115), the Anonymous University (1601S82063), Anonymous University (802242-1), and the Nepal Health Research Council (178/2015). Permission was also received from the District Development Committees representing Nawalparasi, Kapilvastu and Chitwan and written informed consent was sought from all participants. The study adheres to international guidelines for the protection of participants and staff involved in research on violence against women (Hartmann and Krishnan, 2014).

2.3. Measures

The survey instrument was developed in English, translated into Nepali and back-translated for accuracy. The translated document was also reviewed against the English version by the data collection firm prior to initiating data collection. The primary outcomes for this study were physical and sexual IPV in the prior 12 months (What Works to Prevent Violence Global Program, 2015) Items assessed the frequency of occurrence (never, once, few, many) in the past 12 months of five items measuring physical IPV (slapped or had something thrown at

CHITWAN
Male mean age at first marriage: 21.4
Female mean age at first marriage: 17.5
Female land ownership: 11.6%
Female literacy: 70.7%

KAPILVASTU
Male mean age at first marriage: 18.6
Female mean age at first marriage: 16.2
Female land ownership: 9.3%
Female literacy: 45.0%

NAWALPARASI
Male mean age at first marriage: 20.4
Female mean age at first marriage: 17.1
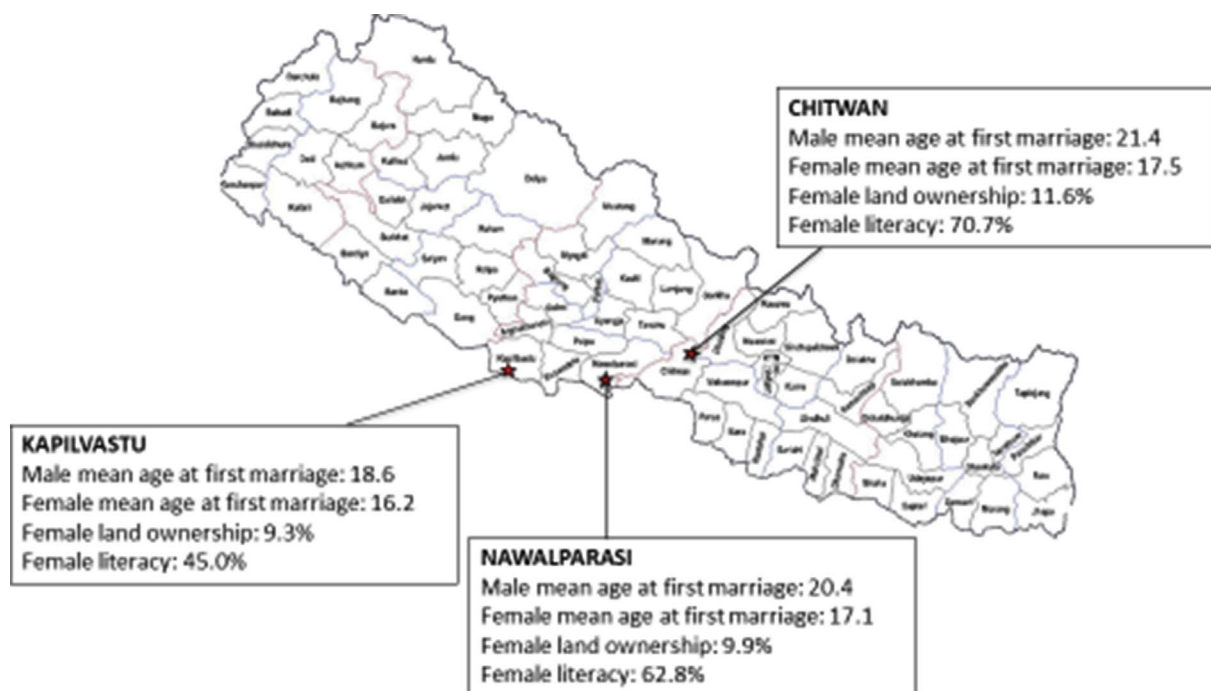Female land ownership: 9.9%
Female literacy: 62.8%

Fig. 1. Sociodemographic characteristics of study locations, Nepal.

them which could hurt; pushed or shoved; hit with a fist or something that could hurt; kicked, dragged, beaten, choked or burnt; threatened with a gun, knife or other weapon) and three items measuring sexual IPV (had sex out of fear that husband might become violent; physically forced to have sex; forced to do something else sexual). Of those who experienced some form of violence (N = 401), 36.41% (N = 146) experienced both forms indicating some overlap in the measures, but they are not redundant. Cronbach's alpha for the physical IPV scale was 0.92. Cronbach's alpha for the sexual IPV scale was 0.85. Measures were modeled dichotomously as experience of that form of IPV in the past 12 months or not.

2.3.1. Perceived and collective normative expectations

The Partner Violence Norms Scale (PVNS) was developed for the study from a thorough review of the norms literature, examination of prevailing practice to measure social norms, and formative research in Nepal including focus group discussions, cognitive interviews, and a pilot test of the survey instrument. The PVNS measures perceptions of normative expectations at the individual-level and collective normative expectations when aggregated to the community-level. The scale was designed to tap into a single underlying construct comprised of items represented related constructs. Items measure traditional gender role expectations (2 items), intra-familial dynamics (1 item), acceptability of violence (1 item), silence and tolerating violence to preserve the family and family honor (2 items), non-interference in family affairs (1 item), and appropriate expressions of women's sexuality (1 item). Correlations among the variables ranged from 0.41 to 0.67 for all items except for the two items on traditional gender role expectations which correlated at 0.76 (Table 1) suggesting at least moderate correlation among most items. Participants were asked how many members of their community believed each statement. Response options included: "no one in my community believes this (0), some people in my community believe this (1), most people in my community believe this (2), everyone in my community believes this (3). The top two categories were combined for analysis given their conceptual closeness, a decision confirmed through factor analysis (described below).

Exploratory factor analysis on a random half of the data was used to assess the scale's dimensionality. While all items loaded strongly on one factor (loadings ranged from 0.69 to 0.82), a 2-factor model (RMSEA = 0.07, CFI = 0.99) outperformed a 1-factor model (RMSEA = 0.13, CFI = 0.95), but one of the factors in the 2-factor model was defined by only two items—men helping with chores and joint decision-making—with joint decision-making dominating the factor. One item (joint decision-making) that seemed to be defining the second factor (highest factor loading) was removed and a confirmatory factor analysis was run on the other random half of the data. This reduced 7-item model fit the data acceptably well (RMSEA = 0.07, CFI = 0.99) and had a Cronbach's alpha of 0.85. The models were re-run with the 4-cateogry response options. The models had poorer fit than those presented here (data available upon request), confirming the need to combine the highest two response options. An individual-level perception of normative expectations score was calculated as a mean across the seven items, with higher values indicating greater endorsement of gender inequitable community norms. These individual-level mean scores were averaged at the ward level to form a measure of collective normative expectations.

In addition, an aggregate measure of gender inequitable attitudes was generated to assess whether the PNVS added any additional information. Respondents were asked their level of agreement (strongly disagree (0) to strongly agree (3)) with each of 10 statements based on the Gender Equitable Men scale (Pulerwitz and Barker, 2008): "A woman's most important role is to take care of her home and family," "A man should have the final say in all family matters," "It is the wife's obligation to have sex with her husband whenever he wants it, except when she is sick or menstruating," "It is indecent for a woman to express her sexual desires to her husband," "A woman who discusses her domestic problems with others brings shame upon her family," "If a woman leaves her marriage, it reflects badly on her family," "Violence between a husband and wife is a private matter and others should not intervene," "If a wife does something wrong, her husband has the right to punish her," "There are times when a woman deserves to be beaten," and "A woman should tolerate violence to keep her family together." An individual-level gender inequitable attitude score was calculated as the mean across the items, with a higher score representing more gender inequitable attitudes (Cronbach's alpha = 0.83). A ward-level proxy for collective normative expectations was created by averaging attitudinal scores by ward. Individual attitudes and collective normative expectations based on the attitudinal items correlated with PVNS at 0.37 and 0.21, respectively.

Table 1
Item Distribution and correlation (N = 1435).

Item	Construct	None (%)	Some (%)	Most/All (%)	Polychoric Correlation							
					1	2	3	4	5	6	7	8
	Traditional gender role expectations											
1	A husband who helps his wife with the household chores will not be respected by his family	30.52	37.07	32.40	1.00							
2	A man who makes important decisions jointly with his wife will be considered a weak man by his family	29.27	40.91	29.83	0.76	1.00						
	Intra-familial dynamics											
3	A man's family will think he is a disloyal son if he takes his wife's opinion over his mother's opinion	17.28	41.25	41.46	0.54	0.59	1.00					
	Inappropriate expressions of women's sexuality											
4	A woman who openly expresses her sexual desires to her husband is perceived to be vulgar	32.54	38.47	28.99	0.41	0.44	0.49	1.00				
	Acceptability of violence											
5	Husbands may use force to reprimand their wives because men should be in control of their families	30.80	40.49	28.71	0.54	0.60	0.50	0.55	1.00			
	Family primacy and honor											
6	A woman who complains about her husband's violent behavior is considered a disloyal wife by her in-laws	26.62	43.97	29.41	0.50	0.51	0.49	0.61	0.67	1.00		
7	A woman who does not tolerate violence from her husband is dishonoring her family and should not be welcomed home	37.28	40.49	22.23	0.52	0.54	0.48	0.51	0.63	0.63	1.00	
	Unacceptability of intervention in family affairs											
8	A person who intervenes when a woman is being beaten by her husband would be considered to be interfering or meddling in the couple's private affairs	28.71	45.57	25.71	0.53	0.51	0.50	0.50	0.55	0.64	0.64	1.00

Note: Item number 2 not included in final scale.

2.3.2. Individual- and community-level perceived financial stress

Prior research in Nepal has shown poverty at the individual and community level to be positively associated with men's use of violence against women (Roof et al., unpublished). Percent of households reporting financial stress was calculated as a ward-level aggregate of a single survey item used to measure whether the respondent or her husband frequently were stressed due to insufficient income. The individual-level item was also modeled.

2.3.3. Education

Low educational attainment for men and women has been associated with IPV and violence against women in Nepal (Ghimire et al., 2015; Roof et al., unpublished). The Participants' and their husbands' educational levels were modeled as an ordinal variable with values consisting of: none (0); primary, informal education, adult education, other education (1); lower secondary (2); upper secondary (3); School Leaving Certificate or equivalent (4); intermediate and equivalent (5); bachelor's level (6); and master's level and above (7). The educational levels of the participants and their husbands were correlated at 0.73. Therefore, only husband's educational levels were modeled as they have been shown to be more predictive of women's risk of IPV in Nepal (Oshiro et al., 2011; Ghimire et al., 2015).

2.4. Analytic strategy

First, the distribution of all variables was examined. Then bivariate multilevel logistic regression models were fit to examine unadjusted relationships of the primary predictors of interest (perceived and collective normative expectations stemming from PVNS) and all other variables to each form of IPV. Next, unconditional multilevel logistic regression models (Model A) were fit to test for the presence of ward-level variation in physical and sexual IPV and to calculate the intraclass correlations (ICC) using the latent variable method (Merlo et al., 2006). Additional multilevel logistic regression models were created by progressively adding variables: perceived normative expectations (Model B), Model B plus collective normative expectations stemming from PVNS (Model C), and Model C plus individual- and cluster-level covariates including the measure of collective normative expectations based on aggregated attitudes (Model D). A contextual effect was assessed in models C and D by calculating the difference in the logits for the perceived and collective normative expectations measures. The change in fit of each model was examined using the deviance test, which is the difference in -2 Log likelihoods for each successive set of nested models, evaluated as a chi-square distribution with degrees of freedom equal to the difference in number of parameters estimated. The deviance test was also used to examine the impact of adding in a random slope for the norms measure in model 2. The individual-level variables were group mean centered and the ward-level variables were grand mean centered (Enders and Tofighi, 2007). Further, attitudes and perceived and collective normative expectations were scaled by 0.25 points which represents a meaningful difference in scores given the various scale's score distribution. The measure of perceived economic stress was scaled by 0.10, to represent a difference of 10% to facilitate interpretation. All analyses were conducted using PROC GLIMMIX in SAS 9.4.

3. Results

Eighteen percent (N = 256) of the respondents reported physical IPV and 20.28% (N = 291) reported sexual IPV, figures that ranged from 2.00% to 32.50% and 4.00%–42.50%, respectively across wards. Table 2 describes sample characteristics and their bivariate relationship to each form of IPV. Notably, all individual- and community-level risk and protective factors were associated with physical and sexual IPV, except gender inequitable attitudes which was associated only with sexual IPV when modeled as an individual-level variable.

Table 2
Sample characteristics and bivariate associations with IPV by IPV type (N = 1435).

	Mean (SD)	Physical IPV[a] OR (95% CI)	Sexual IPV[a] OR (95% CI)
Individual Characteristics			
Husband's education level, (range: 0,7)[b]	2.46 (1.82)	0.77 (0.70, 0.84)*	0.77 (0.71, 0.84)*
Perceived financial stress[b,e]	0.45 (0.50)	1.09 (1.06, 1.13)*	1.06 (1.03, 1.09)*
Respondent's inequitable attitudes, range (0.00,3.00)[b,d]	1.12 (0.47)	1.07 (1.00, 1.16)	1.09 (1.01, 1.17)*
Normative expectations, (range: 0.00,2.00)[b,d]	1.01 (0.55)	1.12 (1.04, 1.20)*	1.15 (1.08, 1.23)*
Ward-level characteristics			
Perceived financial stress, (range: 0.23,0.73)[c,e]	0.42 (0.11)	1.33 (1.14, 1.55)*	1.33 (1.15, 1.53)*
Collective normative expectations (GEM)[f], range (0.68,1.28)[c,d]	1.04 (0.11)	1.48 (0.97, 2.25)	1.13 (0.76, 1.68)
Collective normative expectations (PVNS)[g] (range: 0.45,1.44)[c,d]	0.91 (0.22)	1.40 (1.14, 1.70)*	1.46 (1.23, 1.73)*

Note: * = p-value < 0.05.
[a] Multilevel logistic regressions.
[b] Group mean centered for bivariate regressions.
[c] Grand mean centered for bivariate regressions.
[d] Scaled by 0.25 for bivariate regressions.
[e] Scaled by 0.10 for bivariate regressions.
[f] Gender Equitable Men Scale.
[g] Partner Violence Norms Scale.

From the null models (Model A), ward-level variation in the 12-month prevalence of physical IPV (residual variance = 0.23, standard error = 0.11) and sexual IPV (residual variance = 0.19, standard error = 0.09) was evident, although modest (ICCs: physical = 0.07; sexual = 0.05). Including the random effect significantly improved model fit based on the deviance test (physical IPV: $Chi^2_{(df=1)}$ = 9.26, p-value < 0.01; sexual IPV: $Chi^2_{(df=1)}$ = 8.53, p-value < 0.01).

In Model B (Table 3), perceived normative expectations were associated with higher odds of individual-level risk of IPV. Each 0.25 point higher perceived norms score, relative to the ward mean, was associated with a 12% higher odds of physical IPV and a 15% higher odds of sexual IPV. The addition of normative expectations (Model B) improved model fit compared to the null models based on significant differences in the -2 Log Likelihoods and was further improved by adding in the collective normative expectation scores (Model C). For every 0.25 point higher collective normative expectations score relative to the ward-average, the odds of physical and sexual IPV were 40% and 47% higher, respectively. The contextual effect was significant in both (physical IPV: 0.23, se = 0.11, p-value = 0.04; sexual IPV: 0.24, se = 0.09, p-value = 0.01) suggesting that the ward-level estimate was larger than the individual-level estimate.

The addition of covariates further improved the model fit (Table 3; Model D) and highlighted the protective effect of men's education, elevated risk associated with perceived financial stress, as well as the lack of influence of participants' inequitable attitudes on participants' risk of IPV. The contextual effect became insignificant suggesting that the relationship between collective normative expectations and women's risk of IPV was not larger than perceived normative expectations and women's risk of IPV; however, both remained significantly associated with women's risk of IPV, although at a marginal level of significance in the physical IPV model (p-value = 0.05). In addition, the measure of collective normative expectations derived from attitudes was significantly associated with increased odds of physical IPV (OR = 1.53, CI = 1.02, 2.32).

4. Discussion

The current study in the Terai district of Nepal tested a new scale

Table 3
Multi-level models by IPV type (N = 1435).

Physical IPV	Model A[a]	Model B[a]	Model C[a]	Model D[a]
Individual Characteristics				**OR (95% CI)**
Husband's education level[b]				0.82 (0.75, 0.90)*
Perceived financial stress, by 0.10[b]				1.08 (1.04, 1.10)*
Respondent's inequitable attitudes, by 0.25 point[b]				1.01 (0.92, 1.10)
Perceived normative expectations, by 0.25 point[b]		1.12 (1.04, 1.20)*	1.12 (1.04, 1.20)*	1.11 (1.03, 1.20)*
Ward-level characteristics				
Perceived financial stress, by 0.10[c]				1.27 (1.07, 1.49)*
Collective normative expectations (GEM)[d], by 0.25 point[c]				1.53 (1.02, 2.32)*
Collective normative expectations (PVNS)[e], by 0.25 point[c]			1.40 (1.15, 1.72)*	1.23 (1.00, 1.52)
Model Fit[c,d]				
−2 Log likelihood	1336.64	1326.75	1315.83	1249.80
Error Variance (SE), Level-2 Intercept	0.23 (0.11)	0.24 (0.11)	0.17 (0.10)	0.12 (0.09)
Likelihood-ratio test, Chisq (df)		9.89 (1)*	10.92 (1)*	66.03 (5)*
Contextual effect, estimate (se)			0.23 (0.11)*	0.10 (0.11)
Sexual IPV	**Model A[a]**	**Model B[a]**	**Model C[a]**	**Model D[a]**
Individual Characteristics				**OR (95% CI)**
Husband's education level[b]				0.81 (0.74, 0.88)*
Perceived financial stress, by 0.10[b]				1.04 (1.01, 1.07)*
Respondent's inequitable attitudes, by 0.25 point[b]				1.00 (0.93, 1.09)
Perceived normative expectations, by 0.25 point[b]		1.15 (1.08, 1.23)*	1.15 (1.08, 1.24)*	1.14 (1.06, 1.23)*
Ward-level characteristics				
Perceived financial stress, by 0.10[c]				1.24 (1.07, 1.43)*
Collective normative expectations (GEM)[d], by 0.25 point[c]				1.08 (0.76, 1.54)
Collective normative expectations (PVNS)[e], by 0.25 point[c]			1.47 (1.24, 1.74)*	1.34 (1.12, 1.60)*
Model Fit[c,d]				
−2 Log likelihood	1438.65	1421.15	1403.50	1353.62
Error Variance (SE), Level-2 Intercept	0.19 (0.09)	0.20 (0.09)	0.07 (0.07)	0.04 (0.06)
Likelihood-ratio test, Chisq (df)		17.50 (1)*	17.65 (1)*	49.88 (5)*
Contextual effect, estimate (se)			0.24 (0.09)*	0.16 (0.10)

Note: *p-value < 0.05.
[a] Multilevel logistic regressions.
[b] Group mean centered.
[c] Grand mean centered.
[d] Gender Equitable Men Scale.
[e] Partner Violence Norms Scale.

designed to measure perceived and collective normative expectations influencing women's risk of IPV. The PVNS was robustly associated with physical and sexual IPV when modeled at the individual- and ward-levels, highlighting its potential utility. These findings are a promising first step. Further assessment as the trial progresses and additional psychometric testing are needed to draw firmer conclusions about the utility of PVNS to assess potential impacts of a social behavior change communication intervention on women's risk of IPV.

No studies to date have used the PVNS, thus precluding direct comparisons. However, the presence of ward-level associations is similar to prior research documenting associations between community-level normative expectations and physical IPV (VanderEnde et al., 2014) (Yount et al., 2018), and a composite measure of physical and/or sexual IPV (Linos et al., 2013; Vyas and Heise, 2016). Two studies of normative expectations based on men's reports found collective normative expectations to be associated with perpetration of physical, but not sexual or emotional IPV (Koenig et al., 2006; Uthman et al., 2011), while one study using women's reports found collective normative expectations to be associated with emotional and sexual IPV but not physical (Uthman et al., 2011). Most of these prior studies aggregated attitudes—women's, men's, or a combination of both—to the community level. The positive association between women's aggregated gender inequitable attitudes and risk of physical IPV in the present study suggests the potential of multiple approaches to assess collective normative expectations. In the present case, collective normative expectations assessed by PVNS were more consistently associated with women's risk of IPV than aggregations of women's attitudes. Consistent with prior Nepal-based research, normative expectations retained a strong, significant relationship to women's risk of IPV while individual-

level measures of women's attitudes did not (Lamichhane et al., 2011; Yoshikawa et al., 2014).

While PVNS is a promising measure of social expectations, this study entails the voice of one group of stakeholders (reproductive age women) at one point in time. This approach is scalable as the majority of IPV surveys conducted in lower income settings rely on women's self-report. It is unclear though, whether women's reports alone are sufficient to effectively and efficiently measure injunctive norms. One approach to validate the impact of women's self-report would be to examine the relative association of other stakeholder's attitudes and perceptions on injunctive norms in the community on women's risk of IPV. A recent study using national data for Bangladesh found that senior men's aggregate attitudes mattered for junior men's justification of IPV, control in the family, and IPV perpetration, but women's aggregate attitudes did not (Yount et al., in press; Roof et al., unpublished). The sole prior multilevel study in Nepal did not find an association between an aggregate measure of male's attitudes and the perpetration of violence against women (Roof et al., unpublished); however, that study was unable to disentangle the role of senior versus junior men's normative influence. Thus, further research with a range of stakeholders is needed.

The significant and robust findings linking perceived normative expectations to women's risk of IPV is also significant, as perceived expectations remain the focus of many behavior change communication interventions, including studies of IPV (Paluck and Ball, 2010). Additionally, aggregation of phenomena across members of a community may not accurately represent the collective norm, as perceptions may be inaccurate (Lapinski and Rimal, 2005; Paluck and Ball, 2010) and the most salient groups may not be represented. The significant ward-

level findings suggest that there are important area-level associations that should be considered. Ultimately, trial results are required to assess whether changes in one level or both are needed to impact women's risk of IPV as well as to tease apart the sequencing of social norms and behavior change.

In addition to the social norms findings, this study reinforces the well-established relationship between men's educational attainment and women's lower risk of IPV (Abramsky et al., 2011; Atteraya et al., 2015; Ghimire et al., 2015; Ghimire and Samuels, 2017) and the positive link between household financial stress or low socioeconomic status and women's risk of experiencing IPV (Abramsky et al., 2011; Atteraya et al., 2015; Ghimire and Samuels, 2017).

This study has limitations. Study findings are not generalizable beyond those with similar demographics and the VDCs represented in the sample, and a more robust measure of socioeconomic status would provide better adjustment for socioeconomic status and conditions. All norms items referenced the "community" assuming it would be an important reference network across norm types and across participants. Different underlying norms may have varying reference groups and while norms about the acceptability of IPV cluster within households, norms reference groups extend beyond the family, especially for men (Palladium, 2016; Shakya et al., 2016). Additional research is needed to refine the reference network applicable to the norms items. In addition, the norms items included a negative sanction. This was done intentionally to ensure that the items were understood to be different than the items assessing attitudes and reflected findings from the formative research on likely sanctions for the behavior. Anticipated sanctions, however, may differ across communities and individuals which could lead to unreliable responses if the sanction is incorrect (Cislaghi and Heise, 2016). Mention of a wider range of sanctions might avoid some of this unreliability in future research. Further, causality with observational multilevel data cannot be ascertained (Oakes et al., 2015). Future longitudinal and experimental study designs, such as the *Change* project, are needed. In order to more accurately detect the presence of a social norm, it is necessary to assess the respondents' sensitivity to the norms, their conditional preferences to adhere to the norm and perceived and collective empirical expectations (Bicchieri, 2017). Additional research within these communities is needed to fully diagnose the presence of social norms. Finally, despite careful development of PVNS via prior literature and pilot testing, formal testing of its validity and reliability is still in process.

5. Conclusions

A complex combination of social norms related to gender, sexuality, honor, family primacy and privacy, and the acceptability of violence undergird the perpetration of IPV. Questions remain, however, on the best way to measure social norms. Study findings highlight the potential utility of PVNS to measure perceived and collective normative expectations associated with women's risk of IPV. Additional psychometric testing and ultimately, the trial's results, will shed light on the potential for a social behavior change communication intervention to alter norms around the acceptability of IPV, and ultimately, reduce the occurrence of IPV (Clark et al., 2017) and the ability of the PNVS to measure that change.

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