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Masculine Gender Ideologies, Intimate Partner Violence, and Alcohol Use Increase Risk for Genital Tract Infections among Men

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Abstract

Background—Masculine gender ideologies are thought to underlie alcohol use, intimate partner violence (IPV) perpetration, and sexual risk of HIV and other sexually transmitted infections (STIs). We extend on studies in the Indian context by examining the roles of masculine gender ideologies, alcohol use, and IPV on three outcomes of HIV risk (condom use, genital tract infection-GTI-symptoms, and GTI diagnosis).

Methods—We applied logistic regression models to cross-sectional data of men and their wives in rural Maharashtra, India (n=1,080 couples).

Results—We found that men with less masculine gender ideologies demonstrated greater odds of condom use (e.g., lower odds no condom use OR=0.96, 95%CI=0.93–0.98); IPV perpetration was associated with increased odds of reporting 1 GTI symptoms (AOR=1.56, 95%CI=1.07–2.26) and decreased GTI diagnosis (AOR=0.28, 95%CI=0.08–0.97); and moderate alcohol consumption was associated with increased odds of reporting 1 GTI symptom (AOR=1.51, 95%CI=1.01–2.25).

Discussion—Our findings have direct implications for men and women's health in rural India, including targeted GTI diagnosis and treatment, integrated violence prevention in STI clinics, and targeted intervention on masculine gender ideologies.

Keywords

Gender; men; India; Genital Tract Infections

INTRODUCTION

India has the third largest HIV epidemic in the world, with 2.1 million people living with HIV (UNAIDS, 2014). Over 80% of new HIV infections in India occur from heterosexual transmission (NACO, 2006) and 40% of new infections occur among married women of reproductive age (15–49 years) (Decker et al., 2009). Growing evidence suggests that being married is the greatest risk factor for HIV transmission among women in India (Silverman, Decker, Saggurti, Balaiah, & Raj, 2008). Married women are thought to be exposed to HIV through their husbands' risk behaviors, including sexual violence and intimate partner violence (IPV), having multiple sex partners, and risky alcohol drinking (Ghosh et al., 2011; Silverman et al., 2008). Indian wives typically have less sexual decision-making power than husbands in the marital context (Santhya & Jejeebhoy, 2005), which can exacerbate sexual risk and decrease chances of condom use (Dasgupta et al., 2015). Although the marital context has been identified as high HIV risk for Indian women, much less is known about the risk factors for husbands.

LITERATURE REVIEW

A growing body of work with men in India focuses on the importance of traditional masculine gender ideologies in shaping men's HIV risk behaviors and the HIV risk of their partners. Traditional gender norms define and reinforce ideals of femininity and masculinity. From childhood to adulthood, boys and girls are exposed to societal messages of how men and women are supposed to behave, which are passed onward from their families, social networks, media, and social institutions (Pulerwitz, Michaelis, Verma, & Weiss, 2010). Masculine gender ideologies are an individual's attitudes about the appropriate roles, responsibilities, and behaviors for men in their society. In the traditional Indian context, men are expected to be dominant and are "entitled to exercise power and, if needed, be violent towards women who do not adhere" to gender roles and expectations, especially in the marital context (Nanda et al., 2014). Intimate partner violence (IPV) is often "rationalized to protect the honor of the family" or to "display their manhood", whereas women are expected to endure violence to sustain their family and household (Nanda et al., 2014). Research suggests that men who adhere to traditional norms of masculinity, and endorse inequitable gender beliefs, have greater odds of using violence (Barker, 2005), engaging in risky sexual behaviors (Santana, Raj, Decker, La Marche, & Silverman, 2006), and perpetrating sexual violence and intimate partner violence (IPV) against women (Santana et al., 2006). Such findings place a growing emphasis on the importance of gender equity for both men's and women's health.

Alcohol use may furthermore exacerbate the associations between masculine gender ideologies, IPV, and STI risk for men. There is a consistent gender disparity in which men are more likely to drink alcohol, consume larger quantities of alcohol, and experience

alcohol-related behavioral problems than woman (Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Gmel, 2009); this is likely because alcohol consumption is gendered as a masculine behavior (Nolen-Hoeksema & Hilt, 2006). Although, alcohol consumption has been found to exacerbate IPV perpetration as well as other risky sexual behaviors (Jewkes, 2002), including extramarital sex and STI diagnoses among married Indian men (Saggurti, Schensul, & Singh, 2010), the association between masculine gender ideologies and alcohol use has not yet been examined in Indian men.

Identifying the ways in which masculine gender ideologies influence HIV risk is particularly important in India, where 35% of Indian women report experiencing marital IPV (Silverman et al., 2008) and IPV is associated with increased risk for HIV (Silverman et al., 2008). Although masculine gender ideologies have been associated with sexual risk behaviors in other national contexts (Fleming, DiClemente, & Barrington, 2016), less work has considered the effects of masculine gender ideologies on the risk for sexually transmitted infections (STIs). STIs have been found to facilitate HIV infection and transmission. Even less research has examined the effects of masculine gender ideologies on biomarkers of STIs, such as symptoms of genital tract infection (GTI) which encompass both STIs (e.g., chlamydia, gonorrhea) as well as other infections (e.g., candidiasis, bacterial vaginosis). Studies in the Indian context have demonstrated strong associations between inequitable gender ideologies and IPV, but there has been limited examination of whether masculine gender ideologies and IPV perpetration are associated with STI risk among married men in rural contexts (Nanda et al., 2014). This study examines the roles of masculine gender ideologies, alcohol use, and IPV on three outcomes related to HIV risk: (1) condom use, (2) genital tract infection (GTI) symptoms, and (3) GTI diagnosis among married men in rural India. We hypothesize that men with less support of equitable masculine gender ideologies (i.e., lower score on GEM), who report more frequent alcohol use, and/or whose wives report IPV victimization will have greater odds of: (h1–3) using condoms, (h4–6) reporting at least one GTI symptom, and (h7–9) reporting greater odds of ever being diagnosed with a GTI are associated than their respective comparison groups.

MATERIALS AND METHODS

This study involved cross-sectional analysis of baseline data from couples (N=1,081) participating in the Counseling Husbands to Achieve Reproductive Health and Marital Equity (CHARM) study, a family planning evaluation study conducted in the rural Thane District of Maharashtra, India between March 1 and December 31, 2012. Details on the larger intervention evaluation study can be found elsewhere (Yore et al., 2016).

Sample Design

Sampling efforts were led by scientific leadership in India using geographic maps of rural Maharashtra developed by local primary health centers. Sixty-two geographic clusters were identified on the basis of having comparable population density (approximately 300 households or 1,000 population), geographic size, and make up of public and private health sector facilities, community resources, and business areas. Of those 62 geographic clusters, 50 were selected based on accessibility. Up to 25 eligible households were recruited per

cluster. Trained research staff approached households to identify young married men and their wives for CHARM study participation. Households were eligible for participation if there was a married couple with a husband between the ages of 18 and 30 years, neither husband nor wife were surgically sterilized, both were fluent in Marathi (the native language of Maharashtra), neither had a serious cognitive or health impairment, and they resided together for the past 3 months with no intent to relocate in the next 2 years. Once the household was screened as eligible, research staff provided details regarding the CHARM intervention. If the couple indicated interest, research staff would conduct informed consent with the couple in a private space in the house. Research staff screened 1,881 couples, 1,143 were eligible to participate in the study (60.8% eligibility rate), and 1,081 eligible couples chose to participate (94.6% participation rate). The present analyses are based on data from the baseline survey assessment of husbands and wives (n=1,080). One participant had missing data on the GTI outcome measures.

Eligible and interested participants completed a 60-minute paper survey (distinct surveys for husbands/wives) conducted by a sex-matched researcher. Survey items covered a broad range of topics including demographics, contraception, marital communication, violence, alcohol use, sexual history, and masculine gender ideologies. No monetary incentive was provided for participation. All research study procedures were approved by the Institutional Review Boards at the University of California, San Diego and the National Institute for Research in Reproductive Health (Indian Council of Medical Research), Mumbai.

Measures

Measures for this study were taken from the National Family Health Survey-3 (NFHS-3) (International Institute for Population Sciences, 2007), India's version of the Demographic and Health Survey. Sociodemographic measures included age, caste, and receipt of formal education; age and education were assessed for both husbands and wives. Length of marriage was calculated by subtracting age at marriage from current age. Parity assessed number of live births.

Our primary independent variables were masculine gender ideologies, alcohol use, and intimate partner violence victimization by wives. *Masculine gender ideologies* measured men's gender attitudes related to men's and women's roles in relationships and the household (i.e. masculine gender ideology), using the 24 item Gender Equitable Men (GEM) Scale (Pulerwitz & Barker, 2008). Sample items include: "A man should have the final word about decisions in his home," "It is important that a father is present in the lives of his children, even if he is no longer with the mother," "A man needs other women, even if things with his wife are fine," "Men are always ready to have sex," "I would be outraged if my wife asked me to use a condom." Responses were on a 3-point scale: 1-don't agree, 2-partially agree, and 3-agree. The Cronbach alpha was 0.71 for these 24 items, indicating moderate reliability. A summation score was created, reversing items as appropriate, so that a higher score indicates greater support of gender equitable norms. There is no standard application of the GEM Scale, however the scale was designed and validated as a continuous measure, therefore we apply it as a continuous measure in our analyses. *Frequency of alcohol use* was assessed in husbands – daily, once a week, less than once per week, or never. *Husband's*

perpetration of intimate partner violence (IPV) was asked of wives using items from the NFHS-3. Physical IPV was categorized based on whether or not respondents reported any of the following: “husband slapped you;” “husband twisted your arm or pulled your hair;” “husband pushed you, shook you, or threw something at you;” “husband kicked you, dragged you or beat you up;” “husband choked you or tried to burn you on purpose;” or “husband threatened to attack you with a knife, gun or any other weapon.” Sexual IPV was categorized based on whether or not respondents reported any of the following: “husband physically forced you to have sexual intercourse with him even when you did not want to,” and “husband forced you to perform any sexual acts when you did not want to.” IPV was dichotomized (yes/no).

Our dependent variables included men’s recent condom use, history of genital tract infection (GTI) symptoms, and ever been diagnosed with a GTI. Male participants were assessed on condom use with their wife in the previous three months (yes/no). GTI symptoms (yes/no) was based on the men’s reporting ever having had at least one of the following symptoms: 1) pain/burning when urinating, 2) urethral discharge, 3) genital ulcers. Men were also asked if they had ever received a GTI diagnosis (yes/no).

Data Analysis

Data analysis began with sample descriptive statistics and bivariate analyses (Chi-square, t-test, and ANOVA F-statistics) to assess associations between covariates (e.g., socio-demographics, IPV, and alcohol use) and GEM score. We checked for multicollinearity via correlations and variance inflation factors (VIF), assuming multicollinearity for variables indicating correlations $>.8$ or a VIF > 10 . No variables met this standard for any of our outcomes of focus, and thus all covariates were retained in final models (Piegorisch, 2015).

Simple and adjusted logistic regression models and 95% confidence intervals were used to assess associations between primary independent variables (e.g., GEM, alcohol use, IPV) and each study outcome (e.g., condom use, history of GTI symptoms, and GTI diagnosis). All analyses were conducted using STATA version 13.1.

RESULTS

Table 1 reports the characteristics of the full sample of married men living in rural Maharashtra, India. Men were on average 26 years old (SD=2.68, range=18 to 30 years), had wives an average age of 23 years old (SD=2.52, range=17 to 32 years), had 1.14 children (SD=0.88, range=0 to 5 children), were married for an average of four years (SD=2.68, range=0 to 14 years), and the mean on the Gender Equitable Men (GEM) Scale was 47 (SD=5.41, range=35 to 67). Most men (91%) and their wives (83%) had received formal education, were part of a scheduled caste/tribal group (72%), and reported drinking alcohol never (49%) or less than once a week (36%), and one in three men had perpetrated physical or sexual violence against their wives (33%).

Table 1 also provides mean GEM scores for various sub-categories of men. Greater (more equitable) mean GEM score was significantly positively correlated with husband’s age and significantly negatively correlated with parity and length of marriage. Comparing categories

of men on their alcohol use, men who drank everyday had the lowest mean GEM score and men who never drank had the highest mean GEM score. Husband's higher level of education, wife's higher level of education, and being part of other backward castes or no caste was significantly associated with greater mean GEM score. GEM score was not significantly associated with IPV perpetration.

Table 2 reports the frequency and un-/adjusted odds ratios from logistic regression models comparing three dependent variables (no condom use, GTI symptoms, GTI diagnosis) to GEM score, IPV perpetration, alcohol use, and socio-demographic factors. Eighty-one percent of men report not recently using condoms with their wives, 13% had ever experienced a GTI symptom, and 2% reported being diagnosed with a GTI. *For recent condom use*, greater GEM score was associated with greater odds of recent condom use (e.g., lower odds no condom was used OR=0.96, 95% CI=0.93–0.98) in unadjusted models, although this was non-significant in the adjusted model (AOR=0.98, 95% CI=0.95–1.01). Husband's alcohol use and IPV perpetration were not significantly associated with no condom use in un-/adjusted models. *For GTI symptoms*, in adjusted models, GEM score was not significantly associated with having 1 GTI symptom (AOR=1.00, 95% CI=0.97–1.04), whereas drinking alcohol less than once a week (AOR=1.51, 95% CI=1.01–2.25) and having ever perpetrated IPV (AOR=1.56, 95% CI=1.07–2.26) were associated with greater odds of having 1 GTI symptom. *For GTI diagnosis*, in adjusted models, GEM score was not significantly associated with having ever been diagnosed with a GTI, whereas having ever perpetrated IPV (AOR=0.28, 95% CI=0.08–0.97) was associated with lower odds of having been diagnosed with a GTI.

DISCUSSION

This study described gender role ideologies among married men in rural India and indicated several novel ways in which masculine gender ideologies, IPV perpetration, and alcohol use increased men's risk for contracting and transmitting STI. We found that men with inequitable masculine gender ideologies may demonstrate more risky sexual behavior with lower condom use than their more gender equitable counterparts. Additionally, we find a high level of IPV perpetration among married men in rural India, with approximately one in three men reporting perpetration of physical or sexual violence against their wives. Furthermore, our findings indicate a link between IPV perpetration and GTI symptoms and non-diagnosis, suggesting that men who perpetrate IPV may not seek testing or receive care for their GTIs. The findings also provide insight into potential mechanisms of increased GTI symptoms among IPV perpetrators as alcohol consumption was also associated with increased odds of GTI symptoms. We discuss these key findings in context of extant literature below.

Gender Equitable Men (GEM) Scale

This study finds that married men in rural India with equitable masculine gender ideologies had significantly lower odds of no condom use than men with less equitable ideologies, but this did not hold up in adjusted models. This finding aligns with equitable gender role ideologies that support the need for couple coordination of male condom use and the shared

responsibility of contraception and disease prevention. However, we did not find any statistical association between the GEM scale and GTI symptoms or diagnosis. We speculate that a potential explanation for our null findings related to the GEM scale may be due to our sample in rural India. The GEM scale, although originally developed to measure masculine gender ideologies in Brazil, has been translated and reliably adapted for use in six other countries including in India (Verma et al., 2006). Although this study utilized the Indian GEM scale, this was the first application in the rural context of India, where ideals of masculinity differ from those captured with the current Indian GEM scale. Nevertheless, men's endorsement of masculine gender ideologies would align with qualitative research that Indian men generally view their relationships through a lens of entitlement and dominance over their female partner (Verma et al., 2006).

Alcohol Use

This study also links occasional alcohol use (less than once a week) to greater adjusted odds of having at least one GTI symptom, with the odds ratio trending in the same direction for more frequent drinking. This finding is supported by other research in India connecting alcohol consumption with HIV/STI risk through increased sexual risk behavior (Dandona et al., 2008; Pai et al., 2009; Saggurti et al., 2010; Singh et al., 2010) and IPV perpetration (Jewkes, 2002; Nanda et al., 2014). One study in particular found that alcohol consumption before sex was significantly associated with being HIV positive among married (but not single) men (Pai et al., 2009). A few studies suggest that moderate to heavy male drinkers may have more non-spousal sexual partners (Saggurti et al., 2010; Singh et al., 2010), not use condoms in these relations (Singh et al., 2010), and have greater likelihood of a current STI diagnosis (Saggurti et al., 2010). HIV prevention interventions in the Indian context should critically focus on alcohol consumption prior to sex among married men (Dandona et al., 2008), as well as reducing alcohol-related sexual risk in this population. Additionally, alcohol consumption is a normalized male behavior in rural India. Although almost half of our sample reported never drinking alcohol, findings from rural Maharashtra indicate that rates of alcohol consumption among the tribal populations are higher, and norms around alcohol are different, compared to non-tribal populations (International Institute for Population Sciences (IIPS) & Macro International, 2008). Alcohol use in tribal settings often includes non-traditional types of alcohol that is homemade and men may have difficulty quantifying one alcoholic serving and tallying rate of alcohol consumption for discriminant periods of time (Schensul, Singh, Gupta, Bryant, & Verma, 2010).

Intimate Partner Violence (IPV)

A key finding is that married Indian men whose wives report IPV victimization have greater adjusted odds of having a history of at least one GTI symptom. This finding is consistent with prior research linking IPV perpetration to increased STI diagnosis (Decker et al., 2009; Raj, Reed, Welles, Santana, & Silverman, 2008; Silverman, Decker, Kapur, Gupta, & Raj, 2007; Silverman et al., 2008). Although only two studies have addressed IPV and HIV risk among married Indian men (Decker et al., 2009; Saggurti et al., 2010), this is the first time to demonstrate the association among rural Indian men. Previous research has shown that IPV may facilitate HIV transmission from an infected partner via STI infection which have been found to facilitate HIV infection and transmission (Centers for Disease Control (CDC),

November 2014). Thus, our findings lend additional support that IPV is a significant risk factor for poor sexual and reproductive health for both men and women. The link between IPV perpetration and increased GTI symptoms is posited to be behavioral, with data suggesting that male perpetrators of violence are more likely to report multiple sex partnering, inconsistent condom use, injection drug use, and anal sex than non-IPV perpetrators (Decker et al., 2009; Dunkle et al., 2006; Raj et al., 2008). The fact that the association between IPV and GTI symptoms remains in adjusted models (after controlling for socio-demographic factors and masculine gender ideologies), indicates that IPV perpetration constitutes a marker for risky HIV/GTI behavior above and beyond these socio-demographic and masculine gender ideology indicators.

Extramarital sexual infidelity, defined as concurrent undisclosed sexual partnerships such as transactional sex partners, poses additional HIV/GTI risks for married men and their wives. Findings from urban India suggest that most men who have extramarital sex do so with non-formal sex workers within or near their communities of residence (Saggurti et al., 2010). Upon further investigation of our data, we found lower reports of risky sexual behavior (e.g., multiple sex partnering, transactional sex) among married men than expected given that 13% of our sample reported experiencing at least one GTI symptom. Our sample reported 1.1 lifetime sexual partners ($SD=0.41$, range=1–6), with 92% reporting having only one lifetime sexual partner and 6% reporting two. Moreover, only 0.7% reported having an extramarital sexual partner in the previous six months. Reliance on self-reported sexual risk behaviors increases the risk of social desirability bias. Given that our study took place in a rural context, it is possible that men underreported extramarital affairs due to the increased stigma attached to living in a rural area with smaller communities and tighter social networks. Nevertheless, intervention research among married men in India should address marital fidelity, negotiated safety, and risk reduction to decrease mitigate HIV/GTI risks through risky sexual behavior.

This study also extends upon the literature by suggesting that married men who perpetrate IPV are also less likely to receive a diagnosis -and thus prescribed treatment- for their GTI than non-IPV perpetrators in rural India. Upon further investigation of the data, among men who experienced at least one GTI symptom, only 5% of male IPV perpetrators reported GTI diagnosis compared to 22% of male non-IPV perpetrators. This finding highlights a critical area of intervention to prevent the heterosexual transmission of HIV within the marital context in rural India as strong evidence supports that GTI facilitate HIV infection and transmission by increasing both HIV susceptibility and infectiousness (Centers for Disease Control (CDC), November 2014). Hence, it is critical to detect and treat husbands with GTI as an effective part of HIV prevention strategy. Furthermore, challenges in providing GTI prevention outreach and treatment in rural settings must be addressed. Low GTI diagnosis may also be an artifact of self-treatment with over-the-counter antibiotics. Very high antibiotic misuse, which has been documented in India (Parikh, 2010), could lead to inadequate GTI treatment as well as risk of antibiotic resistance, among other consequences.

Study Limitations

The current findings should be considered in light of several limitations in addition to those already mentioned. First, cross-sectional analysis precludes conclusions of temporality and prospective research is needed to determine the relative sequencing and impact of alcohol and IPV perpetration on men's STI acquisition. Second, all data are self-reported and subject to potential biases based on social desirability, recall bias, or intentional under-reporting of sensitive or socially undesirable outcomes. Third, reliance on self-reported measures of GTI symptoms and diagnosis, rather than biological assessments, likely provided an underestimate of GTI in our sample (Iritani, Ford, Miller, Hallfors, & Halpern, 2006). Under-reporting and truncated variability could have decreased our statistical power to detect a significant association between key variables such as masculine gender ideologies, alcohol, and our outcomes. Lastly, although our sample size was reasonably large, the original study aimed to pilot an intervention and did not implement a probability sample. Therefore our findings are not generalizable to other populations of rural married men in the Indian state of Maharashtra.

The current study indicates a high level of IPV perpetration among married men in rural India, with one in three men reporting perpetration of physical or sexual violence against their wives. Abusive men's increased risk of reporting GTI symptoms and decreased likelihood of getting a formal GTI diagnosis has direct implications for men and women's health in rural India, including male GTI intervention and treatment in rural India. These findings bolster the need to integrate violence perpetration prevention within STI clinics and to target men who report inequitable gender ideologies and IPV perpetration. Further work in this population is needed to empirically link and establish temporal sequencing of alcohol consumption, IPV perpetration, sexual risk behavior, and GTI.

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Conflicts of Interest: Authors have no conflicts of interest to report.

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Table 1

Characteristics of married men living in rural Maharashtra, India

Continuous variables	TOTAL (n=1,080)		Gender Equitable Men (GEM) Score (n=1,080)	
	M	SD	r	sig.
GEM		47.31	5.41	-
Husband's Age	26.18	2.68	0.15	***
Wife's Age	22.57	2.52	0.05	
Parity	1.14	0.88	-0.12	***
Length of Marriage	3.90	2.68	-0.12	***
Categorical variables	n	%	M	SD
Husband's alcohol use			***	
Never	536	49	47.88	0.26
Less than once a week	385	36	46.99	0.25
Once a week	139	13	46.59	0.39
Almost every day	30	3	44.77	0.92
IPV perpetration				
No	722	67	47.18	0.20
Yes	358	33	47.57	0.29
Husband's Education			***	
Received formal education	988	91	47.50	0.17
Never received formal education	92	9	45.24	0.45
Wife's Education			***	
Attended some school	891	83	47.70	0.19
Never attended school	189	18	45.49	0.31
Caste				***
Scheduled caste/tribal	775	72	46.46	0.18
Other backward caste/none	305	28	49.48	0.33
TOTAL	1080	100.0	1080	100.0

M=mean; SD=Standard Deviation; r=correlation;

* p<0.05,

** p<0.01,

*** p<0.001 difference using χ^2 for categorical variables & using two-way

ANOVA for husband's alcohol use and t-test for remaining variables; IPV=Intimate

Partner Violence (both physical and sexual)

TABLE 2
 Logistic regression of GEM on condom use, at least one GTI symptom, and Genital Tract Infection (GTI) Diagnosis among married men living in rural Maharashtra (N=1,080)

Independent Variables	No Condom Use 81% (n=874)		1 GTI Symptom 13% (n=141)		GTI Diagnosis 2% (n=24)	
	OR (95% CI)	AOR [‡] (95% CI)	OR (95% CI)	AOR [‡] (95% CI)	OR (95% CI)	AOR [‡] (95% CI)
GEM.....	0.96** (0.93,0.98)	0.98 (0.95,1.01)	1.00 (0.97,1.04)	0.99 (0.95,1.02)	0.99 (0.92,1.07)	0.98 (0.90,1.06)
Husband's Alcohol Use						
Never.....	ref.	ref.	ref.	ref.		
Less than once a week.....	0.95 (0.69,1.33)	0.88 (0.62,1.25)	1.43 (0.97,2.11)	1.51* (1.01,2.25)	-	-
Once a week.....	0.97 (0.61,1.56)	0.77 (0.47,1.27)	1.44 (0.84,2.46)	1.51 (0.86,2.65)	-	-
Almost every day.....	2.11 (0.63,7.10)	1.57 (0.45,5.47)	1.24 (0.42,3.68)	1.51 (0.49,4.66)	-	-
IPV Perpetration						
No.....	ref.	ref.	ref.	ref.	ref.	ref.
Yes.....	0.93 (0.67,1.28)	0.89 (0.64,1.25)	1.54* (1.07,2.21)	1.56* (1.07,2.26)	0.28* (0.08,0.95)	0.28* (0.08,0.97)
Husband's Age.....	0.93** (0.87,0.9)	0.95 (0.87,1.03)	0.97 (0.91,1.03)	0.97 (0.88,1.07)	1.10 (0.94,1.30)	0.87 (0.68,1.10)
Wife's Age.....	0.97 (0.91,1.03)	1.00 (0.91,1.11)	0.95 (0.88,1.02)	1.00 (0.89,1.12)	1.22* (1.04,1.42)	1.21 (0.95,1.54)
Other backward caste/none.....	0.47*** (0.34,0.64)	0.60** (0.42,0.86)	1.83*** (1.26,2.64)	2.02** (1.32,3.08)	2.19 (0.97,4.95)	2.43 (0.94,6.25)
Husband Not Formally Educated..	3.64*** (1.57,8.44)	2.61* (1.09,6.26)	0.80 (0.40,1.58)	0.93 (0.45,1.93)	0.46 (0.06,3.45)	0.59 (0.07,4.83)
Wife Not Formally Educated.....	2.95*** (1.71,5.01)	2.15** (1.21,3.83)	0.85 (0.53,1.39)	1.13 (0.66,1.94)	0.67 (0.20,2.26)	0.68 (0.18,2.57)
Parity.....	0.90 (0.76,1.07)	0.59*** (0.44,0.77)	0.83 (0.68,1.03)	1.04 (0.75,1.43)	1.09 (0.69,1.71)	0.69 (0.35,1.37)
Length of Marriage.....	1.04 (0.98,1.11)	1.15** (1.04,1.29)	0.92* (0.85,0.98)	0.91 (0.81,1.03)	1.13 (0.98,1.30)	1.23 (0.97,1.56)

OR=Odds Ratio; CI=Confidence Interval; AOR=Adjusted OR;

* Adjusted models controlled for by all other variables

*** p-value<0.001;

** p-value<0.01;

* p-value<0.05;

Alcohol omitted due to low cell count; IPV=Intimate Partner Violence