

**Religion, Rank, and Ruthlessness:
Polygyny and Intimate Partner Violence in Nigeria**

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Abstract

Although some research points to a connection between polygyny and intimate partner violence (IPV), the evidence on the mechanisms underlying this connection remains inconclusive. To better understand this connection, we approach it from two interrelated perspectives – the meaning of polygynous marriage in a broader sociocultural context and the nature of relationships within polygynous unions. Using data from the 2013 Nigeria DHS we connect these two theoretical axes by focusing on the Muslim-vs-Christian context of polygyny and on co-wives' rank. The results of multivariate probit models predicting reported experience of IPV show a clear disadvantage of polygynously married women, compared to monogamously married ones, but also that this disadvantage is particularly pronounced among Christians. Senior wives are more likely to experience IPV than junior wives, but again, this difference is much stronger among Christians. We interpret these findings as reflecting multi-dimensional gender inequalities embedded in the institution of polygynous marriage.

Introduction

Like many sub-Saharan societies, Nigeria is characterized by high rates of intimate partner violence (hereafter IPV). According to the 2013 Nigeria Demographic and Health Survey (NDHS), 19%, 14% and 5% of ever-married women between 15-49 years of age reported that they had ever experienced emotional, physical and sexual violence from their spouses, respectively, with about a quarter of women reporting experience of at least one form of IPV (National Population Commission & ICF International, 2014).

Nigeria also has high prevalence of polygyny: approximately 33% of currently married NDHS respondents were in polygynous unions. Because the Islamic doctrine explicitly allows polygyny, it is not surprising that polygyny is more common among Nigerian Muslims (44%). However, even among Christians, despite their religion's nominal opposition to polygyny, 17% of women were in polygynous unions. We argue that the different religious norms regarding polygyny may have different implications for women's experiences in polygynous unions. Specifically, we posit that the normative conflict underlying polygyny among Christians may offer more fertile ground for IPV, compared to Muslim polygynous marriages.

Several studies have investigated factors that contribute to women's experience of IPV, and polygyny has been identified as one of them. Spousal violence as an indicator of unequal power relations that exist between men and women within households (Dobash and Dobash, 1979; Walker, 1979). Co-wives in polygynous households may wield less bargaining power than their monogamous counterparts because the value of individual wives' assets in polygynous unions, on which bargaining power may be based, is smaller, given that multiple wives contribute to household welfare (Anderson et al., 2016). It is not surprising, therefore, that existing studies find a higher incidence of spousal abuse among polygynous households, compared to monogamous households (Amo-Adjei and Tuoyire, 2016; Uthman et al., 2009).

Recent analyses also suggest that within polygynous unions IPV risks vary between senior and junior co-wives. Within polygynous households, it is not immediately clear whether seniority is a risk or protective factor for IPV. On the one hand, senior wives may command a lot of respect within the household (Naksomboon, 2013), both from junior or lower ranking wives and the husband, which may reduce the likelihood of violence. Given that husbands may not always be present to supervise activities within the household, certain duties may be delegated to the senior wife (Thompson and Erez, 1994), and lower ranking wives are expected to obey her instructions, as if they were from the husband. On the other hand, a husband may show more affection and attention to a younger and often, more attractive junior or lower ranking wife, to the neglect or more seriously, abuse of a senior wife. In a recent analysis in Mozambique, for example, Jansen and Agadjanian (2016) find that senior wives are more likely to report IPV than their junior counterparts. We build on this emerging evidence to complement our focus on religious tenets shaping polygynous marriages with a focus on power imbalance between co-wives. Whereas variations in IPV levels between Christians and Muslims may reflect broader societal norms shaping the dynamics of spousal relationships in polygynous unions, the distinction between the experience of senior and junior wives may reflect different levels of bargaining power between these two categories of women.

Several interrelated theoretical perspectives have been proposed to explain IPV. Feminist theory, example, posits that violence is a consequence of cultural and social expectations that reinforce women's subservience (Rodriguez-Menes and Safranoff, 2012). Proponents of the family conflict theory argue that individual characteristics such as the age, income and employment status of couples can cause stress and lead to abuse within households (Anderson 1997; Gelles 1993). The resource theory, proposed by Goode (1971) associates IPV with resources which individuals contribute to a relationship, which results in a power balance. According to the dependency theory, low opportunities and numerous constraints that women face affect their position in the socioeconomic structure, leading to increased dependency on their male partners and raising the potential and likelihood for violence (Rodriguez-Menes and Safranoff, 2012). According to the power theory, domestic violence is the consequence of power differentials within the household. The less power a woman has, the more likely she will experience abuse (CITE?). These overlapping theoretical perspectives guide our conceptualization of the association between polygyny and IPV.

We focus on two interrelated outcomes: 1. Acceptance of IPV by women; and 2. Women's reported experience of IPV. We seek answers to the following research questions regarding these outcomes:

- Are Nigerian women in polygynous marriages more likely to be accepting of IPV and to report experience of IPV than women in monogamous unions?
- Is the polygynous wives' disadvantage particularly pronounced among Christians than among Muslims?
- Within polygynous unions, are senior wives more likely to be accepting of and to report experience of IPV than junior wives?
- Is the senior wives' disadvantage particularly pronounced among Christians than among Muslims?

Background: Polygyny, Wife Rank, Religion and Intimate Partner Violence

Spousal violence can be potentiated by several factors. An important factor, and the focus of this paper, is the role of family structure – monogamous or polygynous – and wife rank within polygynous unions – senior or junior – in women's experience of IPV. Certain social and cultural features affect the degree of control that men can wield within the household and expose women to more violence. As in other sub-Saharan settings, the traditional patriarchal system in Nigeria confers more social advantages on men, compared to women (Naksomboon, 2013). The resulting gender dynamics therefore create an imbalance of power between men and women (Duze and Mohammad, 2010), and the belief that a woman's husband is free to marry multiple wives may set the stage for the acceptance of violence.

Polygyny has indeed been found in the literature to be closely correlated with higher violence against women. A large body of literature links polygyny to the oppression and abuse of women within polygynous households (Tertilt, 2005; Ickowitz and Mohanty, 2015). In Kenya, being in a polygynous union resulted in an over two-fold increased odds of IPV, compared to being in a monogamous union (Makayoto et al., 2013). Other studies have found that the higher incidence of conflicts and co-wife rivalry often makes polygyny a less preferred union than monogamy (Jankowiak et al. 2005).

Although abundant evidence exists to indicate the connection between polygyny and IPV, very little research has examined the prevalence of IPV *within* polygynous households, i.e. between senior and lower ranking wives. The only apparent empirical study by Jansen and Agadjanian (2016) uses data on women in Mozambique and shows that women holding senior rank positions in polygynous unions report higher rates of IPV than their lower ranking counterparts. This is consistent with work by Bove et al. (2014), who find that in rural Mali, husbands tend to favour junior wives over their senior wives. There are several reasons why a husband may favour a junior wife over a senior one. First, when additional wives are brought into the household as an intervention due to domestic instability between husbands and their first wives, these senior wives may be neglected, relative to junior wives. Additionally, lower ranking wives who are typically younger, may be more attractive physically and hence garner more favour from their husbands. Finally, the rapidly changing social environment with the tensions between modernity and traditional values may lead to deviations from the ideal situation where senior wives are respected by both husbands and junior wives. For instance, in some situations, men simply marry new wives and bring them home without consulting or even informing their senior wives beforehand (Saur et al 2004). This environment can contribute towards the mistreatment of senior wives in favour of junior wives (Nnaemeka, 2005). This paper attempts to establish empirically that women in polygynous unions may face varying likelihoods of IPV, depending on their position within the household.

We also examine the contribution of religion to link between polygyny and IPV. Religion may play a very important role in IPV as it can be used to both justify and condemn the practice of spousal violence, depending on one's understanding and interpretation (Ammar, 2007; Hassouneh-Phillips, 2003; Quraishi and Syeed-Miller, 2004). Despite the plethora of research on IPV, relatively few studies examine the potential of religion for exacerbating or mitigating women's IPV experience. Among the limited studies that have been done, there is little consensus. On the one hand, religion may reduce the incidence of IPV if communities and households conform to values that emphasize spousal commitment and family orientation (Faulkner et al., 2011; Gillium et al., 2006). On the other hand, some studies identify the disempowering and often punitive role that religion plays in the experience of violence, where it provides a justification and basis for abuse (Ringel and Bina, 2007; Yick, 2007). In their study on Nigeria, Linos et al. (2013) used the 2008 round of Nigerian Demographic and Health survey to examine the influence of community social norms on spousal violence. Although they do not discuss their findings in detail, their results indicate that compared to Christian women, Muslim women are less likely to report experiencing violence.

Several reasons may explain the lower incidence of IPV in Muslim communities. First, the ready acceptance of polygyny within the Muslim community and the Qur'anic commandment for men to treat wives fairly and equally, may reduce the likelihood of conflicts and strife. Men who deviate from the expected norm may face public disapproval within their communities. Second, Muslim women are encouraged to be submissive to their male partners, which may limit women's ability to defy their husbands' behaviour and thus reduce the potential for conflict and violence.¹ A third potential explanation for the lower incidence of IPV may be in the characteristics of the Muslim marriage contract, which typically specify the expectations of fair treatment Alkhateeb (1999). A *mahr* is an important component of any Muslim contract and is described as an amount that a husband gives to a wife (not the wife's family) as a bridal gift. The *mahr* is the woman's right in Islamic law and she is entitled to set the amount she wants, and once she receives it, no one else may share in it. It may be paid at the time of marriage or deferred until the husband dies or in the event of a divorce. The *mahr* can often constitute a significant amount of money and in many instances, is meant to establish the bride's financial independence from her parents. She may decide to use it after marriage in starting her own business or invest it for a later time when she may need it. It is often considered to be the woman's safety net. Although a deferred *mahr* may be forfeited if a woman initiates divorce, in a situation where a woman initiates this divorce due to abuse by her husband, the *mahr* may still be paid, as stipulated in the marriage contract. This may serve as a disincentive for abuse within Muslim households.

The conceptual relationship between religion, wife rank and IPV is also important. There may be less violence within Muslim communities because, among other reasons, the Quran explicitly commands husbands to treat all wives fairly, or else not indulge in polygamy at all. A deviation from this rule could be easily noticed by the community and frowned upon. The Christian religion does not specify such strict guidelines. Within a Christian polygynous household, the senior wife may be more likely to experience violence if, first, the junior wife is preferred to the senior wife (Jansen and Agadjanian, 2016; Bove, 2014) and second, the husband does not feel bound by religious expectations to conform to a specific behaviour, potentially leading to mistreatment of the less-favoured, senior wife.

Our conceptualization yields the following hypotheses corresponding to our research questions:

Hypothesis 1: Women in polygynous marriages are more likely to be accepting of IPV and to report experience of IPV than women in monogamous unions.

Hypothesis 2: The polygynous wives' disadvantage will be particularly pronounced in Christian unions, compared to Muslim unions

Hypothesis 3: Within polygynous unions, senior wives are more likely to be accepting of and to report experience of IPV than junior wives

Hypothesis 4: The senior wives' disadvantage will be particularly pronounced in Christian unions, compared to Muslim unions.

Methodology

Data and Descriptive Statistics

The 2013 Nigerian Demographic and Health Survey (NDHS) is employed for this analysis. It is based on a nationally representative sample of 38,948 women aged 15-49 in all selected households and 17,359 men age 15-49 in half of the selected households. The survey had a response rate of 98% among women and 95% among men. The sample design for the 2013 NDHS allow for generating estimates estimates at the national level, urban rural areas, for each of the six regions, for each of the 36 states, and the Federal Capital Territory (FCT). Only one randomly-selected woman per household was asked about her experiences with violence; data on domestic violence is based on this sample of 27,634 women.

Of the total sample, 52% are Christians and 48% are Muslim. Women who belong to Traditional religion are excluded from the analysis as they comprise only a little above 1% of the sample. 20% of senior wives are Christians, compared to 24% of junior wives. Table 1a summarizes the explanatory variables included in the empirical specification, by marriage and family structure (monogamous, senior wives, lower rank wives).

¹ It is important to note here that this submissiveness may also limit the reporting of violence among Muslim women.

Survey weights are applied in the generation of these statistics. More than two-thirds of women in the sample, 67%, are in monogamous marriages. Of the remaining women 14% are senior wives and 19% are junior wives.

Our first outcome is an index of women's acceptance of IPV. It was calculated by principal component analysis using women's responses to questions on whether they think their husbands are justified in beating them if 1) they go out without permission; 2) they neglect the children; 3) they argue with their husband; 4) refuse sex; 5) burn the food. These responses are assigned scores through principal component analysis, depending on whether the woman responds in the affirmative to these questions. Scores are then summed and standardized in relation to the standard normal distribution. Higher scores are indicative of higher degrees of acceptance of violence by women, while lower scores indicate that women are less likely to be accepting of violence by their husbands.

[Table 1a here]

Within monogamous marriages, 65% of women appear to have a low acceptance of abuse from their partners. This is compared to 57% and 58% of senior and junior wives within polygynous households, respectively. This indicates that the acceptance of spousal abuse is lower in monogamous unions, compared to polygynous unions.

Our second outcome is women's reported experience of IPV. The survey collected information on women's experience of emotional, sexual and physical IPV in the 12 months preceding the survey. Emotional violence was recorded if a woman responded in the affirmative to ever being humiliated, ever been threatened with harm, or ever been insulted and/or made to feel bad by her partner. Sexual violence was identified if a woman responded in the affirmative to ever being physically forced into unwanted sex by her partner, ever being forced into other unwanted sexual acts by her partner and/or ever being physically forced to perform sexual acts the respondent did not want to perform. Physical violence was recorded if a woman had ever been pushed, shaken or had something thrown at her by her partner; slapped by her partner; punched with a fist or by a harmful object; kicked or dragged; strangled or burnt; ever been threatened with a knife or gun or other weapon by her partner; and/or had arm twisted or hair pulled by her partner. Emotional, sexual or physical violence was present if a woman responded that she had experienced at least one of the situations under each violence category in the past year.

As Table 1a shows, a slightly higher percentage of senior wives has experienced emotional abuse, compared to lower-ranking wives and women in monogamous marriages. With respect to sexual violence, although the difference is small, higher percentages of those experience sexual violence are experienced in polygynous, compared to monogamous, households. Lower-ranking wives experience the least physical abuse, compared to senior wives and women in monogamous marriages.

Table 1b provides more detailed comparisons of IPV experiences of women, by their marriage structure. Each column represents a bivariate comparison of women in two different marriage forms. The first column examines the average experience and acceptance of IPV among women in polygynous vs monogamous unions. The positive values indicate that the percentage of women who experience violence is higher among polygynous unions; there are significant differences in emotional, sexual and physical experiences of spousal violence between women in monogamous and polygynous marriages. The second column shows that the acceptance and experience of IPV is significantly higher among senior wives in polygynous unions, compared to women in monogamous unions. In the third column, apart from the acceptance of spousal violence, there are no significant differences in the experience of IPV between lower-ranking wives in polygynous households and women in monogamous unions.

[Table 1b here]

The final column compares acceptance and experience of IPV by women within polygynous unions. The consistently negative values indicate that the acceptance and experience of violence is higher among senior wives, compared to lower-ranking wives. Senior wives experience significantly more sexual and physical violence, compared to lower-ranking wives.

Model Specification

There are two stages of the empirical exercise. The first stage examines the determinants of women's acceptance of domestic violence; first between monogamously and polygynously married women, and second, within polygynous households. The variable for women's acceptance of IPV is constructed using a PCA approach (described in the section above) and is a continuous variable with higher values indicative of higher acceptance of spousal violence by partners. Because of the continuous nature of this dependent variable, an OLS model is used for the analysis.

OLS models are specified as follows:

$$AcceptIPV_i = \alpha_i + \beta_i Polygyny_i + \gamma_i X_i + \epsilon_i \quad (1a)$$

$$AcceptIPV_i = \alpha_i + \beta_i Polygyny_i * Christian_i + \gamma_i X_i + \epsilon_i \quad (1b)$$

$$AcceptIPV_i = \alpha_i + \beta_i SeniorWife_i + \gamma_i X_i + \epsilon_i \quad (1c)$$

$$AcceptIPV_i = \alpha_i + \beta_i SeniorWife_i * Christian_i + \gamma_i X_i + \epsilon_i \quad (1d)$$

In (1a- 1d), *AcceptIPV_i* is a continuous variable that indicates a woman's acceptance or tolerance of violence from her partner. *Polygyny* is a dummy variable for whether a woman is in a polygynous (=1) or monogamous (=0) marriage. In 1b), interaction effects of polygyny and Christian religion are included in the regression to examine whether the relationship between polygyny and women's acceptance of violence is moderated by religion.

In 1c, *SeniorWife* takes on a value of 1 for a senior wife and 0 for a lower-ranked wife within the household. In 1d), interaction effects of wife rank and Christian religion are included in the regression to examine whether the relationship between wife rank within polygynous households and women's acceptance of violence is moderated by religion.

X_i in all regressions from 1a) to 1d) refers to the vector of control variables included in the regression, as specified in Table 1. ϵ_i denotes the error term.

The second stage of the empirical analysis examines the probability of women's actual experience of spousal abuse. The outcome variables that measure women's emotional, sexual and physical IPV victimization in the past 12 months preceding the survey are constructed as binary variables and probit models are therefore used for the analyses. The probit models are specified as follows:

$$IPV_i = \alpha_i + \beta_i Polygyny_i + \gamma_i X_i + \epsilon_i \quad (2a)$$

$$IPV_i = \alpha_i + \beta_i Polygyny_i * Christian_i + \gamma_i X_i + \epsilon_i \quad (2b)$$

$$IPV_i = \alpha_i + \beta_i SeniorWife_i + \gamma_i X_i + \epsilon_i \quad (2c)$$

$$IPV_i = \alpha_i + \beta_i SeniorWife_i * Christian_i + \gamma_i X_i + \epsilon_i \quad (2d)$$

In (2a- 2f), *IPV_i* is a dummy variable for the experience of emotional, sexual or physical violence by woman *i*. *Polygyny* is a dummy variable for whether a woman is in a polygynous (=1) or monogamous (=0) marriage. In 2b), interaction effects of polygyny and Christian religion are included in the regression to examine whether the relationship between polygyny and IPV experience is moderated by religion. In 2c, the analysis is restricted to only polygynous households and *SeniorWife* takes on a value of 1 for a senior wife and 0 for a lower-ranked wife within the household. In 2d), interaction effects of wife rank and Christian religion are included in the regression to examine whether the relationship between wife rank within polygynous households and women's experience of violence is moderated by religion. *X_i* in all regressions from 2a) to 2d) refers to the vector of control variables included in the regression, as specified in Table 1. ϵ_i denotes the error term.

Results

Table 2 presents results of the OLS regressions of women's attitudes to domestic violence. Model I shows results of regressing polygyny on acceptance of violence. Model II includes interaction effects between polygyny and religion. Model III examines the effect of wife rank on women's acceptance of abuse, while

Model IV includes interactions of senior wife with religion, and junior wife with religion. In all model specifications, the base category for each type of marriage union is women in monogamous marriages.

From Table 2, women in polygynous unions appear to be more accepting of domestic abuse than women in monogamous households, as shown in I and II. These may be explained by a few factors: first, according to Ickowitz and Mohanty (2015), women in polygynous households tend to be less empowered, compared to women in monogamous households. Combined with the observation that communities where polygyny is practiced tend to be more patriarchal, with well-defined gendered roles for men and women, it is not surprising that women tend to be more submissive in these settings and therefore, more accepting of domestic violence. This would be consistent with the feminist theory of domestic abuse. Additionally, from the summary statistics table, women in polygynous unions appear to have more children than women in monogamous unions. According to the dependence theory of IPV discussed above, women with more children are more likely to condone violence as they may have little income to support themselves and their children, should they choose to exit an abusive marriage (Rodriguez-Menes and Safranoff, 2012). Other theories such as the family conflict and resource theory may also explain high acceptance of violence in polygynous unions. From models III and IV, compared to women in monogamous unions, senior wives in polygynous households appear to be more accepting of abuse from their spouses. According to the power theory, the less power a woman has, the more likely she will experience abuse. Senior wives in polygynous households are often older and less educated than lower-ranking wives (Owoo, 2018). This lower relative status and power may contribute to higher maltreatment of senior, compared to junior, wives.

[Table 2 here]

The effects of control variables are also noteworthy. Factors such as women's age, education, employment and household wealth are negatively associated with the acceptance of violence. The presence of intergenerational abuse and longer durations between marriage and childbirth are positively correlated with women's acceptance of abuse.

Table 3 presents results of the probit regressions of women's actual experience of three forms of domestic violence- physical, sexual and emotional. For each category of violence, model I examines the effect of polygynous unions on violence; model II comprises model I + interaction effects of polygynous unions and religion. Model III, for each category of violence, examines the effect of marriage union types on violence; model IV comprises model III + interactions of religion with both junior and senior wives. In each of the 4 models, the base category for marriage unions is women in monogamous marriages.

It is immediately obvious that women in polygynous unions are more likely to experience all forms of violence- emotional, sexual and physical. The higher incidence of spousal abuse within polygynous households has been documented in the literature and links have been made between polygyny and the oppression and abuse of women within these households (Tertilt, 2005; Ickowitz and Mohanty, 2015). Compared to women in monogamous unions, senior and junior wives are more likely to experience physical and emotional violence, although the probability is higher for senior wives within polygynous households. Senior wives are also at a higher likelihood of experiencing sexual violence by their male partners. The differential treatment in favour of lower-ranking wives that this article finds is consistent with other research findings (Jansen and Agadjanian, 2016; Bove et al., 2014). Several reasons may account for this- first, junior wives on average appear to be more educated than senior wives. From the dependency theory, women with more children are more likely to be accepting of and endure abuse from their spouses. As shown in Table 1, senior wives tend to have higher fertility than junior wives. The power theory may also explain the higher incidence of violence among senior wives, compared to lower ranking wives. Again, from the descriptive characteristics of wives in polygynous households presented in Table 1, lower ranking wives appear to be more educated than senior wives. They are also younger in terms of age. These features may bestow some advantages and degree of power on lower ranked wives, which reduces the likelihood of experiencing violence from their spouses, given that the theory posits that the less power a woman has, the more likely she will experience abuse.

Christian women appear to be more likely to experience all forms of violence, compared to Muslim women and the senior wives' disadvantage discussed above is particularly pronounced in Christian households: Christian senior wives are more likely to experience spousal abuse compared to Muslim senior wives. This may be explained by the general lack of explicit guiding principles for the treatment of multiple wives in Christian unions. The result may reflect a higher likelihood of tensions within Christian unions, where the senior wife, as

the only “legitimate” wife, may challenge the husband’s preferential treatment of junior wives – and be penalized for that.

[Table 3 here]

Although not the focus of the paper, several other interesting results are worth discussing. Factors found to be positively linked with women’s experience of abuse include the use of alcohol by male partners (Solanke et al., 2018; Makayoto et al., 2013) and inter-parental experience of violence (Solanke et al., 2018), among others.

Preliminary Conclusions and next steps

The paper examined the evidence for the following hypotheses. First, women in polygynous marriages are more likely to be accepting of IPV and to report experience of IPV than women in monogamous unions. We find that, consistent with existing literature, women in polygynous marriages are indeed more accepting of spousal abuse and are more likely to experience it. The second hypothesis stated that the polygynous wives’ disadvantage would be particularly pronounced in Christian unions, compared to Muslim unions. Indeed, we found that Christian women were more likely to experience IPV than their Muslim counterparts. We propose that polygyny is particularly likely to lead to violence when it is in conflict with the dominant religious norm.

The third hypothesis examined the experience of IPV by women in the different marriage structures and assumed that senior wives would be more likely to be accepting of and to report experience of IPV than junior wives. The analyses shows results in favour of this premise as well. Senior wives appeared to have a higher likelihood of experiencing domestic violence than junior wives. The final hypothesis stated that the senior wives’ disadvantage would be particularly pronounced in Christian unions, compared to Muslim unions. This supposition was supported by the analytical results. Although our data do not allow us to unpack the nature of husband-wife and wife-wife relationships in Christian vs. Muslim unions, we propose that this result reflects a higher likelihood of tensions within the former, where the senior wife, as the only “legitimate” wife, may challenge the husband’s preferential treatment of junior wives – and to be penalized for that. It is also notable that this pattern fully manifests itself with respect to physical violence, as this may be perceived to be more direct means of gaining control of dissenting senior wives.

As we prepare the paper for presentation at the conference we will refine our multivariate analyses to include an investigation of the intersection between community normative environment and women’s IPV risk by including the share of Muslim populations in the analysis. This is likely to provide some contextual background to the findings on women’s experience of domestic abuse. We note, as a potential limitation to the study, the possible interrelation between women’s attitudes to violence and their actual experience of it. Causality, at this stage, is however difficult to ascertain.

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Table 1a: Summary Statistics of Study Variables, by Marriage Structure and Rank, NDHS, 2013

<i>Dependent Variables</i>	Monogamous		Polygyny			
			Senior wife		Lower rank wife	
	Mean	SD	Mean	SD	Mean	SD
Any violence	0.24	0.43	0.23	0.42	0.23	0.42
Emotional violence (E)	0.18	0.38	0.19	0.39	0.18	0.39
Sexual violence (S)	0.04	0.20	0.05	0.21	0.05	0.21
Physical violence (P)	0.14	0.34	0.14	0.35	0.13	0.33
Acceptance of Violence	-0.08	1.83	0.34	2.08	0.26	2.05
Low acceptance	0.65	0.48	0.57	0.49	0.58	0.49
High acceptance	0.35	0.48	0.43	0.49	0.42	0.49
<i>Independent Variables</i>						
Woman age	30.58	8.75	34.79	8.07	31.15	9.13
<i>Spousal age differences</i>						
Husband is same age	0.01	0.10	0.01	0.09	0.01	0.08
Husband is younger	0.02	0.13	0.01	0.11	0.00	0.06
Husband is older	0.97	0.16	0.98	0.14	0.99	0.10
<i>Woman education level</i>						
No education	0.39	0.49	0.70	0.46	0.66	0.47
Primary education	0.20	0.4	0.18	0.38	0.18	0.39
Secondary education	0.31	0.46	0.10	0.30	0.13	0.34
Post-secondary educ.	0.10	0.3	0.02	0.14	0.02	0.15
<i>Spousal education differences</i>						
Husband less education	0.15	0.35	0.07	0.26	0.11	0.31
Husband same education	0.49	0.50	0.60	0.49	0.58	0.49
Husband more education	0.37	0.48	0.33	0.47	0.31	0.46
Woman employed	0.71	0.45	0.73	0.44	0.70	0.46
<i>Household wealth quintiles</i>						
Poorest	0.19	0.39	0.34	0.48	0.31	0.46
Poorer	0.19	0.39	0.28	0.45	0.26	0.44
Middle Wealth	0.18	0.38	0.17	0.37	0.19	0.39
Richer	0.20	0.40	0.13	0.34	0.15	0.35
Richest	0.24	0.43	0.08	0.27	0.09	0.29
Christian religion	0.52	0.50	0.20	0.40	0.24	0.43
Marriage-to-birth duration	23.04	23.75	30.68	30.24	30.67	32.18
Inter-parental violence	0.10	0.30	0.06	0.23	0.07	0.26
Husband alcohol use	0.20	0.40	0.12	0.33	0.13	0.34
# Children ever born	3.63	2.74	5.71	2.91	4.09	2.94
Urban	0.42	0.49	0.22	0.42	0.26	0.44
<i>Zones</i>						
North central	0.15	0.35	0.13	0.33	0.13	0.34
North west	0.30	0.46	0.50	0.50	0.47	0.50
North east	0.15	0.36	0.21	0.41	0.20	0.40
South east	0.11	0.31	0.03	0.16	0.03	0.18
South south	0.12	0.33	0.04	0.19	0.04	0.2

South west	0.17	0.38	0.1	0.29	0.12	0.33
Observations	18124		3797		5165	

Table 1b-Bivariate t-test comparisons of IPV between women of different marriage structures, NDHS, 2013

	Monogamous versus Polygynous (P- M) (I)	Monogamous versus Senior wife (S- M) (II)	Monogamous versus Lower Rank wife (LR- M) (III)	Senior wife versus Lower Rank wife (LR- S) (IV)
Emotional violence	0.047*** (7.84)	0.023** (2.45)	0.011 (1.34)	-0.012 (-0.99)
Sexual Violence	0.017*** (5.19)	0.016*** (3.16)	0.004 (0.899)	-0.012* (-1.81)
Physical violence	0.040*** (7.42)	0.016* (1.95)	-0.004 (-0.56)	-0.02* (-1.95)
Acceptance of violence	0.015 (0.79)	0.404*** (11.80)	0.331*** (10.89)	-0.073 (-1.63)

t statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.001

Table 2: OLS Regressions of Acceptance of Violence with and without Religion Interactions, by Marriage Structure, NDHS 2013

	Monogamy/Polygyny		Wife Rank	
	I W/O	II W/interaction	III W/O	IV W/interaction
Polygyny	0.09*** (2.62)	0.07* (1.74)	-	-
Senior wife	-	-	0.15*** (2.96)	0.15*** (2.62)
Junior wife	-	-	0.05 (1.17)	0.01 (0.18)
Christian	0.04 (0.80)	0.09 (1.20)	0.04 (0.79)	0.02 (0.45)
Polygyny*Christian	-	0.07 (0.89)	-	-
Senior*Christian	-	-	-	-0.03 (-0.27)
Junior*Christian	-	-	-	0.15 (1.55)
Woman age	-0.02*** (-7.16)	-0.02*** (-7.16)	-0.02*** (-7.13)	-0.02*** (-7.12)
Partner younger	0.18 (1.25)	0.18 (1.25)	0.18 (1.24)	0.18 (1.26)
Partner same age	-0.06 (-0.44)	-0.06 (-0.44)	-0.06 (-0.47)	-0.06 (-0.47)
Primary education	-0.06 (-1.14)	-0.06 (-1.14)	-0.06 (-1.14)	-0.06 (-1.15)
Secondary education	-0.16*** (-2.88)	-0.16*** (-2.84)	-0.16*** (-2.88)	-0.16*** (-2.83)
Post-secondary education	-0.31*** (-4.00)	-0.31*** (-3.95)	-0.32*** (-4.00)	-0.31*** (-3.94)
Partner less educated	0.04 (0.86)	0.04 (0.86)	0.04 (0.89)	0.04 (0.87)
Partner same education	-0.05 (-1.35)	-0.05 (-1.33)	-0.05 (-1.37)	-0.05 (-1.34)
Woman employed	-0.07* (-1.93)	-0.07* (-1.92)	-0.07** (-1.96)	-0.07* (-1.95)
Poorer	0.05 (1.07)	0.05 (1.06)	0.05 (1.05)	0.05 (1.03)
Middle	-0.14** (-2.54)	-0.14** (-2.55)	-0.14** (-2.56)	-0.14*** (-2.58)
Richer	-0.46*** (-7.46)	-0.46*** (-7.45)	-0.46*** (-7.51)	-0.46*** (-7.50)
Richest	-0.65*** (-8.87)	-0.65*** (-8.84)	-0.65*** (-8.91)	-0.65*** (-8.88)
Marriage to birth-duration	0.00*** (3.43)	0.00*** (3.45)	0.00*** (3.46)	0.00*** (3.48)
Inter-parental violence	0.30*** (5.85)	0.30*** (5.85)	0.30*** (5.87)	0.30*** (5.88)
Alcohol	-0.05 (-1.16)	-0.05 (-1.19)	-0.05 (-1.14)	-0.05 (-1.18)
# Children	0.04*** (4.96)	0.04*** (4.97)	0.04*** (4.84)	0.04*** (4.82)
Urban	-0.09** (-2.18)	-0.09** (-2.20)	-0.09** (-2.19)	-0.09** (-2.20)
North central	0.19*** (3.48)	0.18*** (3.47)	0.19*** (3.52)	0.19*** (3.53)
North east	0.75*** (16.98)	0.75*** (16.97)	0.75*** (17.01)	0.75*** (17.03)
South east	0.27***	0.27***	0.27***	0.28***

	(3.75)	(3.78)	(3.78)	(3.83)
South south	0.03	0.03	0.03	0.03
	(0.42)	(0.41)	(0.46)	(0.47)
South west	-0.13**	-0.13**	-0.12**	-0.13**
	(-2.15)	(-2.19)	(-2.07)	(-2.14)
_cons	0.70***	0.68***	0.61***	0.61***
	(8.75)	(8.38)	(8.37)	(8.43)
r2	0.09	0.09	0.10	0.10
N	15757.00	15757.00	15754.00	15754.00

T-statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.001

Table 3: Probit Regressions of IPV on Marriage Type, Religion and other Variables, NDHS, 2013

	I	II	III	IV	I	II	III	IV	I	II	III	IV
	<i>Physical Violence</i>				<i>Sexual Violence</i>				<i>Emotional Violence</i>			
Polygyny	0.16*** (4.67)	0.07 (1.58)	-	-	0.12*** (2.59)	0.12** (2.02)	-	-	0.17*** (5.46)	0.17*** (4.51)	-	-
Senior wife	-	-	0.23*** (5.03)	0.09 (1.43)	-	-	0.20*** (3.36)	0.19** (2.55)	-	-	0.19*** (4.54)	0.16*** (3.07)
Junior wife	-	-	0.10** (2.38)	0.06 (1.08)	-	-	0.05 (0.85)	0.05 (0.75)	-	-	0.15*** (3.95)	0.18*** (3.96)
Christian	0.34*** (8.15)	0.29*** (6.55)	0.34*** (8.15)	0.29*** (6.56)	0.16*** (2.66)	0.16** (2.49)	0.16*** (2.65)	0.16** (2.48)	0.23*** (6.02)	0.24*** (5.75)	0.23*** (6.03)	0.24*** (5.77)
Polygyny*Christian	-	0.18*** (2.79)	-	-	-	0.00 (0.05)	-	-	-	-0.02 (-0.26)	-	-
Senior wife*Christian	-	-	-	0.33*** (3.64)	-	-	-	0.03 (0.24)	-	-	-	0.10 (1.19)
Junior wife*Christian	-	-	-	0.07 (0.83)	-	-	-	-0.02 (-0.14)	-	-	-	-0.11 (-1.40)
Woman age	-0.01*** (-4.31)	-0.01*** (-4.30)	-0.01*** (-4.32)	-0.01*** (-4.32)	-0.02*** (-5.65)	-0.02*** (-5.65)	-0.02*** (-5.65)	-0.02*** (-5.65)	-0.00** (-2.18)	-0.00** (-2.18)	-0.00** (-2.20)	-0.00** (-2.21)
<i>Spousal Age Diff. (base is older)</i>												
Partner younger	0.29** (2.55)	0.29** (2.57)	0.29** (2.53)	0.29** (2.52)	0.59*** (4.45)	0.59*** (4.45)	0.59*** (4.41)	0.59*** (4.41)	0.02 (0.21)	0.02 (0.21)	0.02 (0.21)	0.02 (0.18)
Partner same age	-0.17 (-1.32)	-0.17 (-1.33)	-0.17 (-1.34)	-0.17 (-1.37)	-0.40* (-1.73)	-0.40* (-1.73)	-0.41* (-1.75)	-0.41* (-1.75)	-0.17 (-1.45)	-0.17 (-1.45)	-0.17 (-1.46)	-0.17 (-1.47)
Primary education	0.22*** (5.00)	0.22*** (4.99)	0.22*** (4.99)	0.22*** (4.98)	0.07 (1.16)	0.07 (1.15)	0.07 (1.11)	0.07 (1.11)	0.10*** (2.58)	0.10*** (2.58)	0.10** (2.57)	0.10*** (2.59)
Secondary education	0.16*** (3.29)	0.17*** (3.37)	0.16*** (3.23)	0.16*** (3.29)	0.14** (2.06)	0.14** (2.06)	0.14** (2.00)	0.14** (2.00)	0.12*** (2.61)	0.12*** (2.60)	0.12*** (2.58)	0.12** (2.56)
Post-secondary education	-0.26*** (-3.39)	-0.25*** (-3.30)	-0.26*** (-3.47)	-0.26*** (-3.38)	-0.09 (-0.75)	-0.09 (-0.75)	-0.09 (-0.78)	-0.09 (-0.77)	-0.09 (-1.35)	-0.09 (-1.36)	-0.09 (-1.40)	-0.09 (-1.41)
<i>Spousal Educ. Diff. (base is more)</i>												
Partner less educated	0.03 (0.82)	0.03 (0.83)	0.04 (0.86)	0.04 (0.90)	-0.05 (-0.81)	-0.05 (-0.81)	-0.05 (-0.76)	-0.05 (-0.75)	-0.01 (-0.30)	-0.01 (-0.30)	-0.01 (-0.30)	-0.01 (-0.28)
Partner same education	-0.07** (-2.30)	-0.07** (-2.23)	-0.07** (-2.31)	-0.07** (-2.27)	-0.14*** (-3.23)	-0.14*** (-3.23)	-0.15*** (-3.26)	-0.15*** (-3.26)	-0.05* (-1.82)	-0.05* (-1.82)	-0.05* (-1.83)	-0.05* (-1.85)
Woman employed	0.10*** (2.83)	0.10*** (2.86)	0.10*** (2.83)	0.10*** (2.83)	0.16*** (3.47)	0.16*** (3.47)	0.16*** (3.47)	0.16*** (3.47)	0.17*** (5.50)	0.17*** (5.50)	0.17*** (5.51)	0.17*** (5.50)
<i>Wealth Quintiles (base is poorest)</i>												
Poorer	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.14***	0.14***	0.14***	0.14***

Middle	(1.12)	(1.08)	(1.12)	(1.08)	(0.41)	(0.41)	(0.42)	(0.41)	(3.37)	(3.38)	(3.36)	(3.36)
	-0.07	-0.07	-0.07	-0.07	0.06	0.06	0.07	0.07	0.13***	0.13***	0.13***	0.13***
	(-1.32)	(-1.33)	(-1.28)	(-1.29)	(0.97)	(0.97)	(1.02)	(1.02)	(2.80)	(2.80)	(2.80)	(2.81)
Richer	-0.13**	-0.13**	-0.13**	-0.13**	-0.11	-0.11	-0.11	-0.11	0.10**	0.10**	0.10**	0.10**
	(-2.15)	(-2.13)	(-2.15)	(-2.14)	(-1.44)	(-1.44)	(-1.43)	(-1.43)	(1.98)	(1.98)	(1.97)	(1.97)
Richest	-0.21***	-0.20***	-0.21***	-0.20***	-0.22**	-0.22**	-0.22**	-0.22**	0.02	0.02	0.02	0.02
	(-3.02)	(-2.95)	(-3.03)	(-2.96)	(-2.30)	(-2.29)	(-2.31)	(-2.30)	(0.36)	(0.36)	(0.36)	(0.36)
Marriage to birth-duration	0.00	0.00	0.00	0.00	0.00**	0.00**	0.00**	0.00**	-0.00**	-0.00**	-0.00**	-0.00**
	(1.10)	(1.15)	(1.13)	(1.14)	(2.09)	(2.09)	(2.13)	(2.12)	(-1.99)	(-2.00)	(-1.97)	(-2.01)
Inter-parental violence	0.53***	0.54***	0.53***	0.53***	0.52***	0.52***	0.52***	0.52***	0.52***	0.52***	0.52***	0.52***
	(13.86)	(13.86)	(13.83)	(13.84)	(10.10)	(10.10)	(10.13)	(10.13)	(14.03)	(14.03)	(14.00)	(13.99)
Alcohol	0.60***	0.60***	0.60***	0.60***	0.37***	0.37***	0.37***	0.37***	0.51***	0.51***	0.50***	0.51***
	(17.50)	(17.44)	(17.50)	(17.46)	(7.21)	(7.20)	(7.22)	(7.22)	(15.26)	(15.27)	(15.24)	(15.25)
# Children	0.04***	0.04***	0.03***	0.04***	0.04***	0.04***	0.04***	0.04***	0.01*	0.01*	0.01*	0.01*
	(4.49)	(4.54)	(4.36)	(4.47)	(3.66)	(3.66)	(3.53)	(3.54)	(1.72)	(1.72)	(1.69)	(1.73)
Urban	0.11***	0.11***	0.12***	0.11***	-0.03	-0.03	-0.03	-0.03	0.10***	0.10***	0.10***	0.10***
	(3.18)	(3.12)	(3.25)	(3.18)	(-0.62)	(-0.62)	(-0.59)	(-0.59)	(3.22)	(3.22)	(3.25)	(3.24)
<i>Zones (base in North West)</i>												
North central	0.54***	0.54***	0.54***	0.54***	0.47***	0.47***	0.48***	0.48***	0.49***	0.49***	0.49***	0.49***
	(9.95)	(9.93)	(9.99)	(9.91)	(5.89)	(5.89)	(5.91)	(5.90)	(10.59)	(10.59)	(10.61)	(10.58)
North east	0.67***	0.67***	0.68***	0.67***	1.23***	1.23***	1.24***	1.24***	1.01***	1.01***	1.01***	1.01***
	(14.24)	(14.23)	(14.30)	(14.23)	(19.10)	(19.09)	(19.13)	(19.11)	(25.83)	(25.83)	(25.85)	(25.82)
South east	0.13*	0.13**	0.13*	0.13**	0.27***	0.27***	0.27***	0.27***	0.28***	0.28***	0.28***	0.28***
	(1.91)	(1.98)	(1.96)	(1.97)	(2.69)	(2.69)	(2.71)	(2.71)	(4.71)	(4.70)	(4.73)	(4.70)
South south	0.46***	0.46***	0.46***	0.46***	0.27***	0.27***	0.27***	0.27***	0.15***	0.15***	0.15***	0.15***
	(7.40)	(7.36)	(7.46)	(7.36)	(2.92)	(2.91)	(2.94)	(2.93)	(2.72)	(2.72)	(2.75)	(2.72)
South west	0.62***	0.61***	0.62***	0.62***	0.17*	0.17*	0.18*	0.18*	0.06	0.06	0.06	0.06
	(10.73)	(10.61)	(10.80)	(10.69)	(1.82)	(1.81)	(1.89)	(1.88)	(1.14)	(1.15)	(1.15)	(1.18)
_cons	-1.90***	-1.87***	-1.90***	-1.87***	-2.10***	-2.10***	-2.10***	-2.10***	-1.73***	-1.73***	-1.72***	-1.73***
	(-25.20)	(-24.71)	(-25.15)	(-24.65)	(-19.89)	(-19.77)	(-19.83)	(-19.72)	(-25.98)	(-25.86)	(-25.94)	(-25.82)
N	16064.00	16064.00	16061.00	16061.00	16051.00	16051.00	16048.00	16048.00	16058.00	16058.00	16055.00	16055.00

T-statistics in parentheses: * p<0.10, ** p<0.05, *** p<0.001