Partner violence tolerance, risky sexual behavior, and STI risk in Kazakhstan

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Abstract

This paper utilizes data from the 1999 Demographic and Health Survey in Kazakhstan to examine associations between intimate partner violence tolerance among men and women and reported sexual behaviors, including multiple partnerships, contraceptive behavior, and getting tested for HIV. Using logistic regression, I find that lifetime condom usage declines significantly with increasing partner violence tolerance for both men and women, and that current condom use significantly decreases with increasing tolerance of partner violence among men. The likelihood of reporting multiple sexual partners in the last year increases significantly with increasing tolerance of partner violence for young men and for unmarried women. Finally, the likelihood an individual getting tested for HIV significantly declines with increasing violence tolerance for both men and women. Using attitudes towards intimate partner violence as a proxy for power within intimate relationships, these findings highlight the association between the status of women and sexual risk of HIV and other STIs.

Introduction

Kazakhstan has been cited by several international health organizations, including the WHO, UNAIDS, and the World Bank, as a nation that should expect, and plan for, significant increases in the incidence and prevalence of HIV/AIDS in the coming decade, despite a low prevalence rate of only 0.2% among adults at the end of 2003.[1] The epidemic is now largely concentrated in high-risk populations, such as IV drug users and sex workers, but sexual transmission into the general population is becoming more common, as has already happened in other Eastern European countries such as Belarus and the Ukraine. The number of new infections is increasing rapidly, with new infections doubling in only two years in the late 1990s.[2] Kazakhstan has had the highest incidence rate of HIV infections in recent years, with the number of official cases underestimating the extent of the epidemic by at least tenfold.[3] The HIV epidemic in Kazakhstan is accompanied by a parallel epidemic in other sexually transmitted infections, especially among young adults. The prevalence of syphilis, for instance, has increased 500-fold in Kazakhstan since the early 1990s.[4]

Buckley et.al.[5] find that in the neighboring Central Asian state of Uzbekistan, which has a similar epidemic of syphilis, HIV, and other STIs, young people have low levels of knowledge regarding sexual practices that prevent HIV and other STI transmission, and even lack knowledge of the diseases themselves. Buckley and Barrett[6] indicate that in Kazakhstan, men who indicate acceptance of partner violence are even less likely to report accurate knowledge of HIV/AIDs. Furthermore, despite strong gender norms that discourage female sexual debut before marriage, including official exclusion from reproductive health programs, many young women do engage in sexual activity prior to marriage, especially as social mores change rapidly following the breakup of the Soviet Union.

Although HIV prevalence has not yet reached sub-Saharan levels in Central Asia, as the epidemic moves from specific, high-risk populations such as drug abusers into the larger, more general population, it will be increasingly important to identify groups at high risk for sexual transmission, in order to better target prevention efforts. Furthermore, identifying groups that are at high risk for future heterosexual HIV transmission will also indicate which individuals are at increased risk of another STI, as risky sexual behaviors

that lead to HIV also lead to other STIs. In fact, coinfection with another ulcerative STI is itself an important risk factor for HIV transmission, making it all the more important to identify determinants of risk behavior that may lead to infection with a STI.[7]

Intimate Partner Violence and Risky Sexual Behavior

Violence from a partner is thought to lead to increased risky sexual behavior in women via three purported mechanisms. Firstly, women are at increased risk of STI transmission from physical harm during sexual abuse.[8] Secondly, being abused sets up a pattern of increased risk behavior on behalf of the woman, including increased drug use, alcohol abuse, multiple sexual partners, and less condom use.[9] Finally, even when a partner is not physically overpowering his partner, forcing her into behaviors that she does not want and that could lead to infection with a STI or HIV, the threat of partner violence reduces women's power within a relationship, as well as feelings of control over her own body. Both of these factors mean that a woman is less likely to negotiate safe sex behaviors within her relationships. It is this last pathway that will be the focus of this paper.

Intimate partner violence affects women's actions by lowering their sense of personal autonomy and control.[10] Therefore, women who believe that they are at risk of violence are less assertive regarding their sexual needs and behavior. Hulton et. al.,[11] for instance, determine that women feel that the fact that men can use force, even if they don't, leaves women powerless to implement safe-sex strategies, and to blame themselves when they are raped. Wingood and Diclemente[12] find that women with abusive partners are more likely to avoid using condoms, or avoid using them consistently, perhaps because they are threatened with abuse and abandonment when they ask their partners to use them. The threat of partner violence also discourages women from asking husbands about their risky behaviors, including extramarital partners, and HIV status, because these women fear violent retribution for their doubt and suspicion.[13]

The relationship between intimate partner violence, STI risk, and risky sexual behavior is less straightforward for men. Although men certainly act in ways that conform to gender stereotypes, and according to the balance of power in relationships, the fact that a man beats his wife or lover is not necessarily the cause of his increased STI

risk, or sexual behavior. There have been, however, a number of studies that indicate that men who engage in partner violence are more likely to have a STI and are more likely to engage in sexual behavior that will lead to an infection with a STI or HIV. Martin et. al.,[14] for instance, find that men who abuse their wives are more likely to have extramarital sex, and are more likely to be infected with a STI. Gielen et. al.[15] find that men that abuse their wives are more likely to be HIV-positive, were more likely to use drugs, and were less likely to use condoms. Van der Straten et. al.[16] also found that husbands who abused their wives were more likely to be HIV-positive, and more likely to coerce their partners into having sex. It is particularly important to identify males that are at high risk of HIV infection, as having a risky partner is often a woman's only risk behavior leading to STIs, including HIV.

Tolerance of partner violence among individuals and within society can also be seen as a proxy for the state of gender relations in a country, in terms of whether women are seen as equals of men or as subordinate. Men and women who are more tolerant of intimate partner violence, or who perpetuate violence, are more likely to believe that women do not have control over their own bodies, that the sexual needs of men predominate over those women, and that women should not question a man's sexual behavior.[17] Dunkle et. al.[18] found that relationships that featured substantial male dominance and control, even without violence, women were more likely to avoid using condoms and increased the likelihood of HIV infection.

The incidence of partner violence in Kazakhstan is difficult to calculate, but a population-based survey[19] conducted by the UNFPA and the Kazakh Center for the Study of Public Opinion in 1999, indicated that a third of women surveyed had been beaten in the past year, and that 28 percent of wives had been beaten by their husbands in the past year. Risk factors for intimate partner violence included alcohol abuse, type of residence (urban or rural), being from the southern region of the country, and ethnic origin (Kazakh, Russian, or other). Furthermore, a majority of these violent acts had occurred in public, often proceeding without intervention from bystanders, indicating a high tolerance for violence within Kazakh society. Only eight percent of victims turned to the police for assistance, indicating that women often do not feel that violence against them is a prosecutable crime.

Data

The data for this paper come from the 1999 Kazakhstan Demographic and Health Survey (DHS),[20] a nationally-representative survey of men aged 15-59 and women aged 15-49 that includes information on demographic characteristics, attitudes towards intimate partner violence, and sexual behavior. Because I am interested in sexual behavior, I limit my analyses to individuals who are sexually active, defined as having had sex at least once. Furthermore, although individuals of any age are prone to HIV infection, because incidence has been concentrated almost exclusively in those 30 and under, I use analysis samples both of all respondents and of individuals aged 30 and under. Summary statistics for all four samples can be found in Appendix A.

The survey was constructed in two stages. Initially, regional areas were stratified by dividing the country into health blocks (in urban areas) and villages (in rural areas). In the first stage, primary sampling units were selected with probability proportional to population size; in the second stage, households were then randomly selected from within the primary sampling unit and all women aged 15-49 in that household were interviewed. The men's sample was constructed by selecting every third household and interviewing all the men aged 15-59 living there. To account for oversampling of certain households, I used the household weights included with the DHS survey as probability sampling weights.

Intimate Partner Violence Tolerance Measures

The 1999 Kazakhstan DHS includes questions that ask men and woman whether they believe 'wife-beating' is acceptable in 5 different situations: when a wife burns the food, goes out without permission, argues, neglects the children, and refuses sex. I have created a single violence tolerance score using principle factor analysis, which collapses several independent variables into a single measure. My constructed measure has a Cronbach alpha of .78 for both men and women. The score itself ranges from -.34 to 4.39 for women, and from-.34 to 4.42 for men. Appendix A indicates the percentage of each population that answered 'yes' to each question; Appendix B shows predictors of the tolerance score. In both men and women, decreased tolerance of intimate partner violence

is associated with non-Kazakh ethnicity and higher education levels. In women, tolerance also decreases significantly with increasing household income, urban residency, and increasing age, and increases significantly with increasing numbers of children and among those who desire pregnancy within the next two years.

Tolerance of Partner Violence vs. Incidence of Partner Violence

Tolerance of intimate partner violence is not the same as incidence of violence; just because a woman may tolerate partner violence in a situation does not mean she has experienced it. Likewise, men who tolerate violence do not necessarily go on to abuse their wives. Previous studies, however, have indicated that partner violence incidence is under-reported, not least because the very definition of 'abuse' changes depending on whether one is a victim or a perpetrator, on cultural standards of 'abuse' vs. normal behavior, and on an individual's own perception of what constitutes acceptable behavior.[21] Using questions regarding a specific physical act (being beaten) in specific situations may elicit more consistent answers than more open-ended questions, such as 'is it acceptable for a man to abuse his wife"?

Furthermore, asking about theoretical abuse, rather than actual abuse, might limit under-reporting due to recall bias or shame. Studies of intimate partner violence and risky sexual behavior are also prone to simultaneous causality bias, as risky behavior might be a result of partner violence, but might also precipitate it (as in the case of being abused following an extramarital affair). Asking about attitudes towards violence, as opposed to actual incidence, may reduce this type of bias because attitudes are likely to remain stable in individuals over time. Tolerance of intimate partner violence is also highly correlated with incidence of partner violence, with men most tolerant of violence the most likely to perpetrate it.[22]

Research Questions and Empirical Methods

Given the prevalence of intimate partner violence in Kazakhstan, as well as its potential influence on risky sexual behaviors, it is worth determining whether tolerance of partner violence among men and women increases their propensity to engage in risky sexual behaviors. In particular, I test how tolerance of partner violence in women and

men affects lifetime and current condom use, propensity to get tested for HIV, and the likelihood of multiple partners.

Condom Usage

Condoms are a primary means of protection against HIV and other STIs.[23] Regular, consistent use of condoms is estimated to be at least 87% effective in preventing HIV infection.[24] In Kazakhstan, condom usage is relatively low, with only 6.7% of sexually active women and 20.0% of sexually active men reporting condom usage at last intercourse. Women in this age group may not be using condoms because they are trying to get pregnant, or because they are using alternate forms of contraception. Buckley et. al.,[25] for instance, note that in neighboring Uzbekistan, the IUD is far more prevalent as a contraceptive method than are condoms. Indeed, 37.2% of sexually active Kazakh women are using an IUD to prevent pregnancy, compared to only 5.0% who report using condoms to avoid conception. Young women may also lack knowledge about how to protect themselves from HIV and other STIs. Yet, 36.5% of sexually active women and 21.3% of men report using a condom at some point in their lifetimes, which indicates that condom use is not unheard of, uncommon, or unacceptable. Indeed, 37.6% of young men who reported using a condom at last intercourse said they did so at least partially to protect against HIV and other STIs. Rather than avoiding them altogether, young people seem to be using condoms inconsistently, a method that leads to suboptimal protection against HIV transmission.

As Campbell[26] notes, just because women are informed about the importance of condom use in protecting against HIV, they will not or cannot necessarily use them consistently, because they may not have control over the decision to use a condom, or even believe that they have the right to ask their partners to do so. Previous work has determined that once women's actual or perceived autonomy within a relationship is reduced, she is more unwilling even to purchase contraceptive pills or devices (including condoms),[27] much less use them.[28] The threat of partner violence may be a prime determinant of whether a woman consistently uses condoms, with women reporting a higher tolerance for violence being less likely to use condoms. From a male perspective, men who are more likely to tolerate intimate partner violence are also more likely to

perceive themselves as in sole control of sexual interactions, and are less likely to use condoms with their partners, or even to discuss their use.[29] Therefore I expect that men and women who report a higher tolerance of intimate partner violence will be less likely to have ever used condoms, as well as be less likely to use condoms currently, since they will place a relatively higher value on conforming to traditional methods of contraception and sexual behaviors.

Examining lifetime condom use allows me to gain some sense of an individual's willingness to use condoms at all, and how tolerance of partner violence influences an individual's fundamental attitude towards contraception, regardless of current partner status or pregnancy intentions. I will use logistic regression to model the probability that a respondent has ever used a condom:

Eq. 1: log-odds {ever used condom=1 | tolerance score, X} = $\beta_0 + \beta$score + βX + ε

In addition to other control variables, I control for whether a respondent had premarital sex.

When modeling condom use, it is important to consider other sexual goals in addition to disease avoidance, such as pregnancy, as this competing goal can directly affect the decision to use a condom. In particular, women who are actively trying to get pregnant will be highly unlikely to use a condom, as it impedes pregnancy. Furthermore, there are a number of different options for birth control besides condoms, some of which also protect against STIs (such as female condoms), but most of which do not. In order to account for multiple, competing goals of contraceptive behavior (or lack of contraceptive behavior), I use multinomial logit regression to model current condom use. The multinomial regression model allows for multiple outcomes that are essentially nominal in nature, rather than ranked in some meaningful way, and is a common method employed in other studies to describe recent contraceptive use.[30]

Kazakh women are asked to list all forms of birth control they are currently using. Therefore, I can examine whether a woman is currently using condoms, either alone or in

addition to another form of contraception (option 1)[1], whether a woman is using another form of contraception, but not condoms (option 2), or whether a woman is currently using no contraception (option 3). In addition to other control variables, I will control for whether a woman is seeking pregnancy, defined as wanting to be pregnant in the next two years.

Eq. 2(a): $\{\Pr.\ y = 1 |\ \text{tolerance score, } X\} = \exp(\beta_1 X) / 1 + \exp(\beta_2 X) + \exp(\beta_3 X)$

Eq. 2(b): $\{\Pr.\ y = 2 |\ \text{tolerance score, } X\} = \exp(\beta_2 X) / 1 + \exp(\beta_1 X) + \exp(\beta_3 X)$

Eq. 2(c): $\{\Pr.\ y = 3 |\ \text{tolerance score, } X\} = 1 / 1 + \exp(\beta_1 X) + \exp(\beta_2 X)$

NB: Option 3 is the reference group.

Kazakh men are asked what forms of contraception their main sexual partners are using. For Kazakh men, I will use the same outcome options as Kazakh women, but cannot control for whether these males are currently seeking pregnancy.

Eq. 3(a): $\{\Pr.\ y = 1 |\ \text{tolerance score, } X\} = \exp(\beta_1 X) / 1 + \exp(\beta_2 X) + \exp(\beta_3 X)$

Eq. 3(b): $\{\Pr.\ y = 2 |\ \text{tolerance score, } X\} = \exp/(\beta_2 X)\ 1 + \exp(\beta_1 X) + \exp(\beta_3 X)$

Eq. 3(c): $\{\Pr.\ y = 3 |\ \text{tolerance score, } X\} = 1 / 1 + \exp(\beta_1 X) + \exp(\beta_2 X)$

NB: Option 3 is the reference group.

In addition to other control variables, for this outcome I control for whether a respondent's last sexual partner was a regular sex partner (spouse, girlfriend, or boyfriend), or a casual one (sex worker, acquaintance, friend).

[1] In theory, I could break this option up into two: whether a woman uses a condom only, or whether she uses condoms in conjunction with other family planning methods. In practice, however, very few women who are using condoms also use another form of birth control, so I have put them together in one category for reasons of sample size. Furthermore, almost no women report using a form of contraception besides male condoms that protect against STIs (such as the female condom).

Multiple Partners

Having multiple partners has been widely cited as a risk factor for STIs, both in terms of total lifetime partnerships[31] and multiple concurrent or serial partnerships.[32] Multiple partnerships increase the likelihood that one of these partners may be infected with a STI, especially as many of these partners might themselves currently have or have had many other partners. Women who have multiple partners are less likely to use condoms consistently, and are less likely to have influence over contraceptive choice, including condoms, further increasing their risk of STIs.[33] Having multiple partners is uncommon but not unobserved in Kazakhstan, with 9.1% of sexually active men and 2.7% of sexually active women reporting multiple partners in the past twelve months.

In other countries, men who abuse their wives report more partners than men who do not. [34] But, while partner abuse is correlated with a higher number of partners for men, it has a less conclusive link to partner numbers for women. Some have found that women who are victims of abuse are also more likely to report extramarital affairs,[35] as an affair (or suspicion of an affair) might be a trigger of abuse. Others have found that individuals who are physically and sexually abused, particularly at young ages, are also more likely to have multiple partners following the abuse because of diminished self-esteem, which leads to greater risk-taking.[36] Yet, women who are under the threat of abuse are not likely to exacerbate the problem by taking on extra partners. Therefore, I expect that men who are more tolerant of abuse are more likely to report multiple partners, but the relationship between abuse tolerance and multiple partners is less predictable for women.

In the DHS, respondents are asked about the number of sexual partners they have had in the last twelve months, but not lifetime partners. I use logistic regression to predict whether violence tolerance among Kazakh men and women influences the binary outcome of having more than one partner in the past year:

Eq. 4: log-odds {mult. partners = 1 | tolerance score, X} = $\beta_0 + \beta\text{score} + \beta X + \varepsilon$

In addition to other control variables, for this outcome I also control for whether respondents have had premarital sex.

Voluntary Counseling and Testing

Although not a means of risk reduction *per se*, knowing one's (or one's partner's) HIV status can lead to behavior changes that reduce the risk of infecting others.[37] Gielen et. al.[38] have found that women who are HIV positive are at increased risk of violence and economic abandonment, partly because they are often blamed for bringing HIV into the family. Women who are afraid of a violent reaction from their partners, therefore, are less likely to learn their HIV status, at least voluntarily.[39] Indeed, women who are threatened at home often don't even believe that they have a right to be tested for HIV, at least without asking permission from their husbands.[40] Therefore, women who have a higher tolerance of partner violence should be less likely to have been tested for HIV in the past. This seemingly-straightforward relationship, however, might be confounded by post-Soviet practices of mandatory HIV testing for sex workers, IDUs, and other STI patients.

Women and men in Kazakhstan are asked if they have ever been tested for HIV/AIDS. In order to determine the relationship between violence tolerance and voluntary counseling and testing behavior, I use logistic regression to examine whether a respondent has ever been tested for HIV:

Eq. 5: log-odds {ever tested for HIV = 1 | tolerance score, X} = $\beta_0 + \beta\text{score} + \beta X + \varepsilon$

Control Variables

In addition to other reproductive health behaviors, there are a number of well-documented demographic factors that not only independently influence tolerance and attitudes towards intimate partner violence, but also sexual behaviors.

Although partner violence is found in households at every income level, increased tolerance and incidence of partner violence has long been associated with lower income levels, due to increased stress from financial pressures (especially those due to male

unemployment), lower educational levels, or more crowded housing conditions.[41] Furthermore, condom usage is correlated with income status. Ciszewski and Harvey,[42] for instance, find that couples will forgo purchasing condoms when they need the money for other necessities, such as food. Therefore, I control for economic status, both by estimating household wealth and by controlling for whether a respondent is unemployed (NB: household wealth is not available for males).

Lower education levels among both the woman and her partner are associated with increased incidence of intimate partner violence, at least in part because lower educational attainment limits employment opportunities and earning potential, thus creating financial stress and/or reducing a woman's relative economic power within the relationship.[43] Authors have also found that condom use is associated with higher educational levels,[44] particularly the use of condoms for STI protection, as opposed to contraception.[45] Explanations given include that educated men and women have increased access to information about STI risk and protection, as well as increased economic means to purchase condoms. I control for an individual's educational attainment categorically, dividing respondents into 3 groups: incomplete secondary education, completed secondary education, and higher education (NB: in my sample, all men have at least completed secondary education).

Researchers such as Egley[46] indicate a relationship between the current ages of both the woman and her partner and incidence of intimate partner violence, with younger women being more likely to experience abuse, and younger men being more likely to perpetrate it. The explanation Egley gives for this relationship is that younger ages coincide with the early period of both the individual's and the family's life cycle, when norms of behavior and bargaining are negotiated and set. Also, sexual mores and behaviors in Central Asia have changed over time,[47] and younger men and women may be more aware of modern family planning methods and the importance of protecting oneself from STIs. Therefore, I control for an individual's current age.

Other authors have determined that urban residence is associated with intimate partner violence,[48] which the Kazakhstan national survey of partner violence incidence also showed. The 'private family' theory espoused by Martin et. al.[49] explains that increased incidence of partner violence is encouraged by the anonymity of city living,

apart from traditional networks of kin that observed each other's daily behavior. Urban residence may also influence condom use, as urban dwellers may have increased access to condoms and information about how to use them. They may also have more anonymous access to other partners, and might have more access to HIV testing facilities. I control for urban residence using a binary indicator variable.

The nationwide survey of intimate partner violence incidence also indicates that ethnic origin is an important predictor of violence. Kazakhstan's population in the past eighty years has undergone a series of migrations that have led to a state with several different sub-populations delineated by ethnic group. During the early Soviet period, in order to impose Soviet bureaucracy and ideology on the nation, large numbers of Russians moved into the region, mostly into the professional and managerial positions in cities. These Russians were better educated and wealthier than the native Kazakh population and, although both education levels and the degree of urbanization of the largely nomadic, rural Kazakh peasantry had increased since the 1920s, Russians, prior to independence, still represented an elite socio-economic group. Furthermore, there is a substantial non-Kazakh, non-Russian proportion to the population, mainly due to historical forced and non-forced migration of non-Russian peoples from elsewhere within the former Soviet empire. Although representing over 30 different ethnic groups, including Poles, Germans, Uzbeks, Ukrainians, Tatars, and Belorussians, and almost 13% of the pre-independence population, for simplicity's sake I treat these 'others' as a single group, with an experience that mirrors neither that of Kazakhs nor that of Russians.

Ethnic origin could influence attitudes towards partner violence and condom use in several ways. Firstly, ethnic status in Kazakhstan is highly associated with religious affiliation, as 92% of native Kazakh women report that they are Islamic, while 71.6% of Russian women identify as Orthodox Christians (the remainder report that they have no religion, which is not entirely surprising given the Soviet Union's official policy of atheism). Different religious groups may have different social norms regarding sexual activity. Gray,[50] for instance, indicates that the risk of HIV is lower among Muslims in sub-Saharan Africa, as Muslims are less likely to engage in premarital and extramarital sex. Muslim males are also more likely to be circumcised, a practice that protects against HIV transmission.[51] Gray, however, also points out that Muslim men are less likely to use

condoms in many contexts, citing religious prohibition, and that religious tenets are not always strictly followed, leading to an inconclusive relationship between religion and sexual behavior.

In Kazakhstan, religiosity among Muslims is relatively low, and is much more tied to ethnic, as opposed to religious, identity, although religious codes have shaped cultural expectations of behavior.[52] Furthermore, there indeed are documented differences between native Kazakhs, Russians, and other ethnic groups in terms of sexual behavior and contraceptive use, but these are driven more by social customs and fertility desires than by religious codes.[53] Thus, although religious differences could explain ethnic differences in sexual behaviors, looking at ethnic origin is more salient.

Secondly, forced migration, political change, and economic stress has had profound social consequences for Kazakhstan's citizens, which may have differed for different groups. For one, unemployment has risen since independence,[54] a factor that is strongly correlated with partner violence. Indeed, native Kazakh men and women both report significantly lower levels of current employment than other ethnicities. Although the political and economic power of native Kazakhs has increased relative to Russians since independence, native Kazakhs still have a legacy of lower status, a factor that has been tied to increased partner violence among lower castes in India,[55] even independent of other demographic characteristics, due to increased stress and psychological oppression.

Finally, sexual behavior and sources of risk of STI infection are likely to be quite different for married and unmarried people. Married couples who cohabit are more likely to be in abusive relationships than unmarried couples who do not cohabit.[56] In terms of condom use, married men and women are less likely to use condoms than non-married individuals, even when controlling for pregnancy intentions and other characteristics.[57] Meekers and Klein[58] note that in long-term relationships, self-efficacy among women, the belief that a woman has control over her actions, is a particularly important determinant of condom usage, even more so than when negotiating condom use with casual partners. Santelli et. al.[59] noted that women in long-term relationships are not likely to begin using condoms even when they perceive their risk of STIs and HIV has increased due to partner behavior. Marital status has been shown to have a strong influence on the likelihood of

multiple partners, with unmarried individuals being much more likely to have both multiple concurrent and serial partnerships.[60] I control for marital status by dividing respondents into three groups: never married, currently married, and formerly married (widowed or divorced).

Household Wealth Index

The DHS does not include income and expenditure data, but does include information on asset ownership, housing quality, and sanitary conditions. In order to estimate the effect of household economic status on sexual behavior, I have created an index using this information as an estimate of household wealth. I derived the wealth index using the methods of Filmer and Pritchett.[61] As argued by Filmer and Pritchett, although this method provides questionable data on current wealth, it is a good long-term approximation of household economic status, and relative differences between households. The specific variables included in my wealth index are a series of dummy variables indicating whether a household owns a telephone, radio, bicycle, car, refrigerator, and whether the home has running water, a flush toilet, and a non-dirt floor. Filmer and Pritchett's index calculation method utilizes principle component analysis, which reduces a number of variables into a single index, detects structure in the relationship between variables, and utilizes this structure in determining household wealth. My Cronbach alpha value is .68.

Results

Tables 1 indicates the effects of violence tolerance on lifetime condom use in Kazakhstan. Table 1 shows that the odds ratio of ever using a condom decreases 0.81 for women and 0.63 for men with each increasing 'unit' of intimate partner violence tolerance, a significant decrease for men and women. Among younger men and women, the odds of having ever used a condom decrease 0.73 for women and 0.51 for men for each increasing 'unit' of violence tolerance, also significant for both men and women. Men and women of non-Kazakh ethnicity are much more likely to have ever used condoms, although these results are only significant for women. There is a slight education gradient to condom use, although the increase is only significant for university-

educated women (OR = 1.45) There is a strong, significant association between household wealth and condom usage, with the odds of ever having used a condom increasing by 1.77 for each increasing 'unit' of household wealth. Among women, women who engaged in premarital intercourse are significantly more likely to have ever used a condom (OR = 1.24 for entire sample, OR = 1.44 for young sample). In the full sample, women who are currently employed are 1.27 times as likely to have ever used a condom, also a significant increase. Among men, men who are currently married are far less likely to have ever used a condom than men who are not currently married (OR = 0.15 in full sample, OR = 0.06 in young sample).

Table 2 indicates the effects of violence tolerance on current contraceptive use among women, Table 3 shows the effects for men. Although increased violence tolerance does not have a significant effect on current condom use for women, it significantly decreases the likelihood that men are currently using condoms with their partners. Furthermore, Kazakh men are also less likely to use currently use condoms if their last partner was a casual one – a behavior that might have important implications for STI spread. Condom use is also significantly associated with younger ages and marital status. As expected, married men and women are much less likely to use condoms. Among women, employment does have a significant effect on condom use, indicating that economic power within relationships might be an important predictor of condom use. Ethnicity does not seem to play an important role in contraceptive choice among either men or women, indicating that there may be few innate cultural barriers to condom use among Kazakh Muslims.

Table 4 indicates the effects of violence tolerance on multiple partnerships among Kazakh women; Table 5 indicates effects for men. These tables indicate that violence tolerance, generally, is not a significant predictor of multiple partnerships. Indeed, men who tolerate violence are less likely to have multiple partners. Instead, the most significant predictor by far among female and males for multiple partners is premarital sex (OR = 10.0 for men, OR = 2.62 for women), although these probably represent men and women who are currently unmarried engaging in premarital sex with multiple partners, since marital status is significantly negatively associated with multiple partners (OR = 0.05 for men, OR = 0.25 for women).

Table 6 indicates that tolerance of intimate partner violence is negatively associated with getting tested for HIV. Women are 0.91 times as likely and men are 0.63 times as likely to get tested for HIV with each increasing 'unit' of violence tolerance. One caveat when interpreting these figures is that respondents could be avoiding testing either because they are less likely to want to know the answer, or because they have less reason to believe they need to be tested for HIV. The first reason would imply that women tolerant of violence might fear bringing HIV into a household while men might be less concerned about the consequences of sexual behavior. The second reason, however, might indicate that in fact those who are tolerant of violence believe they are less risky in terms of behavior, and therefore less at risk of contracting HIV.

Table 1: Effects of violence tolerance on lifetime condom use, Kazakhstan

	All women		Women 15-30		All men		Men 15-30	
variable	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]
violence tolerance:								
tolerance score	0.83	**	0.73	**	0.64	**	0.51	**
ethnicity:								
Russian	2.32	***	2.32	***	1.04		1.58	
other ethnicity	1.86	***	1.40		1.06		1.89	
(Kazakh ethnicity is reference group)								
education:								
completed secondary	1.15		1.25					
higher education	1.45	*	1.37		1.67	+	1.89	
(reference = incomplete secondary for women, complete secondary for men)								
others:								
had premarital sex	1.24	*	1.44	*	1.45		1.57	
wealth score	1.77	***	1.56	**				
current age	0.97	***	1.03		0.95	***	1.05	
currently married	1.02		0.61	+	0.15	***	0.06	***
formerly married	0.74		0.51	*	0.78		0.21	*
urban residence	0.63	**	0.95		1.31		1.11	
currently employed	1.27	*	1.26		0.84		0.45	*
# of children	0.94		1.02		0.85	+	0.93	
seeking pregnancy	0.90		1.04					
N:	3374		1183		928		317	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001

Table 2: Effect of violence tolerance on current contraceptive use, Kazakhstan, women

Multinomial logit coefficients, reference group = no condom use, no other contraception

	All women				Women not seeking pregnancy				Women aged 15-30			
variable	other contraception, no condoms	sig.[1]	condoms	sig.[1]	other contraception, no condoms	sig.[1]	condoms	sig.[1]	other contraception, no condoms	sig.[1]	condoms	sig.[1]
violence tolerance:												
tolerance score	-0.09	+	-0.18		-0.10	+	-0.22		-0.05		-0.31	
ethnicity:												
Russian	0.14		0.37		0.04		0.24		0.45	*	0.58	+
other ethnicity (reference group = Kazakh)	0.03		0.11		0.06		-0.11		0.19		0.28	
education:												
completed secondary	0.15		-0.22		0.16		0.00		0.42	+	-0.52	
higher education (reference group = incomplete secondary)	0.42	*	0.17		0.29		0.22		0.60	*	-0.11	
others:												
casual partners	-0.06		0.28		0.04		0.28		-0.15		0.16	
wealth score	0.15	+	0.26		0.16	+	0.32		0.32	*	0.25	
current age	-0.03	***	-0.05	***	-0.03	**	-0.05	**	0.06	*	0.04	
currently married	1.37	***	-0.71	+	1.61	***	-0.62		0.87	*	-1.11	*
formerly married	0.93	**	-1.14	**	1.07	***	-1.27	***	0.57		-1.34	*
urban residence	-0.10		-0.07		-0.14		-0.23		-0.01		0.24	
currently employed	0.22	*	0.69	**	0.28	**	0.75	**	0.12		0.45	
# of children	0.18	***	0.01		0.14	**	-0.04		0.31	**	-0.04	
seeking pregnancy	-1.22	***	-1.10	**					-1.04	***	-1.08	*
constant	-0.29		0.23		-0.44		0.21		-2.75	***	-1.85	+
N:	3017		3017		2668		2668		1114		1114	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001

Table 3: Effect of violence tolerance on current contraceptive use, Kazakhstan, men

Multinomial logit coefficients, reference group = no condom use, no other contraception

	All men				Men aged 15-30			
variable	other contraception, no condoms	sig.[1]	condoms	sig.[1]	other contraception, no condoms	sig.[1]	condoms	sig.[1]
violence tolerance:								
tolerance score	-0.13		-0.49	**	-0.03		-0.98	***
ethnicity:								
Russian	0.07		0.21		0.72	+	0.51	
other ethnicity (reference group = Kazakh)	0.38		0.36		0.32		0.23	
education:								
higher education (reference group = complete secondary)	-0.14		0.32		-0.36		0.19	
others:								
casual partners	-1.67	**	-0.94	*	-2.18	**	-1.92	***
current age	-0.05	***	-0.06	***	0.00		-0.04	
currently married	1.15	*	-1.68	***	-0.48		-3.45	***
formerly married	1.65	*	0.19		2.11	*	-0.51	
urban residence	0.17		0.53	+	0.50		0.14	
currently employed	0.50	*	-0.05		0.00		-0.88	*
# of children	0.10		-0.05		0.33		0.17	
constant	0.53		2.59	***	-0.31		3.14	*
N:	916		916		313		313	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001

Table 4: Effects of violence tolerance on multiple partners in the last 12 months, Kazakhstan, women

	All women		Women 15-30		Unmarried women	
variable	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]
violence tolerance:						
tolerance score	1.05		1.25		2.12	+
ethnicity:						
Russian	0.83		1.03		0.76	
other ethnicity	1.25		1.48		1.35	
(Kazakh ethnicity is reference group)						
education:						
completed secondary	1.00		1.20		2.35	
higher education	0.72		1.15		1.79	
(reference = incomplete secondary for women, complete secondary for men)						
others:						
premarital sex	2.62	**	3.10	*		
wealth score	1.28		1.55		0.73	
current age	0.97		1.00		0.97	
currently married	0.25	**	0.22	*		
formerly married	2.24	+	2.34			
urban residence	1.01		0.74		1.78	
currently employed	2.04	*	1.58		2.15	
# of children	0.72	+	0.73		0.69	
seeking pregnancy	0.99		1.22		0.69	
N:	3036		1119		204	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001

Table 5: Effects of violence tolerance on multiple partners in the last 12 months, Kazakhstan, men

	All men		Men 15-30		Unmarried men	
variable	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]
violence tolerance:						
tolerance score	0.91		0.67	*	0.95	
ethnicity:						
Russian	1.48		1.51		1.35	
other ethnicity	0.60		0.82		0.49	
(Kazakh ethnicity is reference group)						
education:						
higher education (reference = complete secondary)	2.50	*	1.61		1.80	
others:						
premarital	10.002	*	2.61			
current age	0.93	**	1.01		0.93	*
currently married	0.05	***	0.05	*		
formerly married	2.07		2.55			
urban residence	0.71		0.66		0.87	
currently employed	1.06		0.77		1.12	
# of children[2]	1.17		0.70			
N:	928		317		170	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001
2. eliminated for unmarried men since only 2 unmarried men report having at least one child

Table 6: Effect of partner violence tolerance on getting tested for HIV, Kazakhstan

	All women		Women 15-30		All men		Men 15-30	
variable	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]	odds ratio	sig.[1]
violence tolerance:								
tolerance score	0.91	*	0.91		0.63	**	0.57	*
ethnicity:								
Russian	1.24	*	1.37	+	1.58	*	1.27	
other ethnicity (Kazakh ethnicity is reference group)	1.26	+	1.35		1.20		0.75	
education:								
completed secondary	1.08		1.04					
higher education (reference = incomplete secondary for women, complete secondary for men)	1.13		0.78		1.22		0.77	
others:								
had premarital sex	1.23	*	1.48	*	2.88	***	2.91	*
wealth score	1.09		1.18					
current age	0.98	***	1.03		1.00		1.04	
currently married	1.90	**	1.83	*	1.26		0.73	
formerly married	1.51	*	1.69	+	0.72		2.09	
urban residence	1.13		1.01		1.41	+	2.84	**
currently employed	1.55	***	1.35	+	1.79	**	1.28	
# of children	0.98		1.14		0.91		0.96	
seeking pregnancy	0.73	*	0.60	**				
N:	3325		1166		924		316	

1. p-values based on t-statistics: + indicates p < .1, * p < .05, ** p < .01, *** p <.001

Appendix A: Sample summary statistics - Kazakhstan

variable	All women	Women 15-30	All men	Men 15-30
violence tolerance:				
burns food	3.7	3.9	1.3	1.6
goes out without permission	8.1	8.0	7.3	7.3
argues	9.1	9.2	9.3	9.2
neglects children	19.3	20.6	17.2	18.6
refuses to have sex	4.8	4.2	3.6	4.1
tolerance score[1]	0.0193	0.0206	-0.0246	-0.0086
ethnicity:				
Kazakh	46.8	46.9	45.1	44.5
Russian	38.0	38.4	38.8	39.1
other ethnicity	15.2	14.7	16.1	16.4
education:				
< secondary education	10.6	12.8	0.1	
completed secondary	66.2	66.0	80.7	84.2
higher education	23.2	21.2	19.3	15.8
others:				
had premarital sex	29.1	40.4	76.5	88.6
wealth score[2]	0.0829	0.0079	n/a	n/a
current age	34.3	24.9	36.0	24.1
never married	7.6	15.1	18.3	46.1
currently married	76.2	72.5	75.6	49.2
formerly married	16.2	12.5	6.1	4.7
urban residence	64.5	63.7	65.6	68.5
currently employed	48.8	35.8	64.7	59.0
# of children	2.1	1.2	1.9	0.7
seeking pregnancy	10.7	17.0	n/a	
N:	3454	1221	930	317

1. Range: -.366 - 4.39 for women
2. Range: -2.53 to 1.049

Appendix B: Predictors of intimate partner violence tolerance - Kazakhstan

	All women		Women 15-30		All men		Men 15-30	
variable	OLS coefficient	sig.[2]	OLS coefficient	sig.[2]	OLS coefficient	sig.[2]	OLS coefficient	sig.[2]
ethnicity:								
Russian	-0.28	***	-0.32	***	-0.43	***	-0.72	***
other ethnicity	-0.21	***	-0.15		-0.39	***	-0.72	***
(Kazakh ethnicity is reference group)								
education:								
completed secondary	-0.02		-0.01					
higher education	-0.15	*	-0.14		-0.25	**	-0.41	**
(reference = incomplete secondary for women, complete secondary for men)								
others:								
wealth score	-0.31	***	-0.36	***				
current age	-0.01	*	-0.04	***	0.00		0.01	
currently married	0.04		0.08		-0.08		0.18	
formerly married	0.00		0.14		-0.06		-0.07	
urban residence	0.20	**	0.27		-0.09		0.05	
currently employed	0.04		0.12	+	0.02		-0.14	
# of children	0.10	***	0.15	**	0.05		0.06	
seeking pregnancy	0.19	**	0.23	*				
constant	0.08		0.72	**	0.48	**	0.26	
N:	3375		1183		930		317	

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