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Leyla Ismayilova

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Corresponding author: Leyla Ismayilova. Columbia University, School of Social Work, 1255 Amsterdam Avenue Room 809, New York, NY 10027 USA; E-mail: li61@columbia.edu.

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ABSTRACT

Objectives: The study examines the relationship between intimate partner violence and unintended pregnancy in three countries of the former Soviet Union, where abortions were safe, easily available to women, and often used as a form of birth control.

Methods: The study uses data from the nationally representative Demographic and Health Surveys conducted in Moldova (2005), Azerbaijan (2006), and Ukraine (2007). The original sample size is restricted to ever-married (or cohabitating) women of reproductive age (N=1,620 in Azerbaijan, N=1,377 in Moldova, and N=545 in Ukraine) who completed the survey‟s Domestic Violence Module and who had a pregnancy in the past five years. Using multinomial logistic regression, the study compares outcomes of last pregnancy (wanted birth, unintended birth, and abortion) by exposure to lifetime intimate partner violence committed by the most recent partner.

Results: Women who ever experienced physical or sexual violence from their partners showed consistently higher risks of unintended pregnancy across the three countries. After adjusting for socio-demographic characteristics, lifetime contraceptive use, and previous use of abortions, the study found that women with a history of intimate partner violence demonstrated higher risks of their last pregnancy ending in abortion (aRRR=2.1, 95% CI=1.4, 3.2 in Azerbaijan and aRRR=1.6, 95% CI=1.1, 2.3 in Moldova) or in unwanted live birth (aRRR=4.8, 95% CI=1.8, 12.7 in Ukraine).

Conclusions: Women exposed to physical or sexual violence from their partners demonstrated significantly higher risks of unintended pregnancy compared with women never exposed to intimate partner violence. The study emphasizes the need for developing programs that integrate reproductive health and intimate partner violence components to reduce the risk of unintended births and abortions among women living with abusive partners in countries of the former Soviet Union.

INTRODUCTION

Intimate partner violence (IPV)—defined as a "behavior within an intimate relationship that causes physical, sexual or psychological harm"[1] p.89—is a global social issue that infringes on women‟s rights, endangers their safety, and affects their overall wellbeing. In countries with relatively low levels of awareness about IPV, the consequences of violence are perceived to be limited to the woman‟s death or severe bodily harm[2]. Nonetheless, in addition to injuries as a direct result of violence, IPV can have long-lasting adverse effects on a woman‟s reproductive health[3-5].

Empirical studies have demonstrated that IPV is negatively associated with unintended births[6-8] and abortions[9]. The majority of evidence presented in existing research, however, comes from studies conducted in western industrialized countries or developing countries of Africa, Latin America, and Asia[8, 10-13]. The relationships between IPV and unintended births and abortions remain unknown in the transitional countries of the former Soviet Union (FSU). The FSU region is historically known for liberal abortion laws and easy access to safe abortions. The research findings from other parts of the world may not be applicable to the countries where abortions are easily available and acceptable and women have a choice of terminating unintended pregnancies through abortions.

This paper aims to answer the following research question: Are women who have experienced IPV more likely to have an unintended pregnancy compared with women who have not experienced violence from their partners, in Azerbaijan, Moldova, and Ukraine? The results of the paper may provide an empirical foundation for violence prevention and reproductive health programs in some countries of the FSU region.

LITERATURE REVIEW

Regional Context

Politically, geographically, and socially, the FSU region represents a common area that deserves special consideration. As a part of the Soviet Union for 70 years, Azerbaijan, Moldova, and Ukraine shared similar systems of social and health care services[14]. After the collapse of Soviet Union in 1991, the countries gained independence and have been in the transition stage from socialist political systems to independent democratic states with market economies. The transition from a socialist to market economy, however, brought on the economic crisis of the 1990s, resulting in growth in poverty and deterioration of services[15]. Nevertheless, over the last decade all three countries have experienced economic growth (to varying degrees), and improving women‟s reproductive health has become a national priority[16]. Since the collapse of the Soviet Union, reproductive health programs in Azerbaijan, Ukraine, and Moldova have focused primarily on increasing the knowledge, availability, and use of modern contraception and on improving the quality of family planning services[17].

The FSU region is not a homogenous entity. Due to differences in ethnicity and religion, family relationships, health behaviors and cultural norms vary across these three countries[18]. Ukraine and Moldova, with predominantly Christian populations, share relatively more egalitarian gender beliefs, while Azerbaijan, a secular Muslim nation, is characterized by more traditional values and conservative norms in respect to women[19-22]. Azerbaijan differs from countries with traditional Muslim cultures due to a long history of socialistic ideology and suppression of religion. Furthermore, while Azerbaijan and Ukraine exhibit significant economic growth, Moldova remains the poorest country in Eastern Europe. Therefore, an examination of cross-country similarities and differences in the relationships between IPV and unintended pregnancy in Azerbaijan, Moldova, and Ukraine may contribute to the understanding of IPV and reproductive health issues in a unique socio-cultural context.

Theory

The paper is guided by feminist theory and analyzes reproductive health problems through a gender perspective[23-25]. IPV and power differentials between men and women pose direct and indirect risks to women‟s health by creating significant disparities in access to and use of health information, services, and technologies. In addition to the direct influence of IPV (e.g., unintended pregnancy as a result of forced unprotected sex), partner violence can indirectly affect women‟s health by diminishing their functioning and competencies. Living in a situation of chronic violence, intimidation, or fear can impair a woman‟s self-esteem, decision-making abilities, and motivation to care for herself[3].

More specifically, an abusive and controlling family environment precludes a woman from negotiating and taking control over her life and can limit her autonomy in making decisions regarding her health, sexuality, and fertility[26, 27]. This can include decisions related to contraceptive use and fertility choices, often leading to unprotected sex and resulting in unplanned pregnancies and abortions[28]. Furthermore, living in an abusive environment can affect a woman‟s freedom of movement, which in turn can limit her access to health information and services, including family planning clinics. Lack of power in negotiating contraception and fear of a violent response are among the factors impeding behavioral change that health programs are trying to achieve[29]. Empirical studies have shown that women who live in abusive relationships are less likely to use modern contraceptive methods consistently[30, 31], which in turn increases the likelihood of unintended pregnancies[28].

IPV and Unintended Pregnancy

Studies in other countries have shown that after controlling for confounding factors women with a history of IPV report higher numbers of pregnancies that are either *unwanted* („wanted no more children‟) or *mistimed* („wanted children later‟)[28, 32]. Having limited control over their bodies and decisions related to sexual activities, such as the time of sex and use of contraceptive protection, women are more likely to engage in unwanted and/or unprotected sex, which can lead to unintended pregnancies[3, 28]. Lifetime physical and/or sexual IPV was found to be associated with higher odds of unintended pregnancy in studies using DHS data from

Colombia (aOR=1.4)[8], India (aOR=1.3)[12], and Bangladesh (aOR=1.5)[9]. The risks of unintended pregnancy were particularly higher when sexual abuse was combined with physical violence[8, 32]. A case-control study in Uganda identified a similarly strong relationship between IPV and unwanted pregnancy among women seeking post-abortion services, after adjusting for contraceptive use, pregnancy intentions, and other confounders[33].

Further, a study in rural India demonstrated that the relationship between IPV and unintended pregnancy is even stronger when prospective measures of unintended pregnancy are used[12]. The DHS uses a retrospective approach to measuring unintended pregnancy (women report the wantedness of a child after giving birth or becoming pregnant). Additionally, in the DHS, questions about unintended pregnancy are available only for pregnancies resulting in live births in the past five years and for current pregnancies. The question about unintended pregnancy may not solicit accurate information in countries where the culture of family planning is almost absent and women do not refer to unplanned pregnancies as unwanted or undesired, especially after the child is born. Hence, retrospective measures may underestimate the reports of unintended pregnancy.

According to the DHS, the percentage of unintended live births in the five years preceding the survey was 17% in Azerbaijan, 21% in Moldova, and 14% in Ukraine[34-36]. However, the same surveys found that only about half of pregnancies end in a live birth in Azerbaijan (46%) and Moldova (55%), and about two-thirds in Ukraine (68%)[34-36]. An estimated 49% of pregnancies in Azerbaijan, 34% in Moldova, and 25% in Ukraine are terminated through abortion. Thus, for these FSU countries, the fact that the unintended live birth measure in the DHS does not capture pregnancies that were terminated through abortions provides an incomplete measure of unintended pregnancies.

Abortions

Women may use abortions in situations when a fetus endangers the woman‟s health. However, women may also deliberately terminate a pregnancy if it was unintended[37]. The FSU countries have some of the world‟s most liberal abortion laws, and for decades abortion was safe

and free and became a form of birth control[18]. A 2003 study found that about 57% of pregnancies in Azerbaijan were unintended and 87% of unintended pregnancies resulted in abortion[38].

In the late 1990s a woman in the FSU region would have, on average, at least one abortion during her lifetime—1.3 abortions per woman in Moldova, 1.6 in Ukraine and 3.2 abortions per woman in Azerbaijan, one of the highest abortion rates in the world[18, 39]. During the Soviet period there were few legal restrictions to constrain a woman from having an abortion; abortions were provided free of charge at women‟s health clinics, while oral contraceptive methods without significant side effects were not easily available[40]. After the collapse of the Soviet Union, the practice of treating abortion as a main method of birth control began to change, starting with the introduction of family planning programs.

The most significant reduction in abortion has been observed in Ukraine, where the abortion rate dropped to 0.4 abortions per woman in 2007[36]. In Moldova, however, the abortion rate was dropping at first but after 2001 stagnated at the rate of 1.1 abortions per woman[34]. The abortion rate in Azerbaijan fell but remains high, at 2.3 abortions per woman[35]. Furthermore, a recent gap between the number of boys and girls in Azerbaijan demonstrates a preference for sons[41] and suggests a tendency toward sex-selective abortions[42].

A number of previous studies have used DHS data to examine associations between pregnancy loss and lifetime IPV[7, 9, 11]. Significant associations have been identified between lifetime exposure to IPV (physical and/or sexual) and a history of pregnancy loss in Bangladesh (aOR=1.5), Bolivia (aOR=1.6), Dominican Republic (aOR=1.8), Malawi (aOR=1.6), and Zimbabwe (aOR=1.7), as well as Moldova (aOR=1.7). These studies, however, used a binary measure of pregnancy loss that combined a history of stillbirth, miscarriage, or abortion. Another study in Bangladesh examined different types of pregnancy loss as separate outcomes and confirmed significant relationships for abortions and miscarriages but not for stillbirths[9].

In this study, to examine the relationship between IPV and unintended pregnancy, a new measure of unintended pregnancy more suited to the FSU countries was created that included both unintended pregnancies that resulted in live births and pregnancies that were terminated through induced abortion.

Hypothesis

The paper examines the relationships between IPV and unintended pregnancy using population-based samples from three FSU countries—Azerbaijan, Moldova, and Ukraine. More specifically, the paper examines the associations between a history of physical or sexual partner violence from the most recent intimate partner and unintended pregnancy within the last five years, while controlling for socio-demographic characteristics (woman‟s age, urban/rural residence, years of education, wealth status) and important covariates (the number of living children, previous use of abortion, and lifetime use of contraceptives).

Our hypothesis is that women who have ever experienced physical or sexual IPV will demonstrate higher likelihood of unintended last pregnancy compared with women who have never experienced physical or sexual IPV, after controlling for key covariates.

METHODS

Data Source

This study is an analysis of secondary data collected through the Demographic and Health Surveys (DHS) in Azerbaijan (2006), Moldova (2005), and Ukraine (2007). The DHS, conducted in more than 80 developing countries, recently has included the FSU countries, and for the first time provided nationally representative data on socio-demographic, household, women‟s status, and health variables. The DHS employs a unified methodology that allows for cross-country comparisons. The standard DHS questionnaire was fielded in eight FSU countries.[a] However, only three—Azerbaijan, Moldova, Ukraine—included the optional Domestic Violence Module. Therefore, our analysis is limited to these three countries.

Sampling Scheme

Demographic and Health Surveys are nationally representative household surveys that use a stratified multistage sampling strategy. Using the most recent national census, clusters (or PSUs, primary sampling units) are selected using a probability-proportionate-to-size sampling procedure within each strata, meaning that more populated clusters had a higher probability of being selected. Households are then randomly selected within each selected cluster. The Domestic Violence module is administered to one randomly-selected woman of reproductive age (15-49 years old) within each selected household.[b]

In the Moldova DHS, the clusters were drawn separately for urban and rural areas (strata). In Azerbaijan and Ukraine, the stratification was achieved by separating economic regions into rural and urban areas. Due to administrative difficulties and a blockade, no respondents were included from the following areas: Transnistria (a disputed region of Moldova), Nakhichevan (an autonomous republic in Azerbaijan), Kalbajar-Lachin region and the

[a] The standard DHS questionnaire without the Domestic Violence Module was conducted in Armenia, Kazakhstan, Kyrgyz Republic, Turkmenistan and Uzbekistan.

[b] In Ukraine, women were not eligible for the Domestic Violence Module in households in which men were administered the domestic violence module (one-half of all selected households).

four districts of Yukhari Garabakh (occupied territories in Azerbaijan), and a region in Ukraine uninhabited since the Chernobyl nuclear disaster.

The original samples (N=8,444 in Azerbaijan, N=7,440 in Moldova, and N=6,841 in Ukraine) were reduced to include ever-married[c] (or cohabiting) women of reproductive age (15-49) who were eligible and completed the Domestic Violence Module and who had a pregnancy in the last five years preceding the survey. Almost half of the respondents from the domestic violence sample in Azerbaijan had a pregnancy in the last five years compared with one-third of respondents in Moldova and one-quarter in Ukraine. Eligible ever-married women who did not complete the Domestic Violence Module or who could not be interviewed because privacy could not be achieved during their interviews were excluded from the analysis. In addition, women whose last pregnancy resulted in a miscarriage or stillbirth (69 cases in Azerbaijan, 123 in Moldova, and 28 in Ukraine) were not included in the final analysis. To obtain nationally representative estimates, weights from the Domestic Violence Module were used as sampling weights. The final weighted samples included 1,620 women in Azerbaijan, 1,377 women in Moldova, and 545 women in Ukraine.

Measures

Predictor variable: Lifetime occurrence of physical or sexual IPV is a binary outcome defined as having occurred if a woman reported any abusive acts ever committed by her most recent husband or cohabitating partner. The scale included seven items measuring physical violence (husband/partner ever threw something at her, pushed, shoved; slapped the respondent; twisted her arm, or pulled her hair; ever punched with his fist or with something that could hurt her, kicked, or dragged; tried to strangle or burn; or threatened with a knife, gun, or other type of weapon) and three items measuring sexual violence (husband/partner ever physically forced respondent to have sexual intercourse; forced her to perform any other sexual acts; respondent reported forced first sexual intercourse with this partner). Almost all women who reported experiencing sexual IPV also reported ever experiencing physical IPV, and this measure was combined into lifetime occurrence of physical and/or sexual IPV.

[c] Hereafter married or cohabitating (living with a partner) will be used interchangeably.

Outcome variable: The DHS questionnaire collected information about the respondent‟s pregnancy history. Women who had a live birth within the five years preceding the survey were asked whether they had wanted the child then, later, or wanted no more children at the time of pregnancy. Thus, the measure of unintended pregnancy is available only for pregnancies resulting in live births. In the FSU region, where women historically had an option of terminating an unintended pregnancy through an abortion, this question may not capture a large portion of unintended pregnancies. Therefore, to measure unintended pregnancy, we constructed a new variable that captured unintended pregnancies that resulted in live births and pregnancies that were terminated through abortion. This new measure of unintended pregnancy was based on outcome of last pregnancy within the last five years preceding the survey and included three categories (0: live birth wanted then; 1: live birth wanted later or not wanted at all; and 2: abortion).

Control variables: The analysis adjusted for socio-demographic covariates—rural residence, low levels of education, and poverty—often associated with poor reproductive health outcomes[43]. Residence was measured as a dichotomous variable (rural/urban areas). Age demonstrated a non-linear relationship with the outcome variables, and regression models included two variables for age—age in years and age squared. To measure socio-economic status, the DHS uses a wealth index that is computed using principal component analysis and has been tested in many countries[44]. The wealth index includes five quintiles (from 1, lowest wealth, to 5, highest) based on ownership of durable assets and selected living conditions. In this paper the wealth index was dichotomized into two categories; the lowest two quintiles were coded as 1 to indicate poverty, and the middle and two highest quintiles were coded as 0. Education was used as a continuous variable measuring total years of schooling. Further, the model included lifetime use of contraceptives as a reproductive health predictor of unintended pregnancy. Lifetime use of contraceptives included 3 categories (0: no method; 1: only ever used traditional methods such as rhythm, withdrawal, and folkloric methods; and 2: modern methods such as pill, condom, diaphragm, IUD, spermicides, and other modern methods). Finally, to estimate the association between a history of IPV and the decision regarding the most recent pregnancy, the study adjusted for reproductive health covariates commonly associated with pregnancy outcomes—number of living children prior to last pregnancy and number of abortions prior to last abortion.

Data Analysis

The statistical analysis was performed in STATA 11. The statistical analysis was conducted individually for each country and the results were compared. To examine associations between IPV and outcomes of last pregnancy the multinomial survey logistic regression was performed adjusting for the stratified multistage sampling design and using sample weights from the Domestic Violence Module. Without specifying sampling design, the analysis may underestimate the standard errors and produce more statistically significant results, running the risk of Type I Error[45]. The raw and adjusted relative risk ratios with 95% confidence intervals are reported. Models were adjusted for key socio-demographic covariates (woman‟s age, marital status, urban/rural residence, education, and wealth) and reproductive health covariates (number of children, number of abortions, and lifetime use of contraceptives). The models were tested for multicollinearity and variance inflation factors (VIFs) did not exceed the cut-off value of 10, indicating high colinearity[46].

RESULTS

Socio-Demographic Characteristics

Table 1 contains information about the socio-demographic characteristics, prevalence of IPV, and key reproductive health outcomes for ever-married (or cohabitating) women of reproductive age 15-49 who were eligible and completed the Domestic Violence Module and who had a pregnancy in the last five years.

The mean age of participants was 29-30 years in all three countries. In Ukraine respondents predominantly lived in urban areas (63%), and in Moldova in rural areas (60%), with Azerbaijan having a relatively equal proportion of respondents in urban and rural areas (54% vs. 46%, respectively). The mean number of years of education was higher in Ukraine (14 years) than in Azerbaijan or Moldova (11 years). The percentage of formerly married women was lowest in Azerbaijan (4%), followed by Moldova (8%), and Ukraine (11%).

Physical and Sexual IPV

Table 1 shows that 22% of respondents in Moldova, 14% in Azerbaijan, and 11% in Ukraine reported ever experiencing acts of physical and/or sexual IPV from their most recent partners (being punched, kicked, strangled, burned, or threatened or attacked with a weapon; being physically forced to have sexual intercourse or perform other sexual acts against their will, or having forced first sexual intercourse).

Unintended Pregnancy and Reproductive Health Covariates

A number of substantial differences were observed among the three countries in regard to reproductive health outcomes. Last pregnancy within the last five years preceding the survey resulted in abortion for 47% of women in Azerbaijan, 35% of women in Moldova, and 28% of women in Ukraine. In Azerbaijan 27% of respondents have never used any method of contraception compared with 5% in Moldova and 16% in Ukraine. On average, women in Ukraine and Moldova reported having one living child prior to the last pregnancy compared with almost two children for women in Azerbaijan.

Table 1. Socio-demographic characteristics, prevalence of intimate partner violence, and key reproductive health covariates among ever-married women who completed the Domestic Violence Module (Domestic Violence Sample) and had a pregnancy in the past 5 years preceding the survey.

	Azerbaijan (N=1,620)		Moldova (N=1,377)		Ukraine (N=545)	
	%	[95% CI]	%	[95% CI]	%	[95% CI]
Socio-demographic characteristics						
Age, mean	30.1	[29.6, 30.5]	28.9	[28.5, 29.3]	29.3	[28.6, 30.0]
Residence						
Urban	54.4	[49.7, 59.0]	40.1	[37.4, 42.9]	63.4	[59.2, 67.5]
Rural	45.6	[41.0, 50.3]	59.9	[57.1, 62.7]	36.6	[32.5, 40.9]
Marital status						
Currently married	96.4	[94.8, 97.6]	92.4	[90.7, 93.8]	88.9	[85.1, 91.7]
Formerly married	3.6	[2.4, 5.2]	7.6	[6.2, 9.3]	11.2	[8.3, 14.9]
Wealth status						
Middle and higher quintiles/ 60%	58.9	[54.2, 63.4]	65.5	[62.0, 68.8]	62.0	[56.7, 67.0]
Lowest two quintiles/ 40%	41.1	[36.6, 45.8]	34.6	[31.2, 38.1]	38.0	[33.0, 43.3]
Number of years of education, mean	10.8	[10.6, 11.0]	11.3	[11.1, 11.4]	13.6	[13.3, 13.9]
Lifetime IPV						
Any physical IPV	13.0	[11.2, 15.2]	21.5	[19.2, 24.0]	10.3	[7.6, 13.8]
Any sexual IPV	2.9	[2.1, 4.1]	4.7	[3.5, 6.2]	4.2	[2.3, 7.5]
Any physical or sexual IPV	13.8	[11.9, 15.9]	22.4	[20.1, 25.0]	10.9	[8.0, 14.5]
Reproductive health outcomes						
Ever used contraception						
No method	27.0	[24.2, 30.0]	4.8	[3.6, 6.4]	15.8	[11.9, 20.8]
Traditional methods only	38.5	[35.0, 42.1]	8.9	[7.3, 10.8]	12.6	[9.9, 15.9]
Modern methods	34.5	[31.2, 38.0]	86.3	[84.0, 88.4]	71.6	[66.8, 75.8]
Number of children (prior to last live birth)	1.6	[1.5, 1.6]	1.1	[1.0, 1.2]	0.9	[0.8, 1.0]
Number of abortions (prior to last abortion)	0.4	[0.4, 0.5]	0.4	[0.3, 0.4]	0.3	[0.2, 0.3]
Last pregnancy outcome						
Wanted live birth	43.0	[40.1, 45.9]	50.3	[46.9, 53.7]	61.5	[56.9, 66.0]
Unintended live birth	8.5	[7.0, 10.4]	14.3	[12.1, 16.8]	10.9	[8.2, 14.3]
Abortion	46.5	[45.8, 51.3]	35.4	[32.6, 38.4]	27.6	[23.6, 32.1]

IPV and Unintended Last Pregnancy

In all three countries lifetime occurrence of physical or sexual IPV demonstrated strong associations with unintended pregnancy, after adjusting for key socio-demographic covariates, lifetime use of contraceptives, and previous use of abortions (see Table 2). In Azerbaijan and Moldova women who had ever experienced physical or sexual IPV demonstrated higher risks of the last pregnancy resulting in abortion (Azerbaijan, aRRR=2.1, 95% CI=1.4, 3.2; Moldova, aRRR=1.6, 95% CI=1.1, 2.3) compared with women who had no history of physical or sexual IPV. Ever experiencing physical or sexual IPV did not demonstrate a significant relationship with abortion in Ukraine, where the average abortion rate is significantly lower than in Azerbaijan and Moldova. However, in Ukraine ever experiencing physical or sexual IPV was associated with higher risk of unintended live birth (aRRR=4.8, 95% CI=1.8, 12.7).

In all three countries formerly married status and number of living children prior to the last birth were positively associated with the last pregnancy resulting in abortion. Women of lower wealth status in Azerbaijan (aRRR=0.6, 95% CI=0.4, 1.0) and Moldova (aRRR=0.6, 95% CI=0.4, 0.9) and women from rural areas in Moldova (aRRR=0.6, 95% CI=0.4, 0.9) were less likely to terminate their last pregnancy through abortion. Unintended live birth was positively associated with rural residence in Ukraine (aRRR=2.7, 95% CI=1.2, 6.1) and with lower wealth status in Moldova (aRRR=1.6, 95% CI=1.0, 2.4).

Table 2. Relative risk ratios for lifetime exposure to IPV and outcomes of last pregnancy within the last 5 years preceding the survey among ever-married (or cohabiting) women in Azerbaijan, Moldova, and Ukraine.

	Azerbaijan					Moldova					Ukraine				
	Outcome of last pregnancy within last 5 years (N=1,620)					Outcome of last pregnancy within last 5 years (N=1,377)					Outcome of last pregnancy within last 5 years (N=544)				
	Wanted live birth	*Unwanted live birth*		*Abortion*		*Wanted live birth*	*Unwanted live birth*		*Abortion*		*Wanted live birth*	*Unwanted live birth*		*Abortion*	
	RRR	**RRR**	**[95% CI]**	**RRR**	**[95% CI]**	**RRR**	**RRR**	**[95% CI]**	**RRR**	**[95% CI]**	**RRR**	**RRR**	**[95% CI]**	**RRR**	**[95% CI]**
Model 1(unadjusted)															
Ever experienced any physical or sexual IPV															
No	ref					ref					ref				
Yes	1.0	1.2	[0.6,2.2]	**2.0*** **	[1.4,2.8]	1.0	**2.0****	[1.3,3.1]	**2.3*** **	[1.7,3.1]	1.0	**5.3*** **	[2.3,12.1]	**3.5*** **	[1.7,7.1]
Model 2 (adjusted)															
Ever experienced any physical or sexual IPV															
No	ref					ref					ref				
Yes	1.0	1.2	[0.7,2.3]	**2.1*** **	[1.4,3.2]	1.0	1.3	[0.8,2.1]	**1.6***	[1.1,2.3]	1.0	**4.8****	[1.8,12.7]	2.0	[0.8,4.8]
Age	1.0	0.9	[0.6,1.1]	**0.7***	[0.5,0.9]	1.0	**0.6*** **	[0.5,0.8]	**0.7****	[0.6,0.9]	1.00	**0.6****	[0.4,0.9]	**0.6****	[0.4,0.9]
Age (squared)	1.0	1.0	[1.0,1.0]	**1.0****	[1.0,1.0]	1.0	**1.0*** **	**[1.0,1.0]**	**1.0****	[1.0,1.0]	1.00	**1.0***	[1.0,1.0]	**1.0****	[1.0,1.0]
Residence															
Urban	ref					ref					ref				
Rural	1.0	0.8	[0.4,1.6]	0.7	[0.5,1.0]	1.0	0.7	[0.4,1.1]	**0.6****	[0.4,0.9]	1.00	**2.7***	[1.2,6.1]	0.6	[0.3,1.2]
Marital status															
Currently married	ref					ref					ref				
Formerly married	1.0	0.9	[0.2,3.3]	**3.6***	[1.2,10.5]	1.0	**3.7*** **	[1.7,7.8]	**4.9*** **	[2.6,9.4]	1.00	2.1	[0.6,7.0]	**5.8*** **	[2.6,12.9]
Years of education	1.0	1.0	[0.9,1.1]	1.0	[0.9,1.1]	1.0	1.0	[1.0,1.1]	1.1	[1.0,1.2]	1.00	0.9	[0.8,1.0]	1.1	[0.9,1.2]
Wealth status															
Middle and higher 60%	ref					ref					ref				
Lowest 40%	1.0	0.6	[0.3,1.3]	**0.6***	[0.4,1.0]	1.00	**1.6***	[1.0,2.4]	**0.6***	[0.4,0.9]	1.00	**0.4***	[0.2,0.8]	1.10	[0.5,2.3]
# Living children	1.0	**2.3*** **	[1.6,3.2]	**7.0*** **	[4.8,10.2]	1.0	**3.6*** **	[2.6,4.9]	**4.3*** **	**[3.0,6.1]**	1.0	1.6	[1.0,2.5]	**2.6*** **	[1.7,4.0]
# Abortions	1.0	0.9	[0.7,1.2]	**1.5*** **	[1.3,1.8]	1.0	1.0	[0.8,1.2]	1.1	[1.0,1.3]	1.0	1.0	[0.5,1.8]	**2.1*** **	[1.5,2.9]
Ever used contraceptives															
No methods (ref)	ref					ref					ref				
Traditional only	1.0	0.8	[0.5,1.4]	**1.6***	[1.0,2.5]	1.0	1.0	[0.3,3.2]	0.9	[0.4,1.9]	1.0	**4.4***	[1.1,18.2]	1.8	[0.6,5.6]
Modern methods	1.0	1.0	[0.6,1.7]	**1.6***	[1.0,2.3]	1.0	1.2	[0.4,3.3]	0.9	[0.5,1.7]	1.0	**3.6***	[1.1,11.7]	**3.6****	[1.6,8.5]

Note: Models are adjusted for age, rural/urban residence, marital status, education, and wealth status, number of children excluding last live birth, previous use of abortions, and lifetime use of contraceptives.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

DISCUSSION

This paper has identified significant associations between IPV and unintended pregnancy in three countries of the former Soviet Union. In all three countries women with a history of physical or sexual IPV demonstrated elevated probabilities of unintended pregnancies, manifested either through higher probabilities of last pregnancy resulting in abortion in Azerbaijan and Moldova, or through unintended live births in Ukraine. The relationship between IPV and abortions was not significant in Ukraine, where the abortion rate among the general population is lower than in Azerbaijan and Moldova.

The findings in this paper suggest that to further reduce the number of abortions, reproductive health programs in Azerbaijan and Moldova need to take into account the specific risks of women living in abusive relationships. In addition, in Moldova, women with lower economic status who may have limited means and access to abortion are more likely than women from higher economic status to keep an unplanned last pregnancy. In Ukraine, unplanned live births are more common in rural than urban areas.

The study has a number of limitations. It used cross-sectional data to explore initial associations between IPV and reproductive health decisions, but cannot make causal inferences. Despite the strong associations found in this paper, the use of cross-sectional data cannot help sort out whether IPV serves as a risk factor or predictor of reproductive health outcomes, or both. Further, the data collection procedure, an interviewer-administered survey, may pose constraints to the disclosure of sensitive information. The presence of an interviewer may create a situation for social desirability bias and decrease reporting of unwanted pregnancies, large numbers of abortions, and IPV, particularly sexual IPV. Despite certain limitations, interviewing is still considered a legitimate data collection method for studies on IPV and health outcomes, especially if interviewers are trained and administer a standardized instrument, as in the DHS. Another limitation is that the analysis relied on self-reported data about women‟s reproductive health and did not compare their reported health outcomes with health records. Less than 5% of respondents reported ever experiencing sexual IPV, which significantly limited the power to identify significant relationships between pregnancy outcomes and sexual IPV separately from physical IPV.

The paper lays the groundwork for future studies aiming to understand the complex relationship between IPV and unintended pregnancy. To identify causal relationships between IPV and family planning indicators, future studies accounting for temporal factors—the onset of IPV and decisions related to adoption or discontinuation of contraception—are indispensible. To be especially beneficial in program development, the studies should examine mechanisms linking unintended pregnancy and IPV. Moreover, studies using experimental designs are necessary to test the effects of factors mediating the relationship between pregnancy outcomes and IPV and determining their role in preventing and reducing the negative consequences of IPV. Studies examining various mechanisms linking different types of IPV with contraceptive use, unintended pregnancies, abortions, and miscarriages could be extremely informative in developing programs to reduce the effect of IPV on health outcomes among women who have ever experienced violence in intimate relationships.

This analysis suggests that the relationship between IPV and women‟s health may go far beyond physical injuries and seriously undermine women‟s reproductive health outcomes. The results of this paper illustrate the need for reproductive health programs to address IPV as a potential obstacle to preventing unintended pregnancies and its counterpart, use of effective contraception. Likewise, women receiving or seeking services for IPV from women‟s crisis centers or shelters should also be assessed for their family planning needs and risks of unintended pregnancy. Furthermore, women‟s health clinics, family planning centers, and hospital units providing abortion services could be effective settings for screening women for IPV and providing necessary assistance, referrals, and health information. A harm-reduction approach could be applied to reproductive health programs to minimize the risk of unintended pregnancies among women who are currently unable or unwilling to leave their abusive partners.

CONCLUSION

Power dynamics in relationships should be taken into account when understanding the reproductive health behaviors and decisions of women in the FSU region. Strong associations in the FSU region between women‟s abusive experiences and unintended pregnancy suggest the importance of designing new programs or adjusting current reproductive health programs to address the special circumstances and needs of women who have experienced violence from their partners.

REFERENCES

1. WHO. 2002. *World Report on Violence and Health.* Eds: Krug, E.G., L.L. Dahlberg, J.A. Mercy, A.B. Zwi, R. Lozano, Pp. 144. Geneva: World Health Organization.

2. Fox, A.M., S.S. Jackson, N.B. Hansen, N. Gasa, M. Crewe, K.J. Sikkema. 2007. In Their Own Voices: A Qualitative Study of Women's Risk for Intimate Partner Violence and HIV in South Africa. *Violence Against Women* 13(6): 583-602.

3. Coker, A.L.. 2007. Does Physical Intimate Partner Violence Affect Sexual Health? A Systematic Review. *Trauma, Violence, & Abuse* 8(2): 149-177.

4. Jordan, C.E.. 2007. The Health Implications of Violence Against Women: Untangling the Complexities of Acute and Chronic Effects: A Two-Part Special Issue. *Trauma, Violence, & Abuse* 8(2): 87-89.

5. Plichta, S.B.. 2004. Intimate Partner Violence and Physical Health Consequences: Policy and Practice Implications. *J Interpers Violence* 19(11): 1296-323.

6. Stephenson, R., M. Koenig, R. Acharya, T. Roy. 2008. Domestic Violence, Contraceptive Use, and Unwanted Pregnancy in Rural India. *Studies in Family Planning* 39(3): 177-186.

7. Hindin, M.J., S. Kishor, D.L. Ansara. 2008. Intimate Partner Violence among Couples in 10 DHS Countries: Predictors and Health Outcomes. In: *DHS Analytical Studies No. 18.* Calverton, Maryland, USA: Macro International Inc.

8. Pallitto, C.C., P. O'Campo. 2004. The Relationship between Intimate Partner Violence and Unintended Pregnancy: Analysis of a National Sample from Colombia. *Int Fam Plan Perspect* 30(4): 165-73.

9. Silverman, J.G., J. Gupta, M.R. Decker, N. Kapur, A. Raj. 2007. Intimate Partner Violence and Unwanted Pregnancy, Miscarriage, Induced Abortion, and Stillbirth among a National Sample of Bangladeshi Women. *BJOG* 114(10): 1246-52.

10. Schei, B., J.R. Guthrie, L. Dennerstein, S. Alford. 2006. Intimate Partner Violence and Health Outcomes in Mid-Life Women: A Population-Based Cohort Study. *Arch Womens Ment Health* 9(6): 317-24.

11. Kuning, M., D. McNeil, V. Chongsuvivatwong. 2003. Pregnancy Loss in the Philippines. *Southeast Asian J Trop Med Public Health* 34(2): 433-42.

12. Stephenson, R., M.A. Koenig, R. Acharya, T.K. Roy. 2008. Domestic Violence, Contraceptive Use, and Unwanted Pregnancy in Rural India. *Studies in Family Planning* 39(3): 177-186.

13. Stephenson, R., M.A. Koenig, S. Ahmed. 2006. Domestic Violence and Contraceptive Adoption in Uttar Pradesh, India. *Studies in Family Planning* 37(2): 75-86.

14. Suhrcke, M., L. Rocco, M. McKee. 2007. *Health: A Vital Investment for Economic Development in Eastern Europe and Central Asia.* Copenhagen, Denmark: World Health Organization.

15. Scott, W. 2000. *Recent Changes in Social Conditions of Countries in Transition.* Geneva: United Nations Research Institute for Social Development [UNRISD].

16. USAID. 2007. *Family Planning Situation Analysis 2007: Executive Summary.* Arlington, VA: John Snow, Inc./Europe and Eurasia Regional Family Planning Activity for the U.S. Agency for International Development.

17. UNFPA. 2008. *UNFPA 2007 Annual Report.* New York: United Nations Population Fund.

18. CDC. 2003. *Reproductive, Maternal and Child Health in Eastern Europe and Eurasia: A Comparative Report.* Atlanta, GA (USA) and Calverton, MD (USA): Centers for Disease Control and Prevention and ORC Macro.

19. Heyat, F.. 2006. Globalization and Changing Gender Norms in Azerbaijan. *International Feminist Journal of Politics* 8(3): 394-412.

20. Manijeh, S.. 1999. The Impact of Economic and Political Transformation on Women: The Case of Azerbaijan. *Central Asian Survey* 18(1): 111-120.

21. ADB. 2006. *Gender Assessment Synthesis Report: Mainstreaming Gender in Poverty Reduction Strategies in Four Central Asian Republics.* Asian Development Bank (ADB).

22. Tohidi, N.. 1996. Soviet in Public, Azeri in Private: Gender, Islam, and Nationality in Soviet and Post-Soviet Azerbaijan. *Women's Studies International Forum* 19(1-2): 111-123.

23. Worth, D.. 1989. Sexual Decision-Making and AIDS: Why Condom Promotion among Vulnerable Women is Likely to Fail. *Studies in Family Planning* 20(6): 297-307.

24. Sen, G., A. George, P. stli n. 2002. *Engendering International Health: The Challenge of Equity.* Cambridge, MA: MIT Press.

25. Dixon-Mueller, R.. 1993. The Sexuality Connection in Reproductive Health. *Studies in Family Planning* 24(5): 269-282.

26. Blanc, A.K.. 2001. The Effect of Power in Sexual Relationships on Sexual and Reproductive Health: An Examination of the Evidence. *Studies in Family Planning* 32(3): 189-213.

27. Wingood, G.M., R.J. DiClemente. 2000. Application of the Theory of Gender and Power to Examine HIV-Related Exposures, Risk Factors, and Effective Interventions for Women. *Health Educ Behav* 27(5): 539-565.

28. Pallitto, C.C., J.C. Campbell, P. O'Campo. 2005. Is Intimate Partner Violence Associated with Unintended Pregnancy? A Review of the Literature. *Trauma Violence Abuse* 6(3): 217-35.

29. Bawah, A., P. Akweongo, R. Simmons, J. Phillips. 1999. Women's Fears and Men's Anxieties: The Impact of Family Planning on Gender Relations in Northern Ghana. *Studies in Family Planning* 30(1): 54-66.

30. Diop-Sidibe, N., J.C. Campbell, S. Becker. 2006. Domestic Violence against Women in Egypt-Wife Beating and Health Outcomes. *Soc Sci Med* 62(5): 1260-77.

31. Stephenson, R., M.A. Koenig, S. Ahmed. 2006. Domestic Violence and Contraceptive Adoption in Uttar Pradesh, India. *Stud Fam Plann* 37(2): 75-86.

32. Martin, S.L., B. Kilgallen, A.O. Tsui, K. Maitra, K.K. Singh, L.L. Kupper. 1999. Sexual Behaviors and Reproductive Health Outcomes: Associations with Wife Abuse in India. *JAMA* 282(20): 1967-72.

33. Kaye, D.K., F.M. Mirembe, G. Bantebya, A. Johansson, A.M. Ekstrom. 2006. Domestic Violence as Risk Factor for Unwanted Pregnancy and Induced Abortion in Mulago Hospital, Kampala, Uganda. *Tropical Medicine & International Health* 11(1): 90-101.

34. NCPM, ORC Macro. 2006. *Moldova Demographic and Health Survey 2005.* Calverton, Maryland: National Scientific and Applied Center for Preventive Medicine of the Ministry of Health and Social Protection (NCPM, Moldova) and ORC Macro.

35. SSC, Macro International Inc. 2008. *Azerbaijan Demographic and Health Survey 2006.* Calverton, Maryland, USA: Azerbaijan State Statistical Committee (AzSSC) and Macro International Inc.

36. UCSR, SSC, MOH, Macro International. 2008. *Ukraine Demographic and Health Survey 2007.* Calverton, Maryland, USA: Ukrainian Center for Social Reforms (UCSR), State Statistical Committee (SSC) [Ukraine], Ministry of Health (MOH) [Ukraine], Macro International Inc.

37. Singh, S., E. Prada, E. Kestler. 2006. Induced Abortion and Unintended Pregnancy in Guatemala. *Int Fam Plan Perspect* 32(3): 136-45.

38. Goldberg, H., F. Serbanescu. 2002. *Induced Abortion in the Caucasus Republics: A Detailed Analysis.* Centers for Disease Control and Prevention.

39. Hyde, G. 2008. Abortion and the Birth Rate in the USSR. *Journal of Biosocial Science* 2(03): 283-292.

40. Serbanescu, F., H. Goldberg, L. Morris. 2005. Reproductive Health in the Transition Countries of Europe. In: *The New Demographic Regime: Population Challenges and Policy Responses* Pp. 177-198.

41. Hortacsu, N., S.S. Bastug, O.B. Muhammetberdiev. 2001. Desire for Children in Turkmenistan and Azerbaijan: Son Preference and Perceived Instrumentality for Value Satisfaction. *Journal of Cross-Cultural Psychology* 32(3): 309-321.

42. Asian Development Bank [ADB]. 2006. *Gender Assessment Synthesis Report: Mainstreaming Gender in Poverty Reduction Strategies in Four Central Asian Republics.* Asian Development Bank.

43. Remez, L. 2003. Unintended Pregnancy Is Linked to Inadequate Prenatal Care, but Not to Unattended Delivery or Child Health. *International Family Planning Perspectives* 29.

44. Rutstein, S., J. Kiersten. 2004. The DHS Wealth Index. Calverton, MD: ORC Macro.

45. Chambers, R.L., C.J. Skinner. 2003. Analysis of Survey Data. Hoboken, NJ: John Wiley & Sons, Ltd.

46. Tabachnick, B., L. Fidell. 2006. Using Multivariate Statistics. 5th ed: Allyn & Bacon.