Correlates of Modern Contraception Usage in Russia

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ABSTRACT

Low contraceptive prevalence in Russia is due in part to access, supply, and cost issues, however, the Soviet legacy of "abortion culture" has also played a major role. It is unclear if some women use abortion as a form of birth control rather than as a last resort. This paper expands on the limited literature regarding contraception in the Russian Federation by exploring correlates of modern contraception usage including the number of previous abortions a woman has had.

This study employs data from the Russia Longitudinal Monitoring Survey and is based on a sample of 4,612 fecund women with a total of 14,849 woman-year observations between 1996 and 2003. Descriptive statistics and logistic regression results are reported for both a random effects and a fixed effects model.

Based on the results from the random effects model, the relationship between number of previous abortions and modern contraceptive usage is not uniform. Women who have had one to three abortions have higher odds of using a modern form of contraception than women who have never had an abortion and women who have had four or more abortions. Parous women are significantly more likely to use a modern form of contraception. In contrast, the fixed effects model indicates that there are no differences in contraceptive use by the number of abortions a woman has had or in terms of parity. This suggests that there is some unobserved heterogeneity that determines if and how Russian women contracept.

BACKGROUND

Is Abortion Birth Control in Russia?

In her presidential address to the Population Association of America, Karen Mason (1997) suggested that our understanding of fertility transitions would be enhanced if we would conceptualize birth control as encompassing strategies to control family size that range from pre-conception behaviors such as contraception, to post conception strategies such as infanticide and child fosterage. Much of the academic literature on fertility control focuses on forms of contraception that are pregnancy preventatives in the sense that they preclude fertilization of an egg and/or implantation of an embryo. Methods to control fertility both prenatally and postnatally once an unplanned pregnancy occurs, however, are quite common especially in developing countries that have not yet completed fertility transitions (Mason 1997). Induced abortion was one of the earliest forms of fertility regulation (Kovacs 1999). Even though women have 45.5 million abortions worldwide each year (Henshaw et al. 1999) it is often not thought of as birth control because it occurs post-conception. Despite improvements in contraceptive technology and access, abortion persists as a primary method of fertility control in many countries throughout Eastern Europe (Henshaw et al. 1999) as well as Japan (Goto et al. 2000; Sato et al. 2006), China (Zhu et al. 2009), and Sweden (Sydsjö et al. 2009). The Russian Federation poses an interesting case of a semi-developed country in which fertility is low, but contraception prevalence is also low, and the abortion rate is one of the highest in the world. This paper seeks to explore the relationship between abortion, contraception, and possible confounding factors in Russia.

Contraception in Russia

The most recent national level statistics on Russia's contraception prevalence are more than a decade old. In 1996 only 47% of Russians were using some form of modern contraception, while 18% relied on traditional methods. By far the most popular form of contraception was the IUD with 29% of women using one (UNPD 2007)

Recent analysis using the RLMS data from 1994 to 2003 found that 25% of Russian women had failed to use any contraceptive in the last month and 20% were still relying on traditional methods (Perlman 2009). The authors did not find that prevalence of modern methods had increased over this time period. The most common reasons for non-use were irregular sexual relations, desire to be pregnant, concern that contraceptives were uncomfortable, health problems, and the wide availability of abortion. These results also showed that women with at least a secondary education were more likely to use a reliable method of contraception while smokers were less likely. Although this study was done using RLMS data on contraception, it did not take advantage of the longitudinal nature of the survey.

Many assume that modern contraceptives became easier to access once Russia's market economy stabilized in the 1990's. Yet contraceptive prevalence, especially effective modern methods, have not surged in popularity across Russia's highly literate and low fertility populace. David and colleagues (David et al. 2007) suggest that low contraceptive prevalence in Russia may be due to problems with availability and consistent access to a modern method mix of effective contraceptives. In addition, doctors rarely receive training for contraceptive technology and women are seldom counseled regarding side effects or effectiveness of hormonal methods. Consequently there is considerable discontinuation and failure of these

methods in the first year of use (CDC 2000). More effective long term methods like injectables and implants are not widely available. Female sterilization, while very effective and permanent, is also very uncommon (David et al. 2007)(Mahler 1998). The procedure was banned until the early 1990's and even now is only legal if a woman is over age 35 and has at least two children. Male sterilization is virtually absent with little demand for the procedure (CDC 1998; David et al. 2007).

Lower than expected rates of modern contraceptive usage may also be due to the expense. In Russia in 2001, the average cost of a one year supply of oral contraceptives was US$25 (741 rubles), foreign made condoms were US$33 (1008 rubles), a Russian made IUD was US$4 (123 rubles) (Savelieva et al. 2003) and a copper IUD was US$11 (David et al. 2007). In general, the foreign-made contraceptives are preferred and regarded as being better quality, but they also come at a premium price and are not normally subsidized by health care services or health insurance. In contrast, abortions can be obtained free of charge and on demand (Kovacs 1999). The implication is that the most effective means of contraception can only be legitimately accessed by the minority of Russia's wealthy and urban elites (Rankin-Williams 2001).

Perhaps the biggest barrier to higher contraceptive prevalence is the Soviet legacy of dependence on abortion for fertility control. The history of the relationship between contraception and abortion in Russia is convoluted and difficult to disentangle. The high abortion rate is the result of the Soviet government policy and pronatalist ideology. Russia was the first country in the world to legalize abortion in 1920, but the communist imperative for population growth and industrialization lead to a ban of the procedure in 1936 (Philipov et al.

2004). Induced abortion was legalized again after Stalin's death in 1955 and became available on request and free of charge (Agadjanian 2002).

At the same time abortion was legalized, the development and distribution of effective contraception was hindered by the government which believed contraception was contradictory to the official pronatalist ideology (Zakharov 2008). The government feared that effective contraceptives would further stifle the birth rate. As a result, the Soviet government neglected to provide effective contraception and appropriate sexual education, hoping to fuel population growth. This ideology was furthered by a political economy that was focused almost entirely on heavy industry and defense to the detriment of consumer goods and health products (Rankin-Williams 2001). Unpredictable supply and poor quality was a frequent problem for most forms of contraception. Although condom production was the most consistent, their quality was notoriously poor earning the nickname "galoshes" due to their thickness and frequent breakage. IUDs were more popular, but were often blamed for damage to the uterus and cervix that caused pain and inflammation when fitted poorly (Turner 1992). Oral contraceptives were the hardest form of contraception to obtain and had arguably the worst reputation amongst the contraceptive options often being regarded as unsafe and detrimental to health. Adverse side effects included as nausea, bloating, and undesirable hair growth (Rankin-Williams 2001).

Consequently, generations of Soviet Russian women were forced to repeatedly turn to abortions rather than modern contraceptives to control their own fertility. Reliance on abortion as birth control was not based on the belief that it was the best of many options; in practical terms it was the only option. With the lack of true choice in the matter, the lack of moral

opposition to abortion from the dismantled Orthodox church, and increasingly lower levels of desired fertility, abortion became a central facet of reproductive health culture throughout Russia and many parts of the Soviet Union (Agadjanian 2002). The Soviet legacy is evinced not just in the high rate of abortion, but also in the persistence of misconceptions and negative beliefs regarding contraception, especially hormonal methods of birth control (Rankin-Williams 2001).

The Relationship Between Contraception and Abortion

The relationship between abortion and contraception at a population level is complex. Intuitively it seems they should be inversely proportionate with one increasing while the other decreases, but there have been countries where both have increased simultaneously due to decreases in fertility during the same period (Marston and Cleland 2003). In a seven country study, Marston and Cleland found that abortion incidence declined while contraceptive prevalence rose in Kazakhstan, the Kyrgyz Republic, Uzbekistan, Bulgaria, Turkey, Tunisia, and Switzerland. In contrast, in countries where fertility levels were dropping like Cuba, Denmark, the Netherlands, and the United States, there was a contemporaneous increase in levels of both abortion and contraceptive usage. They do note, however, that once fertility stabilized, contraceptive prevalence continued to increase while abortion incidence fell (Marston and Cleland 2003). In Russia fertility dropped substantially through the 1990's from replacement level to as low as 1.17 TFR. Therefore, it is possible that even if contraceptive usage was increasing, abortion might have been increasing as well.

At the individual level, the relationship between abortion and contraception is more complex. Effective and consistent use of contraception, of course, should reduce the probability of pregnancy, and in turn reduce abortion. It is also true, however, that many women may contracept, but rely on abortion as a backup. From this point of view, the use of contraception is a marker for a woman who is sexually active and who does not wish to have a child, and should the contraception fail, or should she use it inconsistently or improperly, such a woman may be more likely than those who do not contracept to have an abortion. Also, women who become pregnant unintentionally and have an abortion may become more consistent or effective users of contraception as a result of the abortion, because the threat of pregnancy has become more concrete.

The period immediately following an abortion provides an obvious opportunity to change women's contraceptive behavior through contraceptive counseling to help women choose modern methods that can be more effective. Prior studies on the individual use of contraception and its association with prior abortions show mixed results. One study from 2007 in France found that post-abortion procedure 77% of women left with a highly effective form of contraception; with one third of the women using the same method they had been before the unplanned pregnancy occurred and 54% of women choosing a more effective method of birth control than they previously had used (Moreau et al. 2010). A different study in Iceland, however, found that when women were randomized into a control group and an intervention group that received contraceptive counseling, there was no significant effect of intervention at a 4-6 month follow-up. Women in both the intervention and control groups that had previously had an abortion were less likely to be using contraception (Bender and

Geirsson 2004). Furthermore, a systematic review of the effectiveness of contraceptive counseling following abortions offers no evidence that contraceptive counseling increases contraceptive uptake after termination of pregnancy. The authors do add the caveat that this review may not apply to developing country settings (Ferreira et al. 2009). Results from a study done in the United Kingdom suggest that even when contraceptive counseling may increase significant uptake of modern contraceptive methods immediately after an abortion, that the problem lies in effective usage and compliance (Garg and Mansour 2001).

With respect to Russia, specifically, Perlman and McKee's study using RLMS data from 1994 and 2003 found no significant relationship between having an abortion in the previous year and contraceptive usage in the past month. They did not, however, consider ever having an abortion or total number of abortions in a woman's lifetime in their analysis. These are likely better measures of a woman's propensity to use abortion as a means of fertility control. Westoff and his colleagues used data from Demographic and Health Surveys from Kazakhstan, Uzbekistan and Kyrgyzstan to look at correlates of contraceptive usage. They found that women in Kazakhstan and Kyrgyzstan who had ever had an abortion were 61% and 52%, respectively, more likely to be using contraception (Westoff et al. 1998).

Hypotheses

We begin with the null hypothesis that there is no association between how many abortions a woman has and her use of modern contraception.

One alternative hypothesis is that Russian women who have had an abortion have chosen to use induced abortion as their primary means of fertility control and therefore do not

feel the need to use contraception to prevent conception. Abortion is part of Russia's societal norms for reproductive health, it is legal, and relatively easy to access if an unplanned pregnancy occurs. In contrast, Russian women have less knowledge about contraception, it is perceived to be more expensive, and there are multiple barriers to access. In fact, descriptive results from in an urban Russian population during the 1990's do suggest that at least some women prefer abortion over other forms of fertility control (Rankin-Williams 2001). Other populations such as Japan and Sweden where fertility is similarly low, have also consistently used abortion as a means of fertility control. In Japan this was similarly due to a lack of alternative contraceptive methods until 1999 (Goto et al. 2000). In Sweden contraceptive access is much better, however, reproductive behaviors including reliance on abortion for fertility control appears to be established at a young age and persist into later ages (Sydsjö et al. 2009). Russian women may also be effectively using abortion as a means of birth control. Under this hypothesis we would expect that the women who have had an abortion would be uniformly less likely to be using a modern form of contraception.

Another alternative hypothesis is that Russian women who have had an abortion view the experience as a negative consequence of an unplanned pregnancy and as a result actively contracept to prevent future pregnancies. The most common method of induced abortion in Russia throughout the 1990's and early 2000's was dilation and curettage (Kuennen et al.) which is more invasive and not as safe as vacuum aspiration techniques and is therefore more likely to end in complications (Cates 1982; Cook et al. 2004; Rogo 2004). There is also anecdotal evidence that repeat abortions in Russia lead to secondary sterility (David et al. 2007). Therefore, it makes sense that Russian women who have had abortions may actively seek out

alternatives to abortion as a means of fertility control, recognizing that behavior change could avoid negative repercussions. Under this hypothesis we would expect that women who have had an abortion are uniformly more likely to use a form of modern contraception.

A final alternative hypothesis is that there is not a uniform relationship between abortion and contraceptive usage amongst Russian women. It is possible that how many abortions a woman has had is more important than ever having an abortion. Perhaps there are a threshold number of abortions that causes a woman to change her contraceptive behavior. Specifically, we hypothesize that women who have never had an abortion would not bother to contracept because they have not yet had to deal with the problem of an unplanned pregnancy the threat may not be concrete for them. In contrast women who have had a couple of abortions may act like the women in the second alternative hypothesis – they are more likely to contracept because they have had to deal with the problems associated with an unplanned pregnancy and view abortions as a negative consequence. Women who have had numerous abortions, however, may act more like women in the first alternative hypothesis – they have decided to use abortion as their primary means of fertility control and are less likely to be using a form of modern contraception.

METHODS

Data

The data for this project comes from the Russia Longitudinal Monitoring Survey (RLMS), which is publicly available from the University of North Carolina Population Center. The RLMS is a household-based survey designed to measure the effects of Russian reforms on the economic

well-being of households and individuals. It has been collected for fifteen annual rounds starting in 1992, and is a longitudinal dataset following individuals and families over time. For each year the survey and accompanying data is broken up into several topics including community, household, financial, individual level health, nutrition, and a women's survey.

RLMS sample is a true probability sample of individuals as well as of households. The household response rate exceeded 80% and individual interviews were successful with 97% of the individuals listed in those households. The distribution of the sample by sex, age, and urban-rural residence is similar to the distribution found in the 1989 Russian census.

The specific waves of the RLMS used in this analysis, round six (1996) through round twelve (2003), are considered to be part of "Phase II" of RLMS data collection. Although Wave II began in 1995 and data is available through 2008, the women's questionnaire differed substantially in the years 1995 and after 2003. As a result not all of the necessary variables for these analyses were available in those years. The sample drawn in Phase II of the RLMS is a multi-stage probability sample made up of 2029 consolidated raions[1] which served as primary sampling units (PSUs). These PSUs were then divided into 38 strata based geographic, urbanization, and ethnic factors.

There were a total of 26,751 woman-year observations across rounds 6-12 of Phase II of the RLMS, but for this analytic sample we made a number of selections. First, we selected female respondents ages 15-49 (n=22,067 woman-year observations) who had reached menarche (n=22,041 observations), were still menstruating (n=20,269 observations), and were

[1] A "raion" is a regional administrative division in Russia that generally translates to "district." Each raion is self-governed through an elected district council.

not sterilized or had sterilized partner (n=20,241 observations). We then narrowed the sample to women who were not trying to get pregnant, who did not have irregular sexual relations, and who were physically able to get pregnant (n=16,939 observations). After dropping women that did not have complete information for the covariates in the regression models the final analytical sample was 14,845 woman-year observations corresponding to 4,612 unique women.

While not all women in the sample are included in every panel of the survey due to attrition and aging into reproductive ages within households, the majority of women participated in the survey on more than one occasion. Table 1 provides the distribution of how many observations each woman in the sample contributed.

Outcome

The outcome of interest is whether or not a woman has used a modern form of contraception in the 30 days prior to the time of interview during a given year. Women in the survey were asked if they had used any form of contraception in the last 30 days, and if so, they were asked to name the two most common forms they utilized. Based on these answers, we created a variable to capture use of modern contraception defined as use of a condom, pill, IUD, implant, injection, spermicidal foam or jelly. Although sterilization is considered a modern form of contraception, women that had been sterilized were removed from the sample because they were not considered fecund.

Table 2 shows the trend in modern contraception over time (1996-2003). During this seven year period the use of modern contraception by women ages 15-49 actually saw an overall decrease of just over fifteen percentage points. The largest percentage change occurred

between Round 8 and Round 9. Table 3 displays the percentage of specific modern contraceptive methods being used by round. The most interesting trends in modern method usage are seen for IUD and condoms. While the IUD consistently remains the most popular modern method for each round, there is a marked decline in its popularity. By 2003 only 42% of modern method users were relying on an IUD, down from over 64% in 1997. In contrast, condom use increased significantly over the same time period from 21% to just under 40% of users. At the same time hormonal contraceptive pills maintained their relatively low share of the distribution wavering between 13% and 17%. Implants, injections, and spermicides consistently lagged behind making up less than 5% of modern method users in each round.

Independent Variables

To control for geography we include the variable *region* which distinguishes among 8 areas of this very large, diverse country: Moscow/St. Petersburg, Northern/North Western, Central/ Central Black-Earth, Volga-Vaytski/Volga Basin, North Caucuses , the Urals, Western Siberia, and Eastern Siberia/Far East. We also include a variable for living in an urban area.

Besides *age*, we include numerous demographic variables regarding education, economics, and religion. We incorporate a variable that indicated the respondent's highest level of *educational attainment* with 4 values: no high school diploma, high school diploma, two-year college level diploma, and 4-year college level diploma or graduate school diploma. With respect to employment, we differentiate between women who are "officially employed" meaning "by labor book, labor agreement, or contract" and women that are not. We also use a variable that combines religious denomination and religiosity to distinguish among Muslims, non-Muslim believers, and non-Muslim non-believers.

Exploring the role of family formation we include a dummy variable scored 1 if the respondent had a *partner* (married or cohabitating) and 0 otherwise. With respect to parity and number of previous abortions, we did extensive exploratory analyses to determine how these variables should be operationalized. We categorize parity as having no children, one or two children, or three or more children. Similarly, abortion is categorized into no previous abortions, one to three previous abortions, and then four or more abortions. Extensive robustness checks confirmed that this coding scheme was appropriate.

Analysis

The outcome variable is dichotomous; therefore we estimated the effects of the predictors by logistic regression. Because many women contribute more than one observation it is essential to control for the non-independence of the observations which we do by using a random-effects logistic regression.

One problem with the estimates from a random effects model is that, if there are unobserved factors that are associated with both the predictors and the outcome, the estimates of the association between the predictor and outcome will be biased. One approach to addressing this issue is to examine a fixed effect (or difference in difference) model. Fixed effects models control for any such unobserved factors by estimating how much a change in a given predictor cause a change in the outcome. So, in this case, we are able to estimate a fixed effect model that examines whether or not a change in the total number of abortions causes a change in contraceptive use.

Disadvantages of fixed effects model are that, when, as in this case, the outcome variable is non-linear, one can only include women in the analysis who experience a change in contraceptive use over the period they are observed. This means we are forced to eliminate all the women (n=1,235) who were only observed once, as well as women whose contraceptive status was the same every time they were observed (n=1923). The fact that the sample for the fixed effects model is so selected, it is wise to test for differences in the estimates from the random effects models and the fixed effects models. The estimates in the fixed effect model are unbiased by unobserved heterogeneity and are therefore preferable. Since the population to which they generalize is limited, however, if a test indicates they are not different from the random effects model one should present the latter as the results in order to maximize generalizability.

We calculated descriptive statistics for demographic, socio-economic, reproductive variables on both the random effects sample of 14,845 women-years as well as the 6,695 sub-group of women-years in the fixed effects sample. All of the descriptive statistics account for survey design and employ individual weighting to allow us to generalize about Russian modern contraceptive usage during this period.

Table 4 provides summary statistics for the variables included in this analysis. Women in the fixed effects sample are more likely to be using a modern form of contraception, but this is expected given that women observed in the fixed effects sample have to have been using modern contraception during at least one time point. Women in the fixed effects sample are also less likely to have no high school diploma, and more likely to have a four year college or graduate level degree. There is no significant difference between the women in the two

samples for geographic region or urban location. They are also more likely to be employed, to be a religious believer, and are much more likely to be married or living with a partner. Of key interest is the fact that the fixed effects sample of women is much less likely to be nulliparous and have had no abortions in the past.

RESULTS

The models in Table 5 are multivariate logistic regressions. The first model employs random effects using the whole sample of fecund women ages 15-49 from the RLMS. The second model uses a fixed effects model on the sub-sample of women that have changed their contraceptive behavior. The fixed effects model does not include geographic region because the variable was not time varying.

Table 5 shows that women who have never had an abortion are significantly less likely to be using a modern form of contraception than women who have had 1-3 abortions. In addition, women who have had four or more abortions are also less likely to be using modern contraceptives. In other words, women that have only had one to three abortions are the most likely to be contracepting. By contrast, the fixed effects model indicates that there are no differences in contraceptive use by the number of abortions a woman has had. This suggests that there is some characteristic, unobserved in these models, that determines how many abortions a woman has had as well as contraceptive use.

In the random effects model we also see that parous women are significantly more likely to use a modern form of contraception. Women that have one or two children are 1.77

times more likely to be using contraception than women that have never given birth. The relationship grows stronger with women who have three or more children having more than twice the odds of using a modern contraceptive as nonporous women. In comparison, the fixed effects model shows that there is no delineation in use of modern contraceptives based on a woman's parity. This again implies that there is some additional unobserved heterogeneity in the models.

The majority of other variables do not differ significantly between the random and fixed effects models. In both models, age has a significant and positive effect on modern contraceptive usage in the last 30 days, however, the negative coefficient on age-squared indicates that this effect is attenuated as age increases. Better educated women are consistently more likely to use modern contraception than their counterparts without high school diplomas. Currently working is also associated with higher odds of using modern contraception. Having a partner is also a strong positive predictor of contracepting with a modern method.

Geography was not time varying and consequently there are only estimates for the random effects model. It shows that Western Siberia and Eastern Siberia have significantly higher odds of using a modern contraceptive compared to women in Moscow and St. Petersburg while the women in Central Russia, the Black Earth Region, and the Ural Mountains have lower odds of modern contraceptive usage compared to the big cities. Even after controlling for region the results show that women living in urban areas are more likely to be using modern contraceptive methods.

DISCUSSION

The results from the full random effects model appear to confirm the alternative hypothesis that there is not a uniform relationship between abortion and contraceptive usage amongst Russian women. Extensive robustness checks confirm that women who have had one to three abortions are more likely to contracept using a modern method than women who have never had an abortion and women who have had four or more abortions. Therefore it appears that there is both a low and high bound for number of abortions that cause women to change their contraceptive behavior. As hypothesized previously, we suspect that the women who have never had an unplanned pregnancy that ended in abortion see no reason to worry about contraception and women who have had four or more abortions intend to use abortion as a means of fertility control in the future as it is more normative for them. In contrast women who have had only a few abortions are more likely to contracept because they have had to deal with an unplanned pregnancy and view abortions as a negative consequence. As a result, they are more likely to change their contraceptive behavior and use a modern method.

The random effects model, however, assumes that women are not inherently different from one another. This ignores the fact that these Russian women are likely different from each other in ways that are unobserved in the RLMS data and these differences also affect their contraceptive behavior. The fixed effects model confirms to some extent that women who have very different abortion histories are in fact different from each other. While it does not appear that abortion changes a woman's contraceptive behavior, it remains unclear if this is due to unobserved heterogeneity or if it is because so few of the women that have multiple abortions ever change their behavior.

The primary strength of this study is the comparison of a random effects and fixed effects model for the relationship between modern contraception usage and previous abortions, which to our knowledge at the time of writing has not been done in any other setting. The goal of this study is not to decide which of the models is better. In this case, the two models are simply different in the sense that they both answer questions that are relevant to the study of modern contraception in Russia. Given the large sample size and the fact that the RLMS is nationally representative, the random effects analysis allows us to make inferences regarding Russian women and predictors of modern contraceptive use in general. The fixed effects, in contrast, only allows for inferences regarding this specific sample of women (Rabe-Hesketh 2008).

Limitations

This study has several limitations. The first is the fact that we could not be certain that every woman in the random effects sample had ever had sex or was sexually active. We did attempt to control for it as much as possible by only choosing fecund women between the ages of 15 and 49 and dropped women that explicitly states they had irregular sexual relations. This is less of a concern for the fixed effects sub-sample of women since it is clear they were using a modern form of contraception as some point and were therefore also likely sexually active. In addition, although this was longitudinal data, not every woman was in every round of the survey due to both attrition and subsequent replenishment. Robustness checks using subsamples with only women in 2 or more and 3 or more rounds did, however, substantiate

our results. Furthermore, our scrutiny of the effect of abortion on contraception may be skewed by the fact that abortions are likely to be underreported, even in Russia where stigma over the procedure is reduced. Underreporting in this case would be more likely to affect women who are sensitive about the topic and having one or only a couple of abortions. They may be more likely to view abortion as a negative consequence making them more likely to change their contraceptive behavior. Therefore, it is likely that any underreporting of abortion would produce an underestimate in the results.

Conclusions

The results of this study leave us with the question of whether women who have abortions are really different from those who do not have abortions. Or does the process of having multiple abortions change the women who have them? The fact that women who have multiple abortions are less likely to change their reproductive and contraceptive behaviors despite the fact that they repeatedly face unplanned pregnancies raises additional questions about to best target and implement family planning programs.

While it is likely that some women prefer to use abortion as a means of fertility control rather than use a modern method of contraception it seems very plausible that the actual problem is a lack of post-abortion counseling and care. Despite better distribution and access to contraceptives in the 1990's, Russian government support and implementation of efforts to increase access to modern contraceptives remained weak and modern contraceptive prevalence did not climb above 43% as evidenced in the findings. Post-abortion counseling

regarding contraceptive choices also remained virtually non-existent during this period with the few exceptions taking place in the Novgorod and Perm regions under the USAID funded Women and Infant Health Project (David et al. 2007). Consequently, with limited knowledge and means it is not entirely surprising that Russian women who have already relied on abortion for fertility control rarely change their contraceptive behavior.

Although in this paper, abortion is separated from contraception in the analysis, it is important to realize that some Russian women actually consider abortion a form of birth control. For these reasons, it is imperative that future family planning efforts in Russia: 1) ensure that abortions in Russia are safe and sanitary and ideally that vacuum aspiration procedures replace dilation and curettage 2) make sure that gynecologists and obstetricians are well trained in a modern family planning curriculum 3) take advantage of the opportunity to counsel women on all of their contraceptive choices post-abortion as well as post-partum 4) improve access to and knowledge specifically about effective long term forms of contraception for women intending to limit their fertility.

More research is necessary to ascertain how Russian women make their reproductive health choices, and why Russian women continue to use abortion despite other alternatives. Qualitative data regarding the relationship between abortion and contraception would be especially enlightening.

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TABLES

TABLE 1: OBSERVATIONS PER WOMAN IN SAMPLE OF FECUND WOMEN

Observations per woman	Number	Percent
1	1,235	26.2
2	871	18.5
3	632	13.9
4	548	12.2
5	536	12.2
6	430	9.4
7	360	7.7
Total	4,612	100

TABLE 2: PERCENT OF WOMAN-YEAR OBSERVATIONS USING A MODERN CONTRACEPTIVE METHOD BY YEAR

	RLMS Round (Year)						
	Round 6 (1996)	Round 7 (1997)	Round 8 (1998-99)	Round 9 (2000)	Round 10 (2001)	Round 11 (2002)	Round 12 (2003)
% Women Using a Modern Method	*41.2%*	*42.5%*	*42.1%*	*38.9%*	*38.6%*	*37.1%*	*34.9%*

TABLE 3: PERCENT OF WOMEN USING EACH FORM OF MODERN CONTRACEPTION BY YEAR

Modern Method	Round 6 (1996)	Round 7 (1997)	Round 8 (1998-99)	Round 9 (2000)	Round 10 (2001)	Round 11 (2002)	Round 12 (2003)
	n=834	n=920	n=962	n=863	n=853	n=855	n=801
condom	*20.8*	*24.3*	*25.5*	*27.7*	*32.2*	*34.3*	*38.6*
pill	*13.5*	*15.2*	*15.3*	*16.8*	*17.5*	*16.5*	*15.5*
IUD	*64.3*	*59.1*	*56.4*	*52.5*	*46.7*	*44.8*	*42.2*
implant	*0.5*	*0.1*	*0.9*	*0.4*	*0.0*	*0.0*	*0.2*
injection	*0.1*	*0.5*	*0.3*	*0.5*	*0.5*	*0.8*	*0.6*
foam, jelly	*0.7*	*0.7*	*1.6*	*2.1*	*3.0*	*3.6*	*2.8*

TABLE 4: DESCRIPTIVE STATISTICS FOR FECUND SAMPLE OF WOMEN

Descriptive Statistics RLMS data 1996-2003	Random Effects Sample n=14,845	Fixed Effects Sample n=6,695
CATEGORICAL VARIABLES	**%**	**%**
Modern Method of Contraception in Last Month		
No	60.3	51.2
Yes	39.7	48.8
Region		
Moscow/St.Petersburg	7.1	5.3
Northern & North Western	7.2	6.2
Central and Central Black-Earth	17.7	19.0
Volga-Vaytski and Volga Basin	17.2	16.7
North Caucasian	14.2	16.2
Ural	16.3	16.2
Western Siberian	10.4	10.5
Eastern Siberian and Far Eastern	9.9	9.9
Urban		
No	30.4	32.4
Yes	69.6	67.6
Highest Level Degree		
No highschool diploma	12.3	7.5
High school diploma	21.4	19.7
2 year college diploma	6.8	7.4
4 year college or graduate diploma	59.5	65.4
Currently Employed		
No	38.8	32.4
Yes	61.2	67.6
Religion		
Muslim	7.6	9.0
Believer (non-Muslim)	73.0	78.1
Non-believer (non-Muslim)	19.4	12.9
Married or Living with Partner		
No	44.8	34.8
Yes	55.2	65.2
Parity		
No children	35.9	24.6
1-2 children	55.6	65.4
3+ children	8.5	10.0
Abortion History		
Never had an abortion	52.1	44.0
1-3 abortions	34.6	40.9
4+ abortions	13.3	15.1

Logistic Regression: Estimated Effects of Demographic Factors on Modern Contraceptive Usage

Logistic Regressions for Modern Contraception Usage Using RLMS data 1996-2003	Random Effects Model *n=14,845 woman-years clusters=4612 women* odds ratio (se)		Fixed Effects Model *n=6,695 woman-years clusters=1,454 women* odds ratio (se)	
VARIABLES	Use of Modern Contraception		Use of Modern Contraception	
ROUND				
Round 6	1.00	(-)	1.00	(-)
Round 7	1.16	(0.11)	1.26 *	(0.16)
Round 8	1.22 **	(0.12)	1.35	(0.38)
Round 9	1.21 **	(0.12)	1.39	(0.62)
Round 10	1.28 ***	(0.13)	1.45	(0.78)
Round 11	1.42 ***	(0.14)	1.65	(1.03)
Round 12	1.45 ***	(0.15)	1.85	(1.33)
Geography				
Moscow/St. Petersburg	1.00	(-)		
Northern/Northwest	1.15	(0.23)		
Central/Black Earth	0.73 *	(0.12)		
Volga-Vaytski	0.87	(0.15)		
North Caucasian	1.01	(0.19)		
Urals	0.74 *	(0.13)		
Western Siberia	1.37 *	(0.25)		
East Sibera/Far East	1.41 *	(0.25)		
Urban	1.39 ***	(0.14)		
DEMOGRAPHICS				
Age	1.66 ***	(0.06)	1.83 ***	(0.20)
Age Squared	0.99 ***	(0.00)	0.99 ***	(0.00)
No high school diploma	1.00	(-)	1.00	(-)
High school diploma	2.95 ***	(0.43)	2.11 ***	(0.40)
2-year vocational school	2.47 ***	(0.45)	1.77 **	(0.43)
4-year university/graduate school	3.25 ***	(0.49)	2.65 ***	(0.57)
Currrently Works	1.29 ***	(0.09)	1.17 ***	(0.11)
Religion: Non-believer	1.00	(-)	1.00	(-)
Religion: Muslim believer	0.79 *	(0.15)	1.17	(0.78)
Religion: Orthodox/other believer	1.01	(0.09)	1.01	(0.15)
FAMILY				
Married or living with a partner	8.09 ***	(0.70)	3.76 ***	(0.44)
Parity: No children	1.00	(-)	1.00	(-)
Parity: 1 or 2 children	1.77 ***	(0.21)	1.14	(0.24)
Parity: 3+ children	2.07 ***	(0.38)	1.02	(0.34)
Abortion: 1 to 3 abortions	1.00	(-)	1.00	(-)
Abortion: No abortions	0.83 **	(0.08)	1.03	(0.14)
Abortion: 4+ abortions	0.72 ***	(0.08)	0.92	(0.17)

*** p<0.01, ** p<0.05, * p<0.1