ROLE OF INDUCED ABORTION IN ATTAINING REPRODUCTIVE GOALS IN KYRGYZSTAN: A
STUDY BASED ON KRDHS-1997

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Summary: Estimates indicate that about 42 million pregnancies are voluntarily terminated every year, of which more than 80 percent occur in developing countries. Abortion has been one of the major reproductive health concerns in post-Soviet nations, especially when it is commonly used as a means of fertility regulation. On an average, every woman has had around 1.6 abortions in Kyrgyzstan. This paper attempts to measure the role of abortion in fertility regulation using data from KRDHS (1997). The analysis reveals that Kyrgyzstan can attain the replacement level fertility in the absence of induced abortion by raising the contraceptive prevalence to 70 percent at the current level of effectiveness. The study also shows that women's attitude towards becoming pregnant and their partner's perception about abortion are significantly associated with the propensity to opt for an induced abortion. Surprisingly, forty six percent of non-users who had experienced abortion in the past do not intend to use any method of family planning in the future. It indicates that a large proportion of women are at risk of repeating abortion in order to achieve their fertility preferences. Reproductive health programmes need to address these issues, including the enhancement of male involvement and the strengthening family planning services.

Introduction

Kyrgyz society has had access to abortion as an intervention designed to manage unwanted pregnancies even before it became a sovereign country in 1991. Abortion was an accepted means of fertility regulation in the former Union of Soviet Socialist Republic (USSR), of which Kyrgyzstan was a part. Besides socioeconomic and cultural factors, the policies prevailing in the country affect reproductive health in general, and the incidence of induced

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abortion, in particular. The former USSR was perhaps the only nation in the world that provided abortion on the request of women with no cost (Heer, 1965). Later, under the 1936 Soviet Decree, abortion was allowed only in case of danger to life, serious health threat, or in the possibility of transmitting fatal diseases from mother to child. The Decree was revoked by the Government in 1955 by allowing abortion within 12 weeks of pregnancy and also in the advanced stage, if there was a health risk to the mother in case the fetus was abnormal, or if there was a threat to the dignity of woman in society. Again in 1987, the Government made provision to grant abortion on request within 24 weeks of pregnancy (United Nations, 2000). The abortion rate continued to be high in the erstwhile Soviet Union, but variation within the country ranged from 66 percent in the Russian republic to 18 percent in Tadzhik (Henshaw, 1990; Henshaw *et al.*, 1999). This paper aims to study the role of abortion in attaining fertility goals and preferences in Kyrgyzstan.

The family size is bigger in Kyrgyz ethnic society than that in Russia or in any other European society. The post-independent era brought several changes in Kyrgyz society. The new political, economic and social environment introduced western democratic values, which promoted the small family norm and egalitarianism. On the other hand, the revival of cultural norms relating to family life and marital relationship were also given priority (Wejnert and Djumabaera, 2004). Maintaining the equilibrium between these two require appropriate family life decisions related to marriage and planned parenthood. Timely and balanced decisions would tend to reduce abortions and generate a demand for improved family planning services.

The absence of improved family planning services is not the only reason for the prevailing high abortion rate. On an average, there were four causes for terminating pregnancy through medical intervention. Besides postponement and stopping childbearing, socioeconomic implications of having an additional child was a major reason for not carrying pregnancy to

the full term. Another prominent reason, especially among younger women, was a problematic relationship with the partner. A woman's career growth and health were also major determinants of abortion seeking behaviour. The causes of abortion were reported to vary by the level of development and the socioeconomic and cultural milieu (Heer, 1965; Torres and Forrest, 1988; Bankole *et al.*, 1998). For example, in the case of Kazakhstan, about half of the women in the age group 15-24 years reported that they had not been happy after getting pregnant (Bankole *et al.*, 1999). In Kazakhstan, Agadjanian (2002) has shown that with women who have higher education, the odds are lower that they report financial problems associated with seeking abortion, but the odds are higher when it comes to reporting health problems. Although there was no stigma attached to seeking abortion, the pain and humiliation during the whole procedure made women reluctant to opt for induced termination of pregnancy. This made women avail themselves of effective contraceptive services.

Thirty percent of women in the reproductive age in the Kyrgyz Republic have had at least one induced abortion, and majority of them (60 percent) had undergone more than one abortion (RIOP and Macro International, 1998). Mini-abortion, which is convenient and relatively less risky, has been popular in Kyrgyzstan since the 1980s. It does not require overnight hospitalization and thus protects women from social stigma. However, excessive reliance on induced abortion affects a woman's health and her chances for further childbearing adversely, and contributes to maternal and perinatal mortality. Knowing that these all are preventable, induced abortion should be included in the priority agenda of public health (Lazovich *et al.*, 2000; Berer, 2004; Grimes *et al.*, 2006). Therefore, understanding the high prevalence of induced abortion as a method of fertility regulation is critical to policy inputs.

The impact of induced abortion on fertility is evident from various studies. The total fertility rate in many countries would have been from about 20 percent to nearly 90 percent higher than it actually is, if no induced abortions had been performed. Among the developed countries, the Soviet Union, Japan, Eastern European countries, Israel and the United States of America have the highest legal abortion rates, ranging from one abortion to more than five abortions per woman during the reproductive years (Teitze, 1983; Frejka, 1985; WHO, 2004). Further, Bongaarts and Westoff (2000) quantifying the tradeoff between abortion and contraceptive prevalence, showed that a 10 percentage-point increase in prevalence in a perfect contraceptive population (e=1.0) could avert 1.6 abortions. In the second part of the paper, several hypotheses were tested to understand the dynamics and the intention to use the family planning method and abortion as a means of fertility regulation in Kyrgyzstan.

Factors affecting induced abortion

The reproductive norms of any society are affected by changes in the socioeconomic, cultural and political environment. Women are motivated to use a contraceptive method according to their reproductive choices. In the absence of a suitable method, women tend to resort to induced abortion to achieve their fertility goals. Therefore, to understand the role of induced abortion, it is crucial to test whether women who have attained their desired fertility goals have a higher likelihood to seek abortion. Whether such women tend to have higher odds to use a contraceptive method in the future can be a critical input to reproductive health policies (Curtis and Westoff, 1996).

The ethnocultural hypothesis, tested in the context of the former Soviet Union, suggests that the practice of induced abortion was more common among Russian and European women than among the others (Agadjanian, 2002). Does the same tendency occur in Kyrgyzstan?

The attitude towards childbearing is likely to be affected by the changing role of the woman both within and outside the family. Women's attitude towards motherhood as well as the partner's perception regarding abortion influence abortion-seeking behaviour and intention to use a contraceptive method (Sayeed *et al.*, 2004; DeRose *et al.*, 2004). Bankole *et al.* (1998) have shown that women's unhappy *attitude* towards becoming pregnant increases the likelihood for seizing the full term. The *partner's approval* hypothesis testing can be operationalized through women's responses to the question, "Does your husband think abortion is a problem?" To build programme strategies regarding male involvement in family planning and reproductive health, ***inter-spousal*** discussions on the intention to use contraception in the future are also necessary.

Method

This study is based on data from the Demographic and Health Survey of the Kyrgyz Republic (KRDHS, 1997). The design of the KRDHS calls for a representative probability sample of approximately 4,000 completed individual interviews with women belonging to the age group, 15-49 years. The methods adopted to carry out the analysis are percentage, percent distributions, cross-tabulation, logit regression and modified proximate determinants framework. Age-specific reproductive rates (pregnancy rate, fertility rate, induced abortion rate, total [spontaneous and induced] abortion rate) are independently calculated using the exposure-incidence rate taking a reference period of three years preceding the survey (see Rutstein and Rojas, 2006). The whole analysis was carried out with the help of SPSS 15.0.

Proximate Determinants Framework

Bongaarts (1978) operationalized the framework on intermediate fertility variables originally given by Davis and Blake (1956), and named it proximate determinants framework. The

proximate determinants include the biological and behavioural factors through which social, economic and environmental variables affect fertility. Bongaarts and Potter (1983) suggested four principal proximate determinants that affect human fertility and defined them as follows:

Index of marriage (C$_m$)

$$C_m = \frac{\sum m(a)g(a)}{\sum g(a)}$$

m(a) is age-specific proportion currently married (or in consensual union) female and *g(a)* is age-specific marital fertility rates.

Index of non-contraception (C$_c$)

$$C_c = 1 - 1.08 * u * e$$

where u can be defined as proportion of married women age 15-49 currently using contraception, and *e* is average use effectiveness of contraception.

Index of abortion (C$_a$)

$$C_a = \frac{TFR}{TFR + 0.4 * (1+u) * TA}$$

TA is total abortion rate and is considered a measure of the incidence of induced abortion.

Index of postpartum infecundability (C$_i$)

$$C_i = \frac{20}{18.5 + i}$$

where *i* is average duration of postpartum infecundability. Unlike other proximate determinants, the estimates on *i* are not readily available. Therefore, the following mathematical relationship was developed to get estimate on *i*,

$$i = 1.753 \ e^{\left(.1396*B - 0.001872*B^2\right)}$$

B is mean or median duration of breastfeeding, which is generally collected in demographic surveys.

With these determinants (Bongaarts and Potter, 1983) proposed a multiplicative model

$$TFR = C_m * C_c * C_a * C_i * TF$$

In the above model, the total fecundity rate *(TF)* is average number of live births expected among women who remain married during their entire reproductive period and do not use

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contraception, do not have any induced abortion, and do not breastfeed their children. TF is expected to vary between 13 and 17 with an average of about 15.3 children per woman. In this study, the value of C_m has been taken as 1, as marriage does matter to have a birth in Kyrgyzstan. The modified form of the framework has been adopted to carry out the analysis under this study (Stover, 1998; Shekhar, 2004). The final model can be written as

$$\text{TFR} = C_c * C_a * C_i * C_f * \text{TF}$$

where, *index of infecundity (C_f)* is given as follows:

$C_f = 1 - f$, where f is the proportion of infecund women aged 15-49.

Regression analysis

Three different logistic regression analyses were performed taking following dependent and independent variables:

Dependent Variables

Regression 1: Ever experienced induced abortion (1 yes, 0 no)

Regression 2: Will opt for abortion in the future (1 yes, 0 no)

Regression 3: Intention to use a contraceptive method in the future (1 yes, 0 no).

Independent Variables

Independent variables include socioeconomic, demographic, reproductive preferences at the individual level. These variables can be broadly divided into four categories: (a) socioeconomic (b) demographic (c) fertility preferences and attitude, and (d) policy variables. The first category includes women's residence, region, ethnicity, education and occupation. The second category consists of women's age, number of living children, marital duration, ever experienced any child loss, ever had an abortion and ever had a miscarriage. Under the third category, women's fertility preferences, women's attitude towards becoming pregnant, comparison of ideal number of children with living number of children, husband's perception

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about abortion were considered. The last category includes discussions on family planning (FP) with the partner and contact with family planning workers. Only a negligible proportion of women reported their education up to the primary level, therefore, primary education is merged with the secondary level. Henceforth, in this paper, education up to the secondary level will be referred to as 'secondary' and the other secondary-special and higher as 'higher'. The independent variable contraceptive use status was not included in regression 3 as the information was collected only from non-users. Furthermore, odds ratios are shown only for statistically significant (5% and 1 % level) variables in all the three regression analyses.

Results

Table 1 Induced abortion rate and mean no. of induced abortion, Kyrgyzstan, 1997

Characteristic	Induced abortion rate (15-49)	Mean number of induced abortions (40-49)
Residence		
Urban	2.09	2.23
Rural	1.29	1.29
Region		
Bishkek	2.01	2.38
North	1.61	2.14
East	0.85	0.84
South	1.47	1.13
Ethnicity		
Kyrgyz	1.25	1.14
Russian	2.25	3.32
Uzbek	1.86	1.17
Other	2.17	2.54
Education		
Secondary	1.26	1.22
Higher	1.83	2.08
Total	**1.55**	**1.63**

Table 1 provides trends in induced abortion obtained by comparing the total induced abortion rate (TAR) with the mean number of induced abortions of women (40-49). The former is a summary measure of current abortion rates, while the latter represents the actual experience of the older cohort. The mean number (40-49) and the rate are almost equal, which implies that induced abortion recourse has been stable over the last couple of decades. Nevertheless, the rate has declined over the years in some population subgroups, but this decline was offset

by an increase in others. For example, on the one hand, the decline in rate was almost half abortion per woman in Bishkek city and in the north region. Similarly, the rate among Russian women was well below the mean number of abortions. In contrast, the TAR (1.5 per woman) exceeds the mean number of abortions (1.1 per woman) for the southern region. The levels of abortion rate by residence were found to be in the expected direction, but witnessed stagnation in rural areas. Correspondingly, there was a small increase in TAR among secondary level educated women against a noticeable decline among the higher educated women.

Table 2a shows that the overall pregnancy rate was 5.5 pregnancies per woman, out of which only 3.4 pregnancies per woman resulted in live births, and the rest of them ended either in induced abortion or in miscarriage. Fertility rate (75 per thousand) and pregnancy rate (92 per thousand) remained low in the age group 15-19, but attained the highest level of 335 and 246 per thousand respectively in the age group 20-24. The highest induced abortion rate of 81 per thousand was observed in the age group 30-34. As a consequence of the high induced abortion rate, fertility was low beyond age 34, but the overall pregnancy rate remained high in Kyrgyzstan. Moreover, the rates for induced and spontaneous abortions differ by age. The former shows its highest level in the age group 30-34, and the latter in the age group 25-29, thereby signifying that younger women were more susceptible, or at least reported miscarriages as compared to older women.

The scenario in reproductive rates by type of residence was quite contrasting. A difference of almost one pregnancy per woman was noticed between rural and urban areas, and abortion had widened this gap to the level of 1.6 live births. Fertility of urban women was substantially low because of the high prevalence of induced abortion. The induced abortion rate reaches its maximum level of 115 per thousand in the age group 25-29 in urban and 79

per thousand in the age group 30-34 in rural areas. These age groups have shown large differences between the pregnancy rate and the fertility rate in the respective settings. The total abortion rate surpasses fertility rate beyond age 30 in urban areas, and beyond 35 in rural areas (see Table 2a).

According to education levels, women with higher educational attainment were more exposed to induced abortion and miscarriage than those educated up to the secondary level. Interestingly, pregnancy rates between the two educational groups did not differ much, but a gap of 0.7 births per woman in the fertility rates was marked. The largest difference between the pregnancy rate and the fertility rate was observed in the age group 25-29 for higher educated women, and in the age group 30-34 for women with secondary level education. This difference occurred due to an induced abortion rate of 94 per thousand for higher educated women and 67 per thousand for women with secondary level education in the respective age groups. An interesting pattern found in total abortion rate was that it remained stable and high among women in the age group 20-35, which is the prime age segment of childbearing (Table 2b).

Fertility regulation and selected proximate determinants

The modified proximate determinant framework shows that the actual total fertility rate and the model total fertility rate were fairly close to each other. The estimated total fecundity rate in Kyrgyzstan was around 15.6, almost similar to 15.3 given by Bongaarts and Potter (1983) for developing countries. The estimated total fertility rates for urban and higher educated women were found to be relatively higher, possibly due to their higher fecundity rate. It is to be noted that values of index of infecundity (C_f) did not differ by residence, but observed differentials by education were quite large. The values of postpartum insusceptibility (C_i) index also remained unchanged across the categories of education and residence. Thus, it can be inferred that urban-

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rural differentials in fertility were mainly created by abortion rate (C_a) and contraceptive use-effectiveness (e). However, fecundity and abortion rates were jointly responsible for fertility differentials by education (Table 2).

Figure 2: Contribution of selected proximate determinants in fertility regulation in Kyrgyzstan, 1997
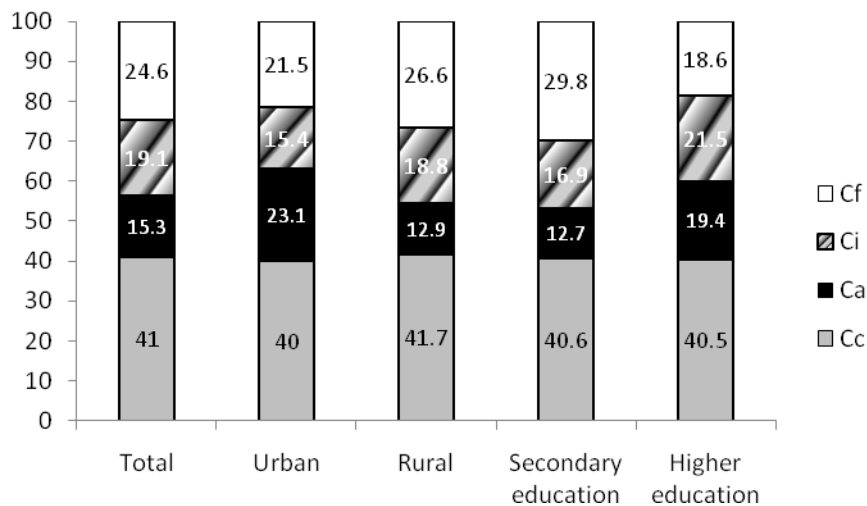

Figure 2 shows the percent contribution in fertility inhibition by residence and educational levels. It clearly indicates that fertility inhibition was equally dominated by contraceptive use, around 41 percent across the groups. For country as a whole, women's infecundity (C_f) contributed to 25 percent of the total fertility reduction. Around one-fifth of the total fertility inhibition was contributed by postpartum insusceptibility followed by induced abortion (15 percent). The share of abortion in inhibiting fertility among urban and higher educated women was relatively large (approximately one-fifth). Infecundity has contributed more to fertility inhibition among the less educated and rural women. This reflects that the rural-urban differentials in fertility have been enlarged mainly by abortion, whereas women's infecundability, induced abortion and postpartum insusceptibility have produced the educational differentials by a magnitude of the respective order.

The complete elimination of induced abortion is not possible for various reasons (Kulczycki *et al.,* 1996; Entwisle and Kozyreva, 1997). However, a simple simulation exercise was performed to estimate fertility in the absence of induced abortion and the required levels of contraceptive prevalence rate to compensate fertility inhibition by induced abortion. The results obtained are shown in the last two columns of Table 3. The complete elimination of abortion will add almost 0.8 births per woman. The total fertility rate in the absence of induced abortion was estimated as 4.2 children per woman. To maintain the observed fertility level in the absence of induced abortion, Kyrgyzstan needs to raise the contraceptive prevalence level to 70 percent, which is 10 percentage points higher than the existing level. Knowing the high level use of traditional methods in the country, a sizeable number of abortions will continue to exist. Therefore, family planning programmes should focus on promotion of modern methods to increase average use-effectiveness (e).

Ever had induced abortion and future intention

Abortion seeking behaviour is not random, and therefore studying the associated characteristics of women will help identify the vulnerable population segments. The crosstab analysis (not shown in the paper) reveals that more than half of the women (55 percent) aged 35 years and above have experienced an induced abortion at least once. In this age group, 61 percent have reported that they would opt for an abortion in the future in case they get pregnant unintentionally. Almost 47 percent among the higher educated women have faced induced abortion; however, the percentage was much lower among women with secondary level education. More urban women (55 percent) experienced an abortion as compared to their rural counterparts (31 percent). Almost two-thirds of Russian women, maximum among different ethnic groups, have experienced abortion. Similar degrees of educational,

residential and ethnic differentials were observed for those women with an intention to opt for induced abortion.

To understand the contraceptive role of abortion, one can see the proportion of women who experienced an induced abortion by desire to have an additional child. A large difference in such proportions between the groups of women who wanted to limit their family size (52 percent) and who did not (26 percent) indicates use of abortion as a prominent method of fertility regulation in Kyrgyzstan. Subsequent evidence can be put forth that women having actual number of surviving children more than the ideal number were more likely to experience an induced abortion. Almost three-fourths of all women who had completed their ideal family size would prefer to have an abortion for an unintended pregnancy. In cases where the husbands perceived abortion as a problem, only 41 percent women intended to have an induced abortion against 57 percent of those whose husbands did not have any such reservations. It is crucial to note that the majority of women who ever had an abortion (65 percent) would not hesitate to repeat it.

Dynamics of family planning and future intention to use a contraceptive method

The contraceptive prevalence rate and intention to use a contraceptive method in the future were also analyzed by selected characteristics in this study (Table is available on demand). It was found that the intrauterine device (IUD) was the most popular modern method of family planning (38 percent), followed by condom (6 percent). Around fifty per cent of the currently married women use modern methods of family planning. The use of oral pills and sterilization was minimal (3 percent each). Condom use was found to be higher among urban (11 percent), highly educated (8 percent), and Russian couples (18 percent). Pill use was relatively higher among women residing in the capital city of Bishkek. Age-wise

contraceptive prevalence rate suggests that 46 percent of the younger women were using a method of family planning as compared to 62 percent of the older women. A higher proportion of non-users below the age 24 responded affirmatively when asked about their intention to use a method in the future. The use was higher among women from urban, Russian ethnicity and from Bishkek city. On the contrary, the level of intention to use a method in the future was found to be relatively high among rural, eastern region and Kyrgyz ethnic women (68 percent or above). Surprisingly, the educational attainments either or of the woman or her partner, did not show any significant effect on contraceptive use or the intention to use in the future.

The programme variable of contact with family planning workers in the recent past has made a positive impact on women's contraceptive behaviour (Phillips *et al.*, 1993; Arends-Kuenning, 2001). In Kyrgyzstan too, 67 percent among those who came into contact with family planning or health workers during the one year preceding the survey were using a method as compared to 56 percent of those who could not meet with the workers. The influence of contacts with the workers was also found to be strong on future use. Among non-users who contacted the workers, four-fifths intended to use a contraceptive method in the future against 61 percent among those who could not do so. Surprisingly, a significant proportion of non-user women (around 55 percent) wanted to stop childbearing, yet did not express their intention to use a method.

Fertility regulation is a couples' decision. In many countries, fertility goals and preferences are jointly set by women with other members in the family (Thomson *et al.* 1990; Salway, 1994; Bankole and Singh, 1998). Therefore, any discussion regarding family planning between husband and wife would lead to a positive impact on acceptance and continuity of a method.

Couples who ever discussed family planning issues were more likely to use a method (46 percent) in the future as compared to those who never did (36 percent).

Women's attitude towards pregnancy and its influence on contraceptive use has been explored in this study. The contraceptive prevalence rate was higher among those who said that they would be unhappy (47 percent) than those who would be happy (27 percent) to become pregnant in the future. However, a significant proportion (38 percent) of non-users who said that they would be unhappy to get pregnant, did not intend to use a method in future. On the other hand, a large percentage of women were under the potential risk of repeating the abortion, as only 54 percent of non-users who had already had an induced abortion intend to use a method.

Binary logit regression analyses

Table 4 shows the results from Regression 1. The results are highlighted only for those factors that directly address the placed hypotheses. Controlling for others, demographic factors age, marital duration and number of living children were found to be significantly affecting the odds of undergoing abortion in the past. The Odds Ratio of having abortion increases with the increase in age of women and marital duration. Women aged 35 and above were 3.6 times (significant at 1% level) more likely to have an abortion compared to those below 25 years. Similarly, women who remained married for 15 years or more had 9.3 times higher odds (significant at 0.1% level) of having an induced abortion than those remained married for less than five years. Women tend to achieve their fertility goals over the years, and therefore, are more likely to use induced abortion as a fertility regulation measure especially in the absence of quality family planning services. Women who had three or more children were significantly less likely to experience induced abortion.

According to the *ethnocultural hypothesis,* Russian women were more likely to experience an induced abortion. In contrast, Uzbek women were 1.8 times more likely (1% level of significance) to have an induced abortion with reference to Kyrgyz women. Women with an unhappy attitude towards becoming pregnant have 1.8 times higher odds (1 % level of significance) to opt for an abortion. Analysis also reveals that women who reported the husband's attitude towards abortion as *a problem* were 36 percent significantly less likely to experience an induced abortion. Interestingly, the odds were higher that those who were using a contraceptive method at the time of survey would have an abortion than non-users.

Regression 2 in Table 4 shows significant effects of women's characteristics on the intention to have an induced abortion in case of any unintended pregnancy in the future. Women having no desire for an additional child were 2.8 times more likely (1% level of significance) to seize the full term of unplanned pregnancy in the future than those who wanted an additional child. Further, those who had attained their ideal family size posed higher risk of aborting future pregnancies. It was observed that women of Russian origin had 2.2 times higher risk (5% level of significance) of aborting an unintended pregnancy as compared to their Kyrgyz counterparts.

The unhappy attitude towards becoming pregnant was highly associated (24 times at 0.1% level of significance against those would be happy being pregnant) with termination of an unintended pregnancy. Contraceptive users were 1.7 times (at 5% significance level) less likely to abort an unintended pregnancy as compared to non-users. It was surprising to see that those women who ever had an abortion were 3.2 times (0.1% level of significance) more likely to have it again than those who never had any such experience.

Regression 3 in Table 4 provides the odds of intention to use a family planning method in the future among non-users. Older non user women were less likely to use a method. Probably they

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considered themselves sub or infecund or intended to practice permanent abstinence in the future. Regional variations exist in the intention to use a contraceptive method in future. A non-user woman from the northern region is 6.3 times more likely to use a method than a woman from Bishkek city. According to women's fertility preferences, those who wanted to stop childbearing were (88 percent at 5% level of significance) less intent on using a contraceptive method. This is a critical finding for programme point of view. Women who were not using contraceptives, and who discussed family planning issues with their husbands were three times more likely (1% level of significance) to use a method in the future.

Discussion

The total abortion rate is estimated to be 1.6 abortions per woman, and it has remained stable for few a decades. Improved and effective use of contraceptives among Russian woman was responsible for the major decline in abortion rate, though the group had the highest abortion rate. In contrast, the abortion rate seems to be on rise among Uzbek and Kyrgyz women. The yearning for a smaller family size and low level of effective contraceptive use compel younger Uzbek and Kyrgyz women to resort to induced abortion. Thus, the study indicates that the practice of abortion as a means of fertility regulation among urban and elite Russian women has been diffused to other ethnic groups, and also to rural and poor women.

The analysis of age pattern of fertility and abortion rates by residence and education throws considerable light on the reproductive behaviour of women. For example, the sharp decline in fertility in the age group 25-29 among urban women, and in the age group 30-34 among rural women coincides with the peak abortion rate in the respective age groups of corresponding settings.

In general, feotal mortality (spontaneous abortion) is reported higher at a younger age (below 20) and an older age (35+), but the observed age pattern for spontaneous abortion rate raises doubt whether a significant number of induced abortions were reported as miscarriages. If it was so, the proximate determinant framework would underestimate the role of abortion in fertility inhibition in Kyrgyzstan.

The application of the proximate determinant framework revealed that the fertility inhibiting effects of induced abortion contributed significantly to the observed fertility differentials. Therefore, if the other proximate determinants remain unchanged, the complete elimination of induced abortion requires Kyrgyzstan to raise contraceptive use with the prevailing level of effectiveness to 70 percent for maintaining the fertility rate at the observed level. In general, the fertility regulation effect of infecundity (C_f) gets weaker during the process of modernization. Considering possible improvements in infecundity and keeping the contraceptive prevalence rate unchanged in the future, induced abortion will continue to play a significant role in further fertility decline in Kyrgyzstan.

The study provides enough evidence that abortion is used as a fertility regulation method in Kyrgyzstan. Policy makers should keep in mind that a significant proportion of women are carrying the potential risk of induced abortion or its repetition. The repetition of abortion has serious and long term bearing on women's health. This study does not support the argument that women experiencing an induced abortion face socio-psycho and physical pain, and therefore, would prefer to adopt a contraceptive method to avoid an unwanted or mistimed birth in the future. The vicious cycle of contraceptive use-failure-induced abortion is complex and needs further investigation. Otherwise, it is difficult to answer why contraceptive users are more likely to have an induced abortion.

The hypothesis ─ *Russian women are more likely to resort to abortion,* has been rejected by this study. Controlling for socio-demographic and economic variables, Uzbek women had higher odds of experiencing an abortion in the past. Though Russian women seem to be more determined in terms of intention to abort an unplanned pregnancy in the future, it is difficult to say whether they will be able to transform these intentions into actual behaviour. High contraceptive prevalence rate for Russian women indicated that they have started relying more on modern methods of family planning to manage their reproductive goals effectively.

Both a woman's unhappy attitude *towards becoming pregnant* and the husband's perception about abortion were significantly associated with the likelihood of an abortion. Nevertheless, one should be cautious while making these interpretations; temporary and situational odd phases in inter-spousal relationship, ups and downs in career or failing to perform familial and societal norms may alter the attitude and the perception regarding abortion. The increased involvement of women in the job market poses further challenges, as both direct and indirect costs of childbearing and rearing are perceived to be high. In such a situation, inter-spousal discussion regarding family planning would be doubly rewarding in achieving reproductive goals. However, one should analyze this aspect by segregating favorable and unfavorable discussions on family planning. Disagreement, conflict, awkwardness, shyness or merely misinformation regarding a contraceptive method may be considered as a fruitful positive discussion towards family planning.

It was surprising that the policy variable ─ *women's contact with health/family planning workers* ─ could not make any significant impact on the dependent variable in any of the regressions. One can corroborate whether these contacts have been made in specific circumstances or as a regular component, and what are the topics discussed between them. This

calls for qualitative information on these issues, especially when DHS data do not provide any scope for such an analysis.

One can infer that the role of induced abortion in the family building process may increase during the transformation of society from traditional to modern, but eventually decline to its lowest level, especially in the presence of improved quality of family planning services. While developing strategies to reduce unwanted births, the health system must be equipped to treat women in emergency situations along with making provision for safe abortion services (Jones *et al.*, 2002; Eunice, 2004; Juarez *et al.*, 2005). In situations like unprotected sex and contraceptive failure, the promotion of emergency contraception is required. However, this must be done without compromising on the regular contraceptive services.

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Table 2a. Age-specific Reproductive Rates, KRDHS, 1997

Age Group	Pregnancy Rate			Fertility Rate			Induced Abortion Rate			Total Abortion Rate		
	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
15-19	92.2	69.3	103.1	75.2	55.4	84.0	5.7	7.7	4.8	17.0	13.9	18.4
20-24	335.1	291.2	355.3	246.1	164.7	283.6	57.3	91.9	41.4	89.0	126.5	71.7
25-29	281.7	286.5	279.0	179.1	136.3	204.1	77.1	119.1	53.5	102.0	150.1	74.9
30-34	213.8	151.2	249.0	113.6	60.8	143.2	80.5	83.0	79.1	100.8	90.4	106.6
35-39	118.6	127.8	113.0	46.8	38.2	51.2	58.3	78.2	48.3	71.2	91.6	61.8
40-44	40.5	43.1	39.1	12.7	4.8	17.0	22.0	31.1	17.0	27.9	38.3	20.9
45-49	11.6	4.4	16.0	0.0	0.0	0.0	9.9	4.4	13.3	11.6	4.4	16.0
Total	**5.48**	**4.87**	**5.77**	**3.37**	**2.30**	**3.92**	**1.55**	**2.08**	**1.29**	**2.10**	**2.58**	**1.85**

Table 2b. Age-specific Reproductive rates by Educational level, KRDHS, 1997

Age Group	Pregnancy Rate		Fertility Rate		Induced Abortion Rate		Total Abortion Rate	
	Secondary	Higher	Secondary	Higher	Secondary	Higher	Secondary	Higher
15-19	110.9	56.5	91.4	44.1	4.3	8.3	19.4	12.4
20-24	344.2	326.9	268.5	225.9	52.8	61.4	76.9	99.9
25-29	275.2	286.2	193.5	169.0	54.4	94.0	81.7	116.2
30-34	214.8	213.0	121.1	107.0	67.4	91.2	93.7	106.1
35-39	108.4	128.9	43.3	50.3	51.0	65.8	63.7	78.7
40-44	39.8	41.3	21.5	3.4	16.6	27.6	18.2	37.9
45-49	9.2	18.0	--	--	6.1	18.0	9.2	18.0
Total	**5.51**	**5.36**	**3.70**	**3.00**	**1.26**	**1.83**	**1.81**	**2.35**

Table 3. Proximate Determinants, Estimated and Actual Total Fertility and Fecundity Rates, KRDHS-1997

Characteristic	Cc	Ca	Ci	Cf	Model TF	Model Fertility	Actual Fertility	Estimated TF	Fertility in absence of induced abortion	Required contraceptive level (%)
Residence										
Urban	0.44	0.68	0.78	0.70	15.3	2.49	2.30	16.54	3.4	84.1
Rural	0.51	0.85	0.78	0.69	15.3	3.62	3.92	14.12	4.6	67.9
Education										
Secondary	0.50	0.85	0.79	0.64	15.3	3.29	3.70	13.61	4.4	69.0
Higher	0.55	0.75	0.73	0.77	15.3	3.13	3.00	15.97	4.0	70.5
Total	**0.50**	**0.81**	**0.77**	**0.70**	**15.3**	**3.32**	**3.37**	**15.55**	**4.2**	**70.0**

Table 4. Odds Ratios for having induced abortion, intention to have induced abortion in the future and intention to use a Family Planning Method in the future, KRDHS-1997, Kyrgyzstan

Background characteristics	Induced abortion-Reg.1 Exp(β)	Intention for Induced abortion-Reg.2 Exp(β)	Intention to use a FP method in future-Reg.3 Exp(β)
Age Group (less than 24 years®)			
25-34 years	2.001*		0.481*
35 and above	3.589**		0.015**
Residence (Urban®)			
Rural	0.517***		
Region (Bishkek®)			
North	1.761*		6.280*
East	0.453*		2.123*
South	0.680		3.364*
Ethnicity (Kyrgyz®)			
Russian	1.328	2.214*	
Uzbek	1.859**	0.943	
Other	1.591*	1.001	
Education (Primary, secondary®)			
Secondary-special, higher		0.601**	
Women's occupation (Do not work®)			
Executives	0.896	1.855**	
Sales and services	1.506*	1.450	
Agriculture and Unskilled	0.763	0.563	
Number of living children (less than 3 children®)			
3 and more children	0.563**		
Fertility preference (Have another child®)			
Want no more		2.776***	0.117*
Attitude towards becoming pregnant (Happy®)			
Unhappy	1.823**	23.9***	
Would not matter	1.256	1.925	
Ideal and living number of children (Living children≥than ideal®)			
2 and less children < than ideal		0.621*	
3 and more children < than ideal		0.270***	
Marital duration (0 to 4 years®)			
5 to 9 years	2.757**		
10 to 14 years	6.461***		
15 years and above	9.319***		
Discussed FP with partner (Never®)			
Once or twice		1.186	3.029**
More often		1.790*	3.668*
Partners occupation (Do not work®)			
Executives			4.607
Sales and services			5.796*
Agriculture			4.646*
Husband considers abortion is a problem (No problem®)			
Problem	0.643**		
Ever had an induced abortion (No®)			
Yes	NT	3.203***	
Ever experienced the loss child (No loss®)			
Loss	0.721*		
Current use of contraception (Non user®)			
User	2.197***	0.613*	NT

®: reference category; * 5 % level of significance; ** 1 % level of significance, *** 0.1 % level of significance, NT represents that the variable not taken into the model.