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

Estimates indicate that 46 million pregnancies are voluntarily terminated each year, of which 19 million are legal. This paper aims to understand the dynamics of family planning use, reproductive preferences, and future intention to use contraception and abortion, and their fertility inhibiting effects among Kyrgyz women. The total abortion rate for Kyrgyz Republic is 1.6 abortions per woman. It seems to be at higher side, though it has declined in recent past. However, there is an increase in rate for women from backward strata. The modified proximate determinant framework suggests that abortion is a prominent factor in creating fertility differentials among Kyrgyz women. Women who have had an abortion, a majority of them intended to repeat it in case of unintended pregnancy. It is worth to note that among non-user of contraceptives, 46 percent women not desiring an additional child, do not intend to use any method in future too.

Introduction:

Each year, throughout the world, approximately 210 million women become pregnant and 130 million of them go on to deliver live births. As many as 80 million pregnancies are unplanned. Some of these are carried to term, while others end in spontaneous or induced abortion. Estimates indicate that 46 million pregnancies are voluntarily terminated each year – 27 million legally and 19 million outside the legal system. According to the World Health Organization (WHO, 2004), complications of unsafe abortion are responsible for 13 percent of all maternal deaths. In most of these cases, women die or become disabled because they do not receive medical treatment for their complications soon enough.

Kyrgyzstan, prior to 1991 was known as Kirgizian Soviet Socialist Republic. In the line of this work, it is important to explore the background knowledge of abortion practices in the Kyrgyz society before independence and thereafter. In this context, the description is given below pertaining to the abortion situation in Kyrgyzstan. Seeking abortions except in cases of danger to life, serious threat to health, or the existence of a serious disease that could be inherited from the parents was banned under the Soviet Decree of June 27, 1936. The Decree also had a provision to punish medical fraternity in case of performing abortions outside a legal system. Even a pregnant woman who underwent an abortion was liable to imprisonment and the payment of a fine of up to 300 roubles in the case of replication of the abortion. The 1936 Decree was repealed by the Government of the former USSR in 1955. Under this, abortions was allowed within 12 weeks of pregnancy and beyond that too, if birth would jeopardize the mother's health or in case of abnormal foetus. On December 31, 1987, the Government of the former USSR issued order setting out a broad range of non-medical indications for abortions on request through the twenty-eighth week of pregnancy.

This extension of the grounds for abortion after the first 12 weeks of pregnancy, combined with the ambivalent attitude of the Government towards contraception, led to a dramatic increase in the number of officially reported abortions. Other factors resulting in a high incidence of abortion have included shortages of high-quality modern contraceptives and reliance upon less reliable traditional methods; a lack of knowledge and about appropriate family planning methods; and the absence of adequate training for physicians, nurses, teachers and other specialists. There were several myths among women about contraceptive side effects. During Kyrgyzstan's years as a Soviet Republic oral contraceptives, which were very popular in the West, were regarded as unsafe by the Soviet medical establishment. Other modern methods produced in the West were expensive to import. Condoms and IUDs manufactured domestically were crude and unpopular. Therefore women still hesitate to use family planning methods, although many of them understand the danger of post abortion complications. They want to use safe method of family planning but don't know where to go to receive competent counseling and contraceptives (UN, 2000).

Review of literature:

There is not much discussion about the abortions in Kyrgyzstan. Kyrgyzstan did not exist as an independent country before 1991 (breaking of USSR), so the trends and patterns of abortions in Kyrgyzstan are more and more being studied. As it was a part of the former USSR, some of the literatures dated back to 1980's (Soviet Union) which show the trends that had prevailed over unified Russia (Including Kyrgyzstan) have been viewed. Kulczycki A, Potts M., Rosenfield A. (1996) cited that women use a combination of contraception and abortion to attain their desired fertility, and some societies also place constraints on marriage

and sexual activity. The degree to which these means are adopted varies considerably, but for the foreseeable future abortion will remain an important element of fertility regulation.

Bloshansky (1973) for each birth figured out two abortions. In Moscow he estimated about 200,000 abortions that include both induced and spontaneous abortions where induced shared 85 percent.

Teitze (1983) quoted from Davis (1980) ―"An extraordinary high estimate of 16.5 million abortions annually in the mid 1960's (Davis,1980), was based on a series of abortions / birth ratios, ranging from 3.2 per live birth in 1962 to 4 per live birth in 1967".

Women aged 40 and older generally obtain the lowest proportion of abortions (10 percent or fewer in most of the countries). On the other hand adolescents account for a high proportion of abortions in some countries. In general, abortion rates by women's age show an inverted U-shaped pattern. Abortion ratios by age, however, show two patterns: an inverted U-shape and a monotonic increase with age. However, once pregnant, unmarried women are more likely than married women to choose abortion (Bankole et al. 1999).

In countries with high rates of legal induced abortion, contraceptive use and marital patterns nearly always have a greater impact on fertility levels than does abortion. As a rule, extremely high rates of abortion – three or more abortions per woman of childbearing age during the reproductive years are required for the fertility-inhibiting effect of abortion to rival that of contraceptive use. Nevertheless, the absolute effect of abortion on fertility (defined as the amount by which the current total fertility rate, or TFR, would increase if no abortions were performed) is often substantial. In most of the countries examined, the TFR would have been from about 20 percent to nearly 90 percent higher than it actually was (other things being equal) had no induced abortions been performed. Among developed countries, the Soviet Union, Japan, Eastern European countries, Israel and the United States have the highest total legal abortion rates, ranging from one abortion to more than five abortions per woman of childbearing age during the reproductive years (Frejka, 1985).

Need for the study:

Overall 30 percent of women of reproductive age in the Kyrgyz Republic have had at least one abortion. Among women who have ever had an abortion, a majority (60 percent) has had more than one (KRDHS 1998). It is necessary to accentuate the high dominance of induced abortion as a method of fertility regulation in the Kyrgyz Republic. The practice of induced abortion can adversely affect a woman's health, reduce her chances for further childbearing, and contribute to maternal and perinatal mortality. To define those women who are more exposed to induced abortion, the study of women by different background characteristics is needed. It is more important to note that a large proportion of unwanted and unintended pregnancies ended with abortions could be avoided by enhancing the use of effective contraceptive methods. During the Soviet Union period, the government policies were to limit the availability of contraceptives, which has affected the behavior of the women towards contraception and force them to depend on abortion. The study would be useful to understand the magnitude of abortion rates and its correlates in the country. The document may help to policy makers in their future course of actions towards family planning programmes as a few policy variables have been analyzed in the present study.

Objectives:

1. To examine levels, trends and patterns of induced abortion in Kyrgyzstan;

2. To understand the dynamics of family planning use, reproductive preferences and future intention of women to use contraception and abortion;
3. To assess the fertility inhibiting effect of induced abortion among Kyrgyz women.

Source of data:

This study is based on Demographic and Health Survey of the Kyrgyz Republic (KRDHS-1997) data. It covers the population residing in private households of the country. The design of the KRDHS calls for a representative probability sample of approximately 4000 completed individual interviews with women between ages 15 and 49.

Methodology:

The methods that have been used in this paper to analyze the data are percentage distributions, cross tabulation, Logistic-Regression and Modified Proximate Determinants Framework.

Logistic-Regression.

Under the logistic regression analysis four different exercises carried out taking following dependent variables:

Regression 1 DV=have experienced induced abortion; Regression 2 DV=currently using method of FP; Regression 3 DV=will go for abortion in future; Regression 4 DV=intention to use FP methods and putting a set of independent variables. The independent variables include socio-economic, demographic, reproductive behavior related information at individual level.

Proximate Determinants Framework.

Bongaarts operationalized the framework on intermediate fertility variables originally given by Davis and Blake (1956) and named as proximate determinant framework. The proximate determinants include the biological and behavioral factors through which social, economic and environmental variables affect fertility. Bongaarts and Potter (1983) noted four principal proximate that mainly affects human fertility. These may be defined as follows:

Index of marriage or index of proportion married (C_m*)*

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

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

Index of non-contraception (C_c*)*

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

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

Index of abortion (C_a*)*

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

TA is the total abortion rate and is considered as a measure of the incidence of induced abortion. The index of postpartum infecundability is measured as;

Index of postpartum infecundability (C_i*)*

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

$i,$ is the average duration of postpartum infecundability. The estimates on i are not readily available like other proximate determinants. Therefore, in this situation the duration of postpartum amenorrhea is obtained from the following relation developed using data from 41 WFS countries;

$$i = 1.753 \, e^{\left(0.1396*B - 0.001872*B^2\right)}$$

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

With these variables or determinants Bongaarts proposed his multiplicative model as

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

In the above model, the total fecundity rate *(TF)* is the average number of live births expected among women who remain married, during their entire reproductive period, do not use contraception, do not have any induced abortion, and do not breastfeed their children. This is generally 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; Chander Shekhar, 2004). The final model is given below:

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

Where index of infecundity (C_f) may be written as follows:

Index of infecundity (C_f*)*

$$C_f = 1 - f$$

and *f* is the proportion of infecund women.

Analysis:

Levels, trends and patterns of abortion

Table 1. *Induced abortions by background characteristics.*

Background characteristic	Total Induced Abortion Rate (15-49)	Mean number of 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		
Primary, secondary	1.26	1.22
Secondary-special, higher	1.83	2.08
Total	**1.55**	**1.63**

The table 1 is developed to meet the first objective of this study. An indication of trends in induced abortion can be obtained by comparing values of the TAR for the three years preceding the survey with the mean number of abortions reported by women age 40-49. The former is a summary measure of current abortion rates while the latter represents the cumulative experience of older women (i.e., represents their experience over the last 25 years). Table indicates that, at the national level, the current TAR and the number of abortions reported by woman age 40-49 are the same (1.6 abortions per women) which implies that recourse to induced abortion has been stable over the last couple of decades. However, while the abortion levels for the Republic as a whole appear to be stable, the data for some population subgroups indicate that the use of abortion has changed. For example, women residing in Bishkek and in the north region the TAR (2.0 and 1.6 abortions per women, respectively) is well below the mean number of abortions among women age 40-49 (2.4 and 2.1), suggests a decline in the use of abortion. Similarly, for Russian women the TAR is well below the number of abortions reported by women age 40-49. However these declines in the use of abortion have been offset by increases in the other groups. Women residing in the south region, the TAR (1.5) exceed the number of abortions reported by women age 40-49 (1.1). The levels of abortion rate by residence are in expected directions depicting decline in both the areas. The total abortion rate presents a declining trend for higher educated women on one hand and on other increasing trends for less educated women.
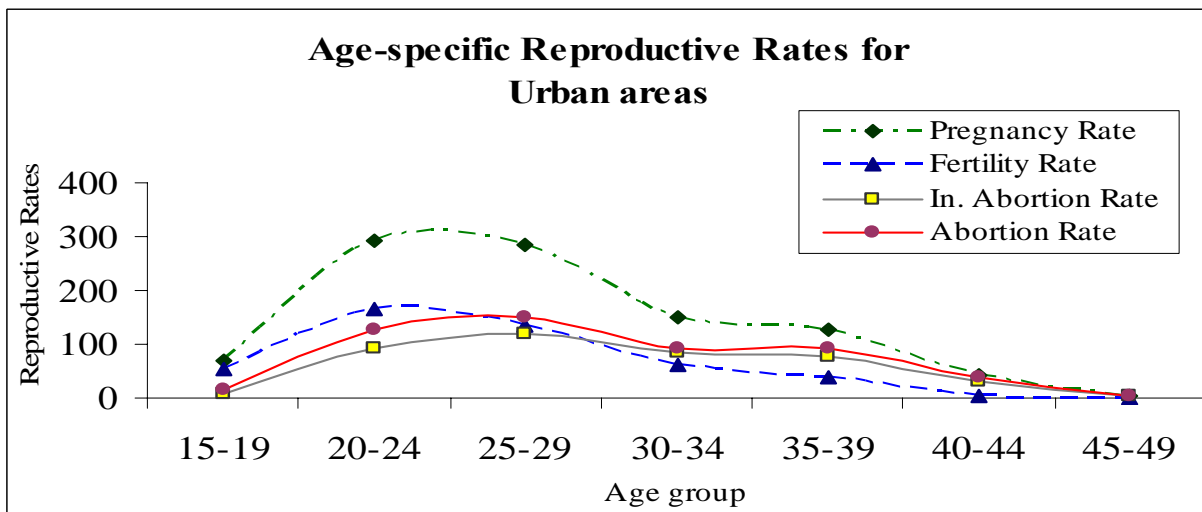
Figure 1. *Age-specific Reproductive Rates.*


Age-specific Reproductive Rates, Kyrgyzstan,1997
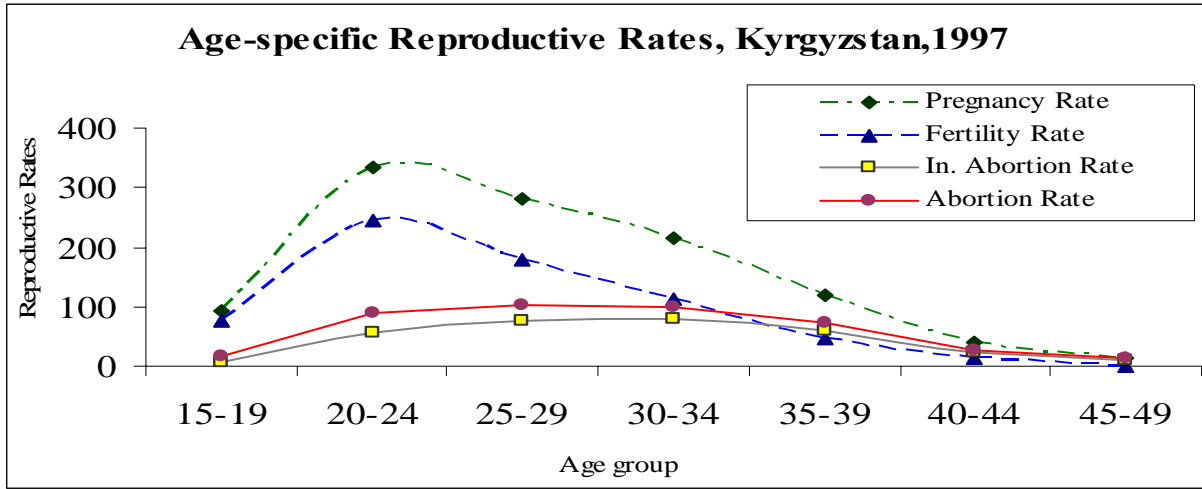
Reproduction rate in Kyrgyzstan, 1997 as seen from the Graph 1, follows the usual fertility pattern. Fertility rate and the pregnancy rate in the age group 15-19 is low, it is achieving the highest value at the age group 20-24 and declining up to 40-49 age group. The difference between pregnancy rate and fertility rate is the abortion rate. It is clear from the picture that induced abortion rate is highest in 30-34 age group, which is the obvious sign of limiting the family size beyond or at this age. After the age group 35-39 the fertility rate goes below the abortion rate, which means that though there is a high pregnancy rate, high abortion rate brings fertility down. After crossing their thirties women are more inclined to use induced abortion as, may be, a fertility control measure, which means that the desired family size is fulfilled. Considering both types of abortions, the abortion rate is highest at 25-29 age group, whereas in induced abortion it was age group 30-34. It indicates that younger women are more prone to have miscarriages.

Figure 2. *Age-specific Reproductive Rates for urban areas.*

Age-specific Reproductive Rates for Urban areas

Figure 3. *Age-specific Reproductive Rates for rural areas.*
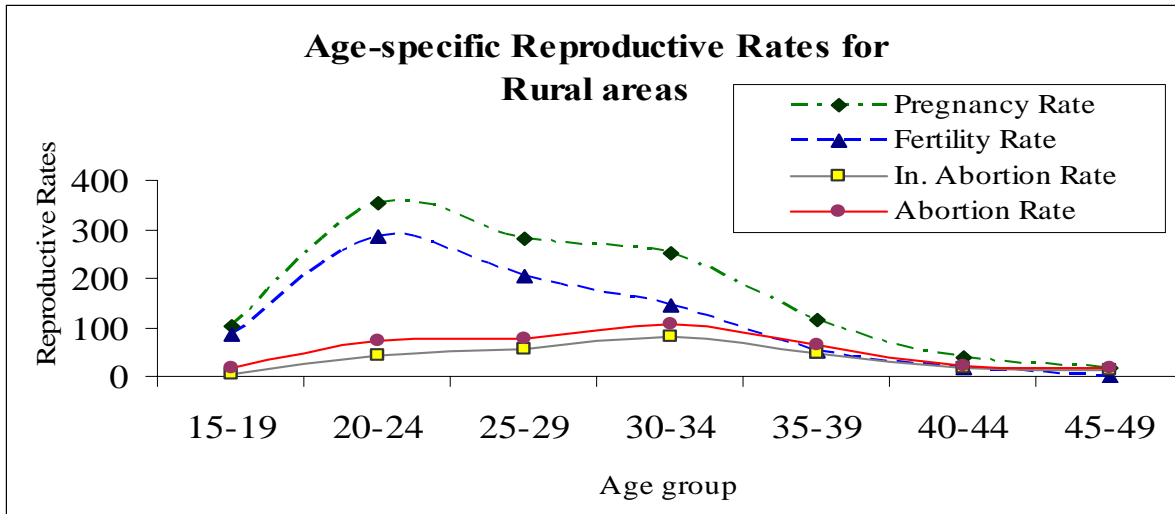
The scenario of reproductive rates by type of place of residence is quite interesting. Induced abortion rate reaches its peak at the age group 25-29 for urban women. This age group shows a large difference between the pregnancy and fertility rates. Induced abortion rate becomes higher than the fertility rate beyond age group 25-29 and this tendency continues till the end of the reproductive span. Though pregnancy and fertility rates are hitting its modal values at 20-24 age groups, the fertility rate is declining more than the pregnancy one. Because of the high abortion rate, the fertility rate of urban women is substantially low. The age group 25-29 is crucial one, as tendency of termination of pregnancy begin to limit family size. On the contrary, the difference between fertility and pregnancy rates is low. This means that in rural Kyrgyzstan induced abortion, as well as overall abortion rates, is low compared to urban. The induced abortion rate reaches its highest point at the age group 30-34 and it remains quite low from pregnancy rate. For rural women, abortion rate offset fertility rate at age group 35-39 which is five years later than urban women.

Figure 4: *Age-specific Reproductive Rates for Secondary and less education.*
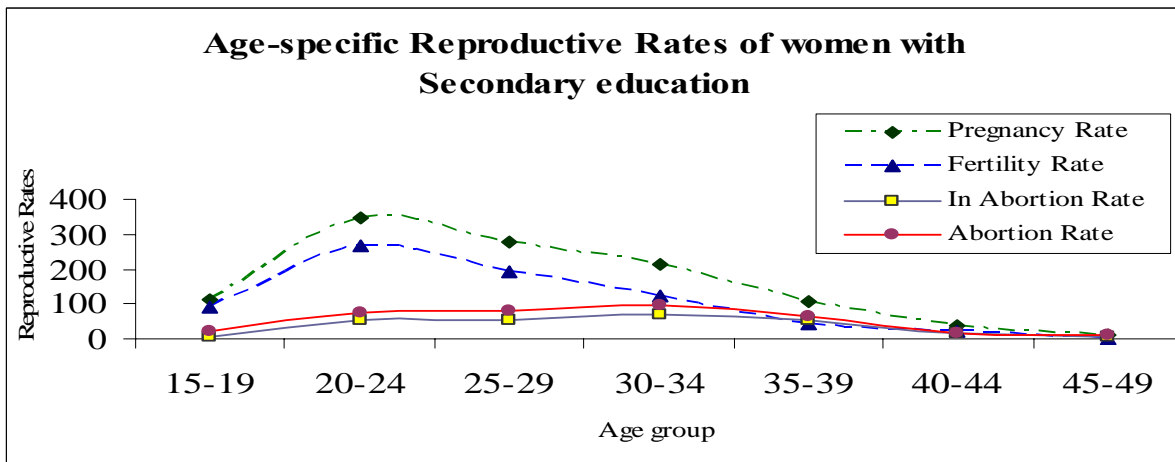
Figure 5: *Age-specific Reproductive Rates for Higher education.*

Age-specific Reproductive Rates of women with Higher education
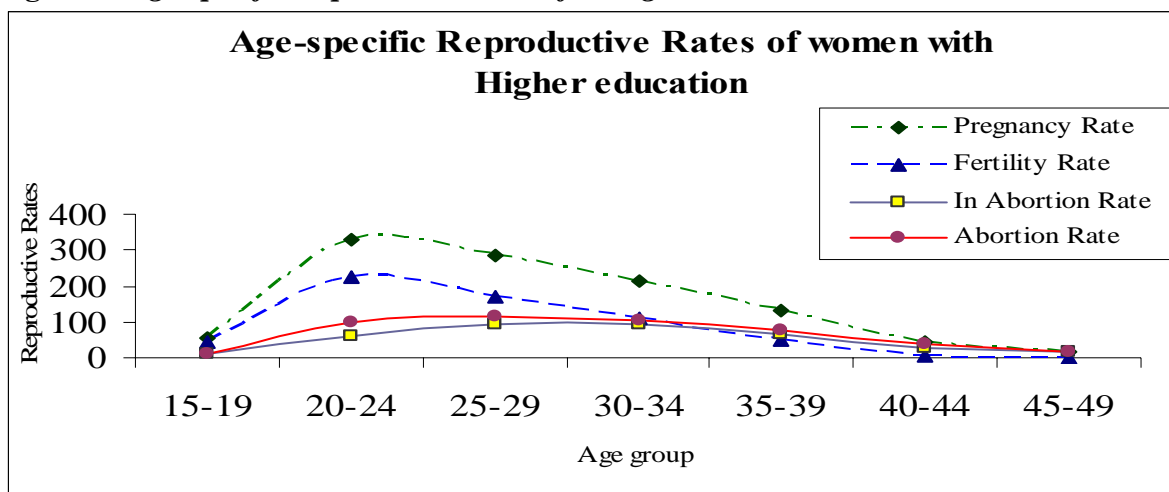
Educational level also influences on reproductive behavior of women in Kyrgyzstan. Women with secondary education are less exposed for induced abortions as well as miscarriages compared to those who have higher educational level. The modal point of abortions (overall and induced) falls on the age group 30-34 of women with secondary education. This age group shows the largest difference between pregnancy and fertility rates. Induced abortion rate and abortion rate surpasses the fertility rate at age group 35-39. Women with secondary-special and higher education have high tendency to have an abortion in their younger ages. There is a large difference between induced abortion rate and abortion rate in the age group 20-24. It gives us an idea that relatively high prevalence of miscarriages are in this age group. Both the abortion rates reach its peak points at the same age group i.e. 25-29. This is five years sooner than women with primary and secondary education. An interesting feature about pattern of abortion rate in Kyrgyzstan is that the rate remains stable over age 20-35 which is a significant part of whole reproductive span.

Figure 4. *Curve between Pregnancies and Terminated Pregnancies*
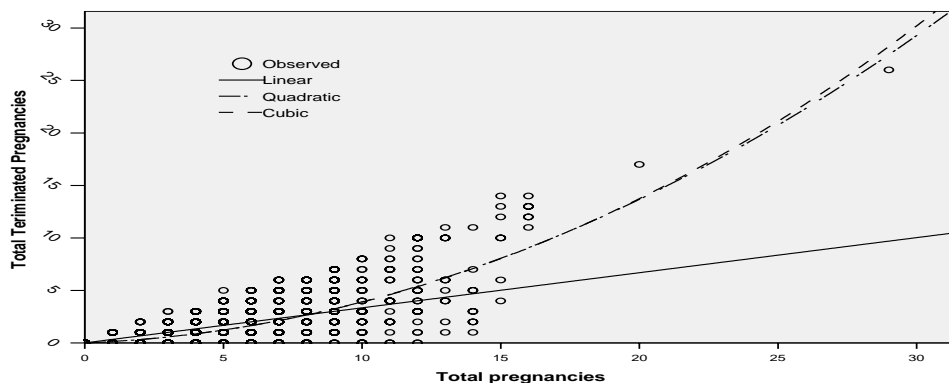
Dynamics of family planning use, reproductive preferences and future intention of women to use contraception and abortion.

Table 2. *Contraceptive use of modern methods among currently married by background characteristics.*

Background characteristics	Modern contraceptive methods						
	Any modern method	Pill	IUD	Injections	Diaphragm/ Foam/ Jelly	Condom	Female Sterilization
Age group							
less than 24	36.0	1.1	27.8	0.2	0.0	6.0	0.0
25-34	52.7	2.3	42.1	1.5	0.3	6.1	0.5
above 35	51.8	1.6	39.7	1.8	0.0	4.7	4.0
Residence							
Urban	54.9	3.0	37.6	1.0	0.2	10.6	2.4
Rural	46.0	1.2	38.5	1.4	0.1	3.4	1.5
Education							
Secondary	47.0	1.1	39.3	1.3	0.0	3.6	1.7
Higher	50.7	2.4	37.0	1.3	0.2	7.7	2.0
Ethnicity							
Kyrgyz	47.0	1.2	39.2	1.4	0.1	3.8	1.8
Russian	58.2	5.7	31.5	0.7	0.3	17.8	2.0
Uzbek	49.5	1.6	41.0	1.2		4.5	1.2
Other	48.7	1.3	33.5	2.1	0.4	8.4	2.9
Region							
Bishkek	59.4	5.0	33.3	1.1	0.6	15.8	3.7
North	50.4	1.6	40.5	1.7	0.1	4.5	1.9
East	51.3	0.7	43.4	3.3	0.0	2.0	2.0
South	45.0	1.1	37.4	1.0	0.0	4.2	1.3
Number of living children							
less than 3 children	42.1	2.2	30.2	0.5	0.1	7.7	1.3
3 children and more	55.4	1.2	46.0	2.1	0.1	3.6	2.4
Total	**48.9**	**1.7**	**38.2**	**1.3**	**0.1**	**5.7**	**1.8**

Table 2 gives the contraceptive prevalence of modern methods by different background characteristics in Kyrgyzstan. It clearly depicts that IUD is the most popular method of family planning, followed by condom. Around half of the currently married women use any modern method of family planning. Among them 76 percent are using IUD, 12 percent are using condom and about 3 percent are using pills and sterilization. Condom use is found to be higher among urban (11), highly educated (8) and Russian women (18). Again pill use is more among women who live in capital city Bishkek. In general, female sterilization is very low in prevalence. It may be mentioned that contraceptive prevalence rate differs significantly between those women who have less than three living children and three and above.

Appendix 4 gives information about women who have ever had an induced abortion and women who intended to have an induced abortion for unintended pregnancy by selected

background characteristics. It is observed that half of the women aged 35 years and above have had at least one induced abortion. At the same age group, 61 percent of women have reported that they will go for abortion if they unintentionally get pregnant. A large difference in proportion of women who have ever had an abortion is observed between women who want to limit their family size and who are still planning to continue their childbearing (52 Vs 26 percent). This is true also for intention to have abortion in future (71 Vs 19 percent). It indicates that induced abortion is used as a means of fertility regulation among Kyrgyz women. This finding also corroborates with marital duration as women with longer duration of marriage might have completed their desired family size.

Comparing ideal number of children with actual shows that more than half of women, whose living number of children is greater than ideal, have experienced induced abortion. Around slightly lower than three-fourths of women who have completed their ideal family size would prefer to go for abortion if they unintentionally get pregnant in future. Husband's attitude towards induced abortion influences woman's intention to go for induced abortion in future for unwanted pregnancy. This can be seen by the proportions given in the table.

It is interesting to note that majority of women who have ever had an abortion (65 percent) would not hesitate to repeat it if they will have an unintended pregnancy in future. Around 47 percent of women who are using family planning methods ever had an abortion. Those women who are using contraceptives, 50 percent of them would like to go for abortion in future if they face unintended pregnancy. The analysis also suggests that 38 percent of those women, who are not intended to use contraceptives, have already gone for abortion. Those who said that they will use a family planning method in future, around 22 percent of them have had an abortion. The similar pattern for intention to have an abortion in future is observed.

Appendix 5 provides information on women currently using family planning methods and non-user women who are intended to use family planning methods in future by different background characteristics. It shows that younger women use any method of family planning (46 percent) compared to women at advanced age. A higher proportion of non-user below age 24 responded affirmatively while asking whether they have intention to use any method of family planning in future. It is observed that intention of using a method in future to delay or avoid pregnancy goes down dramatically beyond age 35. This may be mentioned that a background showing high use and less future intention to use possibly gives an impression that potential clients are already in using them. Rural women, women from east region and women Kyrgyz by ethnicity have higher intention to use a method in future. However, a higher proportion of their counterparts from urban areas, Bishkek City and Russian by ethnicity use any contraceptive method to delay or avoid pregnancy. Interestingly, women's education or their partners' education does not play any significant role in current use or intention to use a method in future. The same is true for occupation.

A lower proportion of women with smaller family size are current user of any method of family planning compared to those who have had three or more living children. A programme variable ― "contact with family planning worker in last 12 months" has a positive effect on contraceptive use in Kyrgyzstan.

Women who desire another child is less in proportion in the user category. A very large proportion of non-user women from this group have intention to use a method family planning in future. It is surprising to know that a significant proportion among women who want no additional child, around 46 percent did not intend to use any family planning method in future. These women are potential to go for abortion to avoid next pregnancy. Again, among those who

have attained their desired family size, around 72 percent are using any method of family planning. Among those who have two or less number of children than their desired family size, 61 percent are using any family planning method. But such non-user women are highest in proportion intended to use a method in future.

The regulation of fertility behaviour is a couples' matter. Therefore, discussion between husband and wife would leave a positive impact on fertility preferences. It is clearly seen that those couples who never had discussions on family planning are less likely to use a method, in both at present and in future, compared to their counterparts who discuss occasionally or frequently.

Women's attitude towards pregnancy has been asked in the survey. The contraceptive prevalence rate is higher among those who were unhappy of having a pregnancy. But a significant proportion (38 percent) of those who are non-user and unhappy to have a pregnancy, do not have any intention to use any family planning method. Husbands' attitude towards abortion does not make any change to current contraceptive use. However, a slightly higher proportion of wives, whose husbands think that abortion is a problem, have intention to use any method to delay or avoid pregnancy. This table also shows attitude and behaviour of women who have experienced an induced abortion or child loss. A large proportion of women who have had an abortion (72 percent) are using a family planning method, compared to those who never had such experience (52 percent). On the other hand, among non-users and those who ever had an induced abortion, only 54 percent is intended to use a method in future. This should be a cause of worry for policy makers as these women are at high risk of repeated induced abortions.

Appendix 6 shows the results of the logistic regression 1 and 2 for those women who have had an induced abortion and for those who are currently using any method of family planning respectively. The first regression shows that women's age, residence type, ethnicity, region, education, occupation of women, number of living children, attitude towards becoming pregnant, duration of marriage, husbands' attitude towards abortion, child lose experience and current use of family planning methods are found to be significant. Women aged 35 and above have 3.6 time higher odds to have an abortion compared to those who are below 25 years of age. Duration of marriage, controlling the other factors, shows that as duration of marriage increases the odds of having abortion also increase significantly. It may be noted that women who have 15 and above years of marriage are nine times more likely to have an abortion. Rural women are significantly less likely to have an abortion compared to their counterparts. By ethnicity, only Uzbek women are 1.8 times more likely to have an induce abortion in reference to Kyrgyz women. Compared to Bishkek city north region women are significantly more likely to have had an abortion, though abortion rate is higher among Bishkek women. This suggests that the rates by women's background differ a lot within Bishkek city. In addition, north women are less likely to ever have had an abortion. This match with the rate observed for the north region. It may be because contraceptive prevalence is highest in north region. By occupation, those who are in sales and services have higher odds to have an abortion compared to not working women. Underlining this finding, it may be suggested that most of the women who do not work are well off by social status.

By living number of children, one can see that those women who have three and more children are less likely to have abortion. It gives an idea that those who like to have more children do not go for abortion. Moreover, women who have ever lost their child are less likely to have an induced abortion compared to those who did not.

The attitude towards becoming pregnant shows that those women who are unhappy with it have higher chance to go for abortion. The attitude of husbands towards abortion reveals that women who reported that their husbands think that abortion is a problem are significantly less likely to go for abortion. This regression also shows that those who are currently using any contraceptive method have higher odds to have ever had an abortion. This does not mean that those who use a method will go for induced abortion, but on the contrary, after having an abortion they might have started using family planning method.

The regression model checks the significance of background variables on current contraceptive status. It shows that attitude towards becoming pregnant, attainment of ideal family size, marital duration, discussion family planning with partner, partner's occupation, abortion experience and future intention to go for abortion are significant. It is interesting to see that no social and economic variable comes significant while studying its effects on contraceptive use. Those women who have shorter duration of marriage and attained their ideal family size are less likely to adopt a family planning method. Discussion on family planning with partner makes a positive impact on contraceptive use; it is as high as 3.1 times among those, who frequently discuss family planning, compared to those who never do. Women whose husbands are in sales and services are 1.8 times more likely to use contraceptives.

Those women, who have unhappy attitude towards becoming pregnant, are three times significantly more likely to use a family planning method. The most important finding of this model is that those who have had an induced abortion are two times more likely to use a method compared to those who did not. Those who reported that they will go for abortion if they get pregnant unintentionally have lower chances to adopt a contraceptive method.

Regression 3 and 4 (see appendix 7) show that significance of different background variables on future intention to go for abortion in case of unintended pregnancy and intention to use a family planning method in future respectively. From regression 3 it is observed that Russian women are more likely to abort unintended pregnancy compared to their Kyrgyz counterparts. Women with higher educational background are less likely to go for abortion in future for an unintended pregnancy. This may be because of that they may be aware with health hazards of induced abortion. It is interesting to know that women with executive professions are 1.8 times more likely to terminate unintended pregnancy in future. This may be due to that their job responsibilities, which would not allow them to afford the bearing and rearing of another child.

Those women who do not want any more children are significantly more likely (2.8 times) to opt for an abortion in case of unintended pregnancy compared to those who want additional child. Again those who have attained their ideal family size would go for abortion if they get pregnant in future. The unhappy attitude towards becoming pregnant also has high positive effect to terminate unintended pregnancy in future.

Those women who have had discussions with husband on family planning are 1.8 times more likely to go for abortion for unintended pregnancy in future compared to those who never had. This may be due to the fact that couples who have strong desire to limit their family size or delay for the next child discuss about family planning more often. Those who are using any method of family planning they are 1.7 times less likely to go for abortion in case they would have an unintended pregnancy in future. It is to be noted that maximum women are using spacing methods, specifically IUD. Those women who have had an induced abortion would like to again terminate unintended pregnancy in future compared to who did not have.

The results from regression 4 shows that women at later ages are less likely to use family planning method in future compared to their younger counterparts. This may also be due to that they consider themselves sub-fecund or infecund or adopt permanent abstinence. Non-user women from north region are 6.3 times more likely and significantly to use a method of family planning in future compared to Bishkek. According to fertility preferences of the women, those who do not want to have children any more are less intended to use contraceptives in future. This group of women is at high risk of abortion. Those women who have attained their ideal family size would more likely to use a method of family planning in future to delay or avoid pregnancy compared to those who have not. Again discussion between non-user husband and wife has a positive effect of 1.3 orders to use contraception in future. Wives of those husbands who work in sales and services and agriculture are more likely to use contraception in future compared to those who do not work.

Fertility Inhibition of Selected Proximate Determinants in Kyrgyzstan:

The modified proximate determinant framework shows that actual and model total fertility rates are close to each other. It is estimated that the total fecundity rate in Kyrgyzstan is around 15.6. The model provides low estimate of total fertility rates for urban and higher educated women. This may be due to higher fecundity rate of urban and highly educated women. It is to be noted that values of C_f do not differ by residence, but it is much higher for more educated compared to less educated women. The index of postpartum insusceptibility does not change much by selected background characteristics. It may be concluded that urban-rural differentials in fertility are created by the level of abortion rates and effective contraceptive use. However, fertility differentials by education are created by the levels of fecundity and abortion rates (see appendix 8a).

Appendix 8b (see also figure below) shows the percent contribution in fertility inhibition, which is mainly dominated by contraception across the background characteristics and its level remains around 41 percent. The proximate determinant infecundity contributes 25 percent of the total fertility reduction. Around one-fifth of the total fertility inhibition is contributed by postpartum insusceptibility followed by abortion (15 percent).

Contribution of Selected Proximate Determinants In Fertility Inhibition in Kyrgyzstan
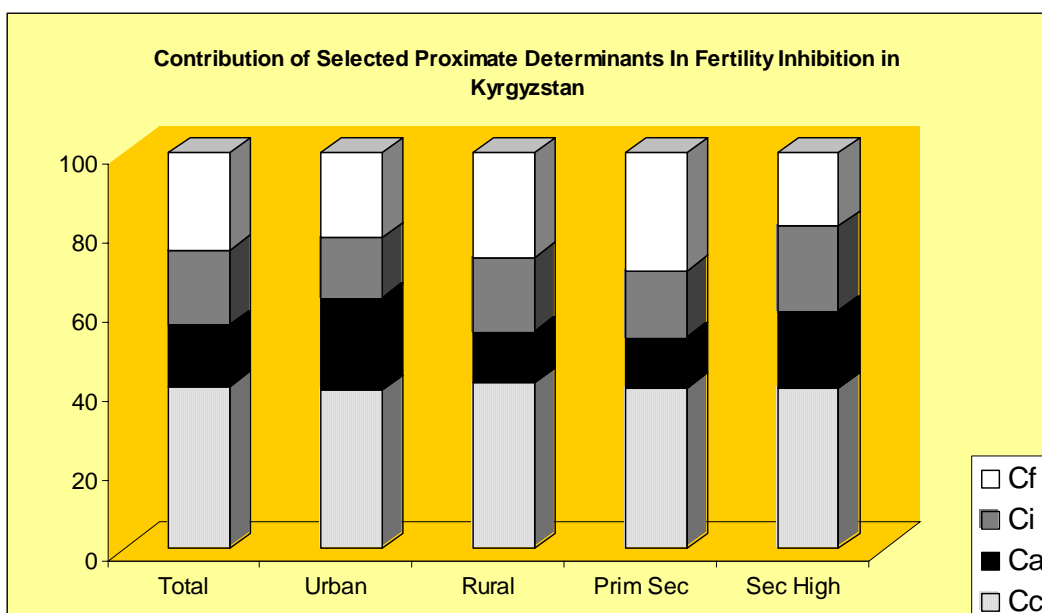
Concluding Remarks.

The total abortion rate for Kyrgyz Republic is 1.6 abortions per woman. The analysis indicates that total abortion rate has declined in the recent years. However, there is an interesting pattern is observed. The rate has declined in case of urban and highly educated women whereas it has increased slightly for rural and less educated women. Age-specific pattern of the induced abortion rate shows that it peaked at age-group 30-34 and crosses fertility rate at age 35-39. The rates for urban and rural areas are estimated as 2.1 abortions per woman and 1.3 abortions per woman respectively. In case of former the peak is at age group 25-29 and latter it is highest at age group 30-34. The quadratic curve fits at the level of 70 percent. It suggests a very close relationship between number of pregnancies and abortions.

There are enough evidences that abortion is used to limit the family size in Kyrgyzstan as a large proportion of women who intended to limit their family size have had an abortion. It may be emphasized that women who have had an abortion, a majority of them would seek abortion again in case they get pregnant unintentionally in future. It is significant to note that around 46 percent of non-user women who do not want additional child are not intended to use any family planning method in future. In addition, women who ever had an abortion among non-user, only 54 percent are intended to use contraceptives in future.

The multivariate analysis shows that those women who reported that they will go for abortion in case of unintended pregnancy are at significant lower odds of currently using any family planning method. Moreover, women who do not want to have any more children in future are significantly less intended to use a method of family planning. These finding should be taken into account while preparing any programme or policy related to reproductive health.

The findings from proximate determinant framework give an idea that abortion rate is playing a significant role in creating fertility differentials among Kyrgyz women. Though the contraceptive prevalence regulates maximum fertility, the infecundity contributed 25 percent of the total fertility reduction. Around 15 percent of the total fertility inhibition is contributed by abortion. This scenario stimulates that if fecundity rate improves and pattern of contraceptive prevalence remains unchanged in future, abortion will continue to play a significant role in further fertility decline in Kyrgyzstan.

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Appendix 1. *Age-specific Reproductive Rates in Kyrgyz Republic (KRDHS, 1997).*

Age group	PR	FR	IAR	AR
15-19	92.2	75.2	5.7	17.0
20-24	335.1	246.1	57.3	89.0
25-29	281.7	179.1	77.1	102.0
30-34	213.8	113.6	80.5	100.8
35-39	118.6	46.8	58.3	71.2
40-44	40.5	12.7	22.0	27.9
45-49	11.6	0.0	9.9	11.6
Total	**5.48**	**3.37**	**1.55**	**2.10**

Appendix 2. *Age-specific Reproductive Rates according to the type of place of Residence (KRDHS, 1997).*

	Pregnancy Rate		Fertility Rate		Induced Abortion Rate		Abortion Rate	
Age group	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
15-19	69.3	103.1	55.4	84.0	7.7	4.8	13.9	18.4
20-24	291.2	355.3	164.7	283.6	91.9	41.4	126.5	71.7
25-29	286.5	279.0	136.3	204.1	119.1	53.5	150.1	74.9
30-34	151.2	249.0	60.8	143.2	83.0	79.1	90.4	106.6
35-39	127.8	113.0	38.2	51.2	78.2	48.3	91.6	61.8
40-44	43.1	39.1	4.8	17.0	31.1	17.0	38.3	20.9
45-49	4.4	16.0	0.0	0.0	4.4	13.3	4.4	16.0
Total	**4.87**	**5.77**	**2.30**	**3.92**	**2.08**	**1.29**	**2.58**	**1.85**

Appendix 3. *Age specific Reproductive rates by Educational level (KRDHS, 1997).*

	Pregnancy Rate		Fertility Rate		Induced Abortion Rate		Abortion Rate	
Age group	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	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	0	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**

Appendix 4. *Proportion of women who have had an induced abortion and intention of Kyrgyz women to have an induced abortion for unwanted/unintended pregnancy in future by different background characteristics (KRDHS-1997).*

Background variable	Have experienced abortion		Would have abortion in future	
	Percent	N	Percent	N
Age Group				
less than 24 years	10.9	551	25.6	488
25-34 years	37.7	1016	33.8	869
35 and above	55.4	1108	60.9	949
Residence				
Urban	54.7	856	51.4	735
Rural	32.1	1819	39.4	1571
Region				
Bishkek	60.5	349	59.0	290
North	48.0	836	46.6	727
East	24.8	153	34.8	138
South	30.0	1338	38.2	1151
Ethnicity				
Kyrgyz	33.8	1632	38.9	1401
Russian	65.7	300	63.6	261
Uzbek	35.1	504	43.2	435
Other	52.5	240	46.9	211
Education				
Primary, secondary	31.1	1314	41.3	1147
Secondary-special, higher	47.2	1361	45.1	1159
Women's occupation				
Do not work	37.1	1114	38.9	989
Executives	44.6	572	49.9	493
Sales and services	58.4	493	50.8	421
Agriculture	31.3	496	37.7	403
Number of living children				
less than 3 children	33.6	1320	32.4	1169
3 and more children	44.9	1356	54.4	1137
Contact with FP worker				
No	39.3	1813	41.3	1546
Yes	39.2	862	47.2	760
Fertility preference				
Have another child	25.9	1083	18.9	990
Want no more	52.5	1206	70.7	1041
Attitude towards becoming pregnant				
Happy	27.9	501	5.6	480
Unhappy	47.2	1549	65.8	1341
Would not matter	32.9	207	9.1	187
Ideal number of children and living children				
Living children greater than ideal	53.3	837	71.9	707
2 and less children less than ideal	37.8	1168	33.9	1022
3 and more children less than ideal	17.3	445	15.3	405

Appendix 4. Contd.

Marital duration				
Up to 9 years	21.1	1126	26.6	988
10 years and above	52.5	1549	55.7	1318
Discussed FP with partner				
Never	38.2	840	38.8	716
Once or twice	41.4	1045	44.5	901
More often	37.5	790	46.2	689
Husbands education				
Primary, secondary	34.6	1276	40.7	1099
Secondary-special, higher	43.6	1399	45.6	1207
Partners occupation				
Do not work	39.1	161	41.5	130
Executives	50.1	371	51.4	325
Sales and services	44.0	1279	44.4	1136
Agriculture	27.7	863	38.0	723
Couples educational level				
Women's education is less than husband's	41.1	801	44.1	690
Women's education is greater than husband's	38.5	1871	42.9	1614
Husband think abortion is a problem				
No problem	58.5	595	57.4	526
Problem	39.2	1426	41.0	1241
Ever had an induced abortion				
No	NA	NA	28.4	1379
Yes	NA	NA	65.4	926
Ever loss child				
No loss	40.1	2128	43.0	1853
Loss	36.2	547	44.4	453
Ever had Miscarriage				
No	36.3	1979	41.8	1717
Yes	47.9	697	47.5	589
Current use of contraception				
Non user	27.5	1082	33.9	933
User	47.3	1592	49.6	1373
Intention to use FP Methods				
Will not use	37.6	364	40.1	314
Will use	22.4	714	30.6	615

Appendix 5. *Proportion of women, currently using contraception and intention to use family planning methods in future by background characteristics, Kyrgyzstan (KRDHS, 1997).*

Background variable	Currently using Method of FP		Future intention to use FP Methods	
	Percent	N	Percent	N
Age Group				
less than 24 years	45.5	552	93.0	298
25-34 years	64.0	1015	85.1	363
35 and above	62.4	1109	30.5	416
Residence				
Urban	65.8	856	59.8	291
Rural	56.6	1819	68.6	787
Region				
Bishkek	68.8	349	55.1	107
North	59.2	836	66.1	339
East	53.9	152	68.6	70
South	58.0	1337	68.0	562
Ethnicity				
Kyrgyz	55.8	1632	68.4	719
Russian	71.9	299	45.8	83
Uzbek	62.7	504	72.2	187
Other	63.2	239	55.2	87
Education				
Primary, secondary	58.2	1315	64.1	548
Secondary-special, higher	60.8	1361	68.5	530
Women's occupation				
Do not work	52.7	1114	70.0	524
Executives	64.0	573	66.3	205
Sales and services	64.9	493	58.7	172
Agriculture	64.5	496	61.9	176
Number of living children				
less than 3 children	52.5	1319	74.4	624
3 and more children	66.4	1356	55.1	454
Contact with FP worker				
No	56.1	1814	61.2	794
Yes	66.8	862	80.3	284
Fertility preference				
Have another child	52.9	1083	87.2	508
Want no more	69.7	1206	55.5	364
Attitude towards becoming pregnant				
Happy	50.1	501	75.8	248
Unhappy	74.1	1548	62.3	398
Would not matter	69.1	207	82.5	63
Ideal number of children and living children				
Living children greater than ideal	71.5	838	56.7	238
2 and less children less than ideal	61.3	1168	72.0	450
3 and more children less than ideal	33.0	445	69.4	297
Marital duration				
Up to 9 years	51.1	1126	88.8	547
10 years and above	65.7	1549	42.8	530

Appendix 5. Contd.

Discussed FP with partner				
Never	43.7	840	44.3	472
Once or twice	64.7	1045	81.4	365
More often	69.6	790	86.7	240
Husbands education				
Primary, secondary	56.5	1275	67.5	554
Secondary-special, higher	62.3	1399	64.9	524
Partners occupation				
Do not work	50.0	160	43.6	78
Executives	65.2	371	66.4	128
Sales and services	61.4	1278	64.6	491
Agriculture	56.0	863	63.1	379
Couples educational level				
Women's education is less than husband's	58.7	801	62.0	329
Women's education is greater than husband's	59.9	1871	68.0	748
Husband think abortion is a problem				
No problem	66.6	595	64.8	199
Problem	61.2	1425	70.1	552
Ever had an induced abortion				
No	51.7	1623	70.9	781
Yes	71.6	1051	53.9	297
Ever loss child				
No loss	59.9	2129	71.1	849
Loss	58.1	546	48.0	229
Ever had Miscarriage				
No	59.5	1979	69.2	798
Yes	59.6	969	57.9	280

Appendix 6. *Odds ratios of experiencing induced abortion and current use of FP method.*

Background variable	Regression 1. Experienced abortion		Regression 2. Current user of FP	
	β	Exp. B	B	Exp. B
Age Group (less than 24 years®)				
25-34 years	0.694*	2.001		
35 and above	1.278**	3.589		
Residence (Urban®)				
Rural	0.660***	0.517		
Region (Bishkek®)				
North	0.566*	1.761		
East	-0.791*	0.453		
South	-0.386	0.680		
Ethnicity (Kyrgyz®)				
Russian	0.284	1.328		
Uzbek	0.620**	1.859		
Other	0.464*	1.591		
Women's occupation (Do not work®)				
Executives	-0.109	0.896		
Sales and services	0.409*	1.506		
Agriculture and Unskilled	-0.271	0.763		
Number of living children (less than 3 children®)				
3 and more children	-0.575**	0.563		
Attitude towards becoming pregnant (Happy®)				
Unhappy	0.600**	1.823	1.144***	3.139
Would not matter	0.228	1.256	0.51*	1.666
Ideal & living number of children (Living children > than ideal®)				
2 and less children < than ideal			-0.063	0.939
3 and more children < than ideal			-0.580*	0.560
Marital duration (0 to 4 years®)				
5 to 9 years	1.014**	2.757	0.552*	1.736
10 to 14 years	1.866***	6.461	1.226***	3.409
15 years and above	2.232***	9.319	0.864*	2.374
Discussed FP with partner (Never®)				
Once or twice			0.806***	2.239
More often			1.147***	3.148
Partners occupation (Do not work®)				
Executives			0.582*	1.789
Sales and services			0.599*	1.821
Agriculture			0.577*	1.780
Husband think abortion is a problem (No problem®)				
Problem	-0.441**	0.643		
Ever had an induced abortion (No®)				
Yes			0.735***	2.085
Ever loss child (No loss®)				
Loss	-0.327*	0.721		
Current use of contraception (Non user®)				
User	0.787***	2.197		
Would go for abortion in future (No®)				
Yes			-0.490**	0.612

 * 5 % level of significance; ** 1 % level of significance, *** 0.1 % level of significance

Appendix 7. *Odds ratios of future intention to have induced abortion and use FP method.*

Background variable	Regression 3. Will go for abortion in future β	Regression 3. Exp. B	Regression 4. Intention to use FP Methods β	Regression 4. Exp. B
Age Group (less than 24 years®)				
25-34 years			-0.731	0.481
35 and above			-4.218***	0.015
Region (Bishkek®)				
North			1.837*	6.280
East			0.753	2.123
South			1.213	3.364
Ethnicity (Kyrgyz®)				
Russian	0.795*	2.214		
Uzbek	-0.058	0.943		
Other	0.001	1.001		
Education (Primary, secondary®)				
Secondary-special, higher	-0.509**	0.601		
Women's occupation (Do not work®)				
Executives	0.618**	1.855		
Sales and services	0.371	1.450		
Agriculture	-0.575*	0.563		
Fertility preference (Have another child®)				
Want no more	1.021***	2.776	-2.149*	0.117
Attitude towards becoming pregnant (Happy®)				
Unhappy	3.174***	23.900		
Would not matter	0.655	1.925		
Ideal & living nember of children (Living children > than ideal®)				
2 and less children < than ideal	-0.476*	0.621		
3 and more children < than ideal	-1.308***	0.270		
Discussed FP with partner (Never®)				
Once or twice	0.171	1.186	1.108**	3.029
More often	0.582*	1.790	1.300*	3.668
Partners occupation (Do not work®)				
Executives			1.528	4.607
Sales and services			1.752*	5.796
Agriculture			1.536*	4.646
Current use of contraception (Non user®)				
User	-0.489*	0.613		
Ever had an abortion (No®)				
Yes	1.164***	3.203		

* 5 % level of significance; ** 1 % level of significance, *** 0.1 % level of significance

Appendix 8a. *Level of proximate determinants and estimated and actual total fertility and fecundity rates (KRDHS 1997)*.

Background characteristic	Cc	Ca	Ci	Cf	Model TF	Model Fertility	Actual Fertility	Difference	Estimated TF
Residence									
Urban	0.44	0.68	0.78	0.70	15.30	2.49	2.30	-0.19	16.54
Rural	0.51	0.85	0.78	0.69	15.30	3.62	3.92	0.30	14.12
Education									
Primary and secondary	0.50	0.85	0.79	0.64	15.30	3.29	3.70	0.41	13.61
Secondary-special and higher	0.55	0.75	0.73	0.77	15.30	3.13	3.00	-0.13	15.97
Total	**0.50**	**0.81**	**0.77**	**0.70**	**15.30**	**3.32**	**3.37**	**0.05**	**15.55**

Appendix 8b. Percentage contribution of Selected Proximate Determinants in Fertility Regulation (KRDHS 1997).

Background characteristic	Contraception (Cc)	Abortion (Ca)	Post partum insusceptibility (Ci)	Infecundability (Cf)
Residence				
Urban	40.0	23.2	15.4	21.5
Rural	41.8	12.9	18.8	26.6
Education				
Primary and secondary	40.6	12.7	16.9	29.3
Secondary-special and higher	40.5	19.4	21.5	18.6
Total	**41.0**	**15.3**	**19.1**	**24.6**