# Contraceptive Discontinuation, Failure and Subsequent Abortions in Romania: 1994-1999

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**Abstract**

This study examines the levels and correlates of contraceptive failure and discontinuation in Romania, together with contraceptive failure consequences for induced abortion. Of special interest is the subset of women relying on withdrawal and the proportion of withdrawal failures resulting in abortion. We use data on women's contraceptive use and their monthly reproductive behaviors collected in a multi-year calendar in the 1999 Romanian Reproductive Health Survey (RRHS). Weibull regression models are estimated to analyze the determinants of all-method and withdrawal discontinuation and failure. Overall, 19 and 28 percent of women became pregnant during the first year of using a contraceptive method and withdrawal, respectively. Around 85 percent of all-method and withdrawal failures ended in abortion, accounting for 35.2 and 24.1 percent, respectively, of all abortions reported in the 1999 RRHS. Due to high rates of contraceptive failure, the practice of induced abortion remained widespread among Romanian women in this period.

**Introduction**

Modern contraception was prohibited in Romania for a long time. The introduction of contraceptives in 1990 was sponsored by governmental and nongovernmental organizations, both relying on financial and informational assistance from international sources. Today, family planning services are widely available in Romania, but suspicion lingers from years of propaganda against the use of contraceptives.

In the early 1990s, following liberalization of the abortion laws, Romania had the highest abortion rate in Europe. In the summer of 1990, the principal hospitals in Bucharest each reported 70-100 abortions daily and up to three abortions for the same woman during the course of one year. With improved access to safe abortion procedures, the maternal mortality ratio declined dramatically from 170 deaths per 100,000 live births in 1989 to 22 per 100,000 live births in 2002. Despite the large number of women who still request induced abortions, most women and gynecologists in Romania say that they would prefer to prevent unwanted pregnancies through the use of modern contraception. (Johnson et al. 1993)

Modern contraception is available from family planning service outlets, but women have to take the initiative. The 1999 Romanian Reproductive Health Survey (1999 RRHS) shows that almost 35 percent of women of reproductive age rely on traditional methods of contraception, 29 percent of them using withdrawal, a highly popular method in Mediterranean and Eastern European countries. More than 70 percent of women 15 to 44 years report ever using withdrawal and almost 10 percent identify withdrawal as the most effective method of contraception available. (1999 RRHS 2001) High prevalence of traditional contraception, especially withdrawal, and high rates of discontinuation and method failure has resulted in widespread use of induced abortion. Between 1993 and 1999, the RRHS documented a 35-percent decrease in the abortion rate. At the same time, the lifetime number of abortions per women also dropped from 3.4 to 2.2. (1999 RRHS 2001)

The current state of knowledge about the dynamics of contraceptive method discontinuation, failure and subsequent use of abortion in Romania is limited. This study examines the levels and correlates of contraceptive failure and discontinuation in Romania between 1994 and 1999, and the proportion of failures resulting in abortions. Of special interest is the subset of women relying on withdrawal and the proportion of withdrawal failures resulting in abortion.

**Background**

The impact of family planning practice depends not only on contraceptive prevalence but also on the method mix and duration and effectiveness of the contraception used. Furthermore, as the desired family size declines, as it has in Romania where fertility is below replacement level (TFR=1.3), the effectiveness of contraceptive practice becomes one of the most important determinants of fertility. (2004 RRHS 2005) Figure 1 shows the composition of contraceptive method use in Romania remains heavily concentrated on the practice of withdrawal.

Several studies of contraceptive adoption and discontinuation, as well as failure, have been carried out using calendar data available from the Demographic and Reproductive Health Survey programs. Moreno and Goldman analyzed the quality of DHS calendar data and noted that the information collected does not suffer from selection bias or attrition problems, and that this kind of measurement allows for in-depth analyses of users of modern and traditional methods of contraception and the socio-demographic determinants of contraceptive discontinuation and failure. (Moreno 1993; Moreno and Goldman 1991; Goldman et al. 1983) Redundant use of contraception occurs when periods of contraceptive use overlap with periods of reduced fecundity and will downwardly bias estimates of contraceptive failure rates. However, Curtis investigated this bias using calendar data from DHS data in nine countries and found that the impact of redundant use on failure rates is generally modest. (Curtis and Blanc 1997)

Most authors who have analyzed calendar data in order to determine contraceptive discontinuation and failure rates have restricted their analysis to 12 or 24 months of observation. A wide range of one-year

discontinuation rates have been reported in the literature. Ali and Cleland (1995) analyzed DHS calendar data from six developing countries and found that about one third of couples stopped using their method within one year of acceptance and about half of them within two years. Based on DHS calendar data from multiple countries, Curtis and Blanc (1997) found that within 24-months after adoption of a reversible method of contraception between 50 and 65 percent of users discontinue their contraceptive method, and contraceptive failure accounts for a significant proportion of their discontinuation. All these studies have limitations associated with retrospective data of contraceptive practice and pregnancy history.

Contraceptive discontinuation and failure has been shown to be dependent on the specific method used. (Ali and Cleland 1995, Ferguson 1992, Ping 1995) Individual socio-economic and demographic characteristics of women and couples have been studied and linked with the probability of contraceptive discontinuation or failure. Curtis and Blanc (1997) found an association between the place of residence and specific-method failure, and showed that this relationship varies by country. Users of young age are seen to have higher discontinuation rates caused by method failure (Moreno 1993; Steele et al. 1996), while parity, which is closely related to age in most countries, has been shown to be positively associated with longer duration of method-specific use (Riley et al. 1994). At the same time, women who already have a child have a lower likelihood of experiencing a failure with their methods as compared to nulliparous women. (Steele et al. 1996) Higher educational levels of both women and their partners, as well as higher socioeconomic status, were found to be good predictors of lower discontinuation rates in many retrospective studies.(Moreno 1993; Bhatt and Halli 1998). Moreno (1993) and Ali and Cleland (1995) identify motivation as an important determinant of contraception practice. Using DHS data from 15 countries, Moreno (1993) finds that women using contraception for birth spacing had higher failure rates than women who have achieved their desired family size.

**Data and Methods**

This analysis uses data from the 1999 RRHS related to women's current contraceptive status and their monthly reproductive behaviors collected for a multi-year calendar. We examine the effects of socio-

economic and demographic characteristics of the women under study on their contraceptive practice (discontinuation and failure), for all methods and then separately for withdrawal. Due to the high prevalence rate of withdrawal use in Romania, we are particularly interested in the subset of women practicing withdrawal, who discontinue for reason of contraceptive failure and their subsequent behavior of ending the pregnancy in abortion.

The 1999 RRHS was conducted by the Romanian Association of Public Health Management in collaboration with the National Commission of Statistics and the School of Public Health, Carol Davila University of Medicine and Pharmacy, with technical assistance in survey design, sampling, questionnaire development, training, data processing and report writing provided by the Division of Reproductive health (DRH) of the United States Centers for Disease Control and Prevention (CDC), and funding from USAID. The 1999 RRHS is the third nationwide reproductive health survey conducted in Romania. The sample for the 1993 nationally representative survey was confined to women of reproductive age, and the 1996 survey focused on youth and young adults aged 15 to 24 years, both men and women. The 1999 RRHS is the most complete reproductive health survey ever conducted in this country. It used a three-stage sampling design (census sectors, household clusters and household individuals), and data collection was carried out between July and October 1999. The survey includes nationally representative separate samples of 6,888 women aged 15 to 44 and 2,434 men aged 15 to 49.

The 1999 RRHS questionnaire obtained for each woman her history of pregnancies and births, including pregnancies ending in abortion and the planned status of the pregnancies, family planning knowledge, history of contraceptive use, reasons for specific method use, fecundity and fertility intentions The questionnaire included a calendar retrospectively obtaining from each female survey respondent her monthly report of reproductive events, contraceptive use and reasons for contraceptive discontinuation. This provides an event history and adequate sample power to identify the episodes of use by main contraceptive methods, the associated reason for discontinuation (e.g., pregnancy, desired pregnancy,

method switching, and health concerns) and pregnancy outcome (e.g. pregnancy, miscarriage, live birth, induced abortion).

Our analysis is confined to data for 64 months, excluding data from the three months preceding the survey in order to avoid underreporting of first trimester pregnancies at the time of the survey. The sample for contraceptive discontinuation/failure analysis is comprised of women who had at least one episode of contraceptive use during the study period, resulting in 8,127 episodes of use. An episode or segment of contraceptive use is defined as the duration (in months) of continuous use of a specific method for any reason from the date of starting to the date of stopping the method.

We base our analysis on three main outcomes: (1) discontinuation of contraceptive use; (2) contraceptive failure; and (3) abortion following contraceptive failure. Two categories of covariates were used: fixed (residence, region, education, socio-economic status), and time-varying (age, number of living children, motivation for use measured as desire to have more children, marital status, coital frequency, and prior experience of induced abortion). Due to missing information on some variables in the 1999 RRHS data, most of the covariates can not be measured dynamically.

Age categories are 5-year age groups from 15 to 44 years of age; education categories are primary, secondary incomplete, secondary complete and postsecondary, and parity is measured for 0, 1, 2 and 3+ births. We control for marital status (married, in union, previously and never married), and motivation for another child. Per our interest in failed contraceptive episodes which end in induced abortion, we control for the number of previous induced abortions (0, 1, 2, and 3+). We used a wealth index constructed by the survey sponsors based on a factor analysis of household amenities and goods, including living in uncrowded conditions and having electricity 24 hours per day. The wealth index is categorized as low, medium or high socio-economic status.

We have decided to control for coital frequency, even if the data on this particular variable was collected for the 30 days prior to interview. Our descriptive bivariate analysis indicates that more than 80 per cent of the women contributing contraceptive episodes are less than 35 years of age, 82 per cent of them are married or in union, and 38 per cent desire more children. Based on these findings and given that our interest is in contraceptive discontinuation and failure, controlling for coital frequency, even when measured only for the past 30 days, is a very relevant factors for all methods and for withdrawal separately. Furthermore, the results of our regression models are not significantly different whether or not coital frequency is included. The coital frequency categories are more than twice a week, once or twice a week, less than once a week, and none in the last 30 days.

We use monthly episodes as units of analysis for one-year contraceptive discontinuation and failure, tagged with women's socio-demographic characteristics. The Kaplan-Meier estimate of the survival function is used to estimate the proportion of women who discontinued or became accidentally pregnant while using a contraceptive method, as well as the cumulative discontinuation and failure rates at one, two and three years. Bivariate analysis was conducted to assess the relationships between individual characteristics and one-year contraceptive discontinuation and failure for all methods and for withdrawal.

Since episode data are essentially duration data, we fit Cox proportional hazard models to assess the relationships between independent variables and the hazard of one-year contraceptive discontinuation or failure for all methods and withdrawal, respectively. The model equation is given below:

$$h\{(t), (z_1, z_2, ..., z_k)\} = h_0(t)*\exp(b_1*z_1 + ... + b_m*z_k)$$

where $h(t,...)$ denotes the hazard, given the values of the $m$ covariates for the respective case ($z_1$, $z_2$, ..., $z_k$) and survival time ($t$). Here $h_0(t)$ is the baseline hazard. The model is linearized by dividing both sides of the equation by $h_0(t)$ and taking the natural logarithm:

$$\log[h\{(t), (z...)\}/h_0(t)] = b_1*z_1 + ... + b_m*z_m$$

The *b* coefficients for the *k* covariates are then calculated with maximum likelihood estimation methods.

We test the proportionality assumption (i.e., that the hazard ratio is proportional over time) in the models statistically using Schoenfeld weighted residuals for individual covariates and then globally. Several variables in our model violate the proportional hazard assumption. Since Cox regression estimates the baseline survivor function empirically without reference to any theoretical distribution, we have assumed that survival times follow a theoretical distribution and have chosen an alternative, parametric approach, the Weibull model. Weibull is a model with a proportional hazard ratio parameterization, based on the Weibull distribution, which reports hazard ratios. Contraceptive discontinuation risk is not constant overtime and most contraceptive discontinuation occurs immediately after adoption. Similarly, the risk of contraceptive failure drops off with longer durations of use. This parametric test does not require failure rates to remain constant but allows them to increase or decrease over time, and implies that ln (-ln (S(t))) is a linear function of ln(t). The Weibull hazard and survival functions are shown below.

$$\ln t_j = x_j \beta + z_j$$

$$h(t) = p \lambda t^{p-1}$$

$$S(t) = \exp(-\lambda t^{p}), \text{ where } \lambda = \exp(x_j \beta)$$

The shape of the Weibull distribution gives a hazard function which is either decreasing or increasing when the shape is significantly less or greater than one.

Since we are analyzing repeated failure data we use the *judet* number and the basic census district to adjust for survey clustering. All analyses and results shown are weighted using the survey-standardized sample weights, a product of four weights: household, one-respondent-per-household, non-response and the post-stratification weight. All analyses are performed and the models fitted by Stata 8.0 (Stata Corp, 2003).

**Findings**

Table 1 shows the 1999 RRHS sample characteristics for both the 6,888 women interviewed and the 8,127 episodes of contraceptive use included in the analysis. A majority 58.7 per cent of the women contributing contraceptive episodes in our sample live in urban areas, 12.3 per cent have completed only primary education, 69 percent have some or complete secondary education, while 18.8 per cent have post-secondary education. When distributions of socio-economic status are compared between the samples of women and contraceptive use episodes, we see that women of high socio-economic status (20.8 per cent) contribute 29.9 per cent of the episodes in our analysis, while women of low socio-economic status (34.6 per cent) contribute only 26.7 per cent of the episodes. The remaining 43.4 per cent of the women who report contraceptive episodes in 1999 RRHS have medium socio-economic status. Some 70.4 per cent of interviewed women are married or in union and contribute 82 per cent of all contraceptive episodes.

Although women contributing contraceptive episodes are younger than women in the entire sample, the parity distribution is similar for the two samples. More than a half (53.4 per cent) of episodes are contributed by women who do not desire more children and are therefore motivated to use contraception effectively, and more than 70 per cent of these episodes are from women who are exposed to sexual intercourse once or more times per week. At the same time, one-quarter of all women surveyed report an induced abortion in the five years before the study, while almost half of the episodes contributed come from women who report having had such a procedure in the same period of time. We may conclude that women who have experienced at least one induced abortion in the past five years are twice as likely to use contraception as those who have not had an induced abortion in that period of time.

Figure 1 shows the gross discontinuation and failure rates for all and main methods used in Romania. Among the 8127 episodes of use in the 64 months of observation, 53.4 per cent ended in discontinuation after the first year of use. More than half of pill use and 61 per cent of condom use ended at one year. The IUD had the lowest discontinuation rate at one year (less than 10 per cent) and reached nearly one quarter by three years. IUD discontinuation was found to be less common than for other methods, most

likely because cessation of use requires a deliberate effort to have the device removed. Traditional methods of contraception -- rhythm and withdrawal -- have high rates of contraceptive discontinuation: 58.2 per cent and 51.8 per cent at one year, 71.4 per cent and 70.3 per cent at two years and 76.3 per cent and 79.6 per cent at three years, respectively.

Overall, 19 per cent of all women became pregnant in the first year, 30 percent within two years and 36 percent within three years of adopting a contraceptive method. These figures are much lower than the 1993 RRHS failure rates (1993 RRHS 1995). The 12-month failure rate estimate is broadly in line with the percentage probability of failure reported for typical use, based on US data. (Trussell 2004) However, the one-year failure rates for pills and condoms are lower than these rates, showing that couples in Romania using these methods tend to practice them correctly. On the other hand, it appears that women relying on rhythm for contraception are less knowledgeable about their method and have more failures after one year of use than expected. The 27.7 per cent failure rate for withdrawal closely matches the failure rate estimated in the literature (27.0 per cent). (Trussell 2004)

Socio-demographic differentials in the one-year contraceptive discontinuation and failure rates for all methods and for withdrawal are shown in Table 2. Rural residence is associated with slightly higher discontinuation and failure than urban residence, the difference being significantly higher for one-year failure rate when all methods are considered (23 per cent in rural versus 17 per cent in urban areas). However, the difference does not seem to be due to the use of withdrawal, which is discontinued by 52 per cent of rural and urban couples and fails equally for 28 per cent of rural or urban couples. Romanians living in Transylvania seem to discontinue their method, including withdrawal, less frequently and have three times lower rates of method failure than those living in the other regions of the country. This might be explained by their better economic situation, as well as by the geographic position of Transylvania on the border with Hungary, where women were likely to have access to Hungarian contraceptives even during the Communist regime.

The older the woman's age, the less likely she will discontinue her contraceptive method, and the results are statistically significant. Also, women aged 25 to 29 at the time of the interview have the highest one-year all-method and withdrawal-specific failure rates. Women in older age-groups have lower one-year failure rates for all methods and withdrawal. While education and socio-economic status do not appear to play important roles in one-year method discontinuation, they do for failure. The higher the level of education or economic wealth, the less likely the woman is to experience contraceptive failure. These findings are statistically significant for withdrawal failures, where the rates are 4-8 percentage points higher at each education level than for all methods.

Previously and never married women discontinue their method, including withdrawal, at significantly higher rates; however, they are less likely to become accidentally pregnant while using a contraceptive method than married or in-union women. Women with no children have the highest one-year discontinuation rates, which decline moderately with the number of children. On the other hand, one-year failure rates significantly increase with the number of children a woman has. Women who do not desire more children are significantly less likely to discontinue their use of a method but have significantly higher one-year failure rates than women who want more children: 21.7 percent of users of all-methods and 31 percent of withdrawal users, compared to 14.9 percent of users of all-methods and 21.7 percent of withdrawal users, who do want more children.

Coital frequency significantly influences the likelihood of all-method and withdrawal discontinuation and failure. Women who were not exposed to sexual intercourse in the past 30 days before the survey have the highest discontinuation rates; however, the higher a woman's reported coital frequency, the higher her one-year failure rate for all-methods, especially withdrawal. Women who report a high number of abortions in the 5 years before the survey have significantly higher one-year discontinuation and failure rates. In the same time, 51.6 and 5 percent of women with no reported induced abortions discontinue and experience a failure with their method at one year, respectively, whereas 47.1 and 7.9 percent of those using withdrawal discontinue and get pregnant at one year, respectively. Women who report only one

abortion during the study period have the lowest one-year discontinuation rate for all methods and for withdrawal.

Tables 3A and 3B provide the results of the hazard Weibull regression models. Table 3A presents the results for all-method and withdrawal one-year contraceptive discontinuation, while Table 3B focuses on one-year contraceptive failure for all-methods and withdrawal. The model fitting one-year contraceptive failures does not include parity as a covariate, as we observe parity to strongly confound the effects of age.

After controlling for all covariates, rural women are 6 per cent more likely than urban women to discontinue their contraceptive method at one year of use when all methods are considered but are not significantly different than their urban counterparts to discontinue withdrawal. However, they do differ in terms of one-year contraceptive failure rates -- rural women are 5 per cent and 12 per cent less likely to get pregnant while using a contraceptive method and withdrawal, respectively. Couples living in the poorest region of Romania (Moldova) have a 19 per cent higher withdrawal discontinuation rate and 48 per cent higher rate of withdrawal failure after one year, compared to those living in Bucharest. For the most part, socio-economic status is not significantly associated with discontinuation at one year although it is negatively related to contraceptive failure. Age reduces the likelihood of contraceptive discontinuation as does parity. However, for withdrawal, higher parity increases the likelihood of discontinuation.

As compared to married women, those in union have a lower hazard of discontinuing their contraception after one year, and interestingly, even lower if the method relied upon is withdrawal. Previously married women are 10 per cent more likely than married women to discontinue their method and 24 per cent more likely to discontinue the use of withdrawal. The differences, however, are not statistically significant. In terms of contraceptive failure, only never married women are significantly less likely (by 67-68 per cent)

than married women to become accidentally pregnant for all or withdrawal methods. These patterns may be explained by previously and never married women's low exposure to sexual intercourse.

Coital frequency appears to be an important predictor of contraceptive discontinuation but less so of failure in Romania. Women who have sexual intercourse one or two times a week are 13 and 18 percent less likely to discontinue all methods and withdrawal at one year of use when compared with those having intercourse more frequently, and the results are statistically significant. On the other hand, women who do not report having had sexual intercourse in the 30 days before the survey are significantly more likely to discontinue using all-methods (27 per cent) and withdrawal (35 per cent) at one year. Also, not surprisingly, couples with increased exposure to sexual activity are more likely to experience failure although not at statistically significant levels.

Compared to women who do not report having an induced abortion in the 5-year period before the interview, those who report having two abortions are 19 and 32 percent more likely to discontinue all-methods and withdrawal after one-year, respectively; those reporting three or more abortions are 1.95 and 2.43 times more likely to discontinue using all methods and withdrawal, respectively. Contraceptive failure is significantly influenced by the number of previous induced abortions. Compared to women reporting no procedures, those who have induced abortion(s) are significantly more likely to experience a failure with their contraceptive method. Furthermore, the hazard of contraceptive failure increases with the number of abortions but, interestingly, is overall lower for withdrawal users.

The Weibull slopes are positive in three of the four models of discontinuation and failure. This reflects an increasing hazard for discontinuing withdrawal (0.072), failing with all methods (0.254) or failing with withdrawal (0.278). Only the discontinuation model for all methods shows a decreasing hazard with a negative Weibull slope (-0.038).

We examine reproductive behaviors subsequent to contraceptive failures (Table 4). The high rates of failure following traditional contraceptive method use, especially withdrawal, contribute to the large number of reported abortions. The study found that 85 per cent of all-method failures and 86 per cent of withdrawal failures in one year end in induced abortion, accounting for 35 and 24 per cent, respectively, of all abortions reported in the five years preceding the RRHS. Looking across methods, it would appear that failure leading to abortion is highest among pill users. However, although 91.4 per cent of pill, 83.3 percent of IUD and 80.5 per cent of condom failures end in induced abortion, nearly as many failures from rhythm and withdrawal use do so as well. The principal finding is that failed contraception of any type frequently ended with induced abortion among contracepting women in Romania in this period. Of the abortions accounted for by failure in one year, the overwhelming majority were sought by women using rhythm or withdrawal methods. Over the five years, failure with the pill, IUD and condom accounted for only 11 per cent of all abortions reported to be failure-related.

The 769 induced abortions reported in Table 4 after one year of failure with the rhythm or withdrawal method were obtained by 449 women. As seen in Table 5, these women are nearly evenly from urban and rural areas, almost 60 per cent have only primary or incomplete secondary schooling, and four fifths are in the low or middle socioeconomic levels. In terms of their demographic characteristics, 81 per cent are currently married, 76 per cent have 1 or 2 children, and their ages are normally distributed. With regard to sexual and reproductive health, 64 per cent want no more children, 59 per cent report sex at least weekly, and 29 and 40 per cent have had 2 or 3 plus abortions, respectively. In the period covered by this particular RRHS, the unmet need for modern contraception was especially great.

**Study limitations**

The current study has several limitations. First, measures taken at the time of the interview may not accurately reflect conditions prevailing for women at the time of early episodes of contraceptive use. Due to data missing on women's ages at the start of episodes begun before the observation period, we are not able to reconstruct age as a time-varying variable. Similarly a variable as fertility motivation measured

only once must be treated as a time-invariant predictor. As noted earlier, coital frequency reported for the 30 days prior to data collection was assumed to remain constant over the period. Results from a bivariate analysis showing similar coital frequencies for consecutive 5-year age groups bolster this assumption.

Second, the calendar data relies to a large extent on the ability of women to remember reproductive events accurately. Although the study is limited to events that happened within 64 months of survey interview, the data are not immune to quality problems. Inaccurate recall of short durations of contraceptive use or underreporting of contraceptive failures and abortions may result in underestimates of discontinuation and failure rates, misreporting of contraceptive failures or reason for discontinuation. Women have the tendency to forget short durations of contraceptive use which can underestimate discontinuation (Curtis and Blanc 1997). Moreover, underreporting, omissions, and misclassification of unintended pregnancies may bias failure rates downward. However, no episode duration heaping was observed; and as a result, the contraceptive history data was judged to be of good quality.

Third, we can not establish the external consistency of calendar data with data from another credible source, since there were no other nationally representative studies on reproductive health behaviors conducted in Romania at this time. Fourth, the 1999 RRHS measures do not capture attitudes and motivations that may be key to behavioral decisions of interest (e.g., attitude towards abortion or perceived contraceptive side effects) and our study is thus unable to examine the role of psychosocial factors.

**Discussion**

The first objective of this study was to identify correlates of contraceptive discontinuation and failure in Romania. In the presence of proximate influences from coital frequency, prior abortions and marital status, distal factors such as woman's place of residence, education, socioeconomic status or desire for more children do not show statistically significant influences on contraceptive discontinuation. Age, parity, coital frequency and previous history of abortions do figure significantly and robustly as

influences. Contraceptive failure likewise is significantly influenced by postsecondary education, high socioeconomic status, age, being single, and prior abortion history. Many of these are also found to be correlates of failure among women practicing withdrawal. In addition, women living in the economically depressed region of Moldova are 48 per cent more likely to experience failure with withdrawal than those in the capital.

We have restricted the analysis of contraceptive discontinuation/failure covariates to all-methods and withdrawal, as the latter is the most widely used method of contraception in this period in Romania. A study of first-method discontinuation and failure may provide higher rates because women are more likely to switch between methods (Bhatia et al. 1980). Also investigating correlates and timing of first-method discontinuation and failure will inform family planning program needs for adolescents and young couples. Our examination of all-method discontinuation and failure is motivated by their broad programmatic implications for service delivery. While low discontinuation rates do not necessarily imply satisfaction with the method or family planning services received, high rates can connote problems with the chosen family planning method, counseling or services.

The use of withdrawal as a contraceptive has been associated with much of the failure observed in this study. *Coitus interruptus* is widely used in many countries, such as Turkey, the Czech Republic, Brazil, Mauritius, Pakistan, and Sri Lanka, as well as in Romania (Finger 1996). As a male-controlled contraceptive method, it has received limited research attention, although programmatically men could be encouraged to take greater responsibility for the consequences of their sexual actions. Kulczycki's study in Turkey (2004) suggests that less egalitarian-minded husbands elect withdrawal over other contraceptive methods but that cultural norms and wives' preferences likely play a significant role in method choice. Wives' concerns about contraceptive side effects, fears of infertility and limited access to modern contraceptives are frequently cited reasons for contraceptive discontinuation (Curtis and Blanc 1997) and may also figure in the preferences of the Romanian couples in the present study.

This study is also interested in the relationship between prior induced abortion experience and subsequent contraceptive behaviors. Some women may learn to prevent the need to obtain an abortion with more efficacious contraceptive practice. Other women may obtain abortions repeatedly if relying on less effective methods. Our analysis provides strong statistically significant evidence that women who rely abortion as means to regulate their fertility are more likely to discontinue and experience failure with the method they use, whether female or male-oriented, modern or traditional. It also finds that unintended pregnancies, as a result of contraceptive failure, are related to induced abortion practice. A large majority of failures, irrespective of the method, end in induced abortion, largely due to the original contracepting intentions of the women. In sum, we observe almost 50 per cent of all contraceptive episodes in the calendar data are discontinued after one-year, 14 per cent of them resulted in accidental pregnancies, and 85 per cent of the failures ended in induced abortion.

Underreporting of induced abortions in the calendar data may be a source of bias for the present study. Trussell and Vaughan (1999) consider that while induced abortions and contraceptive failures ending in induced abortions are underreported, contraceptive failures leading to reported conceptions are probably overreported, and these two bias sources operate in opposite directions and thus cancel each other. However, the effect of underreporting of induced abortion and contraceptive failures ending in induced abortion on the estimates of contraceptive discontinuation is not clear and should be further studied. Trussell and Vaughan (1999) believe that if an abortion prompts a change of method that is reported, there will be no effect on discontinuation, while an abortion occurring during an interval of reported continuous contraceptive use of the same method underestimates discontinuation.

The cultural context for abortion in Romania is such that many women and men view the practice as an acceptable method of birth control. The 1999 RRHS data show that 77.3 per cent of all female respondents think that women have the right to decide their pregnancy outcomes, including whether or not to have an abortion, and 53.5 per cent think that in the case of an unwanted pregnancy, a woman should have an abortion. The majority of women accept abortion in cases of fetal malformation or when

the life of the mother is endangered by the respective pregnancy. At the same time, 23.6 per cent and 29 per cent of women believe a woman has the right to have an abortion if she is unmarried or for economic reasons, respectively. (1999 RRHS 2001) Although options for effective contraception and use of modern methods are increasing in Romania, abortion may remain a method of fertility regulation with normative support in the near term. Post-abortion contraception may be an important reproductive health service strategy for health system planners and those managing public sector maternity and family planning services in the country to consider.

Findings from the 2004 RRHS, nonetheless, show induced abortion practice to be decreasing. The total abortion rate (TAR) reportedly declined from 2.2 as reported in the 1999 RRHS to 0.84 in the 2004 RRHS. Official statistics on abortion for this latter period, however, put the TAR higher and analysts estimate the actual rate to be approximately 1.2. It is further suspected that official records may still underestimate actual number of abortions. (2004 RRHS, 2005) Unfortunately, the monthly calendar instrument was not included in the 2004 RRHS.

Not all induced abortions are the result of contraceptive failure. More than 2700 induced abortions were reported over the five-year period under analysis here. Many unintended pregnancies are the result of not using contraception. Cleland and Ali (2004) find that the contribution of contraceptive failure to unintended births and fetal loss in developing countries is much less than the 50 per cent estimated for the United States. Non-use of contraception thus remains a predominant direct cause of unintended births. They encourage promoting family planning as a public health priority.

Modern contraceptive options to Romanian women and men have been limited until more recently and research regarding knowledge and informed choice has been equally limited. One study in 1993 examined factors behind the disparity between women's desire to use modern contraception and practice of abortions to prevent unwanted pregnancies. (Johnson et al. 1993) Structured interviews with 1000 women sampled from five hospitals in three culturally different regions of Romania showed that women

(and by implication, men) need a wider choice of regularly accessible, high-quality contraceptives and the ability to obtain information, counseling, and methods from a wide range of sources. There is ample evidence that sustained access to and provision of contraceptive services reduces reliance on induced abortion (Marston and Cleland 2003). Bongaarts and Westoff (2000) have estimated that in a population where half of unwanted pregnancies end in abortion, as is the current situation in the U.S., a 10 percentage-point rise in the prevalence of effective contraception can avert an average of 0.45 abortions per woman. Westoff (2005) studied the potential combined effect on the abortion rate if all women shift from unmet need category and use of traditional methods to the use of modern methods in 12 countries of Central Asia and Eastern Europe, including Romania. He estimated a 38 percentage-point reduction in abortion rates if all traditional method use shifted to modern methods, and an additional 21 percentage-point reduction if all unmet need was fulfilled by modern method use.

**Conclusion**

The history of fertility regulation in Romania has been complicated by politically driven regulations influencing access to and quality of contraception and abortion services and limited sexual and reproductive health education and information. Despite a significant increase in modern contraceptive practice over the last 15 years, many women continue to view induced abortion as an acceptable method of birth control and seek the procedure. By analyzing the levels and correlates of women's contraceptive discontinuation and failure and subsequent abortion behaviors, important correlates have been identified and can be used by program decision-makers to modify the present delivery of contraceptive services.

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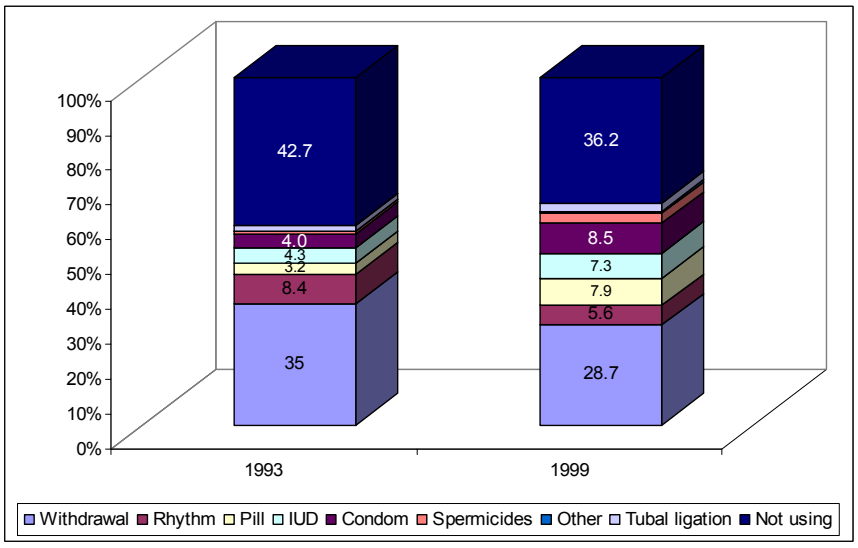
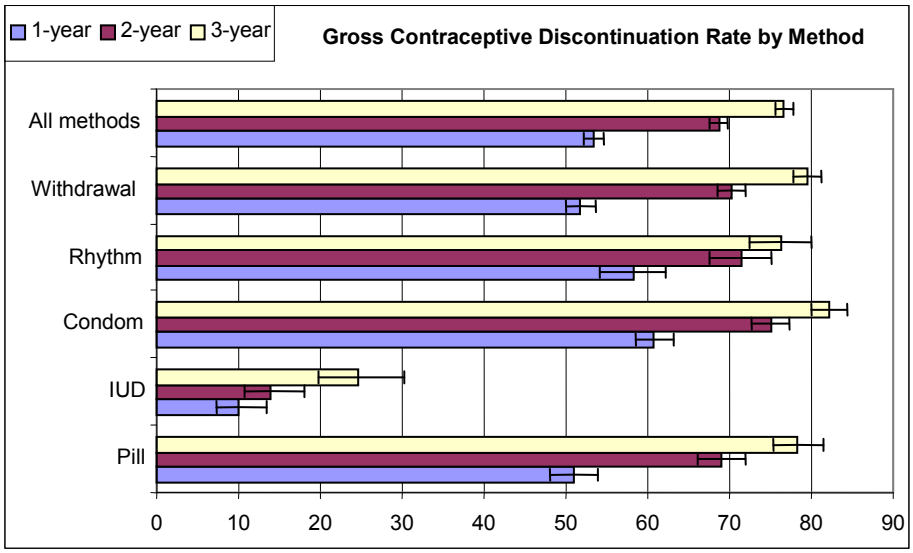
Figure 1. Contraceptive prevalence by methods among married or in union Romanian women in 1993 and 1999




***Source:*** CDC, RRHS1993, 1999 Final Reports

Figure 2. Gross one-, two-, and three-year contraceptive discontinuation and failure rates for all and specific methods and 95 percent confidence intervals



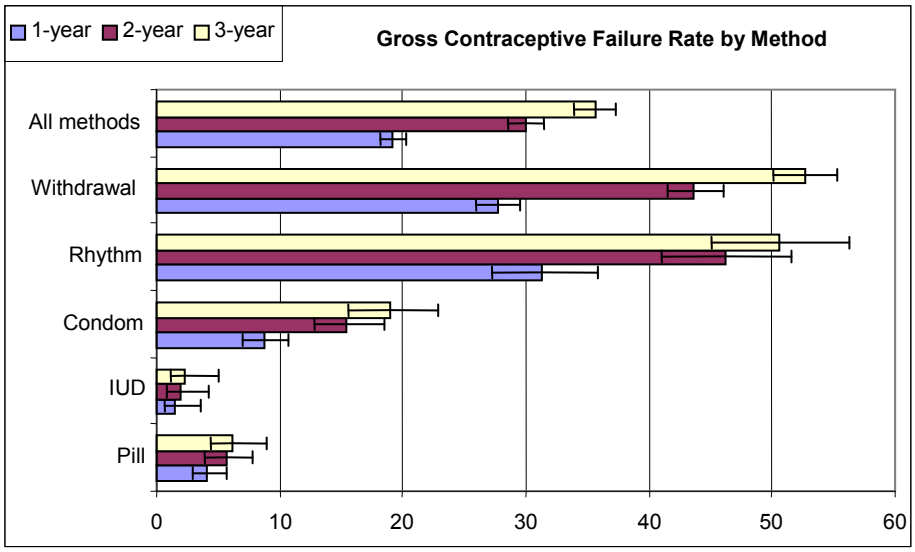



Table 1. Sample characteristics for women and contraceptive use episodes over 64 months: 1999 Romania Reproductive Health Survey

| Individual characteristics | % Women N=6,888 | % Episodes of use N=8,127 |
|---|---|---|
| *Residence* | | |
| Urban | 56.8 | 58.7 |
| Rural | 43.2 | 41.3 |
| *Region* | | |
| Bucharest | 7.8 | 9.5 |
| Vallahia | 36.8 | 38.5 |
| Transylvania | 33.8 | 30.2 |
| Moldova | 21.6 | 21.8 |
| *Education* | | |
| Primary | 17.6 | 12.3 |
| Secondary incomplete | 36.6 | 33.6 |
| Secondary complete | 30.3 | 35.4 |
| Postsecondary | 15.5 | 18.8 |
| *Socio-economic status* | | |
| Low | 34.6 | 26.7 |
| Medium | 44.7 | 43.4 |
| High | 20.8 | 29.9 |
| *Age* | | |
| 15-19 years | 13.4 | 5.0 |
| 20-24 years | 18.0 | 25.2 |
| 25-29 years | 19.0 | 29.5 |
| 30-34 years | 19.9 | 22.9 |
| 35-39 years | 13.9 | 11.1 |
| 40-45 years | 15.9 | 6.3 |
| *Marital status* | | |
| Married | 64.0 | 74.5 |
| In union | 6.4 | 7.4 |
| Previously married | 6.9 | 5.2 |
| Never married | 22.7 | 12.9 |
| *Number living children* | | |
| None | 33.8 | 24.2 |
| 1 | 28.0 | 36.7 |
| 2 | 26.8 | 29.5 |
| 3+ | 11.4 | 9.6 |
| *Desire more children* | | |
| Yes | 40.6 | 38.4 |
| No | 45.0 | 53.4 |
| Don't know / Infertile | 14.4 | 8.2 |
| *Sex frequency last 30 days* | | |
| > 2 times/wk | 17.7 | 26.9 |
| 1-2 times/wk | 37.5 | 43.8 |
| < weekly | 13.4 | 13.7 |
| never | 31.4 | 15.6 |
| *Previous induced abortion(s)* | | |
| None/Unreported | 75.3 | 50.7 |
| 1 | 14.4 | 22.4 |
| 2 | 5.8 | 12.7 |
| 3+ | 4.5 | 14.2 |

Table 2. One-year contraceptive discontinuation and failure rates for all methods and withdrawal, by socio-demographic characteristics of female users: 1999 Romania Reproductive Health Survey

| Individual characteristics | All methods (n=8127) | | Withdrawal method (n=3530) | |
|---|---|---|---|---|
| | One-year discontinuation rate (95%CI) | One-year failure rate (95%CI) | One-year discontinuation rate (95%CI) | One-year failure rate (95%CI) |
| *Residence* | | | | |
| Urban | 53.1 (51.7,54.5) | **17.1** (15.9,18.4) | 51.7 (49.3,54.1) | 27.3 (24.9,29.8) |
| Rural | 54.0 (52.0,55.9) | **23.0** (21.1,25.0) | 52.0 (49.4,54.6) | 28.2 (25.6,31.0) |
| *Region* | | | | |
| Bucharest | **56.6** (53.6,59.6) | **24.2** (21.2,27.6) | 53.8 (48.0,59.8) | **35.6** (29.7,42.2) |
| Vallahia | **55.4** (53.5,57.3) | **24.2** (22.3,26.2) | 54.9 (52.0,57.9) | **35.5** (32.5,38.8) |
| Transylvania | **49.4** (47.5,51.5) | **9.94** (8.6,11.5) | 47.3 (44.3,50.3) | **13.5** (11.2,16.1) |
| Moldova | **54.1** (51.4,56.8) | **21.2** (18.6,24.0) | 53.0 (49.1,57.1) | **31.3** (27.3,35.7) |
| *Education* | | | | |
| Primary | 55.2 (51.9,58.6) | **26.0** (22.7,29.7) | 51.8 (47.8,56.0) | **30.2** (26.2,34.7) |
| Secondary incomplete | 53.4 (51.4,55.5) | **23.5** (21.6,25.7) | 53.4 (50.6,56.2) | **29.9** (27.1,32.9) |
| Secondary complete | 52.9 (51.0,54.8) | **17.4** (15.7,19.3) | 50.3 (47.1,53.5) | **25.8** (22.7,29.2) |
| Postsecondary | 53.3 (50.9,55.8) | **11.1** (9.4,13.1) | 49.9 (44.4,55.8) | **18.2** (13.6,23.9) |
| *Socio-economic status* | | | | |
| Low | 55.8 (53.4,58.2) | **28.4** (25.9,31.0) | 52.9 (49.9,56.0) | **33.4** (30.3,36.6) |
| Medium | 51.8 (50.1,53.6) | **18.1** (16.6,19.8) | 51.6 (49.0,54.3) | **26.6** (24.1,29.4) |
| High | 53.9 (51.9,55.8) | **14.1** (12.5,15.8) | 50.1 (46.2,54.2) | **19.1** (15.7,23.1) |
| *Age* | | | | |
| 15-19 years | **68.0** (63.2,72.7) | **15.0** (10.6,21.0) | **69.6** (62.5,76.4) | **21.4** (14.4,31.2) |
| 20-24 years | **60.0** (57.8,62.1) | **17.7** (15.7,19.9) | **56.4** (53.2,59.7) | **25.5** (22.3,29.1) |
| 25-29 years | **55.2** (53.1,57.3) | **24.0** (21.9,26.2) | **52.3** (49.1,55.6) | **32.1** (28.9,35.7) |
| 30-34 years | **47.0** (44.5,49.6) | **18.2** (16.0,20.6) | **47.7** (43.6,52.0) | **28.4** (24.4,32.8) |
| 35-39 years | **44.4** (41.2,47.8) | **16.1** (13.5,19.2) | **41.8** (36.6,47.5) | **25.9** (21.1,31.6) |
| 40-44 years | **42.4** (38.3,46.8) | **13.1** (10.0,17.0) | **41.8** (35.6,48.5) | **20.1** (14.8,27.0) |
| *Marital status* | | | | |
| Married | **50.7** (49.3,52.0) | **20.8** (19.6,22.1) | **50.0** (27.9,52.1) | **29.6** (27.5,31.8) |
| In union | **57.4** (53.4,61.6) | **30.6** (26.3,35.4) | **50.4** (44.8,56.3) | **34.3** (28.8,40.6) |
| Previously married | **60.5** (55.7,35.3) | **17.6** (13.4,22.9) | **62.7** (55.3,70.0) | **25.8** (18.7,35.0) |
| Never married | **60.9** (58.1,63.7) | **4.3** (3.1,6.1) | **58.9** (54.0,63.8) | **6.3** (3.8,10.3 ) |
| *Number living children* | | | | |
| None | **60.4** (58.2,62.5) | **9.0** (7.5,10.7) | **57.7** (54.0,61.5) | **11.8** (9.1,15.2) |
| 1 | **53.6** (51.7,55.5) | **20.7** (19.0,22.6) | **50.6** (47.6,53.6) | **29.1** (26.2,32.3) |
| 2 | **47.5** (45.4,49.8) | **22.6** (20.6,24.8) | **49.7** (46.5,52.9) | **31.2** (28.0,34.6) |
| 3+ | **48.2** (44.4,52.3) | **27.8** (24.0,32.0) | **50.2** (45.2,55.4) | **36.2** (31.1,41.9) |
| *Desire more children* | | | | |
| Yes | **59.0** (57.3,60.8) | **14.9** (13.4,16.6) | **56.9** (54.0,59.8) | **21.6** (18.8,24.7) |
| No | **49.0** (47.4,50.6) | **21.7** (20.2,23.2) | **48.1** (45.7,50.5) | **31.0** (28.6,33.5) |
| Don't know / Infertile | **53.2** (49.1,57.4) | **21.2** (17.4,25.6) | **55.0** (48.6,61.5) | **27.5** (21.4,35.0) |
| *Sex frequency last 30 days* | | | | |
| > 2 times/week | **55.1** (52.9,57.4) | **21.4** (19.3,23.6) | **54.1** (50.6,57.7) | **30.9** (27.3,34.7) |
| 1-2 times/week | **49.0** (47.2,50.7) | **19.3** (17.7,20.9) | **47.1** (44.4,49.8) | **27.3** (24.7,30.1) |
| < 1 time/week | **51.3** (48.2,54.4) | **17.6** (15.0,20.6) | **46.1** (41.4,51.0) | **25.2** (20.8,30.3) |
| None | **63.5** (60.9,66.2) | **16.3** (13.8,19.2) | **64.1** (60.2,68.0) | **25.8** (21.5,30.7) |
| *Number of induced abortions* | | | | |
| None/Unreported | **51.6** (50.0,53.2) | **5.0** (4.2,6.0) | **47.1** (44.6,49.8) | **7.9** (6.4,9.8) |
| 1 | **44.9** (42.6,47.4) | **16.7** (14.8,18.8) | **42.1** (38.5,46.0) | **21.3** (18.1,25.0) |
| 2 | **54.6** (51.4,57.9) | **29.4** (26.1,33.0) | **51.4** (46.7,56.2) | **35.8** (31.1,41.0) |
| 3+ | **73.6** (70.8,76.3) | **59.4** (55.8,63.1) | **73.6** (69.9,77.2) | **66.5** (62.2,70.7) |

*Note:* Figures in bold are statistically significant at the $p < 0.05$ level or better based on the Wilcoxon test.

Table 3A. Results from Weibull regression of one-year contraceptive discontinuation rates for all methods and withdrawal, by selected individual characteristics

| Covariates | All-method one-year discontinuation | | Withdrawal-method one-year discontinuation | |
|---|---|---|---|---|
| | Hazard Ratio | (95% CI) | Hazard Ratio | (95% CI) |
| *Residence* | | | | |
| Urban | 1.00 | | 1.00 | |
| Rural | 1.06 | (0.92,1.22) | 0.99 | (0.80,1.23) |
| *Region* | | | | |
| Bucharest | 1.00 | | 1.00 | |
| Vallahia | 0.95 | (0.82,1.11) | 1.04 | (0.80,1.35) |
| Transylvania | 0.90 | (0.76,1.08) | 1.08 | (0.78,1.51) |
| Moldova | 1.02 | (0.85,1.22) | 1.19 | (0.89,1.59) |
| *Education* | | | | |
| Primary | 1.00 | | 1.00 | |
| Secondary incomplete | 1.06 | (0.91,1.24) | 1.14 | (0.95,1.38) |
| Secondary complete | 1.07 | (0.91,1.26) | 1.12 | (0.89,1.40) |
| Postsecondary | 1.09 | (0.87,1.35) | 1.12 | (0.82,1.53) |
| *Socio-economic status* | | | | |
| Low | 1.00 | | 1.00 | |
| Medium | 0.98 | (0.86,1.12) | 1.11 | (0.94,1.31) |
| High | 1.09 | (0.92,1.30) | 1.21 | (0.93,1.56) |
| *Age* | | | | |
| 15-19 years | 1.00 | | 1.00 | |
| 20-24 years | **0.76** | (0.63,0.91) | **0.64** | (0.49,0.85) |
| 25-29 years | **0.60** | (0.49,0.74) | **0.45** | (0.32,0.63) |
| 30-34 years | **0.50** | (0.40,0.63) | **0.38** | (0.26,0.55) |
| 35-39 years | **0.51** | (0.38,0.70) | **0.33** | (0.22,0.51) |
| 40-44 years | **0.50** | (0.34,0.74) | **0.35** | (0.19,1.65) |
| *Marital status* | | | | |
| Married | 1.00 | | 1.00 | |
| In union | 0.98 | (0.84,1.14) | 0.84 | (0.67,1.05) |
| Previously married | 1.10 | (0.91,1.34) | 1.24 | (0.90,1.70) |
| Never married | 0.96 | (0.81,1.15) | 1.05 | (0.80,1.40) |
| *Number living children* | | | | |
| None | 1.00 | | 1.00 | |
| 1 | 0.93 | (0.79,1.09) | 1.04 | (0.81,1.33) |
| 2 | **0.81** | (0.65,1.01) | 1.21 | (0.88,1.66) |
| 3+ | 0.89 | (0.66,1.20) | 1.44 | (0.94,2.20) |
| *Desire more children* | | | | |
| Yes | 1.00 | | 1.00 | |
| No | 0.96 | (0.84,1.10) | 0.83 | (0.69,1.02) |
| Don't know/Infertile | 0.96 | (0.81,1.13) | 1.07 | (0.84,1.37) |
| *Sex frequency last 30 days* | | | | |
| 2 times/week | 1.00 | | 1.00 | |
| 1-2 times/week | **0.87** | (0.78,0.98) | **0.82** | (0.70,0.97) |
| < 1 time/week | 0.92 | (0.77,1.09) | 0.80 | (0.62,1.03) |
| None | **1.27** | (1.07,1.52) | **1.35** | (1.07,1.71) |
| *Number of abortions:* | | | | |
| None/Unreported | 1.00 | | 1.00 | |
| 1 | 0.92 | (0.80,1.06) | 0.97 | (0.79,1.19) |
| 2 | **1.19** | (1.01,1.40) | **1.32** | (1.04,1.67) |
| 3+ | **1.95** | (1.70,2.25) | **2.43** | (1.98,2.98) |
| Weibull slope coefficient (ln p) | **-0.038** | | **0.072** | |
| Wald chi square (df=28) | **394.11** | | **279.62** | |

***Note:*** Figures in bold are statistically significant at the p< 0.05 level or better.

Table 3B. Results from Weibull regression of one-year contraceptive failure rates for all methods and withdrawal, by selected individual characteristics

| Covariates | All-method one-year failure rate | | Withdrawal-method one-year failure rate | |
|---|---|---|---|---|
| | Hazard Ratio (95% CI) | | Hazard Ratio (95% CI ) | |
| *Residence* | | | | |
| Urban | 1.00 | | 1.00 | |
| Rural | 0.95 | (0.78,1.15) | 0.88 | (0.69,1.12) |
| *Region* | | | | |
| Bucharest | 1.00 | | 1.00 | |
| Vallahia | 0.98 | (0.78,1.23) | 1.09 | (0.79,1.50) |
| Transylvania | 0.82 | (0.63,1.08) | 0.85 | (0.60,1.22) |
| Moldova | 1.22 | (0.95,1.58) | **1.48** | (1.06,2.07) |
| *Education* | | | | |
| Primary | 1.00 | | 1.00 | |
| Secondary incomplete | 1.12 | (0.88,1.41) | 1.12 | (0.87,1.44) |
| Secondary complete | 1.11 | (0.86,1.44) | 1.17 | (0.87,1.57) |
| Postsecondary | **1.46** | (1.10,1.93) | 1.26 | (0.83,1.91) |
| *Socio-economic status* | | | | |
| Low | 1.00 | | 1.00 | |
| Medium | 0.83 | (0.67,1.03) | 0.99 | (0.76,1.30) |
| High | **0.73** | (0.55,0.96) | 0.83 | (0.57,1.20) |
| *Age* | | | | |
| 15-19 years | 1.00 | | 1.00 | |
| 20-24 years | **0.54** | (0.37,0.80) | **0.61** | (0.38,0.96) |
| 25-29 years | **0.35** | (0.23,0.52) | **0.39** | (0.24,0.63) |
| 30-34 years | **0.25** | (0.16,0.37) | **0.28** | (0.17,0.47) |
| 35-39 years | **0.23** | (0.14,0.36) | **0.30** | (0.17,0.52) |
| 40-44 years | **0.19** | (0.11,0.31) | **0.20** | (0.11,0.35) |
| *Marital status* | | | | |
| Married | 1.00 | | 1.00 | |
| In union | 0.98 | (0.78,1.25) | 0.99 | (0.73,1.36) |
| Previously married | 0.85 | (0.62,1.17) | 1.02 | (0.64,1.63) |
| Never married | **0.32** | (0.19,0.54) | **0.33** | (0.18,0.60) |
| *Desire more children* | | | | |
| Yes | 1.00 | | 1.00 | |
| No | 1.09 | (0.91,1.31) | 1.16 | (0.91,1.47) |
| Don't know/Infertile | 1.10 | (0.85,1.43) | 1.22 | (0.86,1.73) |
| *Sex frequency last 30 days* | | | | |
| 2 times/week | 1.00 | | 1.00 | |
| 1-2 times/week | 0.88 | (0.75,1.04) | 0.85 | (0.69,1.06) |
| < 1 time/week | 0.84 | (0.63,1.13) | 0.75 | (0.53,1.07) |
| None | 1.00 | (0.79,1.27) | 0.98 | (0.74,1.31) |
| *Number of abortions* | | | | |
| None/Unreported | 1.00 | | 1.00 | |
| 1 | **3.56** | (2.70,4.70) | **2.77** | (1.99,3.86) |
| 2 | **6.27** | (4.76,8.26) | **5.00** | (3.62,6.93) |
| 3+ | **15.14** | (11.44,20.03) | **11.98** | (8.91,16.11) |
| Weibull slope coefficient (ln p) | **0.254** | | **0.278** | |
| Wald chi square (df=25) | **1005.19** | | **717.55** | |

***Note:*** Figures in bold are statistically significant at the p< 0.05 level or better.

Table 4. Contraceptive use, one-year discontinuation and failure episodes, and subsequent use of abortion, by method: 1994-1999, Romania

| Method | % and number episodes of use in calendar data | | At one year of use | | | | | | Abortions due to contraceptive failure of all reported abortions: 1994-1999 (%, 95%CI) |
|---|---|---|---|---|---|---|---|---|---|
| | | | % and number of episodes discontinued | | % and number of episodes of failure | | % and number of reported episodes of failure ending in induced abortion | | |
| | % | N | % | N | % | N | % | N | |
| **Pill** | 15.4 | 1248 | 48.9 | 610 | 2.8 | 35 | 91.4 | 32 | 1.2 (0.8,1.7) |
| **IUD** | 5.3 | 433 | 11.8 | 51 | 1.4 | 6 | 83.3 | 5 | 0.2 (0.1,0.4) |
| **Condom** | 20.2 | 1645 | 57.6 | 948 | 5.3 | 87 | 80.5 | 70 | 2.6 (2.0,3.2) |
| **Rhythm** | 7.5 | 607 | 52.4 | 318 | 22.7 | 138 | 81.2 | 112 | 4.1 (3.4,4.9) |
| **Withdrawal** | 43.4 | 3530 | 48.2 | 1700 | 21.7 | 767 | 85.7 | 657 | 24.1 (22.5,25.7) |
| **All methods** | 100.0 | 8127 | 49.9 | 4040 | 13.9 | 1128 | 85.1 | 960 | 35.2 (33.4,37.0) |

Table 5. Characteristics of women having an abortion after experiencing a contraceptive failure with rhythm or withdrawal

| Individual characteristics | % Women (N=449) |
|---|---|
| *Residence* | |
| Urban | 51.7 |
| Rural | 48.3 |
| *Region* | |
| Bucharest | 8.7 |
| Vallahia | 51.7 |
| Transylvania | 16.7 |
| Moldova | 22.9 |
| *Education* | |
| Primary | 17.8 |
| Secondary incomplete | 41.4 |
| Secondary complete | 30.7 |
| Postsecondary | 10.1 |
| *Socio-economic status* | |
| Low | 37.6 |
| Medium | 43.7 |
| High | 18.7 |
| *Age* | |
| 15-19 years | 3.1 |
| 20-24 years | 21.4 |
| 25-29 years | 34.3 |
| 30-34 years | 24.7 |
| 35-39 years | 10.2 |
| 40-44 years | 6.3 |
| *Marital status* | |
| Married | 81.2 |
| In union | 11.4 |
| Previously married | 4.7 |
| Never married | 2.7 |
| *Number living children* | |
| None | 9.4 |
| 1 | 39.6 |
| 2 | 36.5 |
| 3+ | 14.5 |
| *Desire more children* | |
| Yes | 26.7 |
| No | 63.9 |
| Don't know/Infertile | 9.4 |
| *Sex frequency last 30 days* | |
| > 2 times/week | 45.2 |
| 1-2 times/week | 14.3 |
| < 1 time/week | 12.5 |
| None | 28.0 |
| *Previous induced abortion(s)* | |
| 1 | 31.4 |
| 2 | 28.7 |
| 3+ | 39.9 |