DHS
Analytical Studies 6

Contraception–Abortion Connections In Armenia

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Preface

One of the most significant contributions of the MEASURE *DHS+* program is the creation of an internationally comparable body of data on the demographic and health characteristics of populations in developing countries. The *DHS Analytical Studies* series and the *DHS Comparative Reports* series examine these data, focusing on specific topics. The principal objectives of both series are: to provide information for policy formulation at the international level, and to examine individual country results in an international context. Whereas *Comparative Reports* are primarily descriptive, *Analytical Studies* take a more analytical approach.

The *Analytical Studies* series comprises in-depth, focused studies on a variety of substantive topics. The studies are based on a variable number of data sets, depending on the topic under study. A range of methodologies is used, including multivariate statistical techniques. The topics covered are selected by MEASURE *DHS+* staff in conjunction with the MEASURE *DHS+* Scientific Advisory Committee and USAID.

It is anticipated that the *Analytical Studies* will enhance the understanding of significant issues in the fields of international population and health for analysts and policymakers.

Martin Vaessen
Project Director

Acknowledgements

Executive Summary

In Armenia, as in other countries in the orbit of the former Soviet Union, induced abortion is an important method of birth control. The total abortion rate is high in Armenia, estimated at 2.6 abortions per woman for the 1998-2000 period, although there is evidence of a decline over the past 15 years. The general level of contraceptive practice in the country is also high, as would be expected in a population with low fertility (a total fertility rate of 1.7). The abortion rate has remained so high because the use of modern contraception is so low; the primary method is withdrawal, which has a high failure rate. The use of modern methods has been increasing slowly; however, the decline in abortion in the recent past is more the result of postponement of marriage.

Unlike in the West, almost all abortions in Armenia and in that region of the world are generally performed on married women with at least one child. Abortion is relied on mainly to limit fertility rather than to space births. The high abortion rate notwithstanding, most Armenian women disapprove of abortion and prefer contraception; however, at least half report that they would seek an abortion if they were to become pregnant unintentionally.

The analysis includes a description of the covariates of both contraceptive practice and the use of abortion and concludes with the construction of a model of the components of abortion. The model is used to illustrate the potential reduction in the number of abortions that could be realized with shifts in the prevalence and mix of contraceptive methods. The reduction of unmet need and a shift from traditional to modern methods are the main avenues in that direction.

1   Background

In Armenia, as in other republics of the former Soviet Union, abortion is an important method of birth control. The reasons for this include the history of liberal legislation on abortion and its availability, the limited availability of modern contraception, and the attitudes and practices of the medical establishment. Abortion is legally available on request during the first 12 weeks of gestation and thereafter on more restrictive grounds (GOA, UNICEF, and SCF, 1999). There has been a shortage of modern contraception and a lack of training of health personnel on the subject. In the Soviet years, there was a suspicion of oral contraception and resistance to surgical sterilization, some of which continues today. Condoms were in short supply. The result in Armenia has been a widespread reliance on traditional rather than modern methods, particularly on withdrawal, and a high abortion rate. As noted in a 1999 assessment, "a significant demand for fertility regulation exists in Armenia but this demand is not adequately met. Generally speaking, Armenian people still do not have access to modern means of family planning" (Ministry of Health, 1999). The situation is different in some other former republics of the Soviet Union, where the IUD is the method most commonly used and abortion rates are lower. The demand for fertility regulation is evident from the low levels of fertility throughout the region; in Armenia, low levels of fertility, coupled with a significant post-Soviet out-migration, have caused concern in some quarters. The 2000 Armenia Demographic and Health Survey (DHS) estimated the total fertility rate (TFR) at 1.7 (NSS, MOH, and ORC Macro, 2001), which is higher than official estimates but still well below replacement.

This analysis reviews the data on abortion and contraception collected in the Armenia DHS survey with a focus on the interactions between the two forms of birth control and evaluates the potential reductions in abortion that could be realized by various combinations of increases in contraceptive prevalence and changes in the mix of methods used. The analysis begins with a description of current contraceptive practice and abortion and recent trends.

2 Contraception and Abortion: Levels and Trends

Although a recent "Green Path" campaign has been launched in Armenia to promote family values and to support women in their choice of modern methods of contraception, the use of withdrawal still dominates the contraceptive profile in Armenia, accounting for about half of all current use at the time of the survey (Table 2.1). Since the likelihood of experiencing an unintended pregnancy with this method is very high (a failure rate during the first year of use of nearly 30 percent), the potential for abortion is considerable. The more limited use of modern methods is dominated by the IUD and the condom, which are common in this part of the world. These estimates are consistent with those in surveys conducted about three years before the 2000 DHS in Armenia (Khachikyan and Abrahamyan, 1998; Ministry of Health, 1998) and suggest little overall change. In the Armenian DHS survey, a five-year monthly calendar was used, which permits reconstructing annual estimates of contraceptive prevalence between 1995 and 2000. These estimates are shown in Table 2.2 based on months of marriage for women who were 15-44 years of age in each month (the values are roughly comparable with those for women who ever had sex in Table 2.1). There has been an overall increase during the period primarily because of the rise in the use of modern methods—from 17.9 percent in 1995 to 23.1 percent in 2000.

Table 2.1 Current contraceptive use for women who have ever had sex and for all women 15-44, Armenia DHS 2000

	Ever had sex	All women
Not using any method	40.9	59.8
Using any method	59.1	40.2
Using a modern method	22.0	15.0
Pill	1.2	0.8
Condom	7.1	4.8
IUD	9.3	6.3
Sterilization	2.1	1.4
Other	2.3	1.7
Using a traditional method	37.0	25.2
Withdrawal	31.5	21.5
Periodic abstinence	4.2	2.9
Other	1.3	0.8

Table 2.2 Percentage of married months during which contraception was used in the past six years by women 15-44, Armenia DHS 2000

Years ago	Any method	Modern method	Traditional method
1	64.1	23.1	41.0
2	64.1	22.1	42.0
3	62.9	21.7	41.2
4	61.6	20.9	40.7
5	59.2	19.3	39.9
6[a]	57.4	17.9	39.5

[a] Up to nine months of the year included

Estimates of abortion are unreliable in most parts of the world where registration systems are inadequate or nonexistent or where abortion is illegal or underreported because of women's feelings about the subject. In the former Soviet Union, as well as in some Eastern European countries where abortion has been more or less institutionalized, women have been less reluctant to report the practice. Even with adequate registration systems, however, many abortions are not reported in official statistics because of the growing number of abortions performed in the private sector using the vacuum aspiration procedure; therefore, the estimates based on survey data are more reliable. This certainly seems to be the case in Armenia. Whereas the official abortion rate based on registered events (per 1,000 women of reproductive age) was reported as 25 in 1998 (UNDP, 2000), the DHS estimate for the three-year period preceding the survey in 2000 is 81. The total abortion rate for this period is 2.6 abortions per woman. As noted in other recent surveys, the most common outcome of pregnancy in Armenia is induced abortion; for the three-year period prior to the DHS survey, 55 percent of all pregnancies ended in abortion (Table 2.3).

Determining the trend in the abortion rate in Armenia is not straightforward. Using the pregnancy histories collected in the DHS survey to reconstruct the trend, overall there is some evidence of a recent decline but age patterns are different from those in earlier years. In Figure 2.1, the abortion rates for the four age groups have been plotted in three-year averages from 1980 to 2000. For women in their twenties, the abortion rates increased in the early years, reaching a peak in 1992-1994 and declining thereafter. The rates for women in their thirties have been declining fairly steadily.

Table 2.3 Indicators of the level of abortion, Armenia DHS 2000

Percentage of women who have ever had an abortion	46.8
Abortions per 1,000 women 15-44[a]	81
Total abortion rate[a]	2.6
Percentage of pregnancies ending in abortion[a]	55
Mean number of abortions among women 40-49	2.8
Mean number of abortions if ever had an abortion	3.3

[a] For the three years preceding the survey

Figure 2.1 Trends in age-specific abortion rates 1980-2000, Armenia DHS 2000
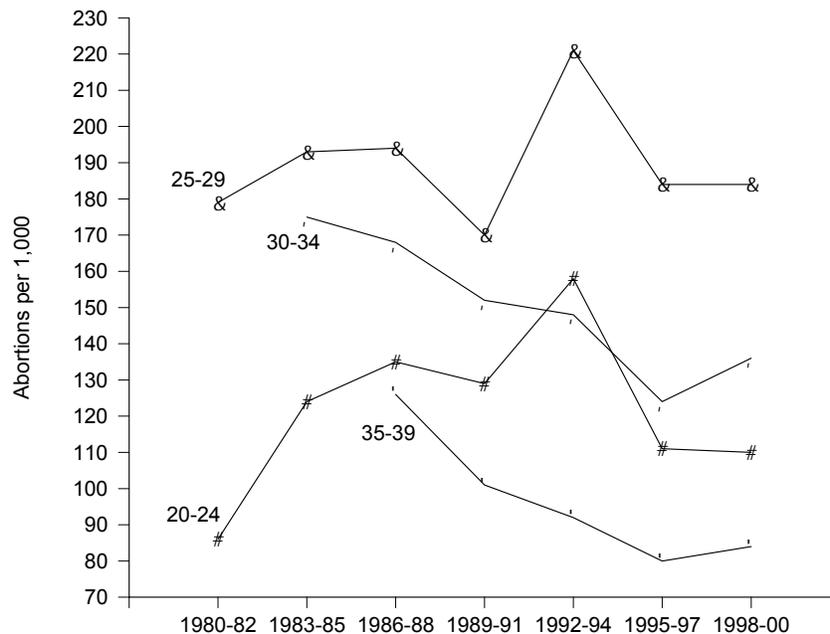
A more detailed picture of the recent trend in abortion rates and their proximate determinants can be derived from data in the month-by-month reproductive calendar. In Armenia, sexual relations before marriage are uncommon and unmarried women contribute almost nothing to the abortion rates. Thus, Table 2.4 shows estimated abortion rates based on all woman-months of exposure and on married woman-months of exposure. Also shown in the table are the proportion of months of exposure at high risk of abortion and at low risk of abortion among all women and among married women.[1]

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[1] In the case of all women, low risk is defined as nonmarried months and married months using modern methods, while high risk is defined as married months using either no method or a traditional method. In the case of married women, the low-risk category consists only of married women using modern methods, while the composition of the high-risk category remains unchanged.

Table 2.4 Recent trends in abortion rates and exposure to the risk of abortion, Armenia DHS 2000

	Months ago		
	46-66	25-45	4-24
Panel A: All Women 15-44			
Abortions per 1,000 women	85	84	78
Percentage of months at high-risk exposure to abortion	56	53	50
Percentage of months at low-risk exposure to abortion	44	47	50
Panel B: Married Women 15-44			
Abortions per 1,000 married women	123	127	122
Percentage of months at high-risk exposure to abortion	81	79	78
Percentage of months at low-risk exposure to abortion	19	21	22

Note: High-risk exposure includes married months in which no method or a traditional method was used. Low-risk exposure for married women is months of modern method use. Low-risk exposure for all women includes months not married as well as months of modern method use.

Abortion rates based on all women declined by 8 percent during the period, from 85 to 78 per 1,000 (Panel A). The percentage of months at high risk of abortion declined from 56 to 50 percent, while months at low risk of abortion increased from 44 to 50 percent. The risk profile changed primarily due to an increase in nonmarried months (from 31 to 36 percent) and only secondarily due to an increase in months of modern method use (from 13 to 14 percent). Thus, most of the recent decline in abortion for all women is the result of postponement of marriage. In the earliest period, 69 percent of all months were in marriage, while in the period just before the survey, the proportion declined to 63 percent. Postponement of marriage is even more dramatic among younger women: the percentage of months married among women 20-24 dropped from 60 to 48 over the short period.

Abortion rates based on married exposure eliminate the effect of the recent trend in postponement of marriage and show almost no decline during the period, from 123 to 122 per 1,000 (Panel B). In the case of married women, the percentage of months at high risk of abortion decreased relatively little during the period, from 81 to 78 percent.[2]

Thus, the recent decline in abortion in Armenia is mainly due to fewer women being married and exposed to the risk of pregnancy. However, the declines in abortion prior to 1995 cannot be attributed to marriage postponement because age at marriage had been declining at least for women age 25-49 in 2000 (NSS, MOH, and ORC Macro, 2001). The larger picture of a general decline in the abortion rate over the past 15 years is clearly apparent in Figure 2.2, which shows total abortion rates for all women and for ever-married women. Both series show a similar picture of decline over the longer period.

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[2] It might be asked why a decrease of 3 points (from 81 to 79 percent) in the proportion of months at high risk of abortion produced virtually no change in the marital abortion rate (from 123 to 122 per 1,000) while a decrease of 6 points (from 56 to 50 percent) produced a decrease of 8 percent (from 85 to 78 per 1,000) in the abortion rate for all women. The explanation primarily lies in the fact that almost all abortions in Armenia are contributed by woman-months in the high-risk exposure category (i.e., married women using either no method or a traditional method), so that a reduction in the relative magnitude of this category will drive a reduction in the abortion rate. For married women, the 3-point reduction in the high-risk group is a relative decline of 4 percent (3/81), while for all women, the 6-point reduction is a relative decline of 11 percent (6/56), i.e., a relative decline almost four times as great).

Figure 2.2 Trends in total abortions rates for all women and for married women age 15-39 during the 15 years preceding the survey, Armenia DHS 2000
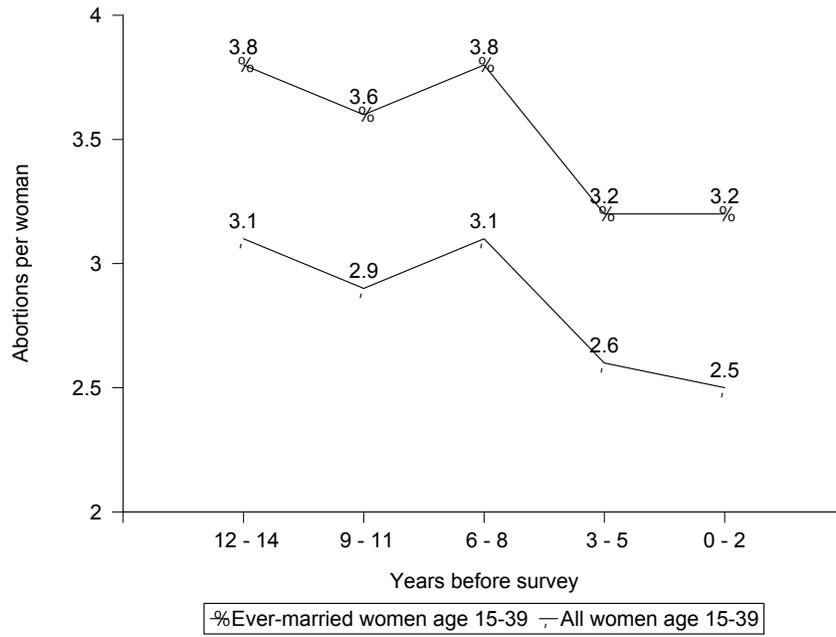
3 Contraceptive Use Before and After Abortion

That 55 percent of women whose last pregnancy (in the past three years) ended in abortion were using a traditional method of contraception, primarily withdrawal, indicates the magnitude of the problem (Table 3.1, column one). Additionally, 36 percent of these women were using no method at all at the time of conception. The combination adds to 91 percent who had been using either an ineffective method or no method at all.

It is important to see how women's use of contraception changed after their abortion experience. There was a slight increase in contraceptive use (Table 3.1, column two). The percentage using some method increased from 64 to 72, with an increase in the use of modern methods (mostly the IUD) from 9 to 19 percent. However, there is still a primary dependence on traditional methods; withdrawal declined only from 46 to 44 percent. In another tabulation (not shown), 13 percent of women who had a recent abortion were classified (at the time of the survey) as having an unmet need for family planning, mostly women who want no more children.

Table 3.1 Method of contraception used at the time of the last conception (in the three years preceding the survey) among pregnancies that ended in abortion and method currently used after the abortion, Armenia DHS 2000

Method	Use before abortion	Use after abortion
No method	35.6	27.9
Any method	64.4	72.0
Modern method	9.1	19.3
Traditional method	55.4	52.7
IUD	1.2	7.9
Condom	5.1	7.9
Periodic abstinence	6.9	6.6
Withdrawal	46.1	44.3

4   Intention to Use Contraception

Since a significant proportion (28 percent) of women with a recent abortion are not currently using any contraceptive method, it is of interest to see how many intend to use a method in the future. About three-quarters of these nonusers say that they intend to use contraception, compared with about half of nonusers who did not have an abortion (Table 4.1).

Nonusers who do not intend to use a contraceptive method were asked their reason. Low exposure to the risk of pregnancy (either because of low fecundity or infrequent sexual activity) was the main reason given by both nonusers who have had a recent abortion and nonusers who have not, followed by opposition to the use of contraception (by either spouse).

Table 4.1 Intention to use contraception and reasons for not intending to use contraception by whether woman had an abortion in the three years preceding the survey, Armenia DHS 2000

Intention to use/ Reason for not intending to use	Nonusers with abortion in last 3 years	Nonusers with no abortion in last 3 years (had sex)
Intention to use		
Intend to use	73.0	48.3
Not intend to use	27.0	51.7
Reason for not intending to use		
Little exposure	43.6	67.2
Opposition to use	25.0	12.4
Health reasons	6.1	1.8
Side effects of use	2.5	0.5
Interferes with body	7.0	6.2
Other reasons	15.8	11.9

5 Other Dimensions of Abortion

Pregnancy Order

Unlike the West, where abortion rates are highest among unmarried women with first pregnancies, abortion in Armenia and in other republics of the former Soviet Union is used almost exclusively by married women and rarely involves first pregnancies. There is little premarital sex in Armenia; 99 percent of never-married women 15-44 report that they have never had sex (NSS, MOH, and ORC Macro, 2001). Less than 1 percent of first pregnancies are aborted. The rate increases to 14 percent for second pregnancies and then jumps sharply to 44 percent of third pregnancies and nearly two-thirds of fourth pregnancies (Figure 5.1). At higher orders, the abortion rate continues to increase slowly.

Figure 5.1 Percentage of pregnancies that ended in abortion, by pregnancy order, Armenia DHS 2000
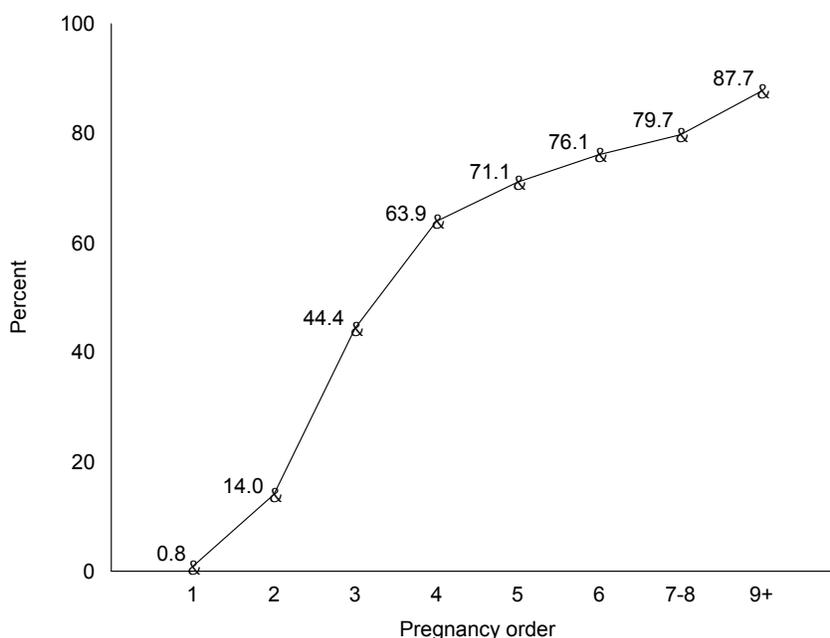
Abortion for Spacing and Limiting Births

Fertility regulation is used both for spacing and limiting births. In Armenia, abortion is relied on principally to limit fertility. Of all recent abortions, 82 percent were among women who wanted no more children in contrast to 18 percent who reported that they would still like to have another child. Among older women (40-49) who ever had an abortion, the largest category (53 percent) was women with one abortion (the last pregnancy) indicating its use for limiting purposes only. An additional 28 percent terminated the last pregnancy with abortion but had earlier abortions that were followed by a birth. These women had used abortion for both spacing and limiting purposes, but only 16 percent had used it exclusively for spacing (their last pregnancy resulted in a live birth).[3]

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[3] An additional 3 percent reported their last pregnancy to be a miscarriage or stillbirth.

Among these older women, 91 percent of abortions followed an unwanted pregnancy. Given the increasing preference for small families, the likelihood of an abortion occurring appears even greater than in the past, unless modern contraceptive methods become more widely used. The total fertility rate in Armenia, currently 1.7, would be 1.5 if only wanted births occurred.

6   Attitudes toward Abortion and Contraception

Despite the high abortion rate, Armenian women's attitudes toward abortion are generally negative. Health concerns or side effects are cited by 67 percent of the women, difficulty in obtaining an abortion by 72 percent, costs by 61 percent, and disapproval of abortion by 69 percent. Two-thirds say they prefer contraception to abortion. These unfavorable attitudes toward abortion are underestimated because a significant proportion of women (about 20 percent) replied "don't know" or "depends." Despite these negative attitudes, half of the women say they would have an abortion if they were to become pregnant unintentionally, and another quarter say they do not know now whether they would seek an abortion. Only 23 percent gave a clear negative response.

Attitudes toward contraception are equally negative. Almost half of women who know about any method believe that contraception is unreliable and that no methods are completely free of health problems and side effects. The IUD and the condom are regarded as the most reliable methods but only by about 20 percent of women. The condom is perceived to be the safest method (24 percent). The general situation is that neither abortion nor known contraceptive methods are regarded positively. In some respects, the attitudes toward contraception are a commentary on the lack of information about modern methods. In summary, there is little enthusiasm for the contraceptive methods Armenian women know about either in terms of their perceived reliability or health safety. Similarly, there is substantial opposition to abortion but a clear willingness to rely on it, if necessary.

7   Covariates of Contraceptive Use

The characteristics associated with contraceptive use and with the future intentions of nonusers are described in the final report for the DHS survey in Armenia (NSS, MOH, and ORC Macro, 2001). Current use of modern contraceptive methods increases with age through the thirties and is highest for women with two or three children and women who want no more children. Education is directly associated with the use of modern methods, as is urban residence. Women who have had an abortion are more likely to use a method than women with no history of abortion.

These and some additional covariates are examined in a multivariate analysis in Table 7.1 for two dependent variables: 1) whether women (who ever had sex) are currently using a modern method of contraception and 2) whether women not currently using any method intend to use a method in the future. Exactly the same multivariate analyses were conducted for women who had terminated their last pregnancy, but the results are so similar that they are not presented separately in Table 7.1. Younger women and those who want no more children are likely to be using modern contraceptive methods. Women with more schooling and with greater wealth[4] are more likely to use a method. With all of these variables controlled, urban-rural residence shows no association with modern contraceptive practice. Women who have ever had an abortion are more likely to use contraception.

The same covariates are examined in connection with intention to use contraception in column two of Table 7.1. Nonusers who are younger but who do not want more children are more likely to intend to use a method. Women with less wealth are more likely to intend to use, as well as those exposed to the mass media in general. Women who have ever had an abortion are

Table 7.1 Odds ratios for currently using a modern method of contraception or for intending to use any method (if not currently using) among women who have ever had sex, Armenia DHS 2000

Covariate	Whether using a modern method	Whether intending to use any method
Age (in single years)	0.91	0.84
Children ever born	1.29	NS
Wants more children	0.73	0.72
Years of schooling	1.19	1.10
Currently working	NS	NS
Wealth	1.24	0.85
Residence	NS	NS
Region		
Yerevan	1.00	1.00
Aragatsotn	NS	NS
Ararat	NS	NS
Armavir	NS	1.68
Gegharkunik	0.64	NS
Lori	NS	2.94
Kotayk	0.49	2.08
Shirak	NS	1.52
Syunik	0.34	2.53
Vayots Dzor	0.31	NS
Tavush	NS	2.18
Ever used a method	NA	2.12
Knows source of method	NA	1.26
Family planning media messages	NS	NS
Mass media exposure	NS	1.10
Ever had abortion	1.39	0.62
Likelihood of having an abortion	NS	1.59
Number of women	4,454	2,048
Chi squared	380	857
R squared	0.090	0.302

NS = Not significant at 0.05 level
NA = Not applicable

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[4] Wealth is a summary index based on possession of a telephone, automobile or truck, refrigerator, and flush toilet.

less likely to intend to use a method, but those who say they would have an abortion if they became pregnant (the likelihood of having an abortion) are more likely to intend to use. The experience of having used contraception in the past is strongly associated with intending to use in the future.

8   Covariates of Abortion

The covariates of four different measures of abortion—ever had an abortion, had an abortion in the past three years, had more than one abortion, and whether the woman would have an abortion if she became pregnant unintentionally—are shown in Table 8.1.[5]

Nearly two-thirds of women (who have had sex) report that they have had at least one abortion, a percentage that reaches 79 percent among women 45-49 years of age. As noted earlier, there is a striking increase in abortion when women have two or more children, although about a third of the women who want more children have had an abortion. There is limited direct association with years of schooling and with employment, but not with residence. The range across regions is fairly narrow. There is a significant difference in the abortion experience in connection with past use of contraception—73 percent of the women who had used a method have had an abortion, compared with 41 percent of those who had never used contraception. This difference is no doubt related in part to the fact that as the years pass, women are more likely both to have used a method and to have had an abortion.

Nearly 20 percent of these women report having had an abortion in the past three years, a percentage that peaks at age 25-29. Most of the other covariates show associations with this abortion statistic similar to those with ever having had an abortion, but rural women are more likely than urban women to have had a recent abortion (a relationship that disappears in the later multivariate analysis).

Of the women who have had an abortion, three-quarters have had more than one. The association with number of children is very strong, but, again, the interrelation with age must be considered. The other covariates do not show much relationship to this dimension of abortion behavior.

The last column of Table 8.1 focuses on the likelihood of having an abortion, measured here by the percentage of women who say that they would seek an abortion if they found themselves pregnant unintentionally. Two-thirds of women (who ever had sex) said they would have an abortion under these circumstances. The percentage increases with age and parity and with intention to have no more children. There is little association with other covariates although again rural women seem more likely to have an abortion. There is a strong association with past use of contraception that probably reflects the motivation to control fertility.

These variables, with some others added, are examined in the multivariate context in Table 8.2. What generalizations emerge when all of these variables are considered simultaneously? All four measures of abortion show a significant association with the number of children ever born. Years of schooling show no association with any of these measures of abortion. Women in rural areas are more likely to have an attitude conducive to abortion and less likely to have had more than one abortion, but residence shows no independent association with the likelihood of ever having had an abortion or of having had a recent abortion. Associations with region, with Yerevan as the reference category, strongly indicate that Lori women have a low probability of having an abortion (consistent with the fact that Lori has the lowest total abortion rate of any region in the country) but have a higher likelihood of having an abortion in the hypothetical case that they were to become pregnant unintentionally.

Perhaps the strongest predictor of abortion behavior and attitude is whether a contraceptive method has ever been used. For example, if a method has been used, the likelihood of having had an abortion at any time or in the recent past is nearly three times greater than if no method was used in the

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[5] By definition, a woman who had an abortion in the past three years will be included among women who ever had an abortion although the reverse is not necessarily true. Nonetheless, the two measures are likely to show similar patterns of association.

past. As noted earlier, this relationship probably reflects the intensity of trying to control fertility compounded with high contraceptive failure rates.

Table 8.1 Among women who have ever had sex, percentage who ever had an abortion, had an abortion in the last 3 years, had one versus more than one abortion, or would have an abortion if they became pregnant unintentionally, by background characteristics, Armenia DHS 2000

Characteristic	Ever had an abortion	Had abortion in last 3 years	Had more than one abortion	Would have an abortion
Age				
15-19	6.5	6.5	} 39.4	30.7
20-24	26.3	23.5		48.7
25–29	54.1	35.6	59.0	60.7
30–34	69.7	31.1	73.5	68.5
35-39	76.8	21.6	78.4	70.1
40-44	72.2	10.0	79.1	73.7
45-49	79.1	2.2	83.0	68.4
Children ever born				
< 2	17.4	6.9	40.9	33.8
2	70.6	28.8	69.4	68.7
3	83.2	21.6	79.5	77.3
4+	83.3	21.1	85.6	78.3
Wants more children				
Wants more	36.7	15.6	64.5	37.5
Wants no more	75.8	20.9	76.2	75.8
Years of schooling				
< 10	55.6	17.7	76.9	59.4
10	67.2	22.6	73.7	67.1
11-12	65.9	19.2	75.5	67.8
13+	65.7	16.8	74.1	63.4
Currently working				
Yes	73.1	17.7	77.3	66.8
No	61.1	20.6	72.5	64.7
Residence				
Urban	65.3	16.5	75.0	62.0
Rural	65.8	23.9	73.7	70.6
Region				
Yerevan	65.9	15.4	74.7	59.5
Aragatsotn	69.7	31.1	74.7	73.1
Ararat	67.1	21.9	72.7	72.1
Armavir	67.5	28.5	74.3	63.2
Gegharkunik	71.1	25.4	81.4	67.5
Lori	51.0	15.2	57.6	66.1
Kotayk	72.4	20.4	83.6	68.7
Shirak	64.0	16.7	73.0	72.9
Syunik	63.5	19.5	73.2	57.3
Vayots Dzor	55.8	14.2	75.0	61.9
Tavush	64.8	18.0	74.3	73.1
Ever used a method				
Yes	72.5	22.8	75.2	71.3
No	40.7	7.8	69.4	45.2
Total	65.5	19.5	74.5	65.5

Table 8.2 Odds ratios for ever having an abortion, having an abortion in the last 3 years, ever having more than one abortion, and the likelihood of having an abortion, among women who have ever had sex, Armenia DHS 2000

Covariate	Ever had an abortion	Had abortion in last 3 years	Had more than one abortion	Likelihood of having an abortion
Age (in single years)	1.06	0.89	1.06	NS
Children ever born	1.80	1.45	1.53	1.29
Wants more children	0.53	0.55	NS	0.29
Years of schooling	NS	NS	NS	NS
Currently working	1.29	NS	NS	NS
Wealth	NS	1.07	NS	NS
Residence				
Urban	1.00	1.00	1.00	1.00
Rural	NS	NS	0.76	1.40
Region				
Yerevan	1.00	1.00	1.00	1.00
Aragatsotn	NS	1.55	NS	NS
Ararat	NS	NS	NS	1.41
Armavir	NS	1.60	NS	NS
Gegharkunik	NS	NS	NS	NS
Lori	0.42	NS	0.41	1.32
Kotayk	NS	NS	1.66	NS
Shirak	0.79	NS	NS	1.68
Syunik	0.66	NS	NS	0.64
Vayots Dzor	0.43	NS	NS	NS
Tavush	NS	NS	NS	1.48
Ever used a method	2.93	2.73	1.70	1.92
Knows source of method	NS	0.64	NS	NS
Family planning media messages	1.08	NS	NS	1.17
Mass media exposure	NS	NS	0.93	NS
Number of women	4,583	4,583	2,992	4,454
Chi squared	1,383	596	284	787
R squared	0.235	0.131	0.084	0.137

NS = Not significant at 0.05 level

The Urban-Rural Anomaly

The urban-rural abortion differential in Armenia differs from that of most other countries in the region. Typically, abortion rates are higher in urban areas than in rural areas, a contrast that is observed in Kazakhstan, Kyrgyzstan, Turkey, Turkmenistan, Ukraine, and Uzbekistan. Only in Armenia and Azerbaijan is there clear evidence of a higher abortion rate in rural areas (in Georgia, there is no

difference). In Armenia, the total abortion rate in rural areas is 3.4, compared with 2.1 in urban areas (NSS, MOH, and ORC Macro, 2001); in Azerbaijan, the corresponding rates are 3.4 and 2.8 (Serbanescu et al., 2002). That the difference in Armenia is not statistically significant when viewed in the multivariate context—at least in connection with ever having had an abortion or having had an abortion in the past three years—does not diminish the program implications of its greater incidence in rural areas.

For both of these countries, the explanation appears to lie in the greater use of traditional methods in rural areas, particularly withdrawal with its high failure rate. In Armenia, 41 percent of rural women (married, 15-44) rely on withdrawal, compared with 29 percent in urban areas; in Azerbaijan, the corresponding estimates are 48 and 34 percent, respectively. In Armenia, higher failure rates in rural areas with both modern and traditional methods also contribute to the differential. A greater proportion of married women live in rural areas (69 percent) than in urban areas (58 percent), so that about one-third of the urban-rural abortion differential arises from differences in the proportion married. Nevertheless, in both Armenia and Azerbaijan, differences in contraceptive use appear to be the primary cause of the higher abortion rates in rural areas.

9   Models of Abortion and Contraception

To evaluate the relative importance of contraceptive prevalence and method mix on levels of abortion, data from the monthly calendar have been used to construct a model. These data include the type of method used, the duration of each segment of use and nonuse, the reasons for method discontinuation, and the outcome of each pregnancy. Such information permits estimation of contraceptive failure rates, pregnancy rates in periods of nonuse, rates of method discontinuation, and the proportion of pregnancies terminated by abortion.

Parameters of the Models

The contraceptive failure rates are estimated for modern and traditional methods for the three-year period preceding the survey (approximately 1998-2000) for women 15-44 years of age (in each year). The rates are based on the pregnancies reported to have occurred while the method was being used, divided by the number of months of use of that method. The average annual failure rate for modern methods (principally the IUD and the condom) is 0.070 per woman-year of use, and for traditional methods (mostly withdrawal), it is 0.198. The likelihood of terminating a pregnancy that resulted from contraceptive failure is 81 percent; for users of modern methods it is 69 percent, and for users of traditional methods, it is 83 percent (Table 9.1).

Pregnancy rates for users and nonusers of contraception are calculated in the same way. Nonusers who have ever had sex are a heterogeneous mixture of different kinds of exposure including fecund women who do not want to become pregnant but are not using a method (classified in the unmet need category), women who are trying to become pregnant and women who are at low risk of pregnancy for physiological reasons or because of low coital frequency.

The estimation of pregnancy rates and the likelihood of having an abortion for the three categories of nonuse—unmet need, seeking pregnancy,

Table 9.1 Model parameters based on women 15-44, Armenia DHS 2000

Contraceptive users	
Percentage currently using any method	40.1
Annual failure rate (per woman-year of use)	0.153
Percentage of failures that ended in abortion	80.7
Percentage currently using a modern method	15.0
Annual failure rate (per woman-year of use)	0.070
Percentage of failures that ended in abortion	68.6
Percentage currently using a traditional method	25.1
Annual failure rate (per woman-year of use)	0.198
Percentage of failures that ended in abortion	83.3
Nonusers	
Percentage not using any method	59.9
Pregnancy rate (per woman-year of nonuse, all women)	0.159
Pregnancy rate (per woman-year of nonuse, women who ever had sex)	0.300
Percentage of pregnancies that ended in abortion	37.8
Unmet need [a]	
Percentage in need of family planning	10.3
Pregnancy rate (per woman-year of exposure)	0.638
Percentage of pregnancies that ended in abortion	43.2
Seeking pregnancy [b]	
Percentage seeking pregnancy	5.5
Pregnancy rate (per woman-year of exposure)	0.662
Percentage of pregnancies that ended in abortion	10.4
Low risk	
Percentage at low risk of pregnancy	12.5
Pregnancy rate (per woman-year of exposure)	0.020
Percentage of pregnancies that ended in abortion	43.8
Exposure	
Percentage never had sex	31.5

Note: Estimates are based on the experience of women 15-44 in the past 36 months except for unmet need, those seeking pregnancy, and the low-risk category, which are based on the 3-20 months preceding the survey.
[a] Includes those currently pregnant unintentionally.
[b] Includes those currently pregnant intentionally.

and low risk—is not straightforward because only current status information is available to classify women into these categories. Women may have been trying to get pregnant for a month or for a couple of years. Women currently at low risk of pregnancy could be in that category for very different durations. How long women have been in the unmet need category is also unknown. As in earlier work on Kazakhstan (Westoff, 2000), the pregnancy rate and likelihood of having an abortion for women in these categories are estimated based on the number of women in each category and the number of pregnancies and abortions in the recent past (a recent 18-month period). This is clearly very crude, but it yields plausible estimates. The pregnancy rate for women with an unmet need for family planning is estimated at 0.638 per woman-year of exposure, for women seeking pregnancy it is 0.662, and for those at low risk it is 0.020 (Table 9.1). The likelihood of having an abortion for women in the unmet need category is 43 percent. The likelihood of having an abortion for women seeking pregnancy is understandably much lower (10 percent). That 10 percent of women seeking pregnancy would have an abortion may seem high, but it must be remembered that pregnant women's situations can change and that abortion levels are high in Armenia. Perhaps more relevant is the estimation methodology that uses current status data for classifying nonusers into exposure categories.

Results

The main criterion of how well the model fits is how closely it approximates the abortion rate. As indicated in Figure 9.1, the two components of use and nonuse of contraception yield the same abortion rate as the direct calculation of 81 abortions per 1,000 women 15-44 over the past three years—the sum of 49 for users of contraception and 32 for nonusers. Most of the contribution of users to the abortion rate (41 of the 49) is from women using traditional methods, mainly withdrawal with its high failure rate. Nonusers, although they have less likelihood of having an abortion (38 percent) than users (81 percent), have a higher pregnancy rate (0.300) than users of all methods in general (0.153). In fact, the product of the two component rates is very similar for both users and nonusers. It is evident that a reduction of abortions in Armenia can be realized by an increase in the use of modern contraception with its lower failure rates.

Implications of Changes in the Components

The main purpose of constructing these models is to show the potential effects on the abortion rate of changes in the underlying parameters. Thus, if all current users were to use modern rather than traditional methods, the abortion rate would be 52 rather than 81 even without any increase in overall contraceptive prevalence (Figure 9.2). In contrast, an increase of say 10 percent in overall prevalence (from 40 to 44 percent, which is a reasonable expectation) would itself not change the population abortion rate because of the high failure rate of traditional methods.[6] This expectation is unrealistic, however, since it implies that nonusers who become users are drawn proportionately from the different subtypes of nonusers. As can be seen in Figure 9.3, women with an unmet need for family planning are the primary source of abortions among nonusers. Thus, if the 10 percent increase in contraceptive prevalence were drawn from the unmet need category (not an unreasonable assumption), the abortion rate would then be 76 rather than 81. The rate would be 58 if all unmet need were to shift to modern method use exclusively. If all unmet need, as well as all current use, were to shift to modern method use, the abortion rate would fall to 29.

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[6] Even if *all* (sexually active) nonusers became users and experienced the pregnancy rates and rates of terminating pregnancies, the overall abortion rate would remain unchanged. This is because although users have a pregnancy rate only half that of nonusers, the likelihood they will terminate a pregnancy is twice as high, so that the product of the two is about equal.

Figure 9.1 Use and nonuse of contraception and the abortion rate
for women 15-44, Armenia DHS 2000

| All Women |
| 1,000 |

| Using Contraception | Not Using Contraception |
| 401 | 599 |

| Modern Method | Traditional Method | Had Sex | Never Had Sex |
| 150 | 251 | 283 | 315 |

Pregnancies

| 10 | 50 | 85 | 0 |

Abortions

| 8 | 41 | 32 | 0 |

| Abortions per 1,000 Women |
| 81 |
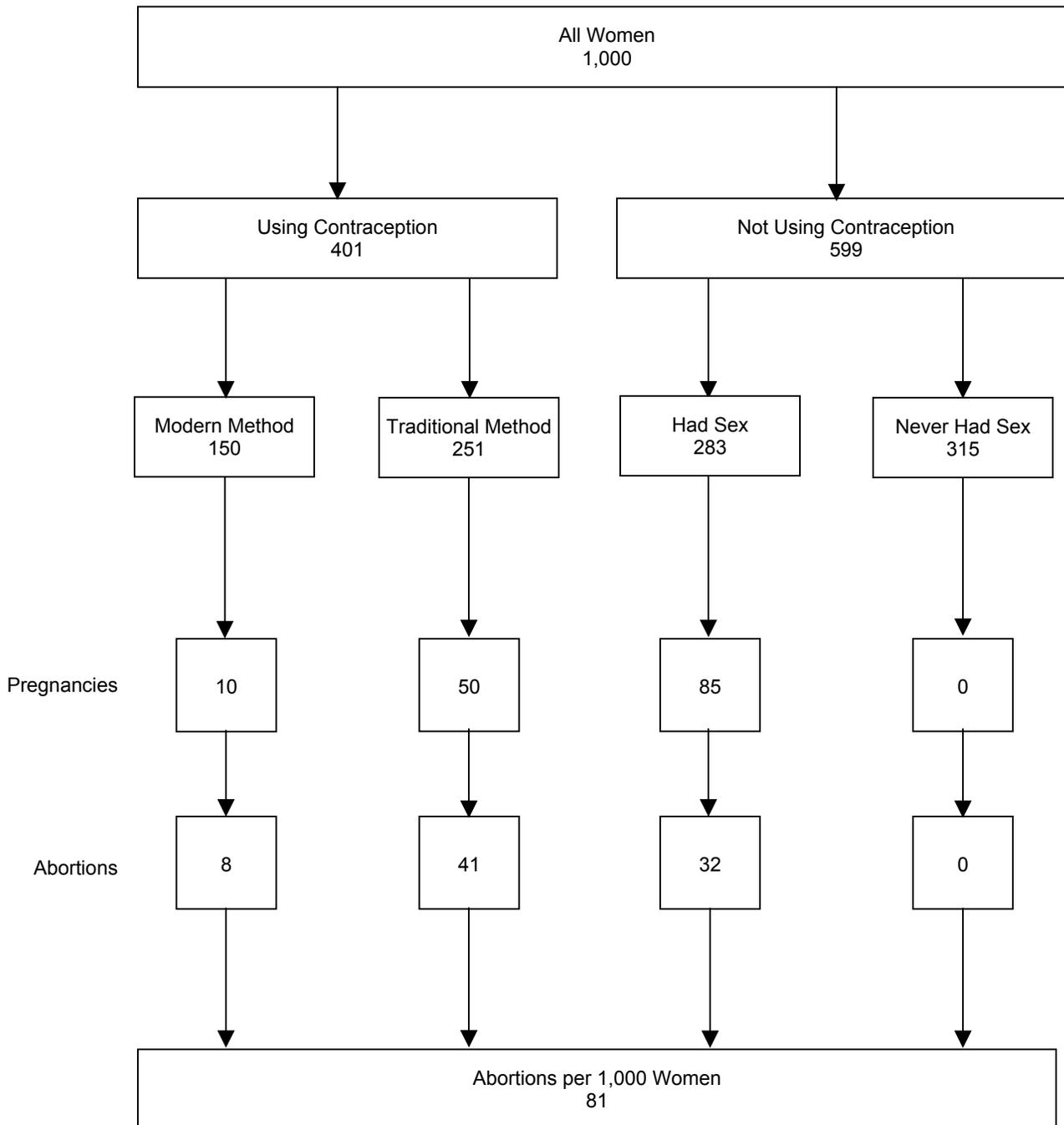
Figure 9.2 Specific components of the abortion rate, Armenia DHS 2000

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                              ┌─────────────────────────────────┐
                              │          All Women              │
                              │           1,000                 │
                              └─────────────────────────────────┘
                      ┌──────────────┴──────────────────┐
          ┌───────────────────┐           ┌─────────────────────────────┐
          │ Using Contraception│          │   Not Using Contraception   │
          │        401         │          │            599              │
          └───────────────────┘           └─────────────────────────────┘
            ┌────────┴────────┐              ┌──────────┴──────────┐
    ┌──────────┐  ┌──────────┐    ┌────────────────────────┐  ┌──────────┐
    │ Modern   │  │Traditional│   │       Had Sex          │  │Never Had │
    │ Method   │  │  Method   │   │        283             │  │  Sex     │
    │  150     │  │   251     │   └────────────────────────┘  │  315     │
    └──────────┘  └──────────┘     ┌──────┬──────┬──────┐     └──────────┘
                              ┌─────────┐ ┌─────────┐ ┌─────────┐
                              │ In Need │ │Low Risk │ │Seeking  │
                              │  103    │ │  125    │ │Pregnancy│
                              └─────────┘ └─────────┘ │  55     │
                                                      └─────────┘
```

	Modern Method 150	Traditional Method 251	In Need 103	Low Risk 125	Seeking Pregnancy 55	Never Had Sex 315
Pregnancies	10	50	66	3	36	0
Abortions	8	41	28	1	4	0

┌───┐
│   Abortions per 1,000 Women   │
│   81   │
└───┘
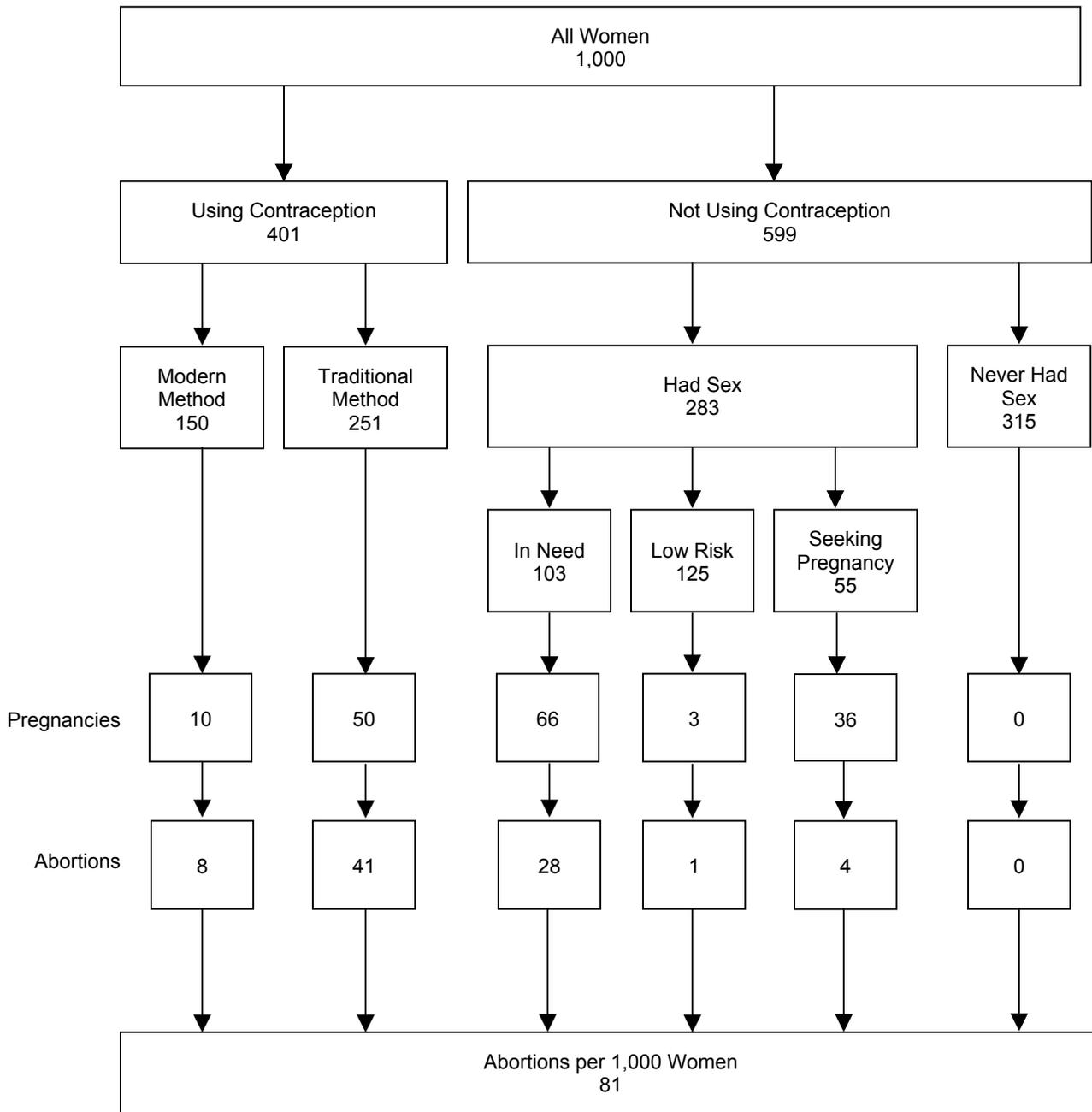
Note: Women *in need* includes those pregnant unintentionally. Women *seeking pregnancy* includes those pregnant intentionally.

Figure 9.3 Abortion rates (per 1,000 women) under different assumptions, Armenia DHS 2000
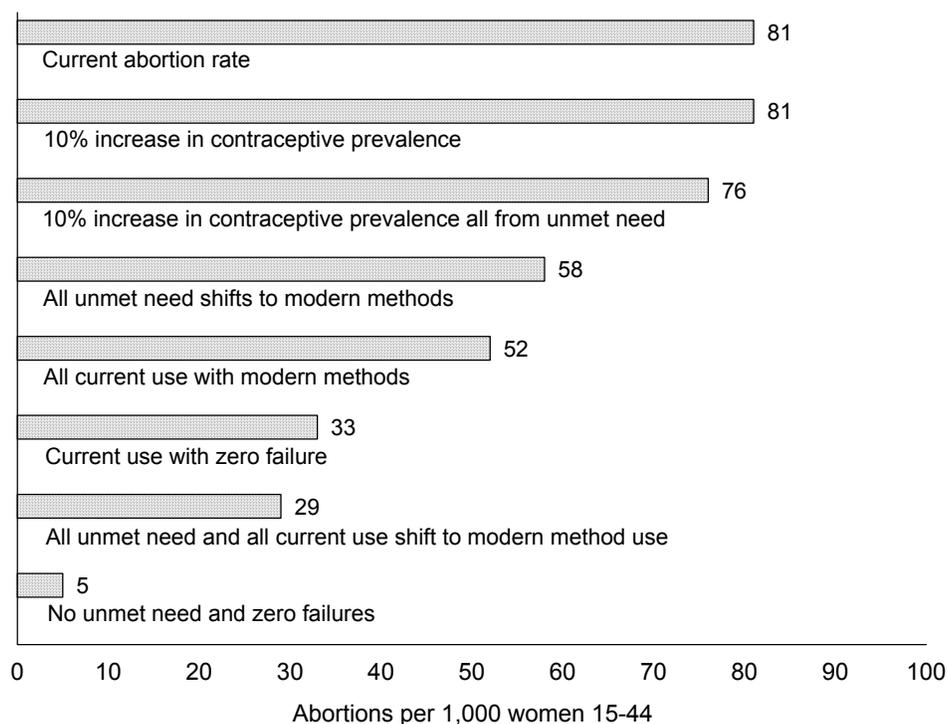
In summary, most abortions (about 60 percent) in Armenia result from contraceptive failure related to the heavy dependence on traditional methods. For the remaining 40 percent from women not using a method, most abortions occur among those with an unmet need for family planning. If contraception were perfect and unmet need nonexistent, the abortion rate would theoretically be 5 rather than 81 per 1,000 women.

These hypothetical illustrations all assume that the current proportion of women 15-44 in Armenia who have never had sex (31 percent) remains unchanged. However, this proportion is higher than that of many other countries in the region[7] and may decline in the future. Any decline will put more pressure on fertility regulation and, without increases in modern contraceptive practice, would increase the abortion rate. On the other hand, any increase in premarital sex may be more than offset by the recent postponement of marriage in Armenia noted earlier. The proportion of months in union for women 15-24 declined by 27 percent over the 5 to 6 years before the survey—from 40 to 29 percent. This postponement of marriage contributed to the decline in abortion in the younger age groups.

Role of Contraceptive Discontinuation in Abortion

An estimated 13 percent of all pregnancy outcomes (in the 1997-1999 period) resulted from discontinuation of method use in contrast to those resulting from method failure (43 percent) and general

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[7] Recent estimates of the proportion of women (15-44) who have never had sex are 18 percent in Romania, 1999 (Serbanescu, Morris, and Marin, 2001), 22 percent in Kazakhstan, 1999 (APM and Macro International, 2000), 27 percent in Uzbekistan, 1996 (IOG and Macro International, 1997), 23 percent in the Kyrgyz Republic, 1997 (RIOP and Macro International, 1998), and 14 percent in the Ukraine, 1999 (Goldberg et al., 2001). In Georgia, the rate is comparable—33 percent (Serbanescu et al., 2001)—and in Azerbaijan, it is slightly higher at 36 percent (Serbanescu et al., 2002).

nonuse of contraception (44 percent). Most of this 13 percent were deliberate interruptions of contraceptive use in order to become pregnant, accounting for more than half of all discontinuations. A variety of other reasons are cited for discontinuation, but health concerns and side effects of method use are mentioned most commonly (see Figure 9.4). Of the 548 abortions per 1,000 pregnancies in this period, 10 percent are attributable to discontinuation, which is clearly less than the proportion attributed to contraceptive failure and to other nonuse, but not insignificant.

Figure 9.4 Contributions to the abortion rate of contraceptive failure, contraceptive discontinuation, and other nonuse, 1997-1999, Armenia DHS 2000
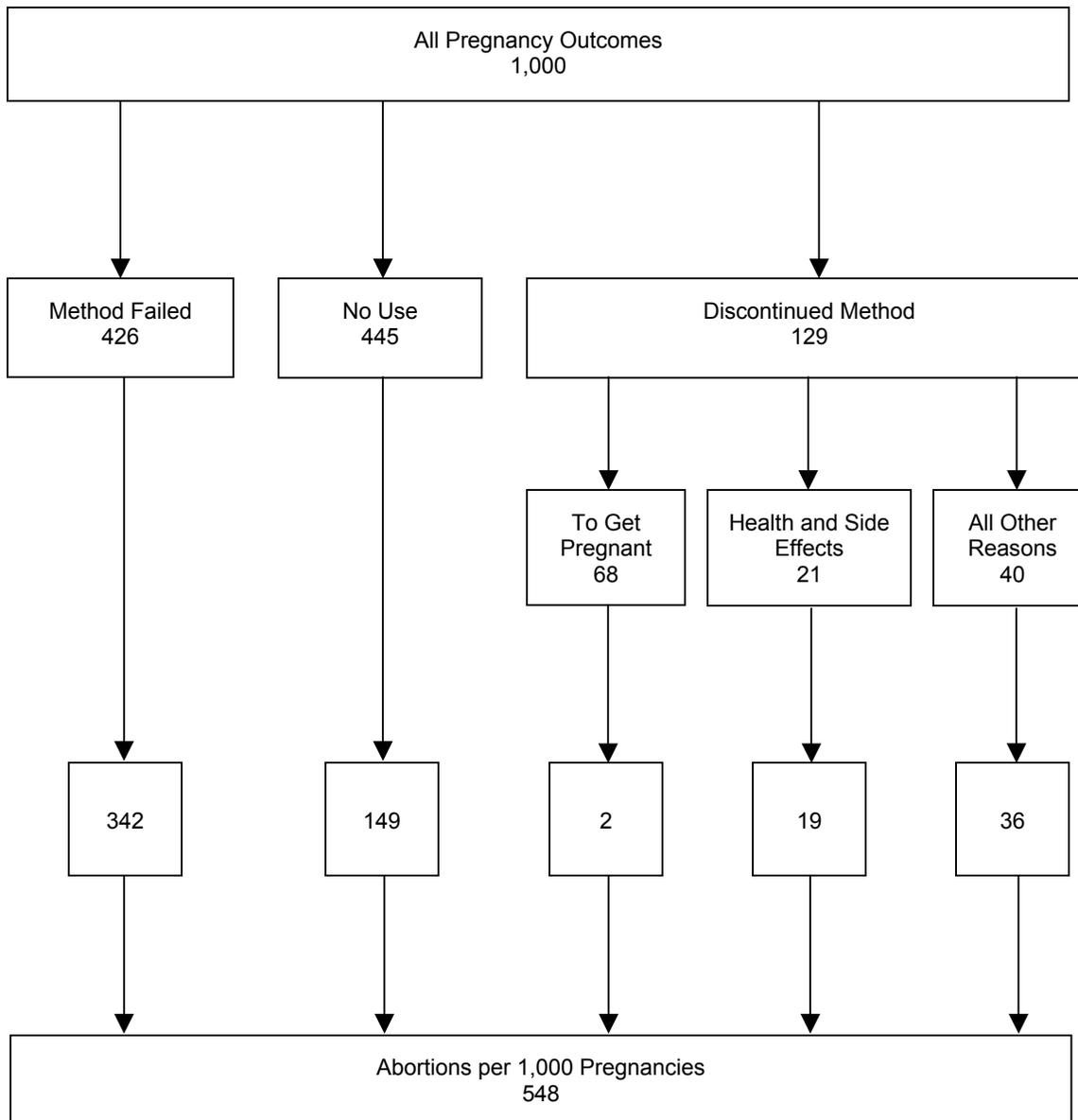
10   Conclusions

Like most countries in the region, Armenia has experienced a sharp drop in fertility as the number of children desired has declined. And like most populations that were part of the former Soviet Union, there has been heavy reliance on abortion to regulate fertility. Unlike most of the countries in the region, Armenia still has widespread use of traditional methods of contraception, primarily withdrawal, which, because of its high failure rate, contributes significantly to the high abortion rate. Nevertheless, there is evidence of a decline in abortion over the past 15 years and a gradual adoption of modern contraceptive methods in recent years. The explanation for the decline in abortion over the past 5 to 6 years lies primarily in the postponement of marriage, a trend that has not only reduced exposure to the risk of unintended pregnancy and thus abortion but also played a role in the decline of fertility.

A variety of hypothetical calculations have been made to illustrate the potential reduction in abortion that could be realized by the use of more effective contraceptive methods. For example, if nonusers with unmet need for family planning switched to using modern methods, the abortion rate could be reduced by 28 percent. If, in addition, current users of traditional methods switched to modern methods, the abortion rate would decrease by 60 percent.

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