Contraceptive Use and Abortion Among Women Of Reproductive Age in St. Petersburg, Russia

CONTEXT: Although the characteristics associated with contraceptive use among Russian women have been studied, no large-scale research has been conducted on women's use of different contraceptive methods and abortion.

METHODS: A random sample of 1,147 women aged 18–44 completed questionnaires at local women's clinics in St. Petersburg in 2003–2004. Chi-square tests were used to examine differences in selected characteristics among age-groups, and logistic regression was used to assess associations between these characteristics and the use of contraceptive methods at last intercourse and abortion history.

RESULTS: Among women at risk of unintended pregnancy, six in 10 had used reliable contraceptives (the pill, the IUD or condoms) at last intercourse; 42% had used condoms. Women in the middle income level were more likely than women with lower income to have used the pill (odds ratio, 2.1); cohabiting women and those who had had children had lowered odds of using condoms (0.6 and 0.3–0.5, respectively). More than half of those surveyed reported having had an abortion. Characteristics associated with increased odds of having had an abortion included being 25 or older (2.2–3.5), cohabiting (2.9), having high income (1.7), having experienced first intercourse before turning 18 (2.2) and having used no contraceptive method at first sex (1.5). The factor that was most strongly associated with abortion was a woman's number of births (4.9–5.7).

CONCLUSIONS: Educational programs that promote the consistent use of condoms, especially among young women, and family planning programs that reduce financial barriers to contraceptive use, are critically needed in Russia.

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Over the last several years, Russia has had one of the highest rates of induced abortions in the Baltic region, in addition to a comparatively low use of reliable contraceptives.[1] Although medical personnel generally discuss the use of modern contraceptives with their female patients, and contraceptives are widely available, induced abortion remains one of the main methods of family planning in Russia. While the abortion rate in Russia has declined in the last decade, it is still twice the rate in Estonia and five times the rate in Finland.[1]

In most countries that have low abortion rates, contraceptive use has been encouraged.[2] In the 1990s, an estimated 75% of western European women who were in a steady sexual relationship used reliable contraceptive methods, while in the former Soviet countries the proportion among women of reproductive age was much lower; in Russia, it was estimated to be 25%.[3,4] The impact of recent changes in reproductive health policy in Russia—including restriction of the conditions under which abortion is permissible—can only be assessed at some point in the future.[3]

Historically, induced abortions were very common in Russia, and contraceptive methods were rarely or halfheartedly introduced into practice. Negative attitudes of health care providers were often supported by government policy. For example, in 1974, the USSR Ministry of Health forbade the use of oral contraceptives for contraceptive purposes, though it was prescribed to treat some medical conditions.[5] A ministry document from 1974 listed about 30 contraindications for oral contraceptive use,[6] including cancer risk; most of these contraindications were not cited in other countries' medical recommendations, and current understanding shows them to be inaccurate. Moreover, the ministry monopolized the importation and distribution of medicines.[5] Hence, oral contraceptives and other modern methods were not generally available until the latter half of the 1980s, in part because of providers' negative attitudes.[7,8] As modern contraceptives became increasingly available, use of the pill and the IUD in urban Russia rose at the end of that decade.[5]

Following the collapse of the Soviet Union in 1991, new actors—such as private health care providers, Western pharmaceutical companies, commercial mass media, international foundations and agencies, new nongovernmental organizations and the Russian Orthodox Church—began to play a role in family planning. The church has opposed sex education in schools,[9] while mass media, influenced by pharmaceutical companies, have promoted oral contraceptives and IUDs. But providers of obstetric and gynecologic services had a financial interest in the provision of abortions, and this may have slowed the growing use of contraceptives. Conflicting messages about and approaches

to preventing unintended childbearing may have led to misperceptions and confusion among potential contraceptive users regarding the safety and effectiveness of different contraceptives, further impeding the shift away from reliance on abortion.

The factors associated with contraceptive use have been extensively studied in many European countries.[4,10] At the individual level, use of reliable contraceptives has been associated with being single, high education level and high income, as well as other social, demographic and behavioral characteristics.[4,10,11] For example, older women have an increased likelihood of using the IUD, and younger women have an increased likelihood of using the pill.[4] No current data are available from representative Russian surveys on women's knowledge of, attitudes toward and practice of contraception. A study in the mid-1990s among health service users showed high awareness of contraceptive methods, but not accurate, comprehensive knowledge or widespread use,[12] and a study among adolescents in the early 1990s found that they had poor knowledge about and negative attitudes toward condoms.[13] Because of the limited research and the dramatic changes in Russia's socioeconomic situation, we set out to study characteristics associated with using different contraceptive methods and abortion, among women of reproductive age living in St. Petersburg.

St. Petersburg is the second largest city in Russia, with a population of 4.7 million. Women's clinics are part of the city's public health care system, and they provide a wide range of reproductive health services, mainly through gynecologists and other specialists, such as therapists and psychologists. This study was conducted as part of the REFER Project,[14] whose aim is to assess reproductive health and health services in Russia and St. Petersburg since the collapse of the Soviet Union. The bordering nations of Estonia, another former Soviet state, and Finland are used as comparison countries in the larger project. Estonia was part of the Soviet health care system, but is culturally closer to Finland; the latter is a Nordic welfare country with a low abortion rate. Because data in countries of the former Soviet Union are scarce and often unreliable, REFER's comparative approach helps put new information on reproductive health and associated services in perspective.

METHODS
Procedures
Data were collected between November 2003 and October 2004 in a survey that was conducted by the REFER research group and that has been described elsewhere.[14] For the sake of feasibility, we restricted our study to two districts out of 20: Krasnogvardeyskiy is a residential suburb consisting of areas with populations of diverse socioeconomic status, and district residents are mostly employed in light industry and construction; Primorsky has recently experienced an increase in home-building, and has attracted an influx of businesspeople.

The sample was drawn from databases maintained by the district authority police departments. In these two districts, there were 90,532 women of reproductive age, who were served by three women's clinics; 2,501 women born between 1959 and 1985 were randomly chosen for the study. We sent each woman an invitation letter that described the study and gave contact information for the researchers and for the participating clinics. The letter informed recipients that they would be contacted by telephone to arrange a visit to one of the clinics, where they could complete the confidential survey questionnaire; the questionnaire included 109 closed-ended questions and took about a half hour. Completed questionnaires were placed in an unmarked envelope by the respondent, and so all surveys were anonymous. After completing the questionnaire, respondents were offered a consultation on reproductive health and given the equivalent of a €5 gift.

Thirty-one percent of women in the original random sample could not be located, mainly because they did not live at the registered addresses; some lived elsewhere in Russia or abroad. Among the 1,718 women who were reached by phone, 1,147 (67%) participated in the study. We compared the original sample and the study participants by age and the clinic they lived nearest to, and found the two groups to be very similar.

The questionnaire had been prepared jointly by Finnish, Russian and Estonian researchers and translated from Finnish into Russian. The study was approved by the ethical committee of St. Petersburg Medical Academy of Postgraduate Studies. No formal informed consent was collected, but respondents showed their willingness to participate by completing the questionnaire.

Measures and Analysis
Women's age (18–24, 25–34, 35–44), marital status, level of education, employment, personal income, parity, age at first intercourse and contraceptive use at first intercourse were among the independent variables.[14] Personal income was classified into three categories, which were based on the minimum living wage (2,308 rubles per month) in Russia at the time of the survey (low, signifying less than twice the minimum; middle, two to less than four times the minimum; high, at least four times the minimum).[15]

To determine whether respondents had ever had intercourse, the survey asked "At what age did you have sexual intercourse for the first time?" and "When did you last have sex?" Those who responded to either question that they had had no intercourse were defined as never having had sex. Those who answered no to the question "Do you have plans to have a child (or more children) in the future?" were defined as not wanting to have children. Those who answered "I would not mind if I got pregnant" to the question "If you did not use any contraceptive method in your last sexual intercourse, what was the reason?" were defined as not minding if they became pregnant.

Women who answered yes to the question "Have you been examined or treated for possible infertility?" or who

said they were infertile in response to the previous question about contraceptive use were considered to be infertile. Whether the partner had been sterilized was accounted for if respondents answered this same question by choosing the response "I don't need to because I or my partner cannot have children." Furthermore, women were asked whether they had ever had a miscarriage and how many pregnancies had been terminated by abortion.

Use of different contraceptive methods was assessed by the question "What kind of contraceptive method did you use during your last sexual intercourse?" Respondents were allowed to choose several answers if they had used a combination of methods. Those who had used the IUD, the pill or condoms were classified as having used a reliable contraceptive. Those who had used the calendar method, spermicides, emergency contraception, withdrawal or douching were classified as having used an unreliable method. No women reported having used the injectable, implant, patch or ring.

Separate questions asked women if they had received sex education at home or at school. Possible answers were "yes, even too much"; "yes, sufficient"; "yes, too little"; "no, but I would have wished it"; and "no, and I wouldn't have wished it." Respondents who chose the first or second response were defined as having received sex education, and those who gave other responses were considered not to have received sex education. Women were also asked whether they preferred to visit the women's clinic in their area, a private health care provider or a public health center.

Women were defined as being at risk of unintended pregnancy if they were sexually active, were fertile, did not want to have (more) children, and were not pregnant or breast-feeding a baby younger than two months, and if neither they nor their partner had been sterilized. Women who said they would not mind if they got pregnant were not considered at risk. Only respondents who were at risk of unintended pregnancy were included in the analysis of contraceptive practice.

In bivariate analyses, chi-square tests were used to assess the statistical significance of differences between age-groups. Logistic regression analyses were used to calculate odds ratios assessing associations between women's characteristics and the use of specific contraceptive methods at last intercourse, as well as between characteristics and women's abortion history. Condom use at first intercourse was considered for the analysis of method use at last intercourse, because it is a strong predictor for later contraceptive use, whereas use of any method at first intercourse was considered for abortion outcomes. All regression models were adjusted for age, marital status and parity; SPSS, version 12, was used to conduct the analyses.

RESULTS

Twenty-six percent of sample respondents were aged 18–24, 30% were 25–34 and 43% were 35–44. Nearly half of the women were married; the proportion ranged from 21% of 18–24-year-olds to 63% of 35–44-year-olds (Table 1).

The lowest proportions of single and cohabiting women were found in the oldest age-group (7% and 10%). Half of all respondents had received 14 or more years of education, and seven in 10 were employed. Seventy percent were in the low or middle income level.

Sexual and Reproductive Characteristics

A higher proportion of women in the youngest age-group than in the oldest age-group had their first sexual intercourse when they were younger than 18 (50% vs. 17%—Table 2, page 54). Among sexually experienced women, 57% of 18–24-year-olds, 42% of 25–34-year-olds and 17% of 35–44-year-olds had first sex before turning 18; the mean age at first sex ranged from 17 among the youngest age-group to 20 among the oldest age-group (not shown). Of the 1,147 study participants, 96% were sexually experienced and were included in further analysis. The proportion of women who were sexually experienced did not differ among age-groups.

As expected, the proportion of sexually experienced women who had had children increased with age, from 23% in the youngest cohort to 91% in the oldest. The proportion who had had a miscarriage increased from 4% to 20% across cohorts, while the proportion of all women who said they wanted to have children in the future was 79% in the youngest group and only 6% in the oldest. Furthermore, among sexually experienced respondents,

TABLE 1. Percentage distribution of women aged 18–44, by selected characteristics, according to age, St. Petersburg, Russia, 2003–2004

Characteristic	Total (N=1,147)	18–24 (N=304)	25–34 (N=349)	35–44 (N=492)
Marital status†				
Single	24.8	58.2	20.9***	6.9***
Married	47.2	21.1	47.9***	63.0***
Cohabiting	14.8	18.8	18.1**	10.0**
Divorced/separated	13.0	2.9	13.7	18.7
Widowed	2.9	0.0	2.3	5.1
Education (yrs.)				
≤10	5.4	3.6	7.2	5.3
11–13	42.1	41.1	39.8	44.3
14–16	39.0	47.4	33.5	37.8
≥17	12.8	7.6	18.3	12.0
Missing	0.7	0.3	1.1	0.6
Employment				
Employed	71.2	48.7	75.9***	81.7***
Unemployed	3.5	5.9	2.3	2.8
Housewife	11.3	8.6	13.2	11.6
Student	8.5	30.3	1.1***	0.2***
Pensioner/other	5.6	6.6	7.4	3.7
Personal income‡				
Low	38.3	45.4	33.5	37.4
Middle	32.4	28.6	32.4	34.8
High	14.5	7.2	19.2*	15.7
Missing	14.8	18.8	14.9	12.2
Total	100.0	100.0	100.0	100.0

*p<.05. **p<.01. ***p<.001. †Percentages do not add to 100.0 because some respondents chose several categories. ‡Based on the minimum living wage (2,308 rubles per month) at time of survey: Low=less than twice the minimum; middle=two to less than four times the minimum; high=at least four times the minimum. *Notes:* Significance testing compared the 25–34 and 35–44 age-groups against the 18–24 age-group. Totals include two women who did not give their age.

TABLE 2. Percentage distribution of women, by selected reproductive and contraceptive use characteristics, according to age

Characteristic	Total	18–24	25–34	35–44
Age at first intercourse	(N=1,147)	(N=304)	(N=349)	(N=492)
13–15	7.3	16.4	8.3	1.0***
16–17	25.7	33.6	33.0	15.7**
18–19	33.0	26.3	34.1	36.4
≥20	28.8	10.2	22.1*	45.1***
Never had sex	3.4	10.9	0.9**	0.6**
Missing	1.7	2.6	1.7	1.2
Ever had intercourse	(N=1,147)	(N=304)	(N=349)	(N=492)
Yes	96.2	88.2	98.6	99.4
No	3.8	11.8	1.4	0.6
Parity†	(N=1,103)	(N=268)	(N=344)	(N=489)
0	33.2	77.2	33.4***	8.8***
1–2	62.6	22.8	65.4***	82.4***
≥3	4.3	0.0	1.2	8.8**
Ever had a miscarriage†	(N=1,103)	(N=268)	(N=344)	(N=489)
Yes	14.4	4.1	14.2*	20.0**
No	85.6	95.9	85.8	80.0
Wants to have children in the future	(N=1,147)	(N=304)	(N=349)	(N=492)
Yes	38.8	79.3	49.3***	6.3***
No	29.8	3.6	16.9**	55.1***
Don't know	11.8	10.5	14.0	11.0
Missing	19.7	6.6	19.8	27.6
Would mind if got pregnant†	(N=1,103)	(N=268)	(N=344)	(N=489)
Yes	89.6	84.0	87.5	94.3
No	10.4	16.0	12.5	5.7*
Infertile†	(N=1,069)	(N=260)	(N=330)	(N=477)
Yes	19.9	10.8	22.7*	22.9*
No	80.1	89.2	77.3	77.1
No. of abortions†	(N=1,103)	(N=268)	(N=344)	(N=489)
0	45.0	74.6	44.2***	29.2***
1	21.1	18.7	23.8	20.4
2	15.8	5.6	17.2*	20.4**
≥3	18.2	1.1	14.8***	29.9***
Method at first intercourse‡	(N=1,103)	(N=268)	(N=344)	(N=489)
Pill	1.5	0.7	2.0	1.4
Condom	23.6	44.4	23.5**	12.3***
Withdrawal	27.2	30.6	29.4	23.7
Calendar method	5.5	0.7	4.9	8.6*
Spermicide	0.9	2.2	0.6	0.4
Emergency contraceptive	2.7	1.5	4.9	1.8
No method	47.3	25.0	43.9**	62.0***
Method at last intercourse§	(N=769)	(N=201)	(N=238)	(N=330)
Reliable	57.6	64.7	59.2	52.1
IUD	8.6	1.5	4.6	15.8***
Pill	11.8	17.4	12.6	7.9
Condom	41.9	48.3	46.6	34.5
Other	0.4	0.0	0.0	1.2
Unreliable	30.8	31.9	33.6	32.4
Withdrawal	25.1	31.3	26.1	20.6
Calendar method	16.8	6.0	16.0*	23.9**
Douching	11.6	7.5	9.7	15.5
Spermicide	4.3	3.5	7.6	2.4
Emergency contraceptive	0.9	0.5	0.8	1.2
No method	11.6	10.4	7.1	15.5
Total	100.0	100.0	100.0	100.0

*p<.05. **p<.01. ***p<.001. †Among sexually experienced women. ‡Percentages do not add to 100.0 because respondents could choose several methods. §Among women at risk of unintended pregnancy, defined as those who were sexually active, fertile, not sterilized, and not pregnant or breast-feeding a baby younger than two months, and did not want to have (more) children. Percentages do not add to subtotals because respondents could choose several methods. "Other" includes the injectable, implant, patch, ring and sterilization. *Notes:* Significance testing compared the 25–34 and 35–44 age-groups against the 18–24 age-group. Totals for all measures except method at last intercourse include two women who did not give their age.

16% of the youngest women said they would not mind if they got pregnant now, but only 6% of the oldest women reported the same. Nearly a fourth of experienced women in the older age-groups indicated that they were infertile, whereas only one in 10 in the youngest group did so. Only small proportions of women had received sex education—21% at home and 8% at school (not shown). A higher proportion of the youngest women than of the oldest women had received sex education at home (36% vs. 12%); 37% of all respondents reported that their sex education had been insufficient.

More than half of sexually experienced women had had an abortion, including a quarter of those aged 18–24. The proportion who had had two abortions increased with age (6% of 18–24-year-olds, 17% of 25–34-year-olds and 20% of 35–44-year-olds), as did the proportion who had had three or more abortions (1%, 15% and 30%, respectively).

At first intercourse, about a fourth of women had used a condom, and another fourth had used withdrawal, while nearly half had used no method. Forty-four percent of 18–24-year-olds had used a condom, as had 24% of 25–34-year-olds and 12% of 35–44-year-olds. Use of the calendar method was lowest among the youngest age-group and highest among the oldest (1% vs. 9%). The proportion of women who had used no method at first intercourse rose steadily with age (from 25% to 62%).

Among sexually experienced women, 70% were at risk of unintended pregnancy. At last intercourse, 58% of these at-risk women had used a reliable contraceptive; 65% of the youngest women and 52% of the oldest had used a reliable method, although the difference was not statistically significant. Forty-two percent of at-risk respondents had used a condom at last intercourse, 12% had used the pill and 9% the IUD. Use of the IUD was highest among the oldest age-group and lowest among the youngest (16% vs. 2%).

Thirty-one percent of women who were at risk of unintended pregnancy had used an unreliable method at last intercourse. Withdrawal was used by 25% of at-risk respondents, and the calendar method by 17%; the latter method was reported by 24% of 35–44-year-olds and 16% of 25–34-year-olds, but by only 6% of the youngest respondents. Twelve percent of women reported using douching, and small proportions had used spermicides or emergency contraceptives. Another 12% of at-risk women had used no method at last sex.

Of all study participants, 52% preferred to visit a women's clinic for a consultation on contraceptive use; 17% preferred private care, and 3% a public health center (not shown). About 25% of respondents had no preference, and 3% did not answer the question.

Multivariate Analysis

On the basis of multivariate analysis, using an unreliable or no method at last intercourse was associated with two characteristics: having had one or two children and having not used a condom at first intercourse (odds ratios, 2.1

and 2.2, respectively—Table 3). Characteristics correlated with the odds of nonuse only were being aged 25–34 (0.4), having had 14–16 years of education (0.3), having had one or two children (2.5) and not having used a condom at first intercourse (2.2).

Women in the middle income level were more likely to have used the pill at last intercourse than were those with low income (odds ratio, 2.1); women with high income were not more likely to have used this method, probably because of the small sample size. Cohabiting women and those who had borne children had reduced odds of reporting condom use at last sex (0.6 and 0.3–0.5, respectively). Strong correlations were found between age and education level and the use of the calendar method at last intercourse: Women in the two older age-groups were more likely than the youngest women to have used this method (2.4 and 3.9, respectively), and those with the two highest education levels were more likely than those with the least education to have done so (4.6–4.7). Those who had had one or two children also had elevated odds of having used

the calendar method (1.9). Women in the oldest cohorts were less likely than the youngest women to have used withdrawal at last intercourse (0.4–0.6), and students were more likely than employed women to report such use (2.3). We found no associations between method use and women's desire to have children in the future.

The characteristic that was most strongly associated with ever having had an abortion was parity (Table 4, page 56): Women who had had one or two children and those who had had three or more were more likely than those who had had none to have had an abortion (odds ratios, 5.7 and 4.9, respectively). Other background characteristics correlated with an increased risk for abortion were being 25 or older (2.2–3.5), cohabiting with a partner (2.9), having high income (1.7), having had first intercourse when younger than 18 (2.2) and having not used a contraceptive at first sex (1.5). Students were less likely than employed women to report having had an abortion (0.4). Notably, the reliability of the contraceptive used at last intercourse was not correlated with abortion history.

TABLE 3. Adjusted odds ratios (and 95% confidence intervals) from logistic regression analyses assessing associations between contraceptive use at last intercourse and selected characteristics, among women at risk of unintended pregnancy

Characteristic	Unreliable/ none	None	Pill	Condom	Calendar	Withdrawal
Age						
18–24 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
25–34	0.94 (0.61–1.44)	0.44 (0.21–0.91)	0.81 (0.46–1.44)	1.29 (0.85–1.95)	2.39 (1.16–4.92)	0.62 (0.39–0.99)
35–44	1.14 (0.73–1.79)	0.85 (0.44–1.67)	0.54 (0.27–1.06)	0.90 (0.58–1.42)	3.86 (1.87–7.96)	0.44 (0.27–0.73)
Marital status						
Married (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Cohabiting	1.60 (0.99–2.57)	0.92 (0.43–1.95)	1.38 (0.69–2.76)	0.57 (0.34–0.93)	1.15 (0.61–2.16)	1.17 (0.69–1.98)
Unmarried	1.22 (0.84–1.78)	0.96 (0.55–1.70)	0.91 (0.49–1.67)	0.95 (0.65–1.40)	1.14 (0.71–1.84)	1.01 (0.66–1.56)
Education (yrs.)						
≤10 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
11–13	1.39 (0.70–2.75)	0.54 (0.23–1.27)	0.78 (0.26–2.39)	1.07 (0.53–2.17)	4.16 (0.96–18.02)	1.21 (0.54–2.73)
14–16	0.93 (0.46–1.85)	0.33 (0.13–0.81)	1.19 (0.40–3.61)	1.32 (0.65–2.68)	4.61 (1.06–20.02)	1.35 (0.60–3.04)
≥17	1.06 (0.50–2.27)	0.85 (0.33–2.20)	1.51 (0.46–4.92)	0.96 (0.44–2.10)	4.72 (1.03–21.55)	1.10 (0.45–2.70)
Employment						
Employed (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Unemployed	2.16 (0.92–5.07)	1.57 (0.50–4.90)	0.61 (0.14–2.71)	0.69 (0.28–1.70)	2.41 (0.92–6.37)	2.09 (0.88–4.98)
Housewife	0.92 (0.57–1.49)	1.28 (0.65–2.51)	0.83 (0.36–1.89)	1.19 (0.73–1.95)	0.76 (0.40–1.48)	0.81 (0.45–1.45)
Student	1.40 (0.75–2.62)	0.50 (0.14–1.84)	1.13 (0.52–2.42)	0.66 (0.36–1.21)	0.21 (0.03–1.61)	2.30 (1.21–4.39)
Pensioner/other	0.88 (0.45–1.70)	1.60 (0.65–3.87)	0.70 (0.24–2.06)	1.18 (0.61–2.25)	1.00 (0.40–2.51)	1.63 (0.81–3.26)
Personal income†						
Low (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Middle	0.72 (0.48–1.09)	1.10 (0.64–1.89)	2.07 (1.18–3.63)	0.95 (0.67–1.36)	1.15 (0.71–1.87)	0.92 (0.61–1.38)
High	0.51 (0.25–1.06)	0.39 (0.15–1.05)	1.82 (0.90–3.67)	1.07 (0.68–1.69)	1.40 (0.77–2.51)	1.03 (0.61–1.72)
Parity						
0 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
1–2	2.08 (1.34–3.21)	2.54 (1.19–5.41)	0.63 (0.33–1.18)	0.47 (0.30–0.72)	1.90 (1.02–3.57)	1.63 (1.00–2.65)
≥3	2.20 (0.92–5.27)	2.87 (0.81–10.13)	0.87 (0.22–3.53)	0.33 (0.13–0.85)	0.20 (0.02–1.60)	0.66 (0.18–2.44)
Age at first intercourse						
≥18 (ref)	1.00	1.00	1.00	1.00	1.00	1.00
<18	1.12 (0.80–1.56)	1.34 (0.80–2.26)	1.30 (0.81–2.10)	0.80 (0.57–1.12)	0.66 (0.41–1.08)	0.96 (0.66–1.39)
Used condom at first intercourse						
Yes (ref)	1.00	1.00	1.00	1.00	1.00	1.00
No	2.24 (1.53–3.26)	2.15 (1.11–4.16)	0.74 (0.47–1.17)	0.50 (0.37–2.68)	1.17 (0.74–1.86)	1.21 (0.85–1.72)

†Based on the minimum living wage (2,308 rubles per month) at time of survey: Low=less than twice the minimum; middle=two to less than four times the minimum; high=at least four times the minimum. *Notes:* Women were considered at risk of unintended pregnancy if they were sexually active, fertile, not sterilized, and not pregnant or breastfeeding a baby younger than two months, and did not want to have (more) children. ref=reference category.

TABLE 4. Adjusted odds ratios (and 95% confidence intervals) from logistic regression analyses assessing associations between abortion history and selected characteristics, among sexually experienced women

Characteristic	Ever had an abortion	Had ≥2 abortions
Age		
18–24 (ref)	1.00	1.00
25–34	2.16 (1.36–3.43)	3.54 (2.02–6.22)
35–44	3.54 (2.18–5.77)	5.86 (3.35–10.27)
Marital status		
Married (ref)	1.00	1.00
Cohabiting	2.91 (1.63–5.21)	2.08 (1.35–3.22)
Unmarried	0.96 (0.64–1.45)	1.00 (0.71–1.40)
Education (yrs.)		
≤10 (ref)	1.00	1.00
11–13	1.16 (0.54–2.47)	0.81 (0.44–1.46)
14–16	0.71 (0.33–1.52)	0.54 (0.29–0.81)
≥17	1.03 (0.45–2.40)	0.71 (0.36–1.39)
Employment		
Employed (ref)	1.00	1.00
Unemployed	1.08 (0.42–2.81)	2.14 (0.96–4.78)
Housewife	0.71 (0.42–1.19)	1.01 (0.67–1.53)
Student	0.39 (0.16–0.96)	0.57 (0.13–2.56)
Pensioner/other	0.67 (0.34–1.34)	0.87 (0.46–1.64)
Personal income†		
Low (ref)	1.00	1.00
Middle	1.01 (0.68–1.51)	1.33 (0.95–1.86)
High	1.72 (1.02–2.91)	1.38 (0.90–2.11)
Parity		
0 (ref)	1.00	1.00
1–2	5.65 (3.52–9.06)	6.23 (3.90–9.96)
≥3	4.94 (1.87–13.04)	6.60 (3.11–14.01)
Age at first intercourse		
≥18 (ref)	1.00	1.00
<18	2.17 (1.46–3.24)	1.70 (1.21–2.37)
Used contraceptive at first intercourse		
Yes (ref)	1.00	1.00
No	1.53 (1.08–2.17)	1.82 (1.36–2.45)
Reliability of method at last intercourse		
Reliable (ref)	1.00	1.00
Unreliable	1.34 (0.98–1.84)	1.83 (1.28–2.62)
No method	1.22 (0.86–1.71)	1.71 (1.23–2.38)

†Based on the minimum living wage (2,308 rubles per month) at time of survey: Low=less than twice the minimum; middle=two to less than four times the minimum; high=at least four times the minimum. *Note:* ref= reference category.

The characteristics that were associated with having had two or more abortions were similar to those associated with ever having had an abortion, with several exceptions. Women who had used an unreliable or no method at last intercourse had increased odds of reporting two or more abortions (odds ratios, 1.8 and 1.7, respectively), and women with 14–16 years of education had decreased odds of repeat abortions (0.5). Furthermore, two characteristics lost significance in this model: student status and high income level.

DISCUSSION

The main findings of our study were that nearly six in 10 women at risk of unintended pregnancy had used a reliable contraceptive method at last intercourse, while nearly a third had used an unreliable method and one in 10 had used no method. Furthermore, women in the middle income level were more likely than women with low income to use the pill, failure to use a condom at first intercourse was associated with contraceptive nonuse at last intercourse and failure to use any method at first sex was correlated with having had abortions. In addition, having had children, cohabiting and being in the older age-groups were positively correlated with abortion history.

The fact that about four in 10 women reported using an unreliable or no method at last intercourse was not unexpected, given the lack of an effective national policy to improve contraceptive use, as well as the opposition of many health professionals to wider use of modern methods. Historically, induced abortions have been a common birth control method in Russia, except during periods of political repression in the 1930s and 1950s, and during the Second World War.[9]

We were surprised to find, in contrast with findings in western European countries,[4,16] that level of education was not associated with the use of reliable methods. However, greater education was associated with less method nonuse and more use of the calendar method. Furthermore, our finding that women in the middle income level showed an increased likelihood of using the pill may reflect that these women can afford to buy these contraceptives, which have to be paid for out of pocket.

In our study, a quarter of the youngest respondents— those born in the 1980s—had had at least one abortion. The odds of having had an abortion were higher among respondents born in the 1960s and 1970s, possibly because older women have had more opportunity to experience unintended pregnancies. Another possible reason is that the youngest women may simply use more reliable contraceptive methods. For example, a 2004 study in St. Petersburg found that women aged 35–44 were more likely than younger women to have used no method at first intercourse.[14] However, we do not know whether the proportion of women who wanted to become pregnant at first sex has varied over time. Before the 1990s, Russian women were expected to marry and have a child during early adulthood.[17]

Other factors strongly associated with abortion were cohabiting and having had children. This could be partially explained by the facts that cohabiting women and those who had borne children were less likely to use condoms; another reason may be that once a woman has had children, she is more likely to rely on abortion to control family size. We found no association between education level and abortion; this unexpected result may be explained by the lack of unambiguous information about the safety and effectiveness of contraceptives, as well as by financial barriers.

The comparison of our findings with data for St. Petersburg in 1996[18] suggests that overall, use of effective contraceptive methods has not improved substantially; the proportion of women who use reliable contraceptives is the same as that found in the earlier study. Furthermore,

in St. Petersburg in 1996, one-third of the population studied had used the rhythm method or withdrawal at last intercourse, about the same proportion who had used an unreliable method in our study.

Limitations

This study has several possible limitations. Regarding our results on the use of reliable contraceptives, it should be noted that we classified condoms as a reliable method, yet condoms are reliable only if used correctly and consistently. Although a survey of youths living in Moscow showed that almost half of them had used condoms consistently in the last six months,[19] the classification of condoms as a reliable method is a potential limitation in our analysis of factors associated with having an abortion.

Furthermore, abortion was self-reported, and we did not ask about the gestational age at which abortions were performed. We also assumed that any memory bias would not vary by respondents' characteristics; however, it is possible that women of different backgrounds may have responded in systematically biased ways. Finally, miniabortion, or menstrual regulation, has become very common in Russia, and many respondents likely consider its use to be an abortion. These procedures take place in women's clinics or hospital gynecologic departments and are performed by the same personnel who perform abortions.

Conclusions

Our study found that a middle income level was associated with increased use of the pill, while education level was not, and that failure to use a condom at first intercourse was correlated with method nonuse at most recent intercourse, while failure to use any method at first sex was associated with having had an abortion. This survey did not collect data on reproductive health services in St. Petersburg, but two policy actions that would help improve contraceptive use are to abolish financial barriers to method use and to create and promote educational programs on reproductive health, especially for young women. In addition to efforts to reduce unplanned pregnancies, public programs are needed to educate women about STD prevention, which is especially important in light of the current HIV epidemic in Russia. Because condoms are by far the most common method used by Russian women,[20] consistent condom use should be the key message for most women. However, the current financial situation of Russian women makes dual method use (e.g., use of an oral contraceptive as well as a condom) unrealistic.

Thus far, attempts to establish school-based sex education in Russia have failed because of the negative attitudes of teachers, parents and medical workers, as well as politicians and the Russian Orthodox Church.[9,21,22] The situation is further complicated by other interest groups, such as private medical care providers and pharmaceutical companies, each with its own agenda. Given the current cultural climate, it is not clear what approach would be best in mounting an effective reproductive health program. Further research is needed to identify the optimal approaches for developing and implementing comprehensive family planning and reproductive health programs.

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