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Abortion trends 1990–1999 in a Swiss region and determinants of abortion recurrence

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Summary

Objective: To assess age- and nationality-specific trends in abortion rates over the last decade, and to describe women's characteristics, identifying risk factors for repeated abortion.

Methods: From 1990–1999, the Health Department of Canton Vaud (Switzerland) received 13'857 abortion requests from residents aged 14–49. Population data were obtained to compute rates.

Results: Both the number of abortions (1400 annually) as well as their rate (8.9 per thousand women [95% confidence interval (CI) 7.3–10.5]) were stable over the decade in question. The rate of abortion for foreign women, especially from ex-Yugoslavia and Africa, was twice that for Swiss women. Half of the requests came from single women, 43% had a low education level, and half were childless. The main reason for requesting termination of pregnancy was psychosocial (93%). The mean gestational age was 7.7 weeks (SD ± 2.3), but 96% of requests were submitted before 12 weeks. Sixty-three percent of women reported that they had used no contraception, 36% the condom and 17% the pill. Among requests, the adjusted risk of repeated abortion (22% of abortion candidates) was greater among divorced/separated/widowed women (odds ratio [OR] 1.9 [95% CI 1.5–2.4]), unemployed women (OR 1.8 [95% CI 1.5–2.1]), and those who had not attended university (OR 1.6 [95% CI 1.1–2.2]).

Conclusions: Although Swiss law only permitted abortion under strict conditions, this procedure was widely available in Vaud, which nevertheless has one of the lowest rates worldwide. Efforts must be intensified to ensure universal access to family planning services, especially for foreign women and adolescents. Professionals should also target "repeaters" to provide personalised counselling.

Key words: induced abortion; contraception; Switzerland; epidemiology; primary prevention; emigration; immigration

Introduction

The only available data on abortion at the national level in Switzerland are based on estimates [1]. This country had one of the most restrictive laws on abortion, until the popular vote of June 2, 2002 [2]. According to the law dating from 1942, the woman and the operator could be sentenced to jail, unless the abortion was performed by a physician, the women had given her written consent, a second medical opinion had been elicited, or that there was an otherwise unavoidable life-threatening danger or one that seriously and permanently threatened the woman's health [3]. Each of the 26 cantons is entitled to issue different application regulations. In practice, the possibility of terminating a pregnancy existed in almost all cantons.

Disparities in terms of access to abortion probably still persist, but are difficult to document in the absence of epidemiological data. Vaud is the only canton that records more than a simple count of abortions. Since 1993, the Canton of Vaud Health Authorities and epidemiologists worked together to actually implement recommendations published by the latter in order to improve the content of the questionnaire completed by second opinion physicians [4, 5].

This paper aims to: (1) describe the trends of abortion request rates over the last decade by age and nationality in Vaud; (2) to describe women who required for abortion between 1997 and 1999 (first analyses of the improved questionnaire format implemented in 1997); (3) to identify the risk factors for repeated abortion in the set of variables studied between 1997 and 1999 among women who wish to terminate their pregnancy.

This study has been conducted with the financial support of the Service de la santé publique du canton de Vaud.

Population and methods

Request figures rather than actual abortions were used, because hospital outcome data are not yet reliable enough in this country. It is estimated that 3–10% of women requesting an abortion choose to continue their pregnancy [29]. After exclusion of 2153 requests from non-residents (13.4%), 13'857 abortion requests were received from residents between 1990 and 1999, of which 4340 concerned the years 1997–1999.

Methods have been described previously [4]. Individual questionnaires were filled in by physicians appointed by the Health Authority to deliver the second opinion for each request. They were sent to the Health authority twice a year and then reviewed by a secretary who asked physicians to fill in missing data in as much as the data were retrievable from medical records. The questionnaire provided *reported* information regarding various socio-economic issues, circumstances of the request, use of contraception and previous abortion. All anonymous questionnaires were sent once a year to the research team for data entry and data analysis was performed on SPSS-Windows version 10.0. In the case of denial of abortion by the second opinion physician, the request is forwarded to an appeals commission which makes a final decision (negative in less than 1% of all abortion requests). Clandestine abortions have disappeared since the seventies, due to the liberalisation of the abortion practice [3].

Population data (residents and livebirths) were extracted by the Service of Cantonal Research, Information and Statistics from the Federal Office of Statistics' records and from the Foreigners' Registry. The following formulas were used:

1. abortion request rate per thousand women: abortion requests/women aged 14–49 living in Vaud × 1000

2. abortion request rate per thousand conceptions ≥7 weeks: abortion requests / (abortion requests + [0.1 × abortion requests] + livebirths + [.2 × livebirths]) × 1000 [6].

The χ^2 statistics at the 0.05 level was used when appropriate to assess the statistical significance of differences in bivariate analyses. Since the total reference population was studied, 95% confidence intervals (CI) were constructed only around overall rates, but not for subgroups presented in the figures.

Because corresponding population data other than age and nationality were not available, risk factors could only be measured in the abortion population through logistic regression techniques, with all statistically significant variables in bivariate analysis entered in the model. Since age was associated with several independent variables such as the number of children, marital status, education, current activity, and the dependent variable, it was included in the model as a continuous control variable. Categorical variables with similar odds ratios (OR) across subgroups, such as education and current activity, were dichotomised in the final model.

Results

Trends of abortion request rates from 1990 to 1999 in Vaud

The number of abortion requests has remained stable between 1990 and 1999 with an average of around 1400 requests per year. The abortion request rate in Vaud was 8.9 per thousand women aged 14–49 [95% CI: 8.8–9.0]. The rate was 5.9 per thousand adolescents [95% CI: 5.6–6.2], 4.4 for Swiss girls [95% CI: 4.1–4.7] and 9.6 for foreign girls [95% CI: 8.8–10.4]), and did not show relevant variation across the 10 years, with a slight decrease between 92 and 95–96 and a slight upwards trend in 1998–1999 (figure 1). Overall, most of the variations in the abortion request rate followed the same trend and were due to variations among foreign women. The highest rates were found for 20- to 29 and 30- to 39-year-old foreigners, peaking respectively at 34.3 [95% CI: 31.8–36.7] and 20.3 per thousand women [95% CI: 18.7–21.9] in 1998, with a crude relative risk of 2.7 and 2.3 over the decade as compared to their Swiss counterparts (figure 1).

As shown on figure 2, the overall proportion of conceptions ending in abortion was stable, at 122 per thousand conceptions for all women [95% CI: 120–124]. While it has remained remarkably stable among Swiss women, it has exhibited some increase since 1995 for foreign adolescent women (mean of 552 per thousand for adolescents [95% CI: 520–584]) and a downward trend for foreign women aged 40 and over (mean of 264 per thousand [95% CI: 246–282]).

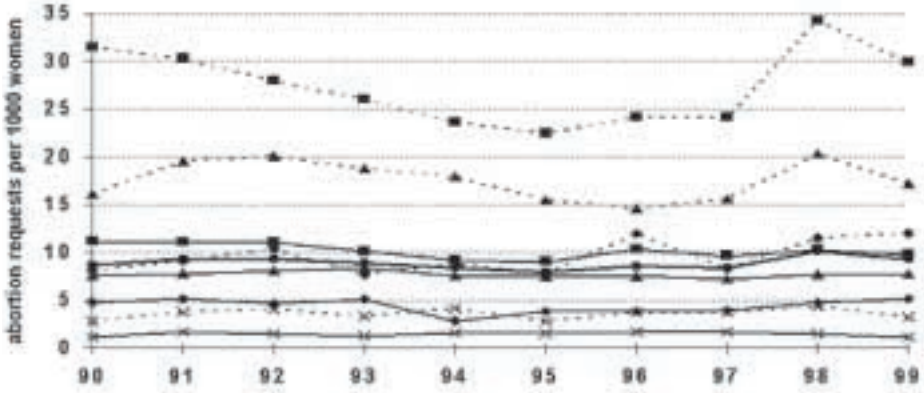


Figure 1

Abortion requests rate per 1000 women aged 14–49 (Vaud 1990–1999).

Figure 2

Incidence of abortion requests per 1000 conceptions (Vaud 1990–1999).

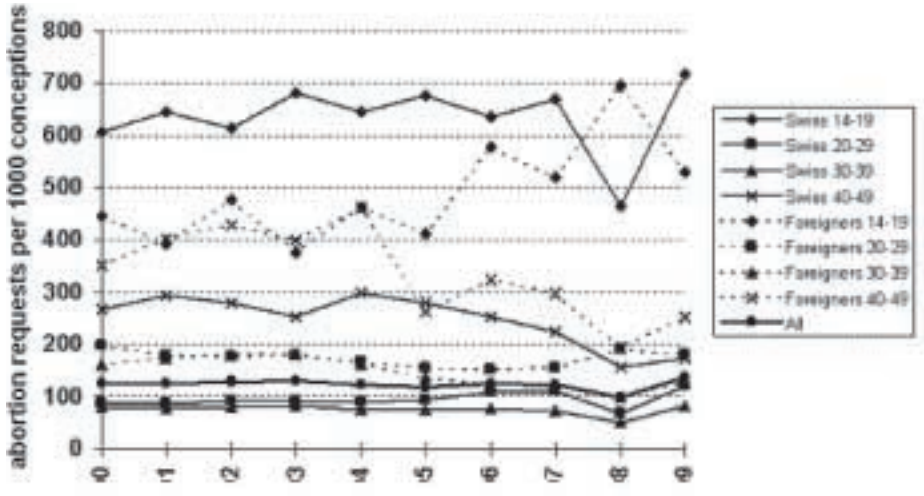
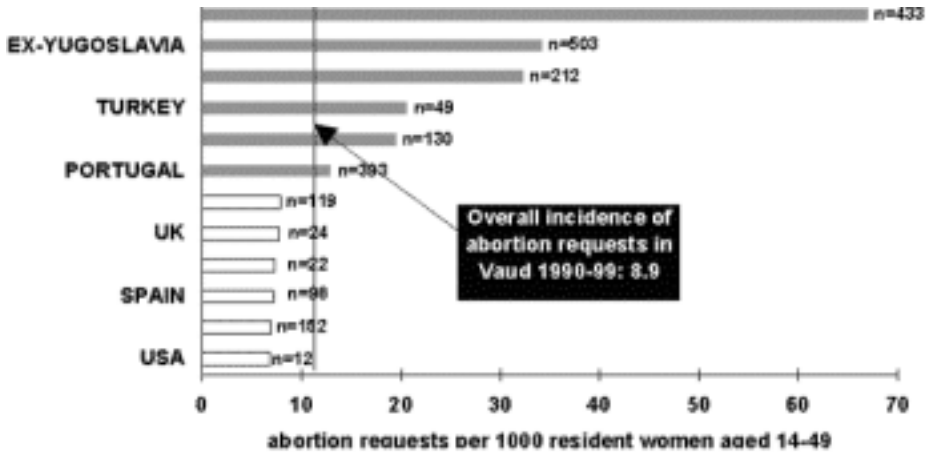


Figure 3

Abortion requests rate per 1000 women by specific nationalities (Vaud 1997–1999).



Demographic and reproductive characteristics (1997–1999)

The characteristics of the study population are provided in table 1. Age distribution was significantly different between Swiss and foreign women, with fewer abortions in the "extreme" ages for foreigners than for Swiss women (P <0.001). Marital status does not adequately describe living arrangement: 4% of married women did not live with a partner, while 18% of single-persons lived with a partner, as did 20% of divorced women, 16% of separated women and 14% of widows. The proportion of women living with a partner increases steadily with age, from less than 2% during adolescence to 80% after age 44. Foreigners lived with a partner significantly more frequently than Swiss women (50% vs. 37%, P <0.001).

The distribution of education status remained ostensibly the same across age categories, even though adolescents should theoretically be less likely to have completed more than primary school or an apprenticeship. The relationship with age is clearer for current activity: 34% of adolescents were students vs. 2% of women aged 29 and over, while the proportion of regular work increased correspondingly from 12% to 49%, and being in the household from 1% to 23%. Nine percent of women, including adolescents, reported living on social benefits.

Among women with at least one child, the mean interval between the last delivery and the present abortion request was 5.3 years (SD ± 4.5), with a maximum of 26 years. This interval increased with age, and was higher among divorced women (7.7 ± 4.8 years) and widows (7.9 ± 5.2 years).

Reasons for terminating the pregnancy were mostly psychosocial and varied little with age, except for psychiatric illness (from 1% among teenagers to 5% between 35 and 39 years) and maternal somatic disease (from 0.8% among adolescents to 4.8% at 40 and over).

The mean gestational age was 7.7 completed weeks (SD ± 2.3) irrespective of nationality, and decreased slightly with age. It was highest if the abortion resulted from the detection of a foetal disease (11.4 ± 5.7 weeks). While 57% of the 4116 requests were made by 7 weeks, 39% were submitted between 8 and 12 weeks, 3% between 13 and 20 weeks, and 0.3% beyond.

Foreigners made up for 51% of all abortion requests, but represented only 27% of the 14- to 49-year-old female resident population.

Figure 3 indicates that women from Africa (67

Table 1

Reproductive and demographic characteristics of women who requested an abortion between 1997 and 1999 in Vaud, Switzerland (n = 4340).

		n	%
Age (years)	<20	383	8.9
	20–24	994	23.2
	25–29	1012	23.6
	30–34	979	22.8
	35–39	665	15.5
	40–44	232	5.4
	45–49	24	0.6
Nationality	Swiss	1932	44.5
	foreign	2408	55.5
Marital status	married	1619	37.5
	divorced	363	8.4
	separated	250	5.8
	single	2051	47.5
	widow	31	0.7
Living with a partner?	yes	1671	44.4
	no	2089	55.6
Living with a partner for	≤ 6 months	167	10.9
	1 year	128	8.4
	>1 to 2 years	151	9.9
	>2 to 5 years	302	19.8
	>5 to 10 years	419	27.4
	>10 years	362	23.7
Education	≤Primary school	1784	42.6
	Apprenticeship	1274	30.4
	Technical school (non university)	787	18.8
	University	342	8.2
Current professional activity	Student	436	10.5
	Apprentice	164	3.9
	Au pair	54	1.3
	In household	636	15.3
	Unstable work	258	6.2
	Regular paid work	1773	42.6
	Unemployed	385	9.2
	social benefits	364	8.7
	other	95	2.3
Reason for abortion	maternal disease	122	2.9
	foetal risk	49	1.2
	rape, incest	19	0.5
	psychiatric illness	104	2.5
	psychosocial	3901	93.0
Nb living children	0	2125	49.8
	1	783	18.4
	≥2	1358	31.8
Previous abortion/s	No	3208	77.8
	yes	917	22.2
Number of previous abortion/s	1	740	80.9
	2	125	13.7
	≥3	50	5.5

per thousand), ex-Yugoslavia (34 per thousand), South and Central America (32 per thousand) and Turkey (21 per thousand) were at highest risk of abortion use.

Contraception (1997–1999)

The vast majority of women (63%) reported to have used no method of contraception at the time of the present conception (table 2). This proportion increased to over 70% at ages forty and above. The most current reported method was the condom (36%), followed by the pill (17%, and, even after 44 years, 11%) and coitus interruptus (5%). Methods varied little with age except for condom use, reported by almost half of the adolescents, but only by 16% of women aged 45 and over. Condom use was more frequent among Swiss women than among foreigners (44% vs. 30%, P <0.001), whereas the opposite was true for coitus interruptus (3% vs. 7%, P <0.001).

Repeated abortion (1997–1999)

As it was impossible to relate the abortion dataset to the population databases, it was decided to explore the repetition of abortion (inferred from the patient's own report) within the dataset of abortion requests. One quarter of women had undergone an abortion before (table 1). Significantly more foreigners than Swiss women had experienced previous abortions (25.1 vs. 18.6%, P <0.001). The risk of repeated abortion within the abortion population followed a bell-curve, first increasing with age, from 7.3% among adolescents to 30.8% among 30- to 34-year-olds, then decreasing after age 34 to 13.0% after age 44.

Not living with a partner and reporting no use of contraception were not significantly associated with the probability of repeated abortion, while having children was (especially having one child), as well as being divorced, separated or widowed, having attended only primary school or less, being unemployed or on social benefits, having used oral contraception, and *not* having used a condom (table 3).

Table 4 shows that the number of living children and condom use were no longer associated with repeated abortion when other variables in the model were held constant, while foreign nationality remained a significant independent risk factor. Divorced, separated and widowed women had almost twice the risk of repeated abortions than single women, and the risk also increased for unemployed women and those living on social benefits compared to those who were in the work force or at home. Non-university education also significantly increased the odds of repeated abortions, as well as reporting not having used oral contraception. Odds ratios did not change when somatic reasons for abortion were excluded (n = 171).

Table 2
Contraception (non exclusive methods) at the time of conception by nationality and age, Vaud 1997–1999 (n = 4340).

	nationality				age (years)													
	Swiss		other		<20		20 to 24		25 to 29		30 to 34		35 to 39		40 to 44		45 to 49		total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No contraception	1080	60.7	1492	65.6	232	63.4	581	61.5	604	64.0	570	63.1	388	62.9	150	70.1	14	73.7	2539	63.3
Condom	775	43.5	671	29.5	170	46.4	387	41.0	326	34.5	271	30.0	200	32.4	71	33.2	3	15.8	1428	35.6
Oral	335	18.8	368	16.2	49	13.4	179	19.0	180	19.1	170	18.8	96	15.6	19	8.9	2	10.5	695	17.3
Infertile days	100	5.6	144	6.3	8	2.2	48	5.1	51	5.4	59	6.5	46	7.5	25	11.7	3	15.8	240	6.0
Coitus interruptus	61	3.4	152	6.7	10	2.7	42	4.4	40	4.2	62	6.9	33	5.3	21	9.8	1	5.3	209	5.2
IUD	63	3.5	63	2.8			9	1.0	27	2.9	38	4.2	42	6.8	9	4.2			125	3.1
Spermicides	34	1.9	17	0.7	1	0.3	7	0.7	9	1.0	14	1.5	9	1.5	8	3.7	1	5.3	49	1.2
Injection	3	0.2	7	0.3			2	0.2	1	0.1	5	0.6	2	0.3					10	0.2
Diaphragm	4	0.2	4	0.2			2	0.2	2	0.2	1	0.1	3	0.5					8	0.2
Other	23	1.3	25	1.1	3	0.8	6	0.6	11	1.2	16	1.8	9	1.5	3	1.4			48	1.2

Note: Somatic reasons for abortion are excluded (maternal disease and foetal risk), because these women intentionally did not use contraception under the hypothesis that they wanted to become pregnant.

Table 3
Bivariate analyses of available determinants of previous abortions, Vaud 1997–1999 (n = 4340).

		previous abortions			
		no		yes	
		n	%	n	%
Age (years)	<20	22	81.5	5	18.5
	20–24	135	89.4	16	10.6
	25–29	170	79.8	43	20.2
	30–34	225	78.4	62	21.6
	35–39	134	77.9	38	22.1
	40–44	47	81	11	19
	45–49	3	100	–	
Number of living children *	0	1725	83.6	338	16.4
	1	529	70.6	220	29.4
	≥2	932	72.6	351	27.4
Marital status *	married	1149	76.0	362	24.0
	divorced, separated, widowed	401	64.0	226	36.0
	single	1638	83.5	324	16.5
Education *	≤ primary school	1285	73.9	454	26.1
	apprenticeship	990	79.7	252	20.3
	technical school (non university)	605	79.5	156	20.5
	university	288	86.2	46	13.8
Current professional *	regular paid work	481	77.1	143	22.9
Activity	student, apprentice	522	90.0	58	10.0
	unstable work, au pair	246	81.7	55	18.3
	in household	1340	77.5	388	22.5
	unemployed, social benefits, other	554	67.9	262	32.1
Oral contraception **	no	2665	78.7	721	21.3
	yes	526	73.0	195	27.0
Condom *	no	2006	75.9	638	24.1
	yes	1185	81.0	278	19.0
Contraception ***	≥1 method	1152	77.6	333	22.4
	none	2039	77.8	583	22.2
Living with a partner? ***	no	1608	78.4	442	21.6
	yes	1235	76.7	376	23.3

* P-value <0.0001; ** P-value <0.05; *** not significant

Table 4

Age-adjusted determinants of repeated abortions among women requesting an abortion in Vaud (1997–1999), n = 917.

	OR	95% C.I.
Divorced, separated, widowed [1]	1.9	[1.5 – 2.4]
Married 1	1.0	[0.8 – 1.3]
Unemployed, social benefits, other [2]	1.8	[1.5 – 2.1]
Non University education [3]	1.6	[1.1 – 2.2]
Foreign nationality [4]	1.5	[1.3 – 1.8]
No use of oral contraception [5]	0.7	[0.6 – 0.9]

[1] Reference category = single
[2] Reference category = stable work, including housework and part time job
[3] Reference category = University
[4] Reference category = swiss
[5] Reference category = use of oral contraception
Note: there was missing information for one or more variables in 10% of the cases (n = 440)

Discussion

The compulsory second opinion and the absence of clandestine abortions guarantee the completeness of Vaud data. However, there are limitations to the use of requests instead of actual abortions. The proportion of women who finally continue their pregnancy varies from 2% in Scotland [7] to 5% in Norway [8] and 8% in Sweden [9], implying a slight over-estimation of Vaud abortion rates.

Furthermore, the population data is limited to foreigners with a residence permit of at least one year, which excludes asylum seekers and illegal immigrants. The latter groups are nevertheless included in the live-births counts (about 300 annual live-births to asylum seekers), as well as in the abortion requests since 1997. This further overestimates the foreign women's abortion rate since 1997, partly explaining the increase observed for the years 1997–1999 as well as the high rate among women from those countries providing the most asylum seekers and/or illegal immigrants.

Another problem is the lack of population data to compare the prevalence of certain socio-economic characteristics of women seeking an abortion to their prevalence among all women living in Vaud, for example in terms of marital status.

From 1990 to 1999, Vaud had one of the lowest abortion rates worldwide, indicating good overall contraceptive knowledge and use [10]. Abortion rates per thousand women of reproductive age were 5.5 in the Netherlands, 9.8 in Italy, 20.0 in the United States and 117.2 in Romania [11–13].

Variations in Vaud abortion request rates over the decade may be highly dependent on the nationalities represented in the immigrant population. The reproductive behaviour of well-established residents originating from nearby countries (eg, Spanish, Italian or Portuguese women) are probably closer to those of Swiss women than those of recent immigrants. The high rate of abortion requests among ex-Yugoslavian and African women should be interpreted in the light of cultural beliefs and customs, but the violence used against women in recent wars, including rape and forced pregnancies, must be taken into account as well.

When they become pregnant, adolescents choose to end their pregnancy more often than women who are in their main reproductive years as found in an earlier survey [14]. Common motives are social desirability, the wish to continue education, feeling too young to raise a child, and the instability of premarital unions.

The proportion of married women among abortion requests in 1997–1999 (38%) was higher than in Canada (22% [15] and 10.3% in another study [16], both in 1994) and in the U.S. (20.3% in 1995 [13]). However, comparisons are difficult in the context of declining marriage rates in developed countries, and because the proportion of married women in the general population may vary across countries.

All study measures of gestational age at the time of request should probably be incremented by at least one week when comparisons are made with studies that use actual abortion procedures. Compared to Vaud, the distribution of gestational age categories was skewed to the right in the U.S., where 54% of abortions were carried out before nine weeks and 34% before 13 weeks, but as many as 12% after 20 weeks (vs. 0.3% of requests in Vaud) [13]. With 96% of requests made in the first trimester, Vaud appears similar to the Czech Republic, Italy, the Netherlands, England, and Canada [10, 16, 17].

As in Vaud, psycho-social motives dominated in Finland (97.8%) [18]. Given the high estimates of abuse among women in general [19, 20], the small number of abortions motivated by rape or incest seems surprising. Possible underestimation may be caused by the fact that women do not easily report abuse to physicians in face-to-face interviews, especially in the case of second opinion physicians whom they do not know [21, 22].

Contraception may seem a peculiar topic to discuss in relation to abortion, since by definition, it failed or was non-existent. Although the wording of the question was too general to provide infor-

mation on method failure ("What was the contraceptive method at the time of this conception?"), the choice of an effective or ineffective "attempted" method provides useful information for prevention programmes. But despite clear questionnaire instructions, several methods were often indicated, sometimes together with "no method", probably meaning that the intended or usual method was not used on that occasion. As a result, the "no method" category was probably very heterogeneous, with, for example, condom failures and condom omissions mixed together.

In a 1994–1995 Swiss family survey, 37% of sexually-active non-pregnant women aged 20–49 were taking the pill, 16% were using the condom and 33% were not using any contraception (including 12% who wanted to get pregnant) [23]. Corresponding proportions were 17%, 36% and 63% among women who requested an abortion in Vaud (table 2). The proportion of women using no contraception increased with age (from 9% to 57%) in the Swiss population, but remained stable among abortion requests. One possible explanation is that women requesting abortion may be less capable of adapting their contraception to their evolving reproductive and affective situations than their peers. Women over age 44 are also more likely to think they are or have become infertile.

Even though reproductive choices are influenced by an array of unmeasured factors, the overrepresentation of condom users among abortion requests confirms its limited effectiveness in preventing unwanted pregnancies. The opposite was observed for the pill, a method considered very effective, with an underrepresentation among abortion candidates by a factor of two. While pill use decreased with age in the Swiss survey from 65% at ages 20–24 to 17% after age 44, no meaningful variations were observed in the abortion population. A decrease in condom use was also seen after 30 in the Swiss population, but only after age 45 among Vaud abortion candidates.

A quarter of Vaud women who where requesting an abortion had experienced at least one previous abortion (2% had ≥2 previous abortions), comparable to the 24% observed in France (1991) and 29% in Canada, but in marked contrast to Romania where 71% of abortion patients were "repeaters" in 1991 (14% with ≥2 abortions), probably the country with the highest abortion rate [16, 24, 25]. Although an American study showed that as many as 19% of women aged 27–30 in 1990–1991 failed to report one or more abortions, twice as many women (54%) were repeaters in the U.S. than in Vaud [13, 26]. The paradoxical association between reporting use of oral contraception and the occurrence of repeated abortions may be explained by the fact that within an abortion population, current users are obviously inconsistent users. They may have been reluctant to use oral contraception at the time of their previous abortions or were then in the "no-contraception" group, and later unwillingly followed family planning advice.

Implications

Over the last decade, Switzerland initiated and maintained one of the first national prevention campaigns against AIDS, with a subsequent moderate decrease in the use of the pill and a rapid increase in condom use seen among youths [27, 28]. Despite this change in contraceptive methods, abortion rates have remained stable. However, there is still room for preventive action aiming at reducing the proportion of sexually active women who do not want to be pregnant and use ineffective contraception or no contraception at all. Emergency contraception in particular should be more easily available. Until recently, it was delivered only on medical prescription and not widely available by women. In the year 2002, emergency contraception has become readily available from pharmacies and there is currently debate as to whether to allow and train school nurses to deliver it without direct medical supervision, at least in some parts of the country. Also, while AIDS prevention programs have been successful in promoting condom use, from now one, they should more systematically integrate effective methods to avoid unwanted pregnancy in addition to the use of the condom for "safe sex".

Some determinants of abortion presented here should also be taken into account: target groups for the prevention of repeated abortion seem to be women who were once married, but whose affective situation may be less stable after separation, women with relatively lower education levels or adverse work situations – such as unemployment and benefiting from social welfare – and recent immigrants. Specific prevention programs should be designed to reach these high risk groups. Finally, epidemiological monitoring such as the one presented in this paper should be complemented by qualitative research focusing on the values and processes underlying the women's sexual, reproductive and emotional life, with a special attention to the area of psychological resistance to contraception.

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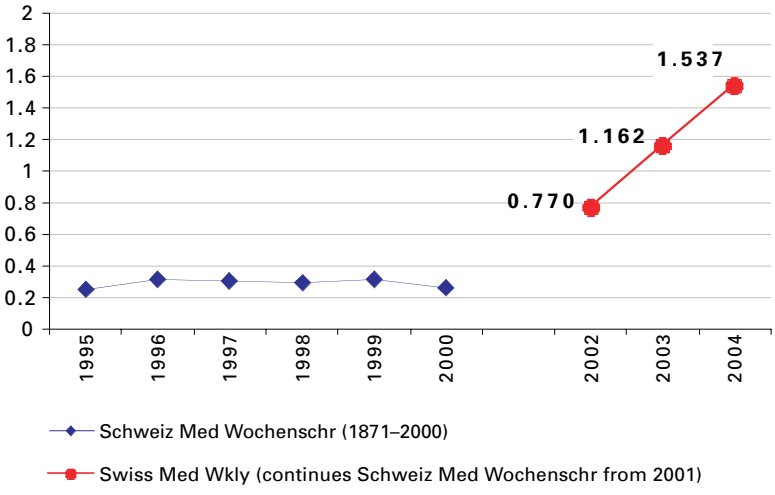

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