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Demographic and Behavioral Factors Associated With Adolescent Pregnancy in Switzerland

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Switzerland has the lowest adolescent fertility rate in Western Europe. According to data collected in 1993 as part of the Swiss Multicentre Adolescent Survey on Health, 5% of 1,726 sexually active adolescents in a group of 3,993 15-20-year-old women enrolled in academic or vocational classes had ever been pregnant; most of these women (80%) had terminated their pregnancy. Adolescents who had ever been pregnant did not differ significantly from those who had not by demographic characteristics. Multiple logistic regression analysis identified seven factors associated with pregnancy: having had four or more sexual partners; not having used contraceptives at first intercourse; ever use of less-effective contraceptive methods; having used illicit drugs during the last 30 days; living apart from one's parents; recently experiencing stress; and perceiving a lack of future prospects.

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The debate over adolescent pregnancy in industrialized societies has evolved continuously over the past 60 years. Widespread premarital sexual activity among adolescents has led to the development of contraceptive education and services tailored to their needs. More recently, AIDS prevention has given impetus to condom use, adding disease prevention to pregnancy prevention and modifying young people's contraceptive responsibilities.

In the developed world, adolescent fertility and pregnancy rates have been consistently lower in Europe than in the United States.¹ For example, a 1988 comparative study conducted by The Alan Guttmacher Institute of some 20 developed countries showed similar rates of exposure to the risk of conception, but a wide variation in teenage pregnancy rates.² This finding suggested that the availability of contraceptives and of sexual and contraceptive education were more decisive factors than the rate of sexual exposure. Although many studies have focused on the psychosocial and behavioral correlates of adolescent pregnancy in the United States, relatively few have been conducted in European countries.³

Fertility and pregnancy rates among European adolescents continue to be far lower than comparable rates among U.S. adolescents. In 1990, for example, the adolescent fertility rate was 53.6 births per 1,000 15-19-year-olds in the United States, 33.1 per 1,000 in the United Kingdom, 14.1 in Sweden, 9.2 in France and 6.4 in the

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- » [table of contents](#)
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Netherlands.⁴ The adolescent pregnancy rate—the rate of live births, miscarriages and stillbirths plus induced abortions—was 92 pregnancies per 1,000 15-19-year-old women in the United States, 65 per 1,000 in England and Wales, 43 per 1,000 in France and 14 per 1,000 in the Netherlands.⁵

Switzerland's adolescent fertility rate of 4.6 births per 1,000 women aged 15-19 is the lowest in Western Europe.⁶ The country's adolescent pregnancy rate, however, is difficult to assess accurately; uniform national statistics on legal abortion are unreliable because of wide variations in the local application of the law and in public health data among the 26 cantons of Switzerland.

Since age at first intercourse is no different in Switzerland than in the rest of Western Europe, the factors that might explain Swiss adolescents' exceptionally low fertility include the country's long history of school-based sex education, reinforced by a national AIDS campaign promoting condom use; the broad availability of contraceptives, including postcoital methods, through general practitioners' offices and family planning clinics; and access to abortion services.⁷

Swiss adolescents who give birth before age 20 are more likely than other adolescents to be married and not attending school.⁸ In Switzerland, schooling is mandatory until age 15, but most adolescents are enrolled in high school or a trade or vocational school until they are 20 years old. Among 15-19-year olds, about 15% choose not to attend postmandatory school. According to the 1990 census, the proportion of 15-19-year-old women who had dropped out of school was much higher among immigrants than in the native-born population (27% vs. 14%).⁹ The total proportion of Swiss adolescents who have married is quite low—just 1.4%, mostly foreign-born women who marry at ages 18 or 19. The fertility rate among foreign-born adolescents is 5-10 times that among native-born adolescents; however, this wide gap in fertility between immigrant and native-born adolescents narrows among older women.

In this research note, we seek to describe the general characteristics of 15-20-year-old women who have ever been pregnant in a sample representative of high school and vocational students;* adolescents no longer attending school are not included. We then analyze the relationships between social, demographic and lifestyle variables, sexual behavior characteristics and pregnancy history.

METHODS

This article is based on data collected in the Swiss Multicentre Adolescent Survey on Health. The national survey, conducted in 1993, relied on an anonymous, self-administered questionnaire completed by a representative sample of 9,268 15-20-year-olds enrolled in the first through fourth grades of postmandatory schools in Switzerland.¹⁰ A one-step cluster sampling procedure was used, including all public secondary schools and technical and trade schools (which involve mainly apprenticeships) in the three linguistic regions (the French, the German and the Italian cantons). Sampling stratification was performed by region and by school curriculum.

The active participation of adolescents was encouraged at every stage of the project, and ethics specialists and parents' organizations were also consulted. The anonymous questionnaires were distributed in classrooms by specially trained personnel not affiliated with the school. Participation was voluntary and students were provided with

information on where to go for help with completing the questionnaire, should they need it.

The dependent variable for the analysis was whether the respondent had ever been pregnant. The questionnaire also solicited information on social, demographic, sexual behavior, emotional and lifestyle variables; we compared the data on these variables for sexually active teenage women who had ever been pregnant with those for women who had not. The response rate for the question on pregnancy history among sexually active young women was 98%, while rates for all other questions ranged from 95% to 98%.

The bivariate analysis used the chi-square test to yield relative risks with 95% confidence intervals. We used a standard statistical software package (SPSS) to perform a forward stepwise logistic regression, which included the background and situational variables that were significantly associated with the respondent's pregnancy history. Because the number of adolescents who had ever been pregnant was quite small (N=85), we reduced the number of parameters to the minimum for the best-fitted model.¹¹ As a result, we excluded the region variable, because it was mediated by the age at first intercourse variable.

RESULTS

The sample consisted of 4% of the reference population of around 300,000 in postmandatory schools of some 423,134 15-20-year-olds in 1990. There were only eight refusals (0.1%) and 575 students (6%) were absent from school on the day of the survey. Nearly 4% of the questionnaires had to be discarded because the respondents were older than age 20; an additional 1.3% were unusable because of inconsistent responses. The resulting sample of 9,268 Swiss adolescents was representative of the reference population on each of the main social and demographic characteristics.

Forty-three percent of the respondents were female (N=3,993). Forty-four percent of these young women had ever had sexual intercourse (N=1,758), and this proportion increased from 27% at age 15 to 74% at age 20. Among the 1,726 sexually experienced women for whom pregnancy data are available, 85 had ever been pregnant (4.8%, confidence interval of 3.8-5.8); and 80% of these adolescents said they had terminated the pregnancy. The proportion of sexually experienced adolescents who had ever been pregnant did not differ significantly by age-group (4.2% of 15-17-year-olds vs. 5.4% of 18-19-year-olds), by type of school (4.7% of vocational or technical students vs. 5.0% of academic students) or by nationality (4.4% of Swiss adolescents vs. 6.7% of foreign-born adolescents).

BIVARIATE ANALYSIS

Among sexually experienced women, the social and demographic characteristics of young women who had been pregnant were similar to those of women who had not (see Table 1). There were no important differences between the two groups by age distribution, socioeconomic status (measured by the father's educational attainment), parents' marital status or type of school. However, a significantly higher proportion of ever-pregnant adolescents than never-pregnant adolescents lived without their parents (17% vs. 8%, $p=.005$). Moreover, ever-pregnant adolescents were significantly more likely to live in the French-speaking cantons than were the never-pregnant adolescents

(67% vs. 39%, $p < .005$).

Table 1. Percentage distribution and number of Swiss adolescent women enrolled in secondary or vocational school, by selected characteristics, according to sexual experience and pregnancy status, 1993

Characteristic	Sexually experienced				Never had intercourse	
	Never pregnant		Ever been pregnant			
	%	N	%	N		
Nationality						
Swiss	78.1	1,281	69.4	59	75.1	1,678
Other	21.9	360	30.6	26	24.9	556
Age (in yrs.)						
15-17	40.2	658	34.1	29	66.2	1,479
18-20	59.8	979	65.9	56	33.8	756
Type of school						
Secondary	35.0	575	29.4	25	56.0	1,247
Vocational	65.0	1,066	70.6	60	44.0	980
Household type**						
Lives without parents	7.9	130	16.5	14	3.5	78
Lives with at least 1 parent	92.1	1,511	83.5	71	96.5	2,152
Parents' marital status						
Divorced, separated or widowed	24.2	392	30.6	26	14.3	319
Currently married	75.8	1,231	69.4	59	85.7	1,907
Father's education						
Mandatory/apprenticeship	56.3	888	55.0	44	55.1	1,228
Higher	43.7	689	45.0	36	44.9	1,000
Region**						
French-speaking	38.6	633	67.1	57	34.9	780
German-speaking	55.3	907	29.4	25	56.0	1,251
Italian-speaking	6.2	101	3.5	3	9.1	204
Total	100.0	1,641	100.0	85	100.0	2,235

**Among sexually experienced, difference between never-pregnant and ever-pregnant women significant at $p < .01$. Note: Ns do not always sum to total because of missing responses on some variables.

As expected, the frequency of sexual intercourse was related to the risk of pregnancy (see Table 2, page 234). Seventy percent of the adolescents who had ever been pregnant had had regular sexual activity (defined as more than once a month) since their first sexual experience, and the number of sexual partners was also higher among those who had ever been pregnant (not shown). Those who had had four or more partners were nearly three times as likely to have ever been pregnant as were those who had had fewer than four (11% and 4%, respectively, for a relative risk of 2.87).

Table 2. Among sexually active respondents, percentage who have ever been pregnant and relative risk of pregnancy (with 95% confidence intervals), by characteristic

Characteristic	N	% ever pregnant	Relative risk
Sexual activity			
Regular	951	6.3	1.96 (1.24-3.09)
Occasionally or once	775	3.2	
No. of partners			

<4	1,448	3.8	
>=4	275	10.9	2.87 (1.88-4.40)
Contraceptive use at first intercourse			
Yes	1,365	4.0	
No	334	9.3	2.35 (1.53-3.59)
Ever used withdrawal or rhythm			
Yes	425	8.2	2.14 (1.41-3.25)
No	1,301	3.8	
Ever used condom			
Yes	1,300	4.2	
No	385	7.3	1.75 (1.13-2.72)
Used condom at last intercourse			
Yes	679	2.9	
No	1,026	6.2	2.12 (1.29-3.47)
Sexual victimization†			
Yes	425	7.8	1.95 (1.27-2.98)
No	1,254	4.0	
Lives with parents			
Yes	1,582	4.5	
No	144	9.7	2.17 (1.25-3.74)
Involved in peer organizations			
Yes	1,020	3.9	0.62 (0.41-0.93)
No	706	6.4	
Smokes regularly			
Yes	620	7.7	2.31 (1.52-3.51)
No	1,106	3.3	
Ever used an illegal drug‡			
Yes	157	12.1	2.88 (1.77-4.66)
No	1,569	4.2	
Used illegal drug in past month‡			
Yes	57	21.1	4.81 (2.78-8.35)
No	1,669	4.4	
Had suicidal ideas in last year			
Yes	471	8.1	2.14 (1.41-3.24)
No	1,247	3.8	
Needs help for stress			
Yes	898	6.2	1.82 (1.16-2.83)
No	815	3.4	
Needs help for sleeping difficulties			
Yes	361	7.8	1.88 (1.21-2.92)
No	1,360	4.1	
Is confident about job prospects			
Yes	1,640	4.6	
No	85	11.8	2.57 (1.38-4.80)

†Defined as "when someone in your family or someone else touches you in a place you did not want to be touched, or does something sexually that they should not have done." ‡Includes hallucinogens, amphetamines, cocaine or heroin. *Note:* Ns do not always total 1,726 because of missing responses on

Moreover, contraceptive use at first intercourse was less common among adolescents reporting pregnancy, and young women who did not use a method at first intercourse were more than twice as likely as those who did to have ever been pregnant (9% vs. 4%, for a relative risk of 2.35). Overall, use of less-effective methods or nonuse was related to pregnancy: Ever-users of rhythm or withdrawal were more likely than those who had never used these methods to have experienced a pregnancy, as were never-users of condoms and those who did not practice contraception at last intercourse.

Eighteen percent of the adolescents said they had been the victim of sexual violence or had received unwanted sexual advances (defined as "when someone in your family or someone else touches you in a place you did not want to be touched, or does something sexually they should not have done"). Young women who were victimized sexually were nearly twice as likely to have ever been pregnant as were those who had not had such an experience (8% vs. 4%, for a relative risk of 1.95).

Some lifestyle variables were significantly associated with the likelihood that an adolescent would become pregnant, including cigarette and drug use and living apart from one's parents (alone, with a boyfriend or friends, or in a student hostel). For example, adolescents who did not live with their parents were twice as likely to have ever been pregnant as were those who did (10% vs. 5%, for a relative risk of 2.17).

Involvement in extracurricular activities with other adolescents was negatively related to the probability of pregnancy (relative risk of 0.62). Moreover, factors that increased the likelihood of an adolescent pregnancy included having thought about suicide during the past year (relative risk of 2.14), needing help to manage stress and to deal with sleeping problems (relative risks of 1.82 and 1.88), and lacking confidence in one's job prospects for the future (relative risk of 2.57).

MULTIVARIATE ANALYSIS

The factors identified in the bivariate analysis as significantly associated with pregnancy were entered into a multivariate logistic regression analysis. The results are shown in Table 3. Net of all other factors, having used illicit drugs in the past month increased the probability of pregnancy by the greatest factor (odds ratio of 3.82), and three factors each more than doubled the probability of pregnancy—feeling uncertain about one's future job prospects (odds ratio of 2.53), having had four or more partners (odds ratio of 2.40) and living apart from one's parents (odds ratio of 2.16). One of the seven significant factors reduced the probability of an adolescent pregnancy: Net of all other factors, young women who had used a method at first intercourse were only half as likely to have ever been pregnant as were those who did not (odds ratio of 0.49).

Table 3. Odds ratios (and 95% confidence intervals) from logistic regression analysis of the probability of ever having been pregnant

Variable	Odds ratio
>=4 partners	2.40 (1.46-3.95)
Practiced contraception at first intercourse	0.49 (0.29-0.80)
Ever used withdrawal or rhythm	1.64 (1.01-2.68)
Used illicit drugs in past month	3.82 (1.86-7.86)
Lives apart from parents	2.16 (1.15-4.07)

Needs help managing stress	1.82 (1.12-2.98)
Uncertain about job prospects	2.53 (1.20-5.32)
<i>Note:</i> Other variables not in the equation include age (entered as a continuous variable), nationality, ever use of a condom, regular sexual intercourse, history of sexual victimization, condom use at last intercourse, having suicidal ideas in last year, smoking regularly and being involved in a society or a club.	

The number of sexual partners, contraceptive use at first intercourse and ever-use of less-effective methods, such as rhythm or withdrawal, are all background variables that precede conception, and thus are potential causal factors. However, the variables measuring recent drug use, current living situation and current attitudes refer to the moment of the survey, and thus may postdate the experience of a pregnancy.

DISCUSSION

Several factors should be borne in mind when interpreting these results. Pregnancy rates are especially low among Swiss adolescents who stay in school. Even though the response rate was high, this in-school survey, by definition, excluded the population that had dropped out of school, and a Swiss study has suggested that pregnancy rates among these adolescents are much higher.¹²

The fact that the data are self-reported might also limit the results, despite the attention paid to ethical and psychological concerns during the survey. Moreover, the data are retrospective and thus are subject to recall bias, and the survey did not solicit any information on the timing and number of pregnancies.

The small numbers of pregnancies in the three regional breakdowns could explain part of the surprising regional differences. These differences might also be linked to the fact that adolescents in the French-speaking region begin sexual activity earlier than those in the German- and Italian-speaking regions of Switzerland. Moreover, the German- and French-speaking regions are divided into many cantons (19 and six, respectively), which contain further religious and cultural differences. Conclusions are difficult to reach without more information.

This research suggests that in Switzerland, pregnancy among adolescents who are still in school is not mediated by demographic and socioeconomic factors such as age, immigrant status or the family's socioeconomic status (measured by the father's educational attainment). There are also no differences between apprentices and academic students in the proportions who were ever pregnant (4.7% and 5.0%, respectively), even though apprentices generally began sexual activity sooner and were less likely to have used contraceptives, either at first intercourse or overall.¹³ This lack of a significant difference by type of school might stem from the low overall pregnancy incidence among all in-school adolescents, as mentioned earlier. The school-based sex education programs, reinforced by national AIDS campaigns promoting condom use, may also have lowered pregnancy rates, although the impact of such programs on sexual activity and pregnancy has been debated.¹⁴

Adolescent pregnancy is a multifactorial problem with individual, psychosocial and sociocultural levels. From a global perspective, biological and psychosocial determinants of adolescent pregnancy are related to intermediate risk factors that determine fertility. As has been suggested in previous studies, an early age at first intercourse, the number of sexual partners and nonuse of contraceptives are

important correlates of pregnancy.¹⁵

Many early first pregnancies occur within six months of beginning sexual intercourse, when adolescents either rarely use contraceptives or have difficulty in doing so.¹⁶ Several studies suggest that the primary reason why young women do not use a method is that they do not anticipate having sexual intercourse.¹⁷ Adolescents often live in the moment and thus lack a future perspective, which is necessary to develop the ability to focus on the consequences of present behavior. Contraceptive use requires admitting that one was planning to have sex and that it did not "just happen," as adolescents often say after the fact.

Contraceptive nonuse is related to the expectations and benefits of an adolescent romantic relationship, and is not a specific problem behavior per se.¹⁸ Sexually active adolescents cite several reasons for neglecting to use a method, including needing spontaneity in a relationship, fearing that parents would discover their sexual activity and waiting for a closer relationship with their partner.¹⁹ For some young women, contraceptive use may mean playing an active part in a sexual relationship, even though they have been socially conditioned to play a passive role.

In addition to contraceptive nonuse, reliance on less-effective methods such as withdrawal or the incorrect use of a more effective method may lead to unintended pregnancy. A study conducted by the University Hospital in Lausanne, Switzerland, showed that only 25% of 720 adolescents who sought an abortion had not been using a contraceptive method when they became pregnant.²⁰ About 14% had used withdrawal and 17% a condom; the proportion who used a condom increased from 1988 to 1989. Although the survey provided no information on the role of the male partner, other studies have demonstrated that gender roles and male attitudes toward contraception are a factor in contraceptive use and in method choice.²¹

The results of our study show that among Swiss adolescents enrolled in school, some lifestyle characteristics and personal feelings are related to the probability of ever having been pregnant. We found that the most influential factors associated with pregnancy were related to past sexual and contraceptive behavior and to current lifestyle or emotional factors, such as having used an illicit drug during the last 30 days, living apart from one's parents, needing help for stress and lacking confidence in one's future prospects. Even though contraceptive use at first intercourse is the sole sexual behavior variable that explicitly precedes a possible pregnancy, all of the variables might potentially contribute to the risk of pregnancy.

Regular alcohol use is infrequent among this population, and ever use of hashish is usually not indicative of a particular lifestyle, but use of other illegal drugs and habitual cigarette smoking could be. (A very strong correlation between illicit drug use and smoking explains the absence of smoking from the logistic regression model.) Illicit drug use is often a sign of social, school and family difficulties and is strongly related to ever having been pregnant.²² Some longitudinal studies have shown that the relationship between drug use and sexual behavior is reciprocal.²³

Personal problems such as stress, sleeping difficulties and a lack of confidence in one's future suggest symptoms of depression at the time of the survey. These signs might not only be possible consequences of a previous unintended pregnancy, but may be related

to feelings of limited options for the future and thus could contribute to the lack of contraceptive use.²⁴ Moreover, a pregnancy might be interpreted as a symptom of distress for those who feel they have little control over their lives or who have difficulties with structuring their relationships. Even if living apart from one's parents can be a consequence of the family conflicts that early pregnancy sometimes causes, we suspect that most of the adolescent women in our study who lived on their own or in a youth residence probably sought independence from their parents before the pregnancy. Pregnancy may represent, in some cases, a way to ease loneliness, to fulfill emotional needs, to affirm adult status, to gain acceptance or to increase self-esteem.

Our results suggest that pregnancy is more likely when an adolescent suffers from emotional disturbances and negative feelings. Health professionals need to be more aware of these facts if they are to deliver appropriate guidance and counseling. Strategies to prevent pregnancy and abortion among Swiss adolescents could be improved by combining efforts with AIDS prevention programs, soliciting more male involvement and promoting condom use.

Emergency contraception could also be an important campaign theme; as other researchers have proposed, condom packages could inform users of what to do in case of failure.²⁵ A significant number of young women could be exposed to preventive services at the time of general medical visits related to menarche, or at the time of a negative pregnancy or human immunodeficiency virus test.²⁶ Pregnancy termination also presents a good opportunity for offering young women contraceptive services and guidance on their future sexual lives.

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*While our reference population of 15-20-year-olds enrolled in postmandatory schools does not strictly conform to the adolescent 15-19 age-group, 20-year-olds still in school are more similar to their 18- and 19-year-old peers than to other 20-year-olds who are no longer in school (see: reference 10.)