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Sexual and contraceptive behavior among female university students in Sweden – repeated surveys over a 25-year period

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Abstract

Objective. To study female students' sexual and contraceptive behavior and compare these results with earlier surveys. *Design.* Comparative, repeated cross-sectional surveys, started in 1989 and repeated every fifth year. *Setting.* Contraceptive counseling delivered at a Student Health Center in Sweden. *Population.* Female university students (n = 359). *Methods.* Multiple-choice waiting-room questionnaire. *Main outcome measures.* Sexual and contraceptive behavior. *Results.* In 1989, age at first intercourse was 17.6 years vs. 16.7 years in 2014, number of lifetime sexual partners was 4.0 vs. 12.1 in 2014, and number of sexual partners during the previous 12 months was 1.0 vs. 2.8 in 2014. Condom use during first intercourse with the latest partner decreased from 49% to 41% (n = 172 in 2009 vs. n = 148 in 2014: $p < 0.001$), and experience of anal sex increased from 39% to 46% (n = 136 in 2009 vs. n = 165 in 2014: $p = 0.038$), and 25% (n = 41 in 2014) always used a condom during anal sex. A total of 70% (n = 251) made use of pornography, and 48% (n = 121) considered their sexual behavior affected by pornography. Eighty-nine percent (n = 291) wanted two to three children and 9% (n = 33) had thought about freezing eggs for the future. The female students' knowledge about increasing age being correlated with decreased fertility varied. *Conclusions.* Sexual behavior among female university students has gradually changed during the last 25 years and behavior appears more risky today. As this may have consequences on future reproductive health, it is vital to inform women about consistent and correct condom use and about the limitations of the fertile window.

Abbreviations: STI, sexually transmitted infection.

Introduction

In 1989, sexual behavior and contraception use among Swedish female university students was investigated due to the threat of HIV/AIDS (1). Since then, this survey has been repeated every fifth year on a sample of women visiting the same clinic in Uppsala, Sweden (2–5). During the first decade (1989–99), condom use increased among women when having sex with a new partner (6,7),

Key Message

A trend towards more risky sexual behavior, with increased number of sexual partners, among female university students was observed. Furthermore, the use of condoms during first intercourse with the latest partner has decreased.

probably because condoms were heavily promoted in Sweden to prevent HIV, which at that time was an incurable infection. In the latest survey in 2009, sexual behavior had become more risky, with an increase in lifetime sexual partners and a decrease in condom use, and one out of three women stated that they had suffered from a sexually transmitted infection (STI) (5). From 1987 onwards, Herlitz and colleagues investigated sexual behavior in a random sample of the Swedish population (6). During the first decade, a trend in increased condom use was observed, but in 2007, sexual risk behavior increased among 16–24-year-old, particularly young women (8).

In France, Bajos et al. (9) have conducted repeated surveys of sexual behavior (1970–2006) and find that age of sexual debut has decreased among young women. Women also have more multiple lifetime partners and a variety of sexual repertoire, including masturbation and oral and anal sex. The gap between women's and men's sexual behavior has narrowed (9).

Internet has rendered all kinds of information easily available for the population. Sex is reported as the most frequently searched topic on the Internet (10) and today's adolescents are the first generation to have grown up with easy access to pornography. In a recent study among Swedish high school students (11), almost all boys and more than half of the girls watch pornography and report that their sexual acts are inspired by pornography.

Postponing childbirth is increasingly common in Western countries, especially among groups with higher education. Maternal age at first birth in Sweden has increased from 24 years in the mid-1970s to 29 years in 2013 (12). Among postgraduate women, four out of ten want to have their first child between 30 and 35 years and two-thirds want to have their last child at the age of 35–45 years (13).

The primary aim of this study was to investigate female students' sexual and contraceptive behavior and to compare these results with those of our earlier surveys.

Material and methods

This study was conducted during 5 weeks in spring 2014 at the Student Health Center, Uppsala, Sweden, a university town with more than 40 000 students. Swedish-speaking female university students (n = 384) undergoing contraceptive counseling at the Student Health Center were informed of the study in connection with an appointment with a gynecologist or a midwife: a letter containing information about the study was distributed. After informed consent, the women completed a questionnaire in the waiting room and placed the questionnaire in a sealed box. No names or personal numbers of participants were recorded on the questionnaire. The inclusion period lasted for 5 weeks during spring 2014. The surveys were approved by the Regional Ethics Committee in Uppsala (dnr 98/508) and were approved by the medically responsible doctor.

The questionnaire comprised 52 questions. The multiple-choice part of the questionnaire has been previously described (4). Four questions were open-ended; two focused on the participants' own and others' influence of watching pornography, one question concerned the participants' awareness of factors that can reduce fertility, and the last open-ended question was about the participants' awareness of the risks of postponing childbearing to 35–45 years of age. The majority of questions were almost identical with earlier studies (4,5), but some questions about fertility were included (14). Four items regarded intentions to have children "Do you plan to have children?" (Yes/No), "How many children do you want?," "At what age would you like to/did you have your first child?," and "At what age would you like to have your last child?" Two items regarded female fertility "At what age is there a slight decrease in female fertility?," and "At what age is there a marked decrease in female fertility?"

Data analyses

The findings were compared with results from previous surveys (1,2,5). Differences over time were tested with Fisher's exact test and Pearson's chi-squared test. To analyze differences between earlier surveys unpaired t-test was used. In all analyses, a two-sided $p < 0.05$ was considered significant. SPSS statistics, version 22 (IBM Corp., Armonk, NY, USA) was used for all statistical analyses. The responses to the open-ended questions were analyzed by content analysis (15). Similar statements were grouped to form the different categories.

Results

The response rate to the questionnaire was 93% (n = 359). All multiple-choice questions were carefully filled in, but the response rate was lower for questions with open-ended answers. Forty-eight percent (n = 121 of 251 who watched pornography) answered the two open-ended questions about pornography. Eighty-five percent (n = 306) answered the open-ended question about factors which may reduce fertility, and 78% (n = 280) answered the open-ended question about the risks of postponed childbearing.

The background characteristics of the female students are described in Table 1. Few women (4%; n = 13) reported daily smoking, compared with 6% (n = 22) in

Table 1. Background characteristics of female students (n = 359).

	n	%	Mean	Range
Mean age (years)			23.5	17–35
Country of birth				
Sweden	336	93.6		
Other	23	6.4		
Parents born outside Sweden				
Mother	42	11.7		
Father	46	12.8		
Stable relationship	200	55.7		
Stable relationship (months in mean)			22.7	1–126
Heterosexual	329	91.6		
Bisexual	18	5.0		
Homosexual	12	3.3		

2009, but daily snuff use had increased to 8% (n = 30) from 3% (n = 9) during this period ($p < 0.001$).

The trend in sexual behavior over time is presented in Table 2. The mean number of lifetime sexual partners increased from 4.0 in 1989 to 12.1 in 2014. The median age for the first intercourse was 16.0 years. Between 2009 and 2014, condom use decreased but experience of anal sex increased. Women's self-graded experiences of giving and receiving oral sex and having anal sex are presented in Figure 1. Almost half of the women had negative experiences of having anal sex. Of the 46% (n = 165) who had experienced anal sex, 73% (n = 120) had experienced it more than once, and 66% (n = 108) were willing to do it again. Almost half, 44% (n = 73) graded anal sex as a negative experience (with three points or less; where 1 = very negative to 7 = very positive), but one-third of these, 33% (n = 24) were willing to do it again. The majority graded giving and receiving oral sex as a positive experience (Figure 1).

The most common contraceptive method at the very first intercourse was the use of condoms, and contraceptive pills were the most common contraceptive method at latest intercourse (Table 3). Seventy percent (n = 251) of the women had used pornography, in the frequency 9% (n = 23) every week, 20% (n = 50) every month, and 71% (n = 178) more rarely. Forty-eight percent (n = 121) considered that their sexual behavior had been influenced by watching pornography, and 82% (n = 206) believed other's sexual behavior was influenced. An association between exposure to pornography and experience of anal sex was found, 54% (n = 136) of 251 women who had watched pornography had practiced anal sex ($p < 0.001$). Thirty percent (n = 108) of women had no experience of pornography, and of these 28% (n = 30) had practiced anal sex. In the open-ended questions, the female students were asked to explain how they considered themselves or others to be influenced by watching pornography. In the content analyses of the text, four categories emerged: inspirational 33% (n = 40); changing of sexual norms 32% (n = 39); a false picture of sex 30% (n = 36); and unconscious influence 5% (n = 6). Some typical statements are presented in Table 4.

Most female students (91%, n = 327) intended to have children in the future. Of these, 89% (n = 291) wanted to have two or three children. The desired mean age for having the first child was 29.2 years (range 21–36 years), and 34.8 years (range 24–45 years) for the last child. One of ten female students had thought about the possibility of freezing eggs (9%, n = 33), and had discussed this with friends (9%, n = 31).

Knowledge about fertility varied; 34% (n = 122) stated that fertility begins to decrease at the age of 25–29 years, and 37% (n = 133) at the age of 30–35 years. Thirty-nine percent (n = 140) thought that fertility markedly decreases at the age of 35–39 years and 29% (n = 104) at the age of 40–44 years. Two prominent categories emerged from the open-ended question about risks associated with postponed childbearing. These categories (with examples of statements) were high-risk pregnancy (n = 90) "It increases the risk of a risky pregnancy with different complications and also increases the risk of a complicated delivery" and birth defects (n = 142), of which 53 expressed Down syndrome as a defect "Fetal development is risky and the baby may be born with diseases or abnormalities," "Postponed childbearing increases the risk for Down syndrome."

Discussion

During a period of 25 years, there has been an opportunity to follow trends in sexual behavior and contraception use among female university students visiting the clinic. This group of young women gradually reported an increase in the number of sexual partners and reduced condom use when having intercourse with a new partner. More women had also experienced anal sex. It is a factor for concern that women infrequently use condoms when having sex with a new partner and during anal sex. These young women may not be sufficiently aware that unprotected anal sex is a high-risk sexual behavior putting them at a risk for STI. Anal sex among homosexual and bisexual men has received much attention due to the risk of transmission of HIV. Therefore, women also need information about the risks associated with anal sex. Although there are few studies investigating sexual behavior among university students, these results are supported by a study among American undergraduate students (16) who also report low condom use during anal sex. A mixed-methods study from Croatia (17) collected quantitative data from 1893 women and qualitative data from 68 women who had experience of anal sex. The first anal sex

Table 2. Trend over time in sexual behavior among female students in Sweden.

	1989 (n = 241)		1999 (n = 333)			2004 (n = 315)			2009 (n = 350)			2014 (n = 359)	
	%	n	%	n	p-value 1999 vs. 2004	%	n	p-value 2004 vs. 2009	%	n	p-value 2009 vs. 2014	%	n
Mean age (years)	23.2		22.9		–[c]	23.9		0.03	23.5		ns	23.5	
Mean age at first intercourse (years)	17.6		17.6		–[c]	17.4		<0.01	16.8		ns	16.7	
Mean number of lifetime sexual partners	4.0		5.4		–[c]	7.4		<0.01	11.0		ns	12.1	
Mean number of sexual partners ≤12 months	1.0		1.8		–[c]	2.1		<0.01	2.6		0.023	2.8	
Experienced vaginal intercourse	96	231	98	326	ns	98	308	ns	99	345	ns	98	353
Experienced giving oral sex	–[c]		86	286	<0.01	94	295	ns	94	328	ns	96	343
Experienced receiving oral sex	–[c]		–		–[c]	–		–	97	338	ns	97	347
Experienced anal sex	–[c]		27	89	ns	32	99	ns	39	136	0.038	46	165
Using condoms													
First intercourse	40	90[d]	77	256	ns	72	227	ns	76	266	ns	71	253
Latest intercourse	24	54[d]	21	70	ns	22	69	ns	25	88	ns	27	98
First intercourse with latest partner	37	85 [d]	60	200	0.04	51	161	ns	49	172	<0.001	41	148
Always during oral sex	–[c]		–[c]	–[c]	–[c]	–[c]	–[c]	–[c]	1	4	ns	1	3
Always during anal sex[a]	–[c]		–[c]	–[c]	–[c]	–[c]	–[c]	–[c]	23	31	ns	25	41
Experience with emergency contraceptive pill	–[b]		22	71	<0.01	52	160	<0.01	67	229	ns	72	258
Experience of induced abortion	–[c]		6	18	ns	6	18	ns	8	27	ns	7	26
Experience of sexually transmitted infection	24	58	14	45	0.02	21	64	0.01	29	101	ns	26	93
Regretted sexual activities after alcohol	27	65	31	102	ns	35	108	0.04	43	147	ns	45	162
First-date sexual activity without a condom	44	106	37	119	0.02	45	140	<0.01	65	226	ns	65	233

[a]Percent of students who experienced anal sex.

[b]Emergency contraceptive pill was not recommended in Sweden, 1989.

[c]Not asked.

[d]n = 228.

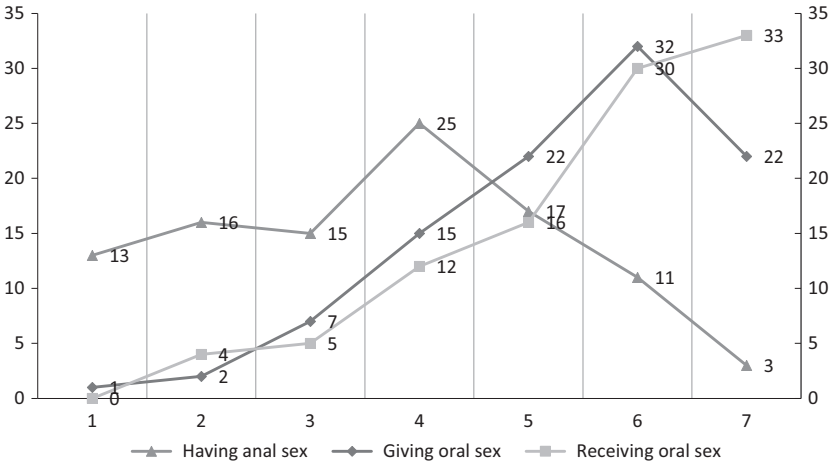

Figure 1. Women self-graded experiences of giving and receiving oral sex and having anal sex on a scale from 1 = very negative to 7 = very positive. Results are percentages.

was considered painful by 79% (n = 1495) and one-third discontinued having anal sex after the first or second attempt. Those who continued to practice anal sex found it exciting and pleasurable (17). In a survey among 1000 women who visited a clinic for contraceptive counseling in Sweden (18), almost half had experienced anal sex and a majority of them valued it as a negative experience. Among the women in this study who graded anal sex as a negative experience, one-third would be willing to do it again. One explanation could be that some women want to please their male partners; especially as male partners initiate anal sex more often than women do (17). The experience of anal sex has increased and one explanation might be the normalization of anal sex in pornography as almost all young men nowadays watch pornography (11) and probably want to test different sexual practices with their sexual partner.

The majority of women intended to have children in the future and have the first child at the age of 29, which is supported in previous studies on university students (1,2,5,14). Most of the women believed fertility decreased after the age of 35 years and that this may lead to fertility problems, if they intend to postpone childbearing. In a US study among university students (19) postponement of pregnancy and delayed motherhood were found to have become more socially acceptable. However, the women's suggestions about the age at which female fertility slightly decreases varied from 25 to 44 years, indicating that they were not sufficiently aware of the age-related decline in female fecundity. Therefore, this group of women would benefit from more information about age-related risks regarding reproduction, which is supported by findings from previous studies (13,14,20).

Another important public health issue is the promotion of better use of contraceptives for avoiding STI, which might endanger fertility in the future. As this group of young women tended to postpone childbearing, they need to preserve their fertility. In the recommendations from the Medical Products Agency in Sweden (21), it is highlighted that the aim of contraceptive counseling is to avoid unwanted pregnancies and to preserve a woman's fertility until she wants to have children. Therefore, testing for STI in connection with contraceptive counseling has been promoted (21). In addition, the use of a reproductive life plan could be a feasible tool for promoting reproductive health. The Center for Disease Control in the USA recommends the use of a Reproductive Life Plan as a tool for reproductive health promotion across the lifecycle to increase awareness of preconceptional health. The Reproductive Life Plan aims to encourage both women and men to reflect on their reproductive intentions, and a recent intervention (22) found that reproductive life plan-based information increases women's knowledge about reproduction. However, healthcare providers have to address the health promotion needs for every woman including the risk of STI and assess the reproductive planning for all women of childbearing age (23).

One-tenth of the women had thought about freezing their eggs. In Sweden, freezing eggs is possible free of charge within the healthcare system for women who are at increased risk of early menopause, for example as a result of cancer, and for those who have to postpone childbearing because of medical or surgical treatment. The option of freezing eggs might be possible for healthy women who can afford this at private clinics, because they wish to postpone childbearing due to careers or not having found the right partner. However, more experience and research is needed concerning freezing eggs (24–26).

One limitation with this survey was the cross-sectional design, which did not allow cause-and-effect associations.

Table 3. Use of contraception among female students (n = 359).

	No contraception		Safe period		Interrupted intercourse		Condom		Gestagen-only pills		Combined pills		Intrauterine device		Other contraceptive[a]	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
First intercourse	35	9.8	–	–	33	9.2	253	70.5	4	1.1	31	8.6	3	0.8	–	–
Latest intercourse	18	5.0	1	0.3	28	7.8	98	27.3	28	7.8	138	38.5	26	7.2	22	5.9
First intercourse with latest partner	29	8.1	2	0.6	29	8.1	148	41.2	14	3.9	120	33.4	15	4.2	2	0.6

[a]For example, vaginal ring/implants, pessary.

Table 4. Examples of free text illustrating how female students considered their own and others' sexual behavior is influenced by pornography (n = 121).

Inspirational
I and my partners dare to try new things when we are watching pornography
I'm curious and like to get new ideas about different positions and places to have sex in
I have been more motivated to experiment in bed and so has my boyfriend
Changing of sexual norms
Normalization of anal sex, it seems to be as natural as vaginal sex
Pornography causes changed sexual attitudes, thoughts, and ideas about what is normal and desirable
Changes in standards, how to behave and what to do. More violent sex and woman should be submissive or a "sex machine"
A false picture of sex
Pornography gives false expectations of women, it puts pressure on women
Porn gives a misleading view of women and sex. It is crazy
Watching pornography affected me very much. Men live in a false world, where it is normal to see women in certain positions. Men want to…have anal sex, which is common in pornography and it is easy to think that anal sex is standard, but it is not
Unconscious influence
Many are affected subconsciously
Unconscious level. Everything we consume affects us

Furthermore, the study sample consisted of only university students, which might have an impact on the results, reflecting a high academic education. Nevertheless, we consider that the findings of this survey could be generalized to women in the same life situation. The strength of this study was that the students were recruited in the same town, at the same healthcare center, and completed the same kind of questionnaire as in previous studies (1,2,5), which renders it possible to compare the findings with our earlier surveys.

In summary, since these surveys started, the sexual behavior among female students has gradually become more risky, which in future may have consequences for their reproductive health. It is important to inform this group of young women about the importance of combining hormonal contraceptives with the consistent and correct use of condoms as a protection against STIs, and about age and fertility so that they are aware that the fertile window is limited.

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