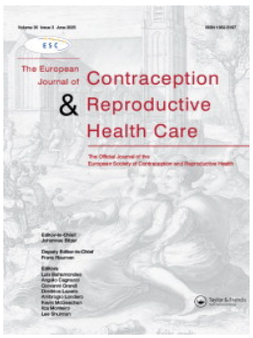

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RESEARCH ARTICLE

Sexual behaviour, contraceptive use, and family planning intentions: 30 years of repeated cross-sectional surveys

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ABSTRACT

Purpose: Globally, women are postponing childbearing and total fertility rates are decreasing. In Sweden, a 2018 law requires consent before sexual activity and LARC is now recommended as a first-hand choice. This study compares sexual behaviour (including consent), contraceptive use and family planning intentions with past surveys.

Material and methods: This is a cross-sectional survey that has been repeated every fifth-tenth year since 1989 in Sweden. It explores sexual behaviour, contraceptive use and family planning intentions among women attending a gynaecology clinic for contraceptive counselling and compares these results with previous surveys.

Results: Of the 596 women surveyed, 558 were sexually experienced, the majority (98%) of which perceived consent during their most recent sexual activity. Over 30 years, there was a significant trend towards having more sexual partners ($p=0.02$). The use of SARC ($p = <0.01$) and LARC ($p=0.04$) has increased since 2014, while condom use and emergency contraceptive use have decreased ($p = <0.01$ for both). Three out of four respondents ($n=449$) wanted children, significantly fewer than 2014.

Conclusions: Sexual behaviour and contraceptive use have changed over the last ten years in Sweden. More women use effective forms of contraception and informed consent laws may have positive implications. Yet fewer women have decided to have children in the future.

SHORT CONDENSATION

The majority of women perceive consent when sexual activity is initiated. More women are using effective contraception when engaging in sexual activity. Concurrently, the number of women planning to have children has declined.

Abbreviations: LARC: long-acting reversible contraceptives; SARC: short-acting reversible contraceptives

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Hormonal contraception; LARC; condom; family planning; fertility; informed consent; sexual behaviour

Introduction

Global emergencies, such as the AIDS crisis or the COVID-19 pandemic, can impact sexual habits, influence family planning decisions, and lead to a decline in birth rates [1,2]. Societal shifts can also affect contraceptive use, particularly when legal circumstances change. The first survey in a series of five on Swedish female university students' sexual behaviour and use of contraception was published 30 years ago [2]. Since then, a variety of changes have occurred in the realm of sexual and reproductive health and rights.

Many Nordic countries have recently introduced consent reform laws to reinforce contemporary values and affirmative communication before sexual acts [3]. In 2018, Sweden introduced a law that requires informed consent before sexual activity. It established a legal foundation that participation in a sexual act must be voluntary, and that partners must be able to consent through words or actions [4]. Although the law's legal applications have been reviewed [5], there is a shortage of studies investigating individuals' experiences of its legal implications in sexual practices. Considering the novelty of consent laws, and the potential impact on legal cases, it is necessary to examine the effect and perceptions of consent before sexual activity.

In recent years, LARC (long-acting reversible contraceptives, including the copper intrauterine device, the implant and levonorgestrel intrauterine device) have become more frequently used in many high-income countries, including the Nordic countries [6]. Furthermore, in line with the Medical Eligibility Criteria from World Health Organisation, the Swedish Medical Products Agency recommend LARC to those who are nulliparous [7]. In Sweden, all LARC are free of charge until 21 and previous research suggests subsidising contraception leads to greater use of LARC, fewer abortions and teenage pregnancies [8].

In the Global North, the frequency of childbirth continues to decline, and there is a tendency to postpone childbirth that has resulted in an increase in elective egg-freezing for non-medical reasons to potentially allow for reproduction at a later point [9]. Despite Nordic countries having many parental-friendly policies that aim to support young

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families and promote gender equality, their fertility rates are among the lowest in the developed world and are decreasing [10]. In Sweden, the total fertility rate in 2023 was at its lowest level since 1970 at 1.5 children.

Few studies have followed how these societal shifts, such as policy and legal changes, affect sexual behaviour, contraceptive use and family planning intentions. Considering these institutional and behavioural changes in Sweden over the last ten years, this study aims to describe sexual behaviour (including consent), contraceptive use, and family planning intentions of women attending contraceptive counselling using longitudinal data from a survey that has been repeated every fifth to tenth year at the same clinic in Uppsala, Sweden.

Materials and methods

We recruited women during four months in the spring of 2023 at an outpatient gynaecology clinic in Uppsala, Sweden, a university town with approximately 50,000 students and around 250,000 residents. Although this is a private clinic, anyone can book an appointment and the cost does not differ from other gynaecology clinics. Women can seek help for gynaecological problems or contraceptive counselling. The majority attending are university students seeking contraceptive counselling, which is provided free of charge.

Participation criteria were Swedish-speaking women attending contraceptive counselling with a nurse-midwife or a gynaecologist. On average, the clinic has 630 appointments every month, which would sum up to approximately 2500 appointments during the study period. Only women attending contraceptive counselling were informed about the study. For administrative reasons, it was not possible to extract and validate which appointments were for contraceptive counselling and which appointments were due to gynaecological problems. Hence, an accurate response rate cannot be determined. Those interested received a cover letter with information and a QR code, linked to an online questionnaire in REDCap, an electronic data capture tool hosted at Uppsala University. No personal identification was recorded in the questionnaire.

The questionnaire was based on previous surveys undertaken at the same clinic, and included 52 questions described in prior studies and available upon request [2,11–14]. Questions on sexual consent were new: if they were asked (and asked themselves) for consent during their most recent sexual activity, if they were asked (and asked themselves) for consent during the first sexual activity with their most recent partner, and if they perceived consent during the most recent sexual activity.

This study focuses on 26 of the 52 multiple choice questions, covering sexual behaviour (including consent), contraceptive use, and family planning intentions. In addition, we made use of one of the survey's five open-ended questions, i.e., reasons for not wanting children. Six of the questions included in this study have been used in every survey (1989, 1999, 2004, 2009, 2014 and 2023). These questions concerned age at first sexual activity, number of lifetime sexual partners, number of sexual partners in the previous year, if a condom was used at first sexual activity, if emergency contraception had ever been used, and finally, if participants wanted children.

Statistical analyses

The descriptive statistics were performed for the entire sample and are presented as absolute numbers and frequencies. Respondents' answers were compared to those from the most recent survey conducted in 2014, and were analysed using the Chi-Square Test of Independence and Fisher's exact test for categorical variables, and a Two Sample t-test for continuous variables. To analyse the trends over time with all previous surveys, the Mann-Kendall Trend test was used. As previous surveys included only university students, we repeated the same analysis including only student respondents to ensure comparability between the years.

Statistical analysis was performed using R version 4.3.2 (2023-10-31).

The responses to the open-end question were summarised to provide an overview of the answers provided. Similar statements were grouped to form different categories. Some answers fit under multiple categories, and were included under all applicable themes.

Results

We obtained 596 survey answers in total. Among participants, response rate varied by question, ranging from 73 to 100% on multiple choice questions. Due to branching logic in the questionnaire, only certain respondents were asked to answer the free text question. Of those who did not want children ($n=45$), 40 respondents answered the free text question, corresponding to a response rate of 88%.

The mean age in the full sample was 24 years. The majority were born in Sweden (91%) and 94% had engaged in sexual activity ever. A total of 404 respondents were students at the time. The background characteristics of all respondents are described in Table 1.

Sexual behaviour

When comparing the results of all six surveys from 1989, 1999, 2004, 2009, 2014 and 2023 (Table 2), we noted the mean number of lifetime sexual partners had increased ($p=0.02$ for trend), reaching 11.7 in the most recent survey. Also, the number of sexual partners in the previous year had increased from 1.0 to 2.4, although this rising trend did not attain statistical significance ($p=0.06$). Age at first sexual activity had declined from 17.6 in 1989 to 16.8 in 2023 ($p=0.05$).

Regarding consent, three-quarters of the 558 women who had engaged in oral, vaginal, or anal sexual activity, were asked for consent (76%, $n=423$) and 67% ($n=375$) asked for consent before their first sexual activity with their most recent partner. A total of 63% ($n=352$) were asked for consent before their most recent sexual activity. Slightly more than half (56%, $n=310$) asked for consent during their most recent activity. The majority (98%, $n=546$) perceived consent during their most recent sexual activity.

Contraceptive use

After the first survey when only 40% reported condom use at their first sexual activity, a period of high condom use followed between 1999 and 2014. However, in the most

Table 1. Background characteristics.

	Total
	n = 596
Age (mean (±SD))	24 (±2)
Born in Sweden	544 (91)
Parous	16 (3)
Occupation	
Studying	404 (68)
Full-time employees	177 (30)
Smoke cigarettes	
Sometimes	61 (10)
Daily	9 (2)
Snuff (White)	
Sometimes	103 (17)
Daily	102 (17)
In a long term relationship	324 (54)
Duration of relationship (years, mean (±SD))	3 (±1)
Identifies as heterosexual	477 (80)
Engaged in sexual activity (oral, vaginal or anal) ever	558 (94)

All values presented as n (% of all) unless otherwise stated.

Table 2. Trends in sexual behaviour, contraceptive use and family planning intentions over the 30-year study period of all women visiting a gynaecology clinic.

	1989	1999	2004	2009	2014	2023		
	n = 241	*n* = 333	*n* = 315	*n* = 350	*n* = 359	*n* = 596	Trend over all years[a]	2014 v. 2023[b]
Number of lifetime sexual partners (mean)	4.0	5.4	7.4	11.0	12.1	11.7	0.02	0.62
Number of sexual partners in the previous year (mean)	1.0	1.8	2.1	2.6	2.8	2.4	0.06	0.06
Age at first sexual activity (mean)	17.6	17.6	17.4	16.8	16.7	16.8	0.05	0.29
Used emergency contraceptive pill (ever)	NA[c]	71 (22)	160 (52)	229 (67)	258 (72)	339 (57)	0.22	<0.01
Want children	227 (94)	319 (96)	270 (88)	324 (93)	327 (91)	449 (75)	0.13	<0.01
Contraceptive at first sexual activity								
Condom	90 (40)	256 (77)	227 (72)	266 (76)	253 (71)	360 (60)	0.71	<0.01
SARC					35 (10)	140 (24)		<0.01
LARC					3 (0.8)	18 (3)		0.04
Withdrawal					33 (9)	41 (7)		0.24
Nothing					35 (10)	73 (12)		0.58

All values presented as n (% of group) unless otherwise stated.
Respondents could choose multiple forms of contraception, e.g., condom and combined oral contraceptive.
[a]Mann-Kendall test.
[b]X^2, t-test or Fischer's exact test, as appropriate.
[c]Emergency contraceptive not recommended yet in Sweden.
SARC – Shorting-Acting Reversible Contraceptives, i.e., combined oral contraceptives, progesterone-only pills, contraceptive ring and patch.
LARC – Long-Acting Reversible Contraceptives, i.e., copper IUD, LNG-IUD and contraceptive implants.

recent study the use of condom at first sexual activity declined from 71% in 2014 to 60% in 2024 ($p < 0.01$) (Table 2). Concurrently, ever-use of emergency contraceptive pills, which had been increasing between 1999 and 2014, had decreased by 2023 (Table 2).

In 2023, a total of 12% did not use any protection at their first sexual activity (Table 2). While this proportion did not differ from 2014 ($p = 0.58$), a larger proportion of women reported using effective methods, such as SARC and LARC methods in 2023 ($p < 0.01$ and $p = 0.04$, respectively).

At first sexual activity with their most recent partner, 39% ($n = 233$) reported using a form of SARC, while 18% ($n = 110$) used a LARC method and 38% ($n = 229$) of respondents reported using a condom. Just 5% of respondents used a withdrawal method and 4% did not use a method.

Family planning intentions

Only three-quarters of all respondents in the sample (75%, $n = 449$) wanted children in the future, 16 of whom already had children, the mean number of children desired was 2. This is considerably lower than in 2014 (Table 2) when 91% wanted children ($p < 0.01$, Table 2). Of all respondents, 94 were unsure whether they wanted children, and 45 responded that they did not want children (Table 3). Almost one third considered egg freezing.

In the responses to the open ended question on reasons for not wanting children, we identified five main themes, presented here with examples of word choice: no desire for children and to become a parent ('I just do not want children'), health concerns ('I have chronic pain and other health issues, I do not want to expose a child to potential heredity'), freedom ('I want freedom to do other things in my life'), economic and social reasons ('Stress, money, do not have a partner I trust'), and climate and overpopulation ('Overpopulation, poor belief that the child will have a good future due to environmental issues').

Sensitivity analysis

In the sensitivity analysis with only student respondents from 2023 ($n = 404$), there were only minor differences in the results (Supplementary Table 1). Specifically, due to a decrease in number of lifetime sexual partners in the 2023 survey (10.4 as compared to 11.7 in the full sample), the

Table 3. Family planning intentions and reasons for not wanting children.

	Total
Family Planning Intentions	*n* = 596
Do you want children?	
Yes	433 (73)
No	45 (8)
Already have children	16 (3)
Unsure	94 (16)
Average number of children desired (mean (SD))	2 (0.3)
Desired average age at first child (mean (SD))	29 (2)
Heard of egg freezing	209 (35)
Considered egg freezing	165 (28)
Reasons for not wanting children	*n* = 45
No desire for children and to become a parent	21 (47)
Health concerns	7 (16)
Freedom	6 (13)
Economic and social reasons	6 (13)
Climate and overpopulation	6 (13)

All values presented as n (% of all) unless otherwise stated.

increasing trend was no longer significant ($p = 0.06$). On the contrary, the upward trend for the number of sexual partners in the past year reached significance ($p = 0.04$). Compared to the last survey in 2014, the age at first sexual activity was significantly higher ($p = 0.04$) and the number of sexual partners in one's lifetime was lower than in 2014 ($p = 0.04$).

Ethics

The Swedish Ethical Review Authority concluded that there was no need for an ethical permission since the study did not process any personal data that could be traced to any individual (Dnr. 2019-04587). The head of the clinic approved the study and a submitted survey was interpreted as informed consent. Data is currently stored in a secure database REDCap and cannot be shared due to previous agreement with respondents at the time of survey collection.

Discussion

Findings and interpretations

The aim of this cross-sectional study was to investigate sexual behaviour (including consent), contraceptive use and family planning intentions, and how these have changed during the course of 30 years of repeated surveys among women attending the same gynaecology clinic for contraceptive counselling. Positively, sexual activity was generally performed with perceived consent and often with explicit action to confirm consent.

Women were also using more effective contraception, such as SARC and LARC, at the beginning of their sexual debut and during their first sexual activity with their most recent partner. However, they use condoms less at first sexual activity. Moreover, a greater proportion of respondents is unsure about having children and one third of respondents are considering egg-freezing, compared with just 9% in 2014. Our sensitivity analysis showed that, compared to the last survey in 2014, students are delaying the age at which they engage in sexual activity and have had fewer sexual partners during their lifetime, perhaps because of the recent pandemic and changing social norms [1]. One recent study found similar results, that younger women are less sexually active than before [15].

Results in the context of what is known

Due to the low mean age in the sample, we assume that up to half of the respondents received sexual education in school during the advent of the informed consent law in 2018. As the law suggests outward communication as a sign of voluntariness during sexual acts, the perceived intentions of all parties are important within this new legal context [16]. Our finding that 98% perceived consent during their most recent sexual activity is very encouraging, however 2% of women still had not perceived consent before their most recent sexual activity. This number is significantly smaller compared to a previous study that found that 3 out of 10 women experienced sexual activity against their will [17]. Other studies point to an even greater prevalence of unwanted sexual contact, ranging from 32% to 58% [18]. As sexual coercion has many negative psychological and physical consequences, improving sexual education and legal structures to reduce its incidence is important on an individual and societal level [19]. It is important to conduct more research in this area to ensure that intentional asking for consent is commonly accepted. Ideally, this law welcomes in a new period of ensuring consent from all parties during sexual activity.

Clinical implications

Furthermore, we found that emergency contraception was used less, perhaps because the current sample uses more effective forms of contraception, such as LARC or SARC, or due to less frequent sexual activity [14]. The latter could also explain the decrease in condom use. Despite more effective forms of contraception being used, condom use at first sexual activity had decreased among the respondents in 2023. This was the lowest recorded use of condoms since the survey began, when just four out of ten students said they used a condom during their first sexual activity in 1989 [2]. Although low numbers, respondents in 2023 tended to use LARC methods more often during their first sexual activity, reflecting both the implant and the levonorgestrel intrauterine device's popularity and changing medical recommendations and practices [20]. This information is important for providers of contraceptive counselling when advising patients on appropriate protection during sexual activity.

In our study, we saw a clear decrease in the desire to have children among participants where only three quarters of respondents intended to have children in the future, or already had children. In the previous survey conducted in 2014, nine out of ten women wanted to have children. This finding follows Nordic trends in decreasing total fertility rates [21], despite generous family friendly policies [22]. This decrease could be linked to global uncertainties, threats of climate change, a recent pandemic, and economic instability. Recent studies on sexual behaviour have shown these can all affect reproductive habits, within a larger framework of social and welfare structures [22–24]. Moreover, considering freezing one's eggs has increased by 20% in the past ten years. This spike has been observed in other countries, despite significant costs for the individual [9]. These trends and intentions may surface during clinical encounters when discussing contraceptive options or reproductive plans.

Research implications

Our study showed many positive developments in the sphere of reproductive health. To begin with, sexual education or implementation of the informed consent legislation may have had an effect on our sample as almost all participants perceived consent. More research is needed into the implications of legal changes on sexual behaviour, particularly as consent laws are being created and reformulated world-wide [25]. Further, more effective forms of contraception were being used more often at sexual debut. One in four responded they did not want or were unsure about having children in the future in spite of family friendly policies, and more respondents than ever are considering egg-freezing. Future studies should investigate what policies or societal changes could mitigate this impact on population growth [26].

Strengths and limitations

A strength of this study is that the same survey has been conducted over 30 years at the same gynaecology clinic, which offers us the unique opportunity to map sexual behaviour, contraceptive use, and family planning intentions over time. To our knowledge, this study is the first to survey individuals about informed consent in Sweden after the implementation of the informed consent law. The main weakness of this study is the possibility of biases. The survey may have excluded those who think sexual behaviour or contraception is a sensitive subject, i.e., social desirability bias. Respondents were asked about events in their past, which unfortunately also make the results susceptible to recall bias. This could affect the answers about questions that inquire about specific details, such as type of contraception. Because the survey was only provided in Swedish, this naturally excludes any respondents who do not speak Swedish. Another limitation with this survey was the cross-sectional design, which did not allow cause-and-effect associations. The study reflects our sample's current perspectives and behaviour. Therefore, the generalisability of the study results in other contexts is uncertain and warrants more research on a broader scale to confirm these trends.

Conclusion

Sexual behaviour and contraceptive use have changed over the last ten years in Sweden. The law of informed consent seems to have a positive effect when initiating sexual activity and more women reported using effective forms of contraception. Yet fewer women have decided to have children in the future.

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Author contributions

CO and TT contributed equally to the intellectual content and study design. CO and FG were responsible for the statistical analyses and CO, FG and TT drafted the manuscript. CO, FG, TT and ISP approved the final version of the article for publication.

Disclosure statement

CO and TT have acted as an invited speaker at scientific meetings for Gedeon Richter. IS-P has served occasionally on advisory boards or acted as an invited speaker at scientific meetings for Asarina Pharma, Bayer Health Care, Gedeon Richter, Peptonics, Shire/Takeda and Sandoz. FG has participated in scientific meetings arranged by Gedeon Richter and received payments for lectures from Bayer AG.

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