Oral contraceptive use among young women in southern Sweden

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Abstract

Study objective—The aim was to survey oral contraceptive usage among women under 25 years of age.

Design—This was a cross sectional population study based on information collected by questionnaire mailed to randomly selected individuals.

Setting—The study population consisted of Swedish women born between 1960 and 1964 and living in the southern Swedish health care region which has about one and a half million inhabitants.

Participants—The sample consisted of 3477 women, of whom 2573 or 74% agreed to participate in the study and were interviewed between November 1990 and April 1991.

Main results—Of the 2573 women participating, 2254 (88%) reported having used oral contraceptives at some time, 77% of them having started during their teens. Teenage start of oral contraceptive use was found to be related to a lower age at menarche, a higher marriage/cohabitation rate, a lower rate of teenage full term pregnancy, a higher rate of spontaneous abortion, a lower frequency of teetotalism, and a higher frequency of smoking. Longterm use of antipsychotic drugs appeared to be less common among women who started oral contraceptive use early, but no relationship with other pharmaceutical drug usage was found. No relationship was found between oral contraceptive use and the presence of a first degree relative with cancer.

Conclusions—A large proportion of Swedish women start using oral contraceptives during their teens, and report long duration of usage both before their first full term pregnancy and before the age of 25 years. The few women who have never used oral contraceptives do not appear to be representative of the general population.

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It has been suggested that the risk of developing breast cancer is increased by the use of oral contraceptives,¹ and that it is related to their use at specific periods in a woman's life, ie, before the first full term pregnancy,² before the age of 25 years,³ or during the teens.⁴ For validity assessments of risk estimates and for the evaluation of potential public health consequences, it is vital to know the prevalence of exposure to oral contraceptives in different age categories, and the relationships between oral contraceptive use

and other factors that may either affect the risk of breast cancer or confound estimates of the risk.

Most national sample surveys⁵ on oral contraceptive use provide information on married women only. Sales data generally cover all women, but neither of these two sources of information usually reports young women separately. Moreover, previously published reports from studies on patterns of oral contraceptive use in Sweden,⁶ Norway,^{7 8} and the USA⁹ have not been specifically focused on the characteristics of young women exposed to oral contraceptives before 25 years of age.

Methods

Within the framework of a larger cohort study among young women in southern Sweden, a cross sectional descriptive study has been performed on baseline data regarding patterns of exposure to oral contraceptives. The cohort study itself will be presented elsewhere.

The Southern Swedish Health Care Region is an area with approximately one and a half million inhabitants, about 50 000 of whom are women born between 1960 and 1965. Between November 1990 and April 1991, an invitation to participate in the study was mailed to 3477 randomly selected women in the region, together with a questionnaire, comprising 42 questions on basic demographic details, reproductive and contraceptive history, social and familial issues, and details of such personal habits as tobacco smoking and alcohol consumption.

The questionnaire was expected to be completed in 15 minutes and the participants were asked to return the questionnaires promptly after completion. The questionnaire answers were checked and coded by a medical secretary specially trained in the procedure, and then stored by computer. A reminder was sent to those who did not answer the invitation or return the questionnaire.

Statistical analysis of categorical data generally involved χ^2 testing, and analysis of variance was used for comparing means of continuous data. All confidence intervals (CI) were 95% and were obtained by normal approximation to the binomial distribution. Pearson's correlations were used. All statistical tests were two sided, and p values below 5% were considered to indicate statistical significance.

Results

In all, 2573 questionnaires were completed and returned, a participation rate of 74%. Fourteen per cent of the women declined to participate and

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Proportion of women who had ever used oral contraceptives

12% could not be reached at their registered address.

Of the 2573 women, 2254 (88%; CI 87–89) reported that they had used oral contraceptives at some time, 307 (12%; CI 11–13) reported never having used oral contraceptives, and the remaining 12 women did not answer the question. Of the 2254 women who had used oral contraceptives, 2093 (93%; CI 91–94) reported their age when they started using them (see figure) and 2071 reported the duration of their use (see table I). The mean duration of oral contraceptive usage was 71.3, 75.3, 79.6, and 81.2 months respectively among women aged 26, 27, 28, and 29 years at interview; the mean duration of use was 90 months among women who started before 20 years of age, 48 months among those who started between 20 and 24 years of age, and 19.5 months among those who started at 25 years of age or later.

Age at start of oral contraceptive use was correlated with the duration of use before the first full term pregnancy and with the duration of use before 25 years of age ($R = -0.40$ and -0.64 , respectively). The duration of use before the first full term pregnancy had a high correlation ($R = 0.89$) with the duration of use before 25 years of age. The total duration of oral contraceptive use correlated with the age when they were first used, the duration of use before the first full term pregnancy, and with the duration of use before 25 years of age ($R = -0.64$, 0.93 , and 0.95 , respectively).

Table I Oral contraceptive usage in relation to age at start and duration of usage before age 25 years and duration before the first full term pregnancy

Characteristics	Frequency	Percent	95% Confidence interval
Age at start (years)			
–19	1604	67	65–69
20–24	415	17	13–21
25–	74	3	0–7
never	307	13	9–17
Duration before age 25 (months)			
never	337	14	10–18
1–48	655	28	25–31
49–96	955	41	38–44
97–	408	17	13–21
Duration before FFTP (months)			
never	326	14	10–18
1–48	667	28	25–31
49–96	846	36	33–39
97–	514	22	18–26

The median age at menarche was 13 years (range 8–28), and the median number of full term pregnancies was 2 (range 0–5). The median age at first full term pregnancy was 24 (range 15–30); 318 women (12%; CI 11–13) reported having had a spontaneous abortion, and 387 women (15%; CI 14–16) having had an induced abortion; 563 women (22%; CI 20–24) were single, 1938 (76%; CI 74–78) were married or cohabiting, and 2% (CI 2–3) were divorced or widowed; 56% (CI 54–58) were smokers or had been at some time.

Table II shows mean ages at menarche, first full term pregnancy, and abortion in relation to age at start of oral contraceptive use, duration of use before age 25, and duration of use before the first pregnancy. Table III shows distribution of the respondents and their other characteristics in relation to age at start of oral contraceptive use.

Previous long term use (a month or more) of pharmaceutical drugs other than oral contraceptives did not appear to be strongly related to age at start of oral contraceptive use. Use of antihypertensive drugs was reported by 1–2% ($p = 0.279$), antibiotics by 2–3% ($p = 0.695$), hormonal drugs by 0–2% ($p = 0.340$), and other drugs by 11–14% ($p = 0.508$).

The use of antipsychotics appeared to be more common among women who had never used oral contraceptives and those who started to use them at age 25 or later (3% in both cases) than among women who started to use them between the ages of 20 and 25 years or as teenagers (1% in both cases, $p = 0.029$).

The proportion of subjects having a first degree relative with cancer (ie, indicating the possibility of cancer heredity) was similar in all oral contraceptive usage categories (range 15–17%). No inquiry was made as to the different brands or types of oral contraceptives used.

Discussion

The women studied constituted a randomly selected group with a participation rate of 74%. Of the remaining 26%, about half could not be reached by mail. One reason for this might have been the relatively high migration rate of women in this age group. Another possible reason is failure to register a change of address when attending school or university away from home. The proportion of women actually declining participation is thus likely to be less than 26%.

As the population addressed comprised women in their twenties, the traditional characteristics among non-responders (alcoholism, criminality, drug abuse, etc) were probably present in only a negligible proportion of the decliners. No attempt was made to relate oral contraceptive usage and the willingness to participate, or to investigate patterns of oral contraceptive exposure among non-responders.

Three measures of exposure to oral contraceptives (ie, duration of exposure before 25 years of age, duration of exposure before the first full term pregnancy, and age at start of use) have been discussed in the context of risk of breast cancer,^{2–4} and, as might be expected, were all found to be related to each other in the present sample. If a woman has a long duration of exposure to oral contraceptives before her 25th

birthday, then reasonably she started using them at an early age. Moreover, she probably used them to postpone her first pregnancy. Owing to the age selection of the women in this study population, the total duration could be expected to be closely related to the duration of exposure before the age of 25 years.

The latent period between exposure to oral contraceptives and an increase in the risk of breast cancer is thought to be several years.^{4 10} Since low dose oral contraceptives were not introduced until the mid-seventies, the first generation of women who can have had any major exposure to low dose

formulations during their teens, before age 25, or before the first full term pregnancy, is the age group chosen for this study (ie, those born between 1960 and 1964); and as these women have not reached the age where breast cancer becomes a more common disease (ie, after 45), the potential breast cancer risks of low dose oral contraceptive usage cannot yet be studied epidemiologically.

Since, however, the risk of breast cancer is greater than that of any other cancer among women, with so large a proportion of women being exposed to oral contraceptives, even a moderate increase in the risk would be important from a public health point of view.

Table II Age at menarche, first full term pregnancy, spontaneous abortion, and induced abortion, in relation to starting age of oral contraceptive usage and duration of usage before age 25 years and duration before first full term pregnancy (FFTP)

Characteristic	Mean	SEM	No	p value ¹	p value ²
Menarche					
Age at start of OC usage (years)					
-19	12.9	0.03	1587	< 0.001	< 0.001
20-24	13.1	0.06	411		
25-	12.7	0.15	73		
never	13.2	0.10	302		
Duration of OC usage before age 25 (months)					
never	13.1	0.09	331	< 0.001	< 0.001
1-48	12.9	0.05	649		
49-96	13.0	0.04	944		
97-	12.7	0.06	404		
Duration of OC usage before FFTP (months)					
never	13.2	0.09	321	0.031	0.023
1-48	12.9	0.05	659		
49-96	13.0	0.04	834		
97-	12.9	0.06	512		
Age at FFTP					
Age at start of OC usage (years)					
-19	24.2	0.09	963	0.164	0.003
20-24	24.8	0.22	183		
25-	23.8	0.59	30		
never	23.6	0.26	131		
Duration of OC usage before age 25 (months)					
never	23.5	0.25	148	< 0.001	< 0.001
1-48	23.8	0.16	375		
49-96	24.5	0.11	531		
97-	24.5	0.16	239		
Duration of OC usage before FFTP (months)					
never	23.5	0.25	150	< 0.001	< 0.001
1-48	23.5	0.14	413		
49-96	24.7	0.09	514		
97-	26.6	0.10	167		
Age at spontaneous abortion					
Age at start of OC usage (years)					
-19	24.2	0.19	230	0.488	0.700
20-24	24.5	0.52	33		
25-	23.3	1.56	6		
never	24.7	0.38	31		
Duration of OC usage before age 25 (months)					
never	24.7	0.56	33	0.259	0.057
1-48	23.7	0.31	101		
49-96	24.7	0.25	110		
97-	24.5	0.45	52		
Duration of OC usage before FFTP (months)					
never	24.4	0.57	34	0.029	0.023
1-48	23.8	0.30	109		
49-96	24.4	0.25	107		
97-	25.5	0.44	40		
Age at induced abortion					
Age at start of OC usage (years)					
-19	21.0	0.26	257	0.032	0.036
20-24	22.5	0.47	48		
25-	23.4	0.28	11		
never	21.9	0.54	41		
Duration of OC usage before age 25 (months)					
never	22.0	0.49	47	0.266	0.585
1-48	21.5	0.37	112		
49-96	21.1	0.37	125		
97-	21.4	0.55	64		
Duration of OC usage before FFTP (months)					
never	21.5	0.53	46	0.905	0.992
1-48	21.4	0.37	120		
49-96	21.4	0.39	112		
97-	21.6	0.51	67		

¹Test for trend
²Test for homogeneity

The frequency of oral contraceptive usage found in this study (88%) is similar to that (82%) reported in another Swedish study from 1981,¹⁶ a consistency in results suggesting that this form of contraception has in fact been used by a large proportion of young Swedish women during the eighties. Accordingly, age at start of oral contraception use is relatively low in Sweden, lower than it would seem to be in Norway⁸ where, as in the USA during the period 1976-80, the use of oral contraceptives appears to be less common,⁹ ie, only 14.6% among young women aged 15 to 19 years.

As was found in studies from Norway,^{7 8} it seems that in some respects early oral contraceptive use is related to factors that also interact with the risk of breast cancer—eg, age at menarche, age at first full term pregnancy, and possibly smoking and alcohol consumption. Reproductive events are generally considered to be risk factors, and are taken into consideration in practically all epidemiological studies on oral contraceptive usage and the risk of breast cancer.

In few (if any) studies of oral contraceptives and breast cancer has simultaneous exposure to tobacco and alcohol been taken into account. The effects of smoking and alcohol on the risk of breast cancer would seem to be weak or equivocal,¹¹⁻¹⁶ however, and are not currently considered to be of any major importance regarding the validity of risk estimates.

No statistically significant heterogeneity in age at start of oral contraceptive usage could be seen with regard to the proportion of women with induced abortions. However, a correlation would appear to exist between age at start of oral contraceptive use and age at induced abortion. This correlation could probably be explained by the reduced probability of having an induced abortion when using oral contraceptives. Spontaneous abortion did not manifest the same correlation to age, but was more common among those starting to use oral contraceptives before the age of 20 than in any other oral contraceptive subgroup.

In few studies has the relationship between abortion and oral contraceptive usage been analysed with sufficient statistical power, and the results of published studies are often conflicting. In a population based case-control study in Denmark,¹⁷ for instance, including almost all new breast cancer cases in the country during a 12 month period, a statistically significant increase was reported in the risk of breast cancer, whereas in a Swedish cohort study of 49 000 women,¹⁸ a

Table III Characteristics of oral contraceptive (OC) users in relation to age at start of use. Figures denote percentages of study population (total number of subjects is given in brackets)

Characteristic	Age at start of OC usage (years)				p value
	≤19	20–24	≥25	never	
Marital status					
Single (living alone)	18	24	34	34	<0.001
Married/cohabiting	80	75	64	63	
Divorced/widowed	2	1	2	3	
	(1604)	(415)	(74)	(307)	
Number of sisters					
0	35	43	35	42	0.052
1	42	35	46	38	
2	15	16	13	13	
3+	8	5	6	7	
	(1549)	(396)	(68)	(297)	
Number of brothers					
0	32	31	27	35	0.032
1	45	47	44	41	
2	18	16	17	17	
3+	6	6	12	6	
	(1526)	(389)	(71)	(294)	
Number of siblings					
0	7	7	3	11	0.241
1	39	41	43	40	
2	28	29	28	25	
3+	26	22	26	24	
	(1490)	(375)	(67)	(287)	
Full term pregnancies					
0	8	9	6	10	<0.001
1	39	49	46	30	
2	41	31	30	41	
3+	12	11	18	18	
	(1050)	(202)	(33)	(148)	
Spontaneous abortion (ever)	14	8	8	10	0.001
	(1604)	(415)	(74)	(307)	
Induced abortion (ever)	16	12	15	13	0.121
	(1604)	(415)	(74)	(307)	
Education					
Elementary school	8	5	8	8	<0.001
Secondary school	55	42	46	46	
University	27	48	39	37	
Other	9	5	7	9	
	(1599)	(414)	(74)	(306)	
Smoke (ever)	65	42	43	33	<0.001
	(1601)	(414)	(74)	(307)	
Teetotallers	3	7	10	16	<0.001
	(1602)	(415)	(74)	(307)	

statistically significant decrease in the risk was found. Clearly, the question of whether any relationship in fact exists between breast cancer risk and abortion has yet to be settled.

Age at start of oral contraceptive usage was also related to the level of education. Although the relationship was somewhat complex, it appeared that university education was more common among women starting to use oral contraceptives between the ages of 20 and 25 years than among teenage starters (48% v 27%, respectively). In Norway,⁸ a clear but different relationship was found between oral contraceptive use and the level of education: the longer the duration of

education, the higher the percentage who had ever used oral contraceptives. The discrepancy between Norway and Sweden in this respect is probably due to the higher average age at start of oral contraceptive use in Norway, and the consequently lower prevalence of teenage starters.

In the present study, long term use of anti-psychotic drugs was more common among late users and among women who had never used oral contraceptives. To some extent, this might reflect the paucity of social and sexual relations among women on such medication. Indeed, women who have never used oral contraceptives may constitute a poor reference category for future studies on the effects of these preparations.

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