Use of the Oral Contraceptive Pill by Austrian Adolescents with Emphasis on the Age of Onset, Side Effects, Compliance and Lifestyle

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ABSTRACT

The present study investigated the use of the oral contraceptive pill in 880 Austrian high school girls. All participants filled in a questionnaire on lifestyle and menarche. Furthermore, subjects on the pill were asked about their preparation, age at first use, reasons why they take it, side effects and oral contraceptive compliance. All 139 subjects on the pill used low dose monophasic preparations. The girls started the pill at a mean age of 16.0 0.9 years for contraceptive and therapeutic reasons. The most commonly noted side effects were weight gain, an increase in breast size, fatigue and depression. The results also indicate that most users comply sufficiently. Regarding lifestyle, it can be stated that there is a correlation between the use of the pill and smoking, the frequency of consuming alcoholic drinks and being physically active.

Introduction

In teenage years relationships are generally not long-term. Planning a family and its size are not yet considered to be important factors¹. Therefore, adequate and safe contraceptives like the oral contraceptive pill (OC) have to be provided for adolescents. Moreover, the pill is not only prescribed as contraception, but also as therapy for acne, irregular menses and other menstrual disorders². Acne is a cosmetic problem and a dermatological dis-

ease, which negatively affects body image and self-esteem and may exacerbate preexisting anxiety and depression³. During adolescence one major concern is body image and factors affecting it, such as acne, for instance^{4,5}. In female acne, hyperandrogenism and the hypersensitivity of the target tissue to an excessive conversion of androgen precursors to the active metabolites are of great importance. OC with progestins, which have a peripheral antiandrogenic effect, like cyproterone acetate, should be used for the treatment of acne and other androgenic disorders, like seborrhea⁶ or hirsutism⁷.

As already mentioned, oral contraceptives are also used in case of menstrual disorders. The decrease of dysmenorrhea during OC use is explained by a reduction of prostaglandine F_2 in the uterus. During their reproductive life half of all women have menstrual irregularities of varying degrees which may lead to an interruption of normal life⁸. In teenage girls it is the leading reason for recurrent short-term school absenteeism in the United States. An estimated 140 million hours are lost annually from school or work because of menstrual pain⁹.

It should also be considered that OC may have side effects, which, especially in adolescents, may influence body image. As weight gain is the most commonly noticed side effect by women using OC¹⁰, teenage girls in particular who desire a safe contraceptive method, might have problems with compliance or continuing OC due to that reason. Moreover, women discontinuing OC often use less effective methods and the probability of an unintended conception increases¹¹.

In Austria data on the use of OC in the teenage population are extremely rare. Most observations on adolescents focus on sexual life and the use of contraceptives in general^{12–14}. The majority of surveys were carried out in the 1980s or earlier and are therefore outdated.

The aim of the present study is to describe the prevalence of OC use in 14 to 18 year old girls in the region of Salzburg, their reasons for using OC, to show possible side effects and how correctly the subjects use OC. Furthermore, the relationship between some lifestyle characteristics and the prevalence of OC use was studied.

Material and Methods

Study population

904 subjects were recruited from six out of seven high schools in the rural region of »Pongau« to the south of the city of Salzburg, Austria. Five high schools were randomly chosen in the city itself. Data were collected between May and June 2000 during sports lessons at school. Sports lessons were chosen because the girls were separated from the boys which created a more intimate atmosphere for the interviews. As the study was restricted to healthy, nulliparous 14 to 18 year old girls 24 subjects had to be excluded. The mean age of the 880 included subjects was 16.2 0.9 years. In eleven girls menarche had not yet occurred at the time of the survey.

Authorities were asked for permission before the survey was started and information letters for parents were handed out to all girls. No control was kept whether the parents received these letter or not. All girls participated voluntarily.

Questionnaire

After an information meeting all participants filled in a questionnaire about lifestyle, menarche and the use of OC. Lifestyle was reported as smoking habits, alcohol consumption, physical activity habits and whether a girl was on a diet or not. Of particular interest for the present study were questions concerning the use of OC. Users were asked for the name of their preparation, for the month and year at which they started using OC, reasons for starting the pill, if they noticed side effects, how many pills they forget per cycle and the daily variation in the time of the pill intake.

Chronological and gynecological age (= calendar age minus age at menarche)² were used to define the age at first ever use of OC. If a girl could not remember the exact month or year of her menarche,

she was asked to connect it with events like birthdays, holidays or seasons. The given answer was an interval of some months of which the mean was assumed as the month of menarche.

Statistical analysis

The data were analyzed with SPSS statistical package for social sciences version 9.0. Chi-square test for linear trend was performed to examine a correlation between lifestyle and the use of OC. A p-value of <0.05 was regarded as statistically significant. All data are expressed as means SD.

Results

Prevalence of OC use

The 880 participating girls were aged between 14 and 18 years, born between 1982 and 1985. Their mean age was 16.2 0.9 years. Further characteristics of the study population are displayed in Table 1 168 subjects (19.1%) had used OC compared to 139 (15.8%) who were on the pill at the time of the survey. The prevalence of OC use increased from 1.8% to 25.6% between 14 and 18 years of age.

All pills used by the study population were low dose preparations containing 20 – 35 g ethinylestradiol. Monophasic pills were taken by 95.0% (132 girls). The pro-

gestagenic component of most of these pills (64.0%) was gestodene. 16.5% contained cyproterone acetate, 7.0% desogestrel, 5.0% norgestimat, 1.4% levonorgestrel and 0.7% chlormadinonacetate. Triphasic pills containing gestodene or norgestimate were used by 4.3% (6 girls) and one girl (0.7%) used progestagenic injections.

Age at the first use of the pill

Chronological and gynecological age can be taken into account if the age at the first us of oral contraceptives is defined. The mean chronological age for the first use of the pill was 16.0 years 0.9. Three subjects started the pill before the age of 14 years while all the other subjects were older than 14. The mean gynecological age at the first use of the pill was 3.2 years 1.3. Here, the minimal age at the first use was 0.3 years and oldest girl started to use the pill 7.2 years after her menarche.

Reasons for the use of oral contraceptives and side effects

Reasons for the use of the pill were not only contraception but also acne, dysmenorrhea, irregular menstruation and other bleeding disorders as well as cysts. 93.5% (130 subjects) of the girls who were on the pill at the time of the survey stated

TABLE 1
DESCRIPTION OF THE STUDIED SAMPLE: AGE, MENARCHE, USE OF OC

Total number of participants	880
Number of participants living in urban area	256 (29.1%)
Number of participants living in rural area	624 (70.9%)
Mean chronological age (yrs.)	16.2 0.9
Number of girls in which menarche had not yet occurred	11
Mean age at menarche (yrs.)	13.1 1.3
Number of girls who ever used OC	168 (19.1%)
Number of girls on the pill at the time of the survey	139 (15.8%)
Mean chronological age at first ever use of OC (yrs.)	16.0 0.9
Mean gynecological age at first ever use of OC (yrs.)	3.2 1.3

TABLE 2
REASONS FOR OC USE CATEGORIZED BY YEAR OF BIRTH

		Year of birth									
	19	982	19	1983		1984		1985		Total	
	N	%	N	N %		%	N	%	N	%	
Contraception	30	96.7	65	95.6	32	86.5	3	100	130	93.5	
Irregular menses	10	32.3	19	27.9	14	37.8	1	33.3	44	32.3	
Dysmenorrhea	9	29.0	16	23.5	12	32.4	0	0	37	26.6	
Acne	5	16.1	14	20.6	6	16.2	0	0	25	18.0	
Cyste	0	0	0	0	1	2.7	0	0	1	0.7	

		Year of birth									
	19	982	1	1983		1984		1985		Total	
	N	%	N	%	N	%	N	%	N	%	
Weight gain	11	35.5	21	30.9	8	21.6	0	0	40	28.8	
Increase in breast size	9	29.0	18	26.5	6	16.2	0	0	33	23.7	
Fatigue	7	22.6	6	8.8	7	18.9	1	33.3	21	15.1	
Head ache	4	12.9	4	5.9	4	10.8	1	33.3	13	9.4	
Depression	1	3.2	2	2.9	4	10.8	1	33.3	8	5.8	
Intermenstrual bleeding	1	3.2	5	7.4	2	5.4	0	0	8	5.8	
Breast tension	3	9.7	2	2.9	1	2.7	0	0	6	4.3	
Nausea	2	6.5	2	2.9	1	2.7	0	0	5	3.6	
Dysmenorrhea	1	3.2	1	1.5	2	5.4	0	0	4	2.9	
Flush	0	0	1	1.5	1	2.7	0	0	2	1.4	
Heavier menses	0	0	1	1.5	1	2.7	0	0	2	1.4	
Decrease in breast size	0	0	1	1.5	0	0	0	0	1	0.7	

contraception as one of the reasons why they use the pill. Compared with contraception all therapeutic reasons were mentioned by only a few girls (see Table 2).

67 girls (48.2%) stated side effects due to the pill. The most common side effects were weight gain in 40 subjects (28.8%), an increase in breast-size in 33 (23.7%) and fatigue in 21 girls (15.1%). Other mentioned side effects were head ache (9.4%), intermenstrual bleeding and depression (each 5.8%), breast tension (4.3%), nausea (3.6%), dysmenorrhea (2.9%),

heavier blood flow and flush (each 1.4%). One girl (0.7%) noticed a decrease in breast size (Table 3). Weight gain and an increase in breast size were significantly mentioned by the same girls ($^2 = 10.9$, p<0.01). None of the probands noticed a loss of libido or acne as side effect.

Compliance

The questionnaire included two questions about the correct use of the pill which are considered to describe the compliance. The question on how many pills a

						Year o	of birth				
		19	1982 1983 1984 1985								
		N	%	N	%	N	%	N	%	N	%
Missed	No	19	61.3	39	57.4	22	59.5	2	66.7	82	59.9
pills	<1/cycle	12	37.8	27	39.7	14	37.8	1	33.3	54	38.8
	>1/cycle	0	0	2	2.9	1	2.7	0	0	3	2.2
Variance	No	4	12.9	14	20.6	9	24.3	0	0	27	19.4
of time of	<1h	15	48.4	41	60.3	22	59.5	3	100	81	58.3
intake	>1h	12	38.7	13	19.1	6	16.2	0	0	31	22.3

TABLE 4
CORRECT PILL INTAKE CATEGORIZED BY THE YEAR OF BIRTH OF OC USER

subject forgets each cycle was answered as follows: 59.9% (82 girls) never missed a pill before, compared with 38.8% (54 girls) who miss less than one pill per cycle and 2.2% (3 girls) who stated to miss more than one pill per cycle. The second question about the variation in time of the daily pill intake shows that in 19.4% (27 girls) the time is exactly the same, in 58.3% (81 girls) the time of the intake varies one hour and in 22.3% (31 girls) it varies more than one hour (Table 4).

Lifestyle and the use of OC

Lifestyle of girls is described as smoking habits, alcohol consumption, sports and being on a diet. 78 girls (56.1%) using the pill were smokers compared to 204 girls (27.5%) who did not use the pill. Similar differences are presented for alcohol consumption and sports. 11 girls (7.9%) of those on the pill never drink alcohol, 103 girls (74.1%) sometimes and 25 girls who take OC (18.0%) often have alcoholic drinks. Of the non-users 119 (16.1%) never, 535 (72.2%) sometimes and 87 girls (11.7%) often drink alcohol. Additionally to at least three hours of sports lessons at school, 43 pill users (30.9%) do no sports, compared to 144 (19.4%) of non-users. 73 girls who use the pill (52.5%) and 406 (54.8%) of the nonusers said that they do up to three hours of sports a week. More than three hours of sports a week were mentioned by 23 users (16.6%) and 191 non-users (25.8%). These differences, that girls on the pill more often smoke and drink alcohol and do less sports are statistically significant and presented in Table 5 and in Figure 1. No differences were observed concerning being on a diet or not.

Discussion

The first objective of the present study was to describe the prevalence of OC use among adolescents. A comparable Dutch study showed that 11% of girls between 14 and 16 years of age had experienced OC use². In another European survey from Belgium 14% of 14 to 17 year olds were OC user¹⁵. A similar result was assumed and obtained for this observation. 19.1% of the study population had used oral contraceptives and 15.8% used the pill at the time of the survey. Only high school girls were involved in the presented study. The inclusion of other types of schools may lead to totally different results as Husslein stated that the percentage of girls who had sexual relations is higher in vocational schools than in high $schools^{12}$.

The general opinion that low dose monophasic preparations should be prescri-

TABLE 5
LIFESTYLE DIFFERENCES BETWEEN OC USER (N=139) AND CONTROLS (N=741)

		U	ser	Con		
		N	%	N	%	- р
Smoker	Yes	78	56.1	204	27.5	< 0.000
	No	61	43.9	537	72.5	
Alcohol	Never	11	7.9	119	16.1	
	Sometimes	103	74.1	535	72.2	< 0.012
	Often	25	18.0	87	11.7	
Sports	No	43	30.9	144	19.4	
	<3h/week	73	52.5	406	54.8	< 0.003
	>3h/week	23	16.6	191	25.8	
Diet	Yes	12	8.6	57	7.7	< 0.7
	No	127	91.4	684	92.3	

bed for teenagers¹⁶ is displayed by the results of the present study as all mentioned preparations contain 20–35 g ethinylestradiol. In addition, that fact that most of these pills have gestodene as their progestagenic component, not only low dose pills but also preparations with a modern progestagenic component are preferred. Gestodene is at present the most potent progestogen having a bioavailability of about 100% and although its high affinity to androgenic, glucocorticoid and aldosterone receptors the ex-

pected effects are of no clinical importance¹⁷. The fact that only one girl uses progestagenic injections shows that this new method has not yet established itself in the Austrian adolescent population. In the United States much more teenage girls are prescribed such injections due to their high reliability. Even before the approval by the Food and Drug Administration clinicians used them for teenagers¹⁸. As well as their longitudinal effect, major advantages of progestagenic injections are that they do not require cooperation

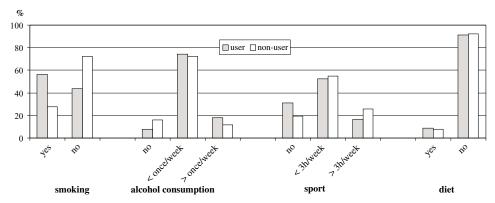


Fig. 1. Lifestyle characteristics for OC user (N = 139) and non-user (N = 741).

with the partner, they are not as user-dependent as the pill and that, compared with barrier-methods, they are independent of coitus¹⁹.

The results also demonstrate that none of the subjects uses progestogenonly mini-pills. Due to frequent spotting and breakthrough bleeding they are not recommended for adolescents. Owing to their low dose concentration gestageneonly-pills demand for a good compliance which generally can not be expected of adolescents¹⁶.

Concerning the age at the first use of the pill no comparable data were found. But it must be pointed out that the interpretation of the presented data is difficult as the girls are of different age and they had not vet finished adolescence. Nevertheless it is assumed that most women in Austria may use OC for the first time in late adolescence or in early adult years. This hypothesis is supported by the results of an Austrian survey published in 1997, where 64% of 14 to 24 year old women had used oral contraceptives¹³ versus 19.1% in the presented report. It is most likely that the number of sexually active subjects in the presented study population is lower than in older age groups and therefore the girls are not yet longing for hormonal contraception. Nonetheless the number of subjects mentioning contraception as one reason for the use of the pill is very high. A Dutch study illustrated that 22%, 45%, and 71% of 14, 15 and 16 year old girls use the pill for contraception² compared to 100% and 83.8% in 15 an 16 year old subjects in this study. It should also be mentioned, that two of the three girls, who used OC before the age of 14 used them as contraception. The third girl took them as therapy due to cysts. As it was not intended to ask for the main reason of the OC use therapeutic reasons were mentioned in relatively small amounts. However, the importance of the pill as therapy must not be ignored. The fact that 16.5% of the prescribed preparations contain cyproteroneacetate, a highly effective antiandrogenic progestagen⁶, supports its role in acne therapy for instance.

Side effects were noticed by 48.2% of the subjects on the pill. Another Austrian study had about the same result (44.3%) when asking for side effects during the first month of the pill intake. The main side effects concerned bleeding anomalies²⁰. In the recent study, bleeding anomalies play a minor role compared with weight gain, an increase in breast size, fatigue or depression. Weight gain and an increase in breast size affect teenage body image and therefore might be overvalued by the subjects. The question of whether the mentioned weight gain and/or increase in breast size is perception or reality will not be handled here, as the necessary information was not gathered. The interpretation of fatigue and depression as pill-related side effects is generally difficult in adolescents. They may be markedly affected by the confounding life situation and not by the pill itself. Teenagers experiencing first sexual relations add a new facet to their life which is time-consuming and stressful and therefore may result in fatigue or depression²¹.

The results of the present study concerning oral contraceptive compliance illustrate that only 2.2% of the subjects miss more than one pill per cycle and 22.3% have a time variation of the intake of more than one hour each day. A survey which took place in five European countries pointed out that 19% of women on the pill miss more than one pill per cycle and 10% miss more than two pills per cycle. In this report, two key predictors for inconsistent use were whether taking the pill was routine and whether the woman read and understood the instructions that accompanied the pill package²². As in the presented study the data of the European survey was gathered by self-re-

port. The indirect method of self-report may lead to an over estimation of oral contraceptive compliance, especially if a woman uses the pill for a long period and therefore has to rely on her memory²³. Nevertheless it can be assumed that most of the subjects who participated in the survey comply sufficiently and that their risk of a teenage pregnancy is relatively low. When adolescents start a contraceptive method the compliance is generally poor²⁴. They are still developing their capacity for cognitive reasoning and acquiring skills. Therefore age-appropriate information and adequate counseling by the practitioner necessarily has to be provided to guarantee a good compliance of the contraceptive method⁴. Besides adequate counseling, one of the most important factors is whether a woman has developed a regular routine for taking her pill. Woman who do not are more likely to miss a pill than those who always take the pill at the same time¹¹.

Despite the well known cardiovascular risks of this association, girls on the pill are more likely to smoke, consume more alcoholic drinks and are less physically active than the controls. Several studies obtained similar associations for using OC in adolescents and cardiovascular risk factors, especially smoking. As a general statement, the authors of these surveys mention that these findings indicate the necessity of prospective studies because the health consequences in later life of combining OC and smoking in young age have not sufficiently been studied^{15,25,26}. It should be pointed out once again that age-appropriate counseling by physicians could be one step towards preventing later consequences on cardiovascular disease.

The opinion of the authors is that these results may also imply that teenage girls using OC have more emphasis on going out or relationships and therefore need reliable contraceptives like the pill.

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KORIŠTENJE ORALNE KONTRACEPCIJE U AUSTRIJSKIH ADOLESCENATA S NAGLASKOM NA DOB POČETKA KORIŠTENJA, POPRATNE UČINKE I PODNOŠENJE PILULE TE NAČIN ŽIVOTA

SAŽETAK

Ova studija istražuje korištenje oralne kontracepcije u 880 austrijskih srednjoškolskih djevojaka. Sve su sudionice ispunile upitnik o načinu života i menarhi. Nadalje, korisnice oralne kontracepcije pitane su o pripremi, dobi prvog korištenja, razlozima, uzgrednim štetnim učincima i podnošenju »pilule«. Svih 139 korisnica pilule koristilo je monofazne preparate niske koncentracije. Prosječna dob početka korištenja iznosila je 16.0 0.9 godina iz kontraceptivnih i terapeutskih razloga. Najčešće zabilježena uzgredna štetna djelovanja odnosila su se na porast tjelesne težine, povećanje grudi, umor i depresiju. Rezultati također upućuju da većina korisnica dobro podnosi ovu kontracepciju. Što se tiče načina života, može se utvrditi kako postoji korelacija između korištenja kontaceptivne pilule i pušenja, učestalosti konzumacije alkoholnih pića i tjelesne aktivnosti.