



The relationship between the use of combined hormonal contraception with a predominance of gestagens and the selected types of female body in young women from the region of Lower Silesia

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ABSTRACT: Oral contraceptive agents are currently the most popular and one of the most effective methods for preventing pregnancy. The data shows that over 300 million women in the world use contraceptive drugs containing synthetic hormones to avoid an unwanted pregnancy. Their effects may affect other systems, leading to the occurrence of various problems associated with the use of the drug. The aim of the study is to estimate the frequency of prevalence of subjective effects associated with the use of combined hormonal contraception with a predominance of gestagens by young women. Surveys were conducted among female students of Wrocław universities from December 2010 to January 2011. They covered 257 women aged statistically 23.58 (SD=2.95). They were divided into three age classes: 19-22, 23-24, 25-28. The individual age of menarche and the hormonal type of body were determined. Only persons with a gestagenic or estrogenic type of body were qualified for the study. Results: 64.6% of all respondents declared the use of hormonal contraception. Combined agents with a predominance of gestagens constituted 87% in this group. Their use brings both positive (90%) and negative (65%) aspects. The most common positive effects include high contraceptive effectiveness, regulation of menstruation and minimisation of skin problems. The most frequent negative effects include: weight gain, spotting, breast swelling and decreased libido. Surprisingly, the study did not show any correlation between the hormonal type and the occurrence of side effects. There was no significant statistical relationship between the type of hormonal contraception used and the hormonal type.

KEY WORDS: contraceptive pills, PMS, menstruation, pregnancy

Introduction

The influence of sex hormones on the ovulation process was noticed at the beginning of the 20th century. The first contraceptive pills were originally pre-

scribed for patients for the “menstrual cycle control” (Bishop 2011). They contained a drastically high hormone concentration (Finley 2012). Currently, physicians in the world have a wide range of hormonal contraceptives that they can

choose. They are the most popular, the safest and the most effective method of pregnancy prevention (Burkman 2002).

Oral contraceptives are currently used by 9% of women in reproductive age in the world and by 18% of women in developed countries (United Nations 2011). According to the data of Polish Central Statistical Office (GUS) from 2009, in Poland this type of contraception is chosen from among all available methods by 29.1% of respondents (GUS 2009). There are many types of hormonal contraception - progestogen-only pills and combined pills. The combined pills can be also divided into monophasic pills and multiphasic pills. Scientific data indicate that nowadays, the two-phase contraception containing at least 30 mg of ethinyl estradiol and a suitable gestagen is still the most popular in the developed countries (Glasier 2006). The type of gestagen used depends on its popularity in the country. There are no literature data on the popularity of selected types of contraception in Poland.

In women, there are several basic body types: Android, Gynaecoid, Thyroid and Lymphatic. The gynaecoid type is described as the estrogenic body and the android type is related to the relatively lower levels of progesterone and is sometimes referred to as gestagenic or progesterone (Zagami et al. 2013, Tehard and Clavel-Chapelon 2006).

The gestagenic type (android) is characterised by a more masculine appearance, small and flat mammary glands, greasy hair and oily skin, WHR (waist-hip ratio) above 0.87, scanty, not painful and prolonged menstrual cycles, scanty vaginal discharge, which is associated with a relatively high level of progesterone, relatively lower estrogen level and increased level of adrenal androgens

(Jernström and Olsson 1997, Bird Oinonen and Mazmanian 2015).

The gynaecoid (estrogenic) type concerns women with WHR below 0.8, with very feminine appearance, large and round mammary glands, dry skin and dry hair, usually premenstrual syndrome, short or normal (up to 28 days) menstrual cycle with painful and heavy bleeding and abundant vaginal discharge (Xie et al. 2012). The above-mentioned types of female body are the result of i.e. specific hormonal game. The use of the same hormone therapy in these two types of women (a combined drug with the predominance of gestagens) as oral contraception can potentially cause different effects in both groups of women. Adverse effects and potentially beneficial effects associated with the use of combined contraception are known, however, the use of the same type of drug in phenotypically different women can cause different body reactions intensifying or reducing some of the effects resulting from its use.

This is the reason why the research goal was to estimate the frequency of occurrence the positive and negative effects of the use of this type of agents by women aged 19 to 28 years, as well as to determine the relationship between the choice of adequate hormonal contraception and the effects of its use. This is a pilot study.

Material and methods

Surveys concerning the use of hormonal contraception were conducted among female students of Wrocław universities in the period from December 2010 to January 2011. They covered 257 young women. The average age of survey participants was 23.58 years (SD=2.95).

The age of menarche was also used to describe the surveyed sample. Respon-

dents of the survey matured on average at the age of 12.5 years (SD = 1.199).

The task of the respondents was to choose one of three descriptions which was more suitable for them (gestagenic/androgenic type; estrogenic/gynaecic type; another type). Only respondents who were characterised by an estrogenic or gestagenic type of body were qualified for the study. Such a division of the material will make it possible to determine whether the occurrence of the effects accompanying the used pharmacotherapy could have been influenced by the certain type of the human body.

Basic statistical parameters were calculated: arithmetic mean, standard deviation, range of variation and mode. In this way, the frequency of positive effects associated with contraception and of adverse effects occurring simultaneously as well as the time of use of hormonal contraception among young women using it were determined. The significance of differences between the type of hormonal contraception used and the occurrence of side effects in each of the hormonal types was examined using the chi-squared test, which is the simplest and most common method in case of such research. The statistical analysis was based on the statistical package algorithms Statistica PL 2014, Statsoft, Palo Alto, CA, USA.

Results

In the first stage of the research, it was established that as much as 64.6% of the surveyed women had contact with hormonal contraception and 35.4% of them never used such agents. Further analysis concerned only those who used combined hormonal contraception with a predominance of gestagens (144 people). This group (60%) was dominated by the

respondents characterised by the estrogenic body type.

It was found that the average period of using this type of agents is 2.82 (SD = 1.94) years. The purpose of using them was: pregnancy prevention, regulation of the menstruation cycle, improvement of skin condition

The analysis of the relationship between the respondent's body type (gestagenic or estrogenic), the occurrence of positive or negative effects accompanying the drug intake and the long-term use of contraception with a predominance of gestagens showed that the combined gestagen contraception caused adverse effects in almost 66% of female students, however, an insignificant statistical difference between the two analysed types of female body type emerged ($\chi^2=0.388$, $df=1$, $p=0.533$). Adverse effects were slightly more common in women with estrogenic body type (Fig. 1).

In addition, the nature of the most frequent effects of the surveyed female students and the frequency of individual symptoms for both hormonal body types were analysed (Table 1)

It should be emphasized that 90% of respondents who reported the occurrence of side effects of combined hormonal contraception with a predominance of gestagens noticed 2 or more effects at the same time and only 10% noticed that the specific symptoms appeared individually. On average one student declares the occurrence of 3-4 side effects simultaneously.

Combined hormonal contraception does not only bring negative effects of its use. The main purpose of using hormonal contraception is to ensure high effectiveness of unwanted pregnancy prevention (81% of respondents) but also to regulate the menstruation cycle (9%), treat skin problems (7%) or ovarian cysts (3%).

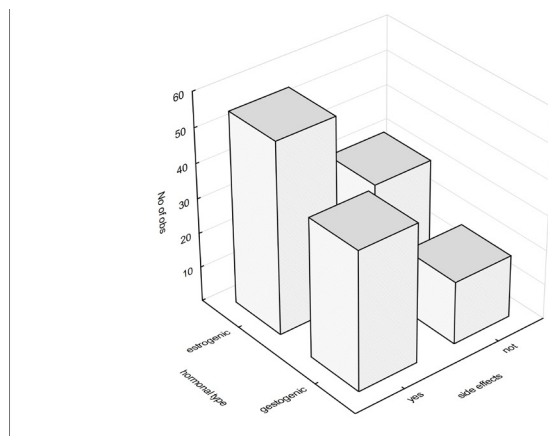


Figure 1. Side effects associated with the use of hormonal contraceptive with a predominance of gestagens

Table 1. Side effects of the hormonal contraceptive use with the division into hormonal body types

Side effects	Estrogenic type	Gestagenic type
	n (%)	n (%)
Slight increase in body weight	26 (30)	18 (58)
Significant increase in body weight	9 (10)	8 (14)
Breast enlargement	24 (28)	17 (29)
Breast swelling and soreness	17 (20)	15 (26)
Drop in libido	31 (36)	22 (38)
Nausea and vomiting	6 (7)	3 (5)
Vaginal dryness	12 (14)	8 (14)
Skin lesions	8 (9)	12 (20)
Hair loss	7 (8)	4 (7)
Headaches	15 (17)	11 (19)
Vascular system diseases	1 (1)	2 (3)
Spotting	16 (19)	10 (17)
Gastric problems	9 (10)	4 (7)
Other	8 (9)	4 (7)

The surveyed students were asked if the type of contraception used by them had a positive influence on their organisms. The positive effects resulting from its use were observed in 90% of women who simultaneously declared the occurrence of adverse effects, and in 31% of all respondents the effects were solely

beneficial. Taking into account the hormonal body type of women participating in the research, hormonal contraception with a predominance of gestagens influenced positively 53% of women of the estrogenic type and 37% of women of the gestagenic type (Fig. 2). However, the noticeable difference is not statistically sig-

nificant ($\chi^2=0.336$, $df=1$, $p=0.562$).

The positive aspects of using oral contraception mentioned by the respondents included the regulation of menstruation cycle, high contraceptive effectiveness, improvement of skin condition (Table 2)

Apart from the above-mentioned effects, the students classified the following effects into the “other” group: stabilisation of or decrease in body weight, disappearance of PMS and successful treatment of the ovarian cysts. There were 1 to 6 positive effects per respondent, and the most frequently indicated number of effects was 4.

Discussion

Modern contraceptives are very effective (Dinger et al. 2011). This is confirmed by the respondents participating in the research. Approx. 70% of the surveyed students consider the effectiveness of oral contraceptives to be the most important advantage of these chemical substances. According to the authors of this article, this is the result of the long-term existence of oral contraceptives and their excellent effectiveness that is widely known in the society (Mengesha et al. 2016, Gosavi et al.2016, Sweeney et al. 2015).

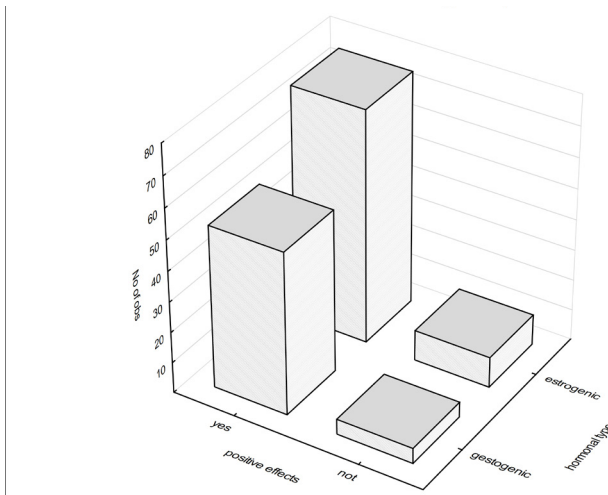


Figure 2. Positives effects associated with the use of hormonal contraceptive with a predominance of gestagens

Table 2. Positive effects of hormonal contraception with a predominance of gestagens

Positive effects of contraception	n (%)
Regulation of menstruation cycle	104 (72)
Less painful menstruation	91 (63)
Less heavy menstrual bleeding	83 (58)
Effective contraception	97 (67)
Skin improvement	58 (40)
Other	4 (3)
In total	129 (90)

Many authors consider the resolution of PMS symptoms and the reduction of menstruation pain to be the basic positive effects associated with the use of oral hormonal contraception with a predominance of gestagens (OCG). In both cases, the occurrence of hormonal disorders at the end of the menstrual cycle - the excessive production of estrogens with the deficiency of progestagens is deemed to be the cause of the problems (Freeman et al. 2012). Similarly to various authors (Condom et al. 1995, Greco et al. 2007) the students from the Lower Silesia region consider the resolution of PMS symptoms as a significant positive effect associated with the use of OCG in approx. 70% of cases. Newton and Hoggart (2015) emphasize that the use of OCG involves the resolution or significant reduction of selected skin disorders (acne, hirsutism) and the reduction of the intensity of menstrual bleeding. 40% of respondents observe this effect and consider the skin improvement to be a significant positive result of the use of contraception. A lot of researchers emphasize the relationship between the regular use of OCG and the resolution/reduction of cystic changes in the ovaries. In their research, Grambizi et al. (2010) focus on the beneficial effects of hormonal contraception, which include the protection against cancer. The results of meta-analysis indicate that Breast cancer incidence was slightly but significantly increased in users (OR, 1.08; CI, 1.00-1.17); results show a higher risk associated with more recent use of oral contraceptives. Risk of cervical cancer was increased with duration of oral contraceptive use in women with human papillomavirus infection; heterogeneity prevented meta-analysis. Colorectal cancer (OR, 0.86; CI, 0.79-0.95) and endometrial cancer incidences

(OR, 0.57; CI, 0.43-0.77) were significantly reduced by oral contraceptive use (Gierisch et al. 2013). The respondents from the universities in Wrocław do not mention such effects of the use of OCG. Perhaps this is the result of poor knowledge concerning the potential impact of OCG on the development of cancer.

Adverse effects associated with the use of OCG can be divided into systemic and local ones. Local effects usually include spotting, feeling of vaginal dryness and feeling of tension in the mammary glands. Systemic adverse effects include weight gain, coagulation disorders, decreased libido or skin abnormalities. Meisenbacher (2008) lists spotting, headaches, breast tension, nausea, and decreased libido (a problem that is also very often reported in our research) among the negative side effects of oral contraceptives.

Participants of research carried out in Philadelphia (Clark et al. 2006) indicated a lot of adverse effects of hormonal contraception. They included weight gain, headaches and dizziness, and many abnormalities related to menstruation (irregular bleeding or its absence, spotting during the cycle).

Glasier (2006) draws attention to the impact of hormonal contraception on almost all the systems of the female body. He describes the same symptoms as the authors quoted above, and mentions serious side effects that affect the cardiovascular system to a large extent. These are mainly: venous thromboembolism, myocardial infarction, or stroke. The etiology of these disorders indicates the negative influence of estrogens on blood clotting. This effect is also described by Salehi (2001), who noted that such serious cardiovascular diseases occur five times more frequently in women using OCG. He also claims that the mild side effects

of using hormonal contraception already mentioned by other authors (decreased libido, spotting, headaches) affect about every tenth woman.

Lidegaard (2016) indicates that the combined hormonal contraceptives have the most side effects among hormonal contraception methods. Diseases of the coagulation system, which the author repeatedly invokes in his research, are the most common ones.

The research conducted by Hubacher et al. (2008) shows that the use of hormonal contraception may increase the risk of incidence of sexually transmitted diseases. This is the result of changes in the structure and thickness of the vaginal epithelium caused by hormones contained in oral contraceptives. These processes reduce the resistance to pathogens, as a result of which the probability of developing sexually transmitted infections increases.

The research conducted by De Seta et al. (2012) also focuses on the analysis of the physiology of the vagina. Annual observations of the vaginal pH showed that the use of hormonal contraceptives causes the increase in the level of *Lactobacillus* bacteria and thus lowers the vaginal pH.

Our research showed that the surveyed students complained mainly of a drop in libido (37%), slight increase in body weight (31%), breast swelling (28%) and headaches (26%). Three cases of cardiovascular diseases were also observed.

After the application of the division into two hormonal body types, the frequency of individual symptoms in each of these two types changed, however, the most common symptoms still include: slight increase in body weight (58% in

the gestagenic type, 30% in the estrogenic type), drop in libido (38% in the gestagenic type, 36% in the estrogenic type), breast enlargement (29% in the gestagenic type, 28% in the estrogenic type).

Limitations: There are several limitations in this study: lack of validation used for the survey analysis, limited size of the study sample and large diversity of the hormonal contraception used.

In conclusion it might be said that no relationship between the effects resulting from the use of combined hormonal contraception with a predominance of gestagens and the selected types of female body in young women from the region of Lower Silesia was found. The most common side effects of combined hormonal contraception with a predominance of gestagens among the surveyed students include: breast enlargement, increase in body weight, spotting, drop in libido, breast swelling and soreness; two or more of such effects occurred simultaneously in 90% of the subjects. The beneficial effects of combined hormonal contraception with a predominance of gestagens were experienced by 90% of the surveyed students. On average one student experienced 4 such effects, and most often they include: regulation of menstruation, less painful and less heavy menstruation as well as high contraceptive effectiveness.

Authors' contributions

AK has designed the research, interpreted results and collected data; BK has designed the research and given a conceptual advice; JG has performed statistical analyses; ZD and BK-D gave support, conceptual advice, and also collected the articles. The final version of paper was prepared by ZD.

Conflict of interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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