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## Knowledge of Hormonal Contraception Among Young Women in Poland

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## ABSTRACT

**Introduction.** Hormonal contraception could activate wide range of biological effects in women body and what's important these pharmaceuticals are often used for long time. The aim of this study was to examine the level of knowledge among young women studying on the universities of Bydgoszcz (Poland) about the health effects of hormonal contraception. **Materials and Methods.** 172 women aged from 18 to over 25 years (the majority of respondents were in the age 21-24 years) were assessed with original anonymous questionnaire. **Results.** The state of knowledge of young women concerning negative aspects of using contraception differs depending on field of study. The awareness of women using contraception was higher than women which didn't use hormonal contraception. **Conclusion.** General state of knowledge of studied women concerning using hormonal contraception was not satisfactory. Especially alarming is ignorance of health threads connected with using hormonal contraception among women using this method of contraception.

**Key words:** contraception, young women, students

## INTRODUCTION

Side effects are connected with nearly all drugs, so it's very important to know potential risk of used medicines not only prescribed by physician but also OTCs. Among many pharmaceuticals present in the market hormonal contraception becomes popular among women. These hormones could activate wide range of physiological effects in women body and what's important these pharmaceuticals are often used for long time. The aim of this study was to examine the level of awareness among young women studying on the universities of Bydgoszcz about the effects of hormonal contraception.

## MATERIALS AND METHODS

The study included 172 women aged from 18 to over 25 years. The women were divided into 4 groups depending on the field of study (group I: n=90 women studying on medical subjects; group II: n=82 women studying on non-medical subjects) and the use of oral hormonal contraception (group III: n=72 women using hormonal contraception; group IV: n=100 women no using hormonal contraception). The study was carried out in second half of 2015 using survey method. Authorial questionnaire of 24 questions was delivered to several high schools and posted by internet. Access was anonymous and did not required identity verification of the respondent. A text of questionnaire is included as supplementary material. The study was approved by Bioethics Committee of the Collegium Medicum in Bydgoszcz. Data analysis was supported by Excell 2007.

## RESULTS

The survey was completed by 172 young women varying in age, place of inhabitancy, the level of completed education and field of study. The majority of women (73.84%) were in the age 21-24 years. 16.28% of respondents was in the age of 18-20, 9.88% declared 25 or more. Most of respondents live in the city (54.68%), less in the village (31.98%) or in the town (13.37%). 43.02% of women completed education in high school, 34.88% possessed incomplete secondary education, and 22.09% completed university education. The majority of medical students studied physiotherapy (25.27%) or pharmacy (25.27%), remainder studied medicinal analytics (13.19%), public health (9.89%), obstetrics (9.89%), biotechnology (8.79%) and other medicinal fields (7.69%).

Most of non-medical respondents studied pedagogy (41.57%), the rest of the group was less homogenous: 6.74% students of journalism, 6.74% of philology, 5.62% administration, 4.4.9% psychology, 3.37% EHS, remaining 31.46% were students of other fields.

58.14% of young women didn't used hormonal contraception, while 41.86% of respondents used this form of fertility control. Similar percentage of medical (41.11%) and non-medical students (42.68%) used hormonal contraception.

**Where are you finding information about contraception (mark all sources)? a) parents, b) physician, c) colleagues, d) radio/TV, e) internet, f) journals, g) leaflets, medical informers, h) books, i) school, j) others.**

Respondents listed several used sources of information about hormonal contraception. 22.87% found information in internet, 16.42% trust physician, 14.17% asked colleagues, and also 14.17% read leaflets or informer. Among less popular sources of information were mentioned school (8.21%), books (8.05%), journals (6.44%), radio/TV (4.67%), parents (4.51%), other sources (0.47%). Non-medical students declared little higher percentage of internet (23.96%), colleagues (15.97%), radio/TV (6.25%) and lower percentage of school (6.94%) and books (5.21%) information then whole group. Contrary medical students declared higher percentage of books (10.51%) and school (9.31%) and lower percentage of internet (21.92%), colleagues (12.61%), radio/TV (3.30%) then whole group.

Crucial differences about information sources were observed between women using and not using hormonal contraception. Physician (25.41%) was main informer for respondents using hormonal contraception. Other important sources were internet (22.54%) and leaflets or informer (15.98%). Less popular sources of information for this group were: books (7.38%), school (5.33%), journals (4.10%), parents (4.10%) and radio/TV (2.46%). Contrary women not using contraception preferred internet (23.08%), were less informed by physician (10.61%) and leaflets or informers (13.00%), but declared higher percentage than whole group at colleges (15.21%), school (10.08%), books (8.48%), journals (7.96%), radio/TV (6.10%).

Following questions was connected with various biological effects of hormonal contraception therapy.

**Q7: Does hormonal contraception has influence on metabolism of vitamins? a) yes, it may cause deficiency of vitamins A and D, b) yes, it may cause deficiency of vitamins of B group and C, c) no d) I don't know.**

Majority of respondents (61.05%) declared ignorance on this question. Correct answer - possible deficiency of vitamins B and C (Larsson-Cohn 1975) was marked by 11.63% of whole group. Better knowledge showed non-medical (17.07%) than medical students (6.67% correct answers). More 13.89% hormonal contraception users declared good answer than non-using women (10.00%).

**Q8: Does using hormonal contraception together with exposition to sun radiation could cause changes in skin color? a) yes b) no c) I don't know.**

48.26% of respondents give correct answer – possible skin stains creation (Resnik 1967). More correct answers were declared by medical (57.78%) than non-medical students (37.80%). More women using hormonal contraception give correct answer (51.39%) then women no using this therapy (46.00%).

**Q9: Contraindications for using hormonal contraception constitute (chose 3 of 6) a) migraine headaches, b) gaining weight, c) nausea and vomiting 2-3 h after table intake, d) breast cancer in family, e) irregular bleedings during first 2-3 months of using tablets, f) decrease of libido.**

Correct answers vomiting and nausea (68.60%), breast cancer in family (55.23%) and migraine headaches (Sacco, Merki-Feld, Ægidius 2017) (45.93%) were marked by majority of respondents. Remaining answers were wrong: irregular hemorrhages (answered by 41.86%), decrees of libido (33.14%) and gaining weight (32.56%). More medical students marked vomiting and nausea (78.89%) and breast cancer in family (66.67%) than non medical students (57.32% and 42.68% respectively). Among correct answers only migraine headaches were marked by little more non-medical (48.78%) than medical students (43.33%). Each wrong answer was marked by about 41% of non-medical students.

Little more women no using hormonal contraception marked vomiting and nausea (70.00%) and breast cancer in family (57.00%) than women using this kind of fertility control (66.67% and 52.78% respectively). Remaining correct answer migraine headaches were marked by more women using hormonal contraception (54.17%) than non-users (40.00%). Wrong answers were declared more often by non-users (averagely 4% more wrong answers).

All contraindications were correctly marked by only 16.86% of whole group. Medical students (20.00% of all correct answers) and hormonal contraception users (19.44%) demonstrated better knowledge than non-medical students and non-users (13.41% and 15.00% respectively).

**Q10: Does using hormonal contraption could have influence on circulatory system? a) yes, increases blood clotting, b) yes, decreases blood clotting, c) no, d) I don't know.**

Correct answer - hormonal contraception increases blood clotting (Poller 1969) was marked by 48.26% of respondents. This answer was more frequently responded by medical students (66.67%) than non-medical students (28.05%). More than half of non-medical students (53.66%) marked "I don't know". Awareness of side effect was higher in the group using hormonal contraception (54.17%) than not using (44.00%). At the same time women no using hormonal contraception marked "I don't know" also frequently (41.00%).

**Q11: Whether during using hormonal contraception should be done control examinations? a) yes, control examination should be done before starting use contraception and than if worrying syndromes appeared, b) yes, control examination should be done before starting use contraception and then should be repeated at least once a year, c) examinations are unnecessary, because using hormonal contraception is absolutely safe, d) I don't know.**

44.77% of respondent replied correct answer: examination should be done before stating of hormonal contraception and at least once a year. 49.42% reply examination should be done before starting of hormonal contraception and than if occur disturbing effects. These percentages were similar in the groups using and not using hormonal contraception. Essential differences were observed between medical and non-medical students (61.11% and 36.59% correct answers respectively).

**Q12: Mark possible threads which could occur during using hormonal contraception (mark all right answers). a) venous thrombosis, b) arthritis, c) myocardial infarction, d) asthma, e) cerebral stroke, f) renal calculi, g) cataract, h) gastric ulcers.**

Correct threats possible to occur during using hormonal contraception marked 73.84% (venous thrombosis) (de Bastos et. al. 2014), 41.28% (myocardial infarction) (Tanis 2003), 37.21% (cerebral stroke (Lima et al. 2017)) of whole group. 49.42% responded incorrectly gastric ulcers (Vessey, Villard-Mackintosh, Painter 1992)). Medical students possessed significantly better knowledge about threats: 85.56% (venous thrombosis), 57.78% (myocardial infarction), 62.22% (cerebral stroke) against 60.88%, 23.17% and 9.76% in non-medical students group respectively.

Young women no using contraception showed greater awareness of possible threads (49.00% myocardial infarction, 40.00% cerebral stroke) than women using hormonal contraception

(30.56% and 33.33% respectively). Only venous thrombosis was marked by similar percentage of using and not using respondents (75.00% and 73.00% respectively).

All correct questions were marked only by 26.16% of whole group. Respectively 46.67% of medical and only 3.66% of non-medical students reply three answers correctly. 31.00% of no using women and 19.44% using hormonal contraception reply all proper answers.

**Q13: Does hormonal contraception have any influence on mood? a) yes, improve mood by increasing secretion of endorphins, b) have no influence on mood, c) yes, cause decrease of libido, which could lead even to depression.**

Majority of respondents (71.51%) answer correctly – hormonal contraception could cause decrease of libido, which could lead even to depression (Kulkarni, Liew, Garland 2005). Medical students marked more correct answers (75.56%) than non medical students (67.07%). Similar percentage of using (72.22%) and no using women (71.00%) answered correctly.

**Q14: Could hormonal contraception influence on development of breast cancer? a) yes, it could lead to development of this cancer, especially when used long and when no pregnancy occurred until age of 30, b) yes, hormones present in contraceptive drugs decrease risk of breast cancer, c) there is no connection, d) I don't know.**

46.51% answered correctly – hormonal contraception could influence on development of breast cancer (Westhoff, Pike 2018)), especially when long-lasting used and without pregnancy until 30 year of life (Mørch 2017). Medical students marked more correct answers (56.67%) than non-medical ones (35.37%). Similar percentage of using (47.22%) and no using women (46.00%) answered correctly.

**Q15: Is there any connection between using hormonal contraception and development of cancer of uterus mucous membrane and ovary cancer? a) yes, hormones present in contraceptive tablets increases risk of development of uterus mucous membrane and ovary cancer, b) yes, hormones present in contraceptive tablets protect from development of uterus mucous membrane and ovary cancer, c) there is no connection, d) I don't know.**

Only 11.63% of women answered correctly – hormonal contraception protects against above mentioned cancers (Bosetti et al. 2002, Levi et al. 1991). Medical students (15.56% correct answers) and women using hormonal contraception (15.28%) possessed little better knowledge than non-medical students (7.32%) and no using ones (9.00%).

**Q16: Does hormonal contraception intake influence on menstrual cycle? a) yes, bleeding during menstruation is more plentiful and occur increased symptoms of premenstrual syndrome, b) yes, could occur more irregular menstrual cycles, c) yes, bleeding during menstruation is less plentiful and occur regular cycles d) no, e) I don't know.**

Correct answer was marked by 74.42% of whole group – bleeding becomes less plentiful and cycles become regular (Maguire, Westhoff 2011). Medical students marked more correct answers (80.00%) than non-medical ones (68.29%). 69.00% of women no using and 81.94% of using hormonal contraception reply proper answers.

**Q17: Do you know what is „Pearl index“? a) yes, Pearl index is... b) I don't know.**

Only 11.63% of group answered positive and described shortly as index indicating effectiveness of contraception (Berglund 2017). Medical students possessed little better knowledge (15.56% positive answers) than non medical ones (7.32%). Also women using hormonal contraception marked more positive answers (15.28%) than no using ones (9.00%).

**Q18: Could systematic using of hormonal contraception cause pregnancy? A) no, it's contraceptive method with 100% efficiency, b) yes, it's possible, c) I don't know.**

78.49% of respondents marked correct answer – its possible to conceive during hormonal contraception therapy (Gerlinger 2014). Medical students were more aware on this dependence (87.78%) then non-medical ones (68.29%). Similar percentage of using (79.17%) and no using women (78.00%) answered correctly.

**Q19: Could smoking cigarettes during hormonal contraception therapy create additional threads? a) yes, it increases risk of ischemic heart disease, b) smoking is harmful, but don't increase side effects when connected with hormonal contraception, c) I don't know.**

48.84% of respondents marked correct answer – smoking during therapy improve risk of ischemic heart disease (Farley et al. 1998). Medical students possessed better knowledge (63.33% of correct answers) than non-medical ones (32.39%). Similar number of women using and no using hormonal contraception answered correctly (48.61% and 49.00% respectively).

**Q20: Does using hormonal contraception has any influence on systolic and diastolic blood pressure? A) yes, using hormonal contraception could decrease systolic and diastolic blood pressure, b) yes, using hormonal contraception could increase systolic and diastolic blood pressure, c) I don't know.**

Correct answer – hormonal contraception could improve systolic and diastolic blood pressure (Shen et al. 1994) was marked by 27.91% of respondents. Medical students (with 36.67% of correct answers) and women using contraception (30.56%) possessed better knowledge than non-medical students (18.29%) and no using ones (26.00%).

**Q21: Does using hormonal contraception have influence on liver activity? A) no, using hormonal contraception is wholly safe for liver, b) yes, using hormonal contraception act protective for liver, c) yes, using hormonal contraceptive could lead to cholestasis and gallstones, d) I don't know.**

46.51% of respondents answered correctly – using hormonal contraception could lead to cholestasis and gallstones (Connolly, Zuckerman 1998). Comparable percentage of women answered “I don't know”. Medical students marked correct answer more frequently (58.89%) than non-medical students (32.93%). Women using contraception have better knowledge on this issue (51.39%) than non-using ones (43.00%).

**Q22: Does using hormonal contraception have influence on carbohydrate metabolism? A) no, there is no influence b) yes, using hormonal contraception could increase level of insulin and glucose, c) I don't know.**

Only 23.26% of respondents answered correctly – using hormonal contraception could increase level of insulin and glucose (Cortés, Alfaro, 2014). Majority of group marked “I don't know”. Medical students possessed better knowledge (28.89%) than non medical ones (17.07%). Women no using hormonal contraception marked correct answer more frequently (27.00%) than women using this therapy (18.06%).

**Q23: How do you evaluate your knowledge concerning contraception? A) very good, b) good, c) sufficient, d) poor.**

43.02% of respondents described their knowledge as poor. Little less women (42.44%) evaluated their knowledge as sufficient. 13.95% answered as good and only 0.58% as very good. Medical students described their knowledge better (20% good, 46.67% sufficient, 33.33% poor) than non-medical ones (1.22% very good, 7.32% good, 37.80% sufficient, 53.66% poor). Women using hormonal contraception evaluated their knowledge better (18.06% good, 54.17% sufficient, 27.78% poor) than no using ones (1% very good, 11.00% good, 34.00% sufficient, 54.00% poor).

## DISCUSSION

It's no surprise that medical students possess general better knowledge concerning hormonal contraception than students of other fields. However even for this group some properties of hormonal contraception remain unknown (for example its influence on metabolism of vitamins) and majority of medical students described their knowledge only as sufficient.

Women using hormonal contraception in general possess better knowledge than non-users. It could be connected with regular physician counsels and reading pills leaflets. Despite the majority of them named their knowledge of contraception as sufficient, undertaken questionnaire demonstrated their benightedness of important many aspects of using tablets. What's essential, women not using hormonal contraception were more aware of its contraindications and possible threads of this therapy than female users of hormonal contraception.

## CONCLUSIONS

Despite multiple available sources of information, the general state of knowledge of studied women concerning possible effects of hormonal contraception was not satisfactory. Especially alarming is ignorance of health threads connected with using hormonal contraception among women using this method of contraception. Majority of web sites (marked as main source of information of young women) concentrate on benefits and safety of fertility control, while wider knowledge is more difficult to find. More attention should be done by physicians and pharmacists to provide proper information concerning possible contraindications and side effects, especially for young women starting use of hormonal contraception.

## DISCLOSURE OF INTEREST

The authors report no conflicts of interest.

## REFERENCES

- Berglund SE, Lundberg O, Kopp KH, Gemzell DK, Trussell J, Scherwitzl R. Perfect-use and typical-use Pearl Index of a contraceptive mobile app. *Contraception*, 2017, 96, 420-425.
- Bosetti C, Negri E, Trichopoulos D, Franceschi S, Beral V, Tzonou A et al. Long-term effects of oral contraceptives on ovarian cancer risk. *Int. J. Cancer.*, 2002, 102, 262-5.
- Connolly TJ, Zuckerman AL. Contraception in the patient with liver disease. *Semin Perinatol*. 1998, 22, 178-82.
- Cortés ME, Alfaro AA. The Effects of Hormonal Contraceptives on Glycemic Regulation. *Linacre Q*. 2014, 81, 209–218.
- de Bastos M, Stegeman BH, Rosendaal FR, Van Hylckama VA, Helmerhorst FM, Stijnen T et al. Combined oral contraceptives: venous thrombosis. *Cochrane Database Syst. Rev.*, 2014, 3, CD010813.
- Farley TM, Meirik O, Chang CL, Poulter NR. Combined Oral Contraceptives, Smoking, and Cardiovascular Risk. *J. Epidemiol. Community Health* 1998, 52, 775–785.
- Gerlinger, C., Trussell, J., Mellinger, U., Merz, M., Marr, J., Bannemerschult, R., et al. Different Pearl Indices in studies of hormonal contraceptives in the United States: impact of study population. *Contraception*. 2014, 90, 142-6.
- Kulkarni J, Liew J, Garland KA. Depression associated with combined oral contraceptives - a pilot study. *Aust. Fam. Physician.*, 2005, 34, 990.
- Larsson-Cohn U. Oral contraceptives and vitamins: A review. *Am. J. Obstet. Gynecol.*, 1975, 121, 84-90.
- Levi F, La Vecchia C, Gulie C, Negri E, Monnier V, Franceschi S et al. Oral contraceptives and the risk of endometrial cancer. *Cancer Causes Control.*, 1991, 2, 99-103.
- Lima AC, Martins LC, Lopes MVO, Araújo TL, Lima FET, Aquino PS et al. Influence of hormonal contraceptives and the occurrence of stroke: integrative review. *Rev. Bras. Enferm.*, 2017, 70, 647-55.
- Maguire K, Westhoff C. The state of hormonal contraception today: established and emerging noncontraceptive health benefits. *Am. J. Obstet. Gynecol.*, 2011, 205, S4-8.

- Mørch LS, Skovlund CW, Hannaford PC, Iversen L, Fielding S, Lidegaard Ø. Contemporary Hormonal Contraception and the Risk of Breast Cancer. *N. Engl. J. Med.*, 2017, 377, 2228-2239.
- Poller L. Relation between oral contraceptive hormones and blood clotting, *J. Clin. Pathol.*, Suppl. 1969, 3, 67-74.
- Resnik S. Melasma induced by oral contraceptive drugs, *JAMA*. 1967, 199, 601-5
- Sacco S, Merki-Feld GS, Ægidius KL, Bitzer J, Canonico M, Kurth T, et al. Hormonal contraceptives and risk of ischemic stroke in women with migraine: a consensus statement from the European Headache Federation (EHF) and the European Society of Contraception and Reproductive Health (ESC), *J. Headache Pain.*, 2017, 18, 108.
- Shen Q, Lin D, Jiang X, Zhang Z, Blood pressure changes and hormonal contraceptives. *Contraception*. 1994, 50, 131-41.
- Tanis BC. Oral contraceptives and the risk of myocardial infarction, *Eur. Heart J.*, 2003, 24, 377-380.
- Vessey MP, Villard-Mackintosh L, Painter R. Oral contraceptives and pregnancy in relation to peptic ulcer. *Contraception*, 1992, 46, 349-57.
- Westhoff CL, Pike MC. Hormonal contraception and breast cancer. *Am. J. Obstet. Gynecol.*, 2018, S0002-9378(18)30247-3.