

KNOWLEDGE AND ATTITUDES ABOUT ORAL HORMONAL CONTRACEPTION AMONG STUDENTS FROM SELECTED UNIVERSITIES

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ABSTRACT

Introduction: The introduction of the contraceptive pill in the United States in 1960 had a significant impact on various aspects of society, including women's health, fertility trends, laws, politics, religiosity, interpersonal relationships, family roles, feminist issues, and sexual behaviour practiced both among adults and adolescents.

Aim of the study: To determine the level of knowledge of students of Medical University of Gdańsk and the Gdańsk University of Technology about oral hormonal contraception.

Material and methods: The research material consisted of 100 students of Medical University of Gdańsk and 100 students of the Gdańsk University of Technology. The study used the method of a diagnostic survey with the use of a research tool of our own authorship.

Results: The level of knowledge about oral hormonal contraception was higher among students of Medical University of Gdańsk. The students of the Gdańsk University of Technology obtained an average of 67.2% correct answers, and the students of Medical University of Gdańsk had an average of 74.8% correct answers. As many as 97% of students at Gdańsk universities know that oral hormonal contraception does not protect against sexually transmitted diseases. 81% of students believed that oral contraceptives are almost 100% effective when used correctly.

Conclusions: The level of students' knowledge about oral hormonal contraception is sufficient. The average proportion of correct answers in the study group was 71%. Half of the surveyed students had a score of correct answers of at least 71.9%.

Key words: knowledge, students, hormonal contraception.

INTRODUCTION

The introduction of the contraceptive pill in the United States in 1960 had a significant impact on various aspects of society, including women's health, fertility trends, laws, politics, religiosity, interpersonal relationships, family roles, feminist issues, and sexual behaviour among adults and teenagers [1].

Oral contraceptive (OC) use is associated with many health benefits that primarily include protection against potentially fatal diseases, including ovarian and endometrial cancer, as well as reducing the incidence of benign breast changes, functional ovarian cysts, pelvic inflammatory disease, ectopic pregnancy, and iron deficiency in anaemia. In addition,

they are also used in the treatment of various gynaecological conditions, such as dysmenorrhoea, irregular or excessive bleeding, and pain related to the occurrence of endometriosis [1, 2].

The most common side effects resulting from their use are mild and self-limiting. They include nausea, vomiting, weight gain, headaches, intermenstrual bleeding, and decreased libido [3].

AIM OF THE STUDY

The aim of the study was to determine and compare the level of knowledge of students of the Medical University of Gdańsk and Gdańsk University of Technology about oral hormonal contraception.

MATERIAL AND METHODS

The study took place between March and April 2021. The research material consisted of 100 students of Medical University of Gdańsk and 100 students of Gdańsk University of Technology, including both sexes. The participation of respondents in the study was voluntary and anonymous. All respondents were informed about the purpose and character of the study.

The study used the method of a diagnostic survey with the use of a research tool of our own authorship including questions characterizing the demographic and social data of the respondents. The questionnaire consisted of 21 closed questions. In 7 questions the respondents had the opportunity to indicate several answers. The questionnaire was developed based on the available literature about published results. Statistical analyses were performed using Pearson's χ^2 (this test was used to check associations between categorical variables) and Mann-Whitney U tests. The level of significance was $p < 0.05$ in all calculations.

RESULTS

The study group consisted of $N = 200$ students, half of whom were students of Gdańsk University of Technology and half were students of Medical University of Gdańsk. This sample was randomly selected based on the response structure of the greater number of responses.

In the study group of students of Gdańsk University of Technology 67% were female, and in the group of students of Medical University of Gdańsk women constituted 60%. There were no statistically significant differences between the student groups in terms of the gender distribution ($\chi^2 [1] = 1.06$, $p = 0.304$, $V = 0.07$).

The analysis with the Pearson χ^2 test showed that the study groups differed in terms of place of residence ($\chi^2 [2] = 13.43$; $p < 0.01$, $V = 0.26$). The group of students of Medical University of Gdańsk was dominated by those living in a large city (68%).

Sexually active people accounted for 78% of the students of Gdańsk University of Technology and 75% of the students of Medical University of Gdańsk. There were no statistically significant differences between the groups of students in terms of sexual activity ($\chi^2 [1] = 0.25$, $p = 0.617$, $V = 0.04$).

In the group of students from Gdańsk University of Technology, 68% admitted to using contraceptive pills (or their partners used them), whereas in the group of students from Medical University of Gdańsk this amounted to 62%. There were no statistically significant differences between the groups of students in terms of contraceptive pill use ($\chi^2 [1] = 1.20$, $p = 0.312$, $V = 0.07$).

The study aimed to determine the level of knowledge of students of two Gdańsk universities about oral hormonal contraception. First, the examined students were asked to define the purpose of using hormonal contraception. Prevention of pregnancy was the most frequently mentioned purpose of hormonal contraception (97% of Gdańsk University of Technology and 99% of Medical University of Gdańsk), followed by the regulation of the menstrual cycle (80% of the Gdańsk University of Technology and 86% of Medical University of Gdańsk). Reduction of pain associated with menstruation was mentioned by 63% of students of Gdańsk University of Technology and 73% of students of Medical University of Gdańsk. The smallest number of respondents reported that hormonal contraception was used to prevent acne (64% of Gdańsk University of Technology and 58% of Medical University of Gdańsk). According to the analysis of the Pearson χ^2 test, the students of both universities did not differ in terms of knowledge regarding the purpose of oral hormonal contraception.

According to most students, OCs are almost 100% effective if properly used: respectively, 77% Gdańsk University of Technology vs. 85% Medical University of Gdańsk ($\chi^2 [4] = 4.87$, $p = 0.301$, $V = 0.16$). Next, students most often believed that contraceptive pills were effective, but that additional safety measures should be taken (15% of Gdańsk University of Technology and 13% of Medical University of Gdańsk).

The respondents were asked about their reasons for choosing hormonal contraception. The respondents most often chose OC for its effectiveness (91% of students of both universities), followed by the comfort of intercourse (87% Gdańsk University of Technology and 77% Medical University of Gdańsk). The least frequently mentioned reason for using hormonal contraception in the study group was the price (37% of Gdańsk University of Technology and 26% of Medical University of Gdańsk). Analyses showed that the students differed statistically significantly in terms of the use of OCs for safety ($\chi^2 [1] = 7.52$, $p < 0.01$, $V = 0.26$), due to doctor's recommendations ($\chi^2 [1] = 5.24$, $p < 0.05$, $V = 0.22$), and non-contraceptive benefits ($\chi^2 [1] = 5.21$, $p < 0.05$, $V = 0.22$). Students of Medical University of Gdańsk more often than students of Gdańsk University of Technology chose OC because of safety (88% vs. 65%), because of a physician's recommendations (80% vs. 60%), and because of non-contraceptive benefits (73% vs. 51%).

Respondents were asked to indicate sources of information about oral hormonal contraception. Students of Medical University of Gdańsk were more likely than students of Gdańsk University of Technology to have gained knowledge about OC from a doctor: 88% vs. 66% ($\chi^2 [1] = 7.61$, $p < 0.01$, $V = 0.20$) or from school 43% vs. 21% ($\chi^2 [1] = 11.12$, $p < 0.01$, $V = 0.24$), while students of Gdańsk University of Technology

more often than students of Medical University of Gdańsk learned about OC from mass media: 79% vs. 59% ($\chi^2 [1] = 9.35, p < 0.01, V = 0.22$) and from parents: 25% and 5%, respectively ($\chi^2 [1] = 15.69, p < 0.001, V = 0.28$). There was also no significant difference between the groups of students in terms of obtaining knowledge from friends, leaflets, and from a midwife/nurse. The main source of students' knowledge about oral hormonal contraception was the doctor and mass media. In contrast, 60% of students at Gdańsk University of Technology and 48% of students at Medical University of Gdańsk learned from friends.

The fact that OCs are available only on prescription was known to 96% of students of Gdańsk University of Technology and 99% of students of Medical University of Gdańsk. There were no statistically significant differences between the groups of students in terms of knowledge about the availability of oral hormonal contraception ($\chi^2 [1] = 1.85, p = 0.174, V = 0.01$).

In the case of contraceptive pill users, about half admitted that the gynaecologist had indicated various contraceptives at the visit (52% of Gdańsk University of Technology and 47% of Medical University of Gdańsk). More than 20% of the students admitted that at the visit the gynaecologist only suggested oral hormonal contraception (28% of Gdańsk University of Technology and 22% of Medical University of Gdańsk).

The respondents' knowledge about the advantages of oral hormonal contraception differed statistically significantly between the two universities.

The students of Medical University of Gdańsk knew more often than the students of Gdańsk University of Technology that the advantage of using hormonal contraception is its high efficacy of 100% vs. 96% ($\chi^2 [1] = 4.08, p < 0.05, V = 0.14$) and fewer symptoms of PMS 87% vs. 74% ($\chi^2 [1] = 5.38, p < 0.05, V = 0.16$) and that the use of oral hormonal contraception does not reduce the risk of venous thromboembolism (VTE) 5% vs. 14% ($\chi^2 [1] = 4.71, p < 0.05, V = 0.15$). The most common advantages of using hormonal contraception indicated by students were its high effectiveness and convenience, as well as the alleviation of pain during menstruation and the reduction of PMS symptoms, showing that groups of students differed statistically significantly in terms of choosing oestrogen-dependent neoplasms as contraindications.

The students were also verified in terms of their knowledge of contraindications to the use of oral hormonal contraception. The students of Medical University of Gdańsk knew more often than the students of Gdańsk University of Technology that contraindications to the use of oral hormonal contraception are: oestrogen-dependent tumours (94% vs. 76%;

$\chi^2 [1] = 12.71, p < 0.001, V = 0.25$), severe liver diseases (96% vs. 82%; $\chi^2 [1] = 10.01, p < 0.01, V = 0.22$), cardiovascular diseases and VTE (93% vs. 83%; $\chi^2 [1] = 4.74, p < 0.05, V = 0.15$), unexplained vaginal bleeding (93% vs. 72%), diabetes with vascular changes (85% vs. 49%; $\chi^2 [1] = 29.31, p < 0.001, V = 0.38$), and thrombophilia (87% vs. 56%; $\chi^2 [1] = 23.58, p < 0.001, V = 0.34$). The most commonly mentioned contraindications to the use of oral hormonal contraception were pregnancy, oestrogen-dependent neoplasms, severe liver and cardiovascular diseases, and VTE.

The respondents were asked to indicate side effects resulting from the use of oral hormonal contraceptives. In this context, statistically significant differences were obtained among the respondents. The students of Medical University of Gdańsk knew more often than the students of Gdańsk University of Technology that the side effects of using oral hormonal contraception may be nausea and vomiting: 72% vs. 53%; $\chi^2 [1] = 8.58, p < 0.01, V = 0.21$, headaches: 81% vs. 63%; $\chi^2 [1] = 8.04, p < 0.01, V = 0.20$, increased risk of breast cancer: 65% vs. 40%; $\chi^2 [1] = 12.53, p < 0.001, V = 0.25$, increased risk of VTE: 82% vs. 69%; $\chi^2 [1] = 4.57, p < 0.05, V = 0.15$, deterioration of mood and susceptibility to depression: 79% vs. 62%; $\chi^2 [1] = 6.95, p < 0.01, V = 0.19$, and tiredness: 80% vs. 60%; $\chi^2 [1] = 9.52, p < 0.01, V = 0.22$. On the other hand, students of Medical University of Gdańsk, more often than students of Gdańsk University of Technology, indicated an increase in the risk of developing endometrial cancer as a side effect: 45% vs. 28%; $\chi^2 [1] = 6.23, p < 0.05, V = 0.18$ and a decrease in bone density: 38% vs. 23%; $\chi^2 [1] = 5.31, p < 0.05, V = 0.16$. The most common side effects of the use of oral hormonal contraception mentioned by students were weight gain, decreased libido, and an increased risk of VTE, and the least frequently reported were increased menstrual pain and increased risk of ovarian cancer.

The issue of protection against sexually transmitted diseases connected with the use of OCs was also analysed. Statistically significant differences were not obtained ($\chi^2 [2] = 3.42, p = 0.181, V = 0.13$). The fact that contraceptive pills do not protect against sexually transmitted diseases was known to 95% of students of Gdańsk University of Technology and 99% of students of Medical University of Gdańsk.

Similarly, there was no difference regarding the effect of OCs on weight gain. 87% of the students of Gdańsk University of Technology and 89% of the students of Medical University of Gdańsk knew that the use of contraceptive pills may increase body weight ($\chi^2 [2] = 1.69; p = 0.430, V = 0.09$). The respondents differed in the aspect of knowledge about the influence of stimulants on the effectiveness of OCs. The fact that the use of stimulants has a negative impact on the effectiveness of OCs was known to 78%

of students of Gdańsk University of Technology and only 65% of students of Medical University of Gdańsk ($\chi^2 [2] = 3.67, p < 0.05, V = 0.18$). The correct course of action after omitting the contraceptive pill was indicated by 60% of the students of Gdańsk University of Technology and 46% of the students of Medical University of Gdańsk ($\chi^2 [2] = 2.64, p = 0.267, V = 0.12$).

32% of students of Gdańsk University of Technology and 50% of students of Medical University of Gdańsk ($\chi^2 [2] = 10.07, p < 0.05, V = 0.22$) assessed their knowledge of OCs as sufficient.

During the analyses, a comprehensive assessment of the level of knowledge about oral hormonal contraception in the study group was made as a percentage of correct answers. The respondents obtained from 28.1% to 93% correct answers, and the mean was $M = 71\%$ with a standard deviation of $SD = 12.1\%$. Half of the surveyed students had knowledge of at least 71.9%. Most respondents had a level of knowledge in the range of 71-80%.

The aim of the study was also to compare the level of knowledge about oral hormonal contraception between students from two universities. For this purpose, a comparative analysis with the Mann-Whitney U test was performed.

Students of Gdańsk universities differed statistically in terms of the level of knowledge about oral hormonal contraception ($Z = 4.26, p < 0.001, r = 0.30$). Gdańsk University of Technology students obtained an average of 67.2% correct answers, and students of Medical University of Gdańsk obtained 74.8% correct answers on average.

With the help of a series of analyses, the Mann-Whitney U test was used to assess the relationship between the level of knowledge about oral hormonal contraception and gender, place of residence, sexual activity, and the use of contraception. It was shown that the level of knowledge about oral hormonal contraception was statistically significantly associated with sex ($Z = 2.34, p < 0.05, r = 0.17$) and place of residence ($Z = 2.93, p < 0.01, r = 0.21$). Women had a higher level of knowledge about oral hormonal contraception than men (72.5% vs. 68.3%) as did people living in large cities compared to those in small towns and villages (72.5% vs. 69%). However, the relationship between the level of knowledge about oral hormonal contraception with sexual activity and the use of contraception was not demonstrated.

DISCUSSION

The use of OCs has changed significantly in recent times. At the turn of the decade, they became more widespread. Nevertheless, society still has a high percentage of unwanted pregnancies. Thus, measuring the level of knowledge about oral hormonal contraception is extremely important. It will allow educa-

tional interventions to be undertaken to prevent this phenomenon, and it will enable people to make informed decisions about reproductive health [4]. The presented discussion shows studies that compare the knowledge of medical and non-medical university students in the field of oral hormonal contraception.

In 2011, Szyper and Gotlib [4] conducted research with the participation of third-year students of first-cycle studies in the fields of obstetrics and emergency medical services at the Medical University of Warsaw, as well as computer science and environmental engineering at Warsaw University of Technology. The studies showed that a small proportion of students used contraceptive pills (students of obstetrics and emergency medical services – 20%, students of IT and environmental engineering – 27%). The highest percentage of OC users was observed among female IT students (39%). Other studies conducted by Kulesza-Bronczyk *et al.* [5] in 2014 among students of the Medical University of Białystok (MUB) and Białystok University of Technology (UTB) also reported that only a small percentage of students (16.2% vs. 14.2%) used contraceptive pills, and the most popular method of contraception among the sexual partners of MUB and UTB students was condoms (30.2% vs. 28.3%). Contraceptive pills were used only by 7.8% of MUB students and 21.7% of UTB students. The aforementioned studies differed significantly from the results of our own research. Contraceptive pills were used by 68% of students (or their partners) of Gdańsk University of Technology and 62% of students of Medical University of Gdańsk. Also, Wang *et al.* [6] in their research in China in 2015 proved that over 90% of students were aware of the used of OCs.

The analysis of the collected material revealed that the main purpose of using hormonal contraception was its high effectiveness (91% of students of both universities) and the comfort of intercourse (Medical University of Gdańsk – 77%, Gdańsk University of Technology – 87%). Regulation of the menstrual cycle was indicated by 80% of the students of Gdańsk University of Technology and 86% of the students of Medical University of Gdańsk.

The research results obtained by Szyper and Gotlib [4] differed significantly from the authors' research. More than half (65.9%) of the students of the Medical University of Warsaw chose this method due to its high effectiveness in preventing pregnancy and 64% of students due to the possibility of regulating the menstrual cycle. The studies by Kulesza-Bronczyk *et al.* [5] also showed the choice of contraceptive pills due to their high effectiveness (75.9% of students of Medical University of Białystok and 66% of students of Białystok University of Technology). On the other hand, studies by Wang *et al.* [6] proved that male students indicated the request of a sexual partner (49%), effectiveness (47%), and practicality

(36%) as the main reasons for choosing OCs. Moreover, students of the same school also declared the practicality of using pills in the first place (49%). Then they chose them because of their high effectiveness (44%), as well as few side effects resulting from their use (36%).

In their research, Szyper and Gotlib [4] showed that when choosing an appropriate contraceptive method, only 36% of students of the Medical University of Warsaw reported that a gynaecologist suggested they take pills, while 19% of students of the Warsaw University of Technology indicated different methods of contraception. The presented research differs slightly from the results of our own research. It was found that a gynaecologist indicated various contraceptives to 52% of students of Gdańsk University of Technology and to 47% of students of Medical University of Gdańsk.

Research carried out by Szyper and Gotlib [4] reported that 71% of students of the Medical University of Warsaw knew that contraceptive pills were an almost 100% effective method of preventing pregnancy, provided that they were used correctly. This percentage among students of the Warsaw University of Technology was 60%. In light of our own research, it was shown that the effectiveness of contraceptive pills was known to 77% of students of Gdańsk University of Technology and 85% of students of Medical University of Gdańsk. According to the results of the Szyper and Gotlib [4] research, 88% of students of Medical University of Gdańsk obtained knowledge about oral hormonal contraception from a doctor and 59% from the mass media. The opposite situation was observed among students of Gdańsk University of Technology. The main source of their knowledge was mass media (79%), followed by a gynaecologist (66%). On the other hand, among students of the Medical University of Warsaw, only 46% of people learned about OC from a gynaecologist. The remaining part used the knowledge of friends in 63% of cases and the mass media in 64%. Students of the Warsaw University of Technology mainly used the Internet (63%) and the knowledge of their friends (52%). Also, Kulesza-Bronczyk *et al.* [5] in their research showed that the vast majority of students learned about contraception via the internet (Medical University in Białystok and Białystok University of Technology – 73%), others reported learning from school (MUB – 63.8% and UTB – 17%) and books (MUB – 55.2% and UTB – 6%). More than half of the students of the Medical University in Białystok (53%) and the Białystok University of Technology (55%) learned from friends.

Research conducted by Szyper and Gotlib [4] revealed that 99% of students of the Medical University of Warsaw knew that oral hormonal contraception is available on prescription. Students of Warsaw University of Technology, whose percentage was less than

70%, had different knowledge on this subject. Meanwhile, our own research showed that both students of Medical University of Gdańsk (99%) and Gdańsk University of Technology (96%) had a high level of knowledge about the availability of contraceptive pills [4].

The results of the Szyper and Gotlib [4] studies showed that 99% of the students of the Medical University of Warsaw and 89% of the students of Warsaw University of Technology knew that OC does not protect against sexually transmitted diseases. These studies do not differ from the results of our own research. The fact that contraceptive pills do not protect against venereal diseases was known by 95% of students of Gdańsk University of Technology and 99% of students of Medical University of Gdańsk.

Research conducted by Lewicka *et al.* [7] among high school students at the Centre for Continuing Education in Kijany showed that 63% of students believed that cervical cancer is the main complication of using oral hormonal contraception, 53% of students reported depression and mental illness, and 48% indicated endometrial cancer. Only 35% of people reported VTE as a risk factor for taking birth control pills. In the research by Szyper and Gotlib [4], 82% of students of the Medical University of Warsaw indicated an increased risk of VTE and 78% of students reported weight gain in women. On the other hand, students of Warsaw University of Technology indicated nausea and vomiting (48%) and weight gain (62%) as the main side effects of taking OC. According to youths from the Continuing Education Centre in Kijany, based on the studies by Kanadys *et al.* [8], the main complication of using OC are depression (47%), weight gain (37%), and nausea (32%). These studies differ slightly from our own research. Students of Medical University of Gdańsk and Gdańsk University of Technology most often mentioned weight gain (91% vs. 94%), decreased libido (82% vs. 80%), and increased risk of VTE (69% vs. 82%).

The studies by Szyper and Gotlib [4] presented that both students of the Medical University of Warsaw (86%) and students of Warsaw University of Technology (54%) indicated that the main benefit of using contraceptive pills is the alleviation of pain during menstruation. On the other hand, studies by Lewicka *et al.* [7] among high school students showed that the main advantages of taking pills were regulation of the menstrual cycle (57%) and the reduction of the painfulness and the abundance of menstruation (46%). These studies differ from the results of our research. Students of Medical University of Gdańsk and Gdańsk University of Technology declared, in particular, high efficiency (100% vs. 96%) and lower symptoms of PMS (premenstrual syndrome) (87% vs. 74%).

Studies by Kanadys *et al.* [8] have shown that high school students consider pregnancy as the basic con-

traindication to the use of OC (59%). The presented results do not differ from the results of our research. Students of Medical University of Gdańsk (98%) and students of Gdańsk University of Technology (96%) also indicated pregnancy as a factor prohibiting the use of OC [8].

The studies by Szyper and Gotlib [4] proved that 82% of students of the Medical University of Warsaw and 64% of students of the Warsaw University of Technology believed that oral hormonal contraception can cause weight gain. These studies do not differ from the results of our own research. 87% of students of the Gdańsk University of Technology and 89% of students of Medical University of Gdańsk knew that using OC may increase body weight. According to 61% of students of the Medical University of Warsaw and 40% of students of Warsaw University of Technology, smoking or drinking alcohol can reduce the effect of the contraceptive pill. These study results do not differ from the results of our research. The fact that the use of stimulants has a negative impact on the effectiveness of OCs was known to 78% of the students of Gdańsk University of Technology and 65% of the students of Medical University of Gdańsk. Only 42% of the students of the Medical University of Warsaw and 30% of the students of Warsaw University of Technology knew that while using antibiotics, additional protection is needed while taking OC. The presented analyses do not differ from the obtained results of our own research. Only 46% of students of Medical University of Gdańsk and 34% of students of Gdańsk University of Technology knew that additional precautions should be taken during antibiotic therapy while taking OC. Moreover, our own research has shown that the correct procedure after omitting the contraceptive pill was indicated by only 60% of students of Gdańsk University of Technology and by 46% of students of Medical University of Gdańsk.

The students of Medical University of Gdańsk assessed their knowledge of oral hormonal contraceptives better, and their verified knowledge was higher than that of the students of Gdańsk University of Technology. The biggest differences between universities were shown in terms of knowledge about tests performed before the use of oral hormonal contraception, contraindications, and side effects. Gdańsk University of Technology students obtained an average of 67.2% of correct answers, and students of Medical University of Gdańsk obtained an average of 74.8% positive answers.

The research allowed us to establish the factors determining the level of knowledge about oral hormonal contraception. It was influenced by gender and place of residence. Women had a higher level of knowledge about hormonal contraception than men, and people living in large cities had greater knowledge than those in small towns and villages.

CONCLUSIONS

The level of students' knowledge about oral hormonal contraception is sufficient. The average proportion of correct answers in the studied group was 71%. Half of the surveyed students had a high level of knowledge.

The level of knowledge about oral hormonal contraception is higher among students of Medical University of Gdańsk.

According to the majority of students, OC are almost 100% effective if is used correctly. Some of the students were of the opinion that the contraceptive pills are effective, but additional safety measures should be used.

The majority of students of Gdańsk universities know that oral hormonal contraception does not protect against sexually transmitted diseases.

Knowledge about oral hormonal contraception is obtained by students from reliable sources of information. The main source of the students' knowledge was the doctor and the mass media.

Disclosure

The authors declare no conflict of interest.

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