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Combined Hormone Contraceptive Choice Experience in Czech Republic

Research Article

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Abstract: The aim of the prospective, multicenter project was to evaluate the effect of standardized information on the decision of woman when selecting application routes for combined hormonal contraceptives (CC). Selection the route of CC´s administration before and after consultation with the physician was evaluated on the group of 1326 women in 125 centres in the Czech Republic using a questionnaire. Analysis of the difference between the intended (4,1%) and selected (33,9%, CI 95% 31% - 38%, 451 women) contraception shows that the vaginal ring preference increased by 29,8% (CI 97,5% 26,9% - 32,8%, $p < 0,0001$). The difference for the weekly patch after (5,7%) and prior (4,2%) to the counseling of 1,4% was borderline statistically significant (CI 97,5% -0,002% - 3,0%, $p = 0,05$). Preference of COC remained practically unchanged at 53,5%. Vaginal ring was selected by 45,2% of undecided women and 28,0% of women, who considered other than combined hormonal contraception. Easibility of application, efficacy and cycle control are the most important predictors for contraception choice. Following expert advice, including information on all forms of combined oral contraceptives, more than 33% of women chose the latest application form of combined hormonal contraceptives - vaginal ring.

Keywords: *Combined hormonal contraception • Application routes • Pill • Vaginal ring • Patch • CHOICE project*

1. Introduction

Combined hormonal contraceptives are the dominant method of contraception in Czech Republic. Their significance is clearly demonstrated by statistical data indicating negative correlation with the number of induced abortions, which has decreased in the Czech Republic by more than 75% over the past 20 years in relation to the ready availability of high-quality combined oral contraceptives (COC). Use of COC has increased by approximately 670% in the population during last 20 years [4].

Combined hormonal contraceptives have undergone significant modification in the 50-years since their invention. The estrogen component has decreased and new progestines have been introduced. A relatively large number of COCs with the original formulation are available on the market as well as many of their generic copies. Another direction in the development of combined hormonal contraceptives is to introduce new forms of administration. Until recently, the vast majority of general public as well as some physicians could not imagine combined hormonal contraception in any form other than the daily pill [2].

Lack of public and expert awareness served as inspiration for the CHOICE (**C**ontraception **H**ealth Research **o**f **I**nformed **C**hoice **E**xperience) project, supported by European Society of Contraception (ESC), and carried out in 12 European countries with different preference in individual methods of contraception. The primary goals of the project were to determine the effects of proper patient education on the selection of means of administration of the contraception, to evaluate the difference between the intended and selected method and to clarify the effects of demographic variables on the selected method.

Provided information was based on the comparison table (Table 1).

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Table 1. Methods of combined hormonal contraception.

Method	Combined pill with daily administration	Contraceptive patch with once weekly application	Vaginal ring with once per month application
Description	Pack of 21-24 pill containing estrogen and progestin. One pill daily.	Three patches to be applied on the skin, containing estrogen and progestin. Each patch is applied for one week.	A flexible plastic vaginal ring containing estrogen and progestin. Provides contraception for one month.
Efficacy (if used correctly)	99%	99%	99%
Return of fertility	Fertility usually promptly returns following discontinuation of use.		
Characteristics	• the most widely explored method • more experience than with other methods • regular menstrual bleeding • effectiveness based on regular daily use • pill releases hormones into the digestive tract • performance can be affected by vomiting and diarrhea • fluctuations in hormone levels during the day· can be used to delay menstruation • there is evidence of some non-contraceptive health benefits	• regular menstrual bleeding • there is no need to think about taking the pill every day • higher incidence of breast tenderness • not recommended for women over 90 kg • estrogen levels (over 21-day period) higher than in case of the pill or ring* • can be used to delay menstruation • patch releases hormones through the skin • higher incidence of irritation and allergic skin reactions • non-contraceptive health benefits are likely, but have not yet been demonstrated	• very regular and predictable menstrual bleeding • there is no need to think about taking the pill every day • the ring releases hormones through the vaginal wall • higher incidence of vaginal symptoms of symptoms caused by the presence of the ring • minimal perception of the ring during sexual or common daily activities • stable low estrogen levels (over 21 day period • can be used to delay menstruation • non-contraceptive health benefits are likely, but have not yet been demonstrated
Route of administration	Oral	Transdermal	Vaginal
Use during breastfeeding	Should not be used while breastfeeding		

All methods described below include a permanent combination of estrogen and progestin. The main differences between them lie in the frequency and route of administration. These differences can significantly affect the convenience of use.

2. Material and Methods

Women aged 15 – 40 years, who came to discuss the possibility of using combined hormonal contraceptives (CC), were included in the project. Women who expressed dissatisfaction with one of the methods, leading to complete refusal of CC, and women for whom CC were contraindicated were excluded from the project.

The total of 1326 women (out of 8797 women, who visited selected outpatient gynaecologists in relation to contraception) was included in the 125 centres in covering all regions of Czech Republic.

A simple questionnaire was completed by women. Results were statistically processed [9]. Statistical power analysis led to the determination that 1 070 women needed to participate in each country to yield a power of 90% and maintain a false positive error of 5% to detect an increase of 3% in either the selection of the patch or ring. Given that two comparisons - for the patch and ring - were required, there was used a one-sided statistical significance level of 1.25%. A woman's pre-counseling and post-counseling contraceptive choices were evaluated using simultaneous two-sided 95% CIs derived from a five-cell multinomial probability distribution model. The difference in proportions (post-counseling choice versus pre-counseling choice) was tested for statistical significance using McNamara's test for the difference in proportions and used a one-sided statistical significance level of 1.25%. All other statistical tests were exploratory (for these analyses, a two-sided, statistical significance level of 5% was used).

Characteristics of the study group. The average age of participating women was 26.3 years. The study group included 15.1% of women with basic education, 66.2% with high school education and 18.6 % with a university degree. Other interesting demographic findings indicate that 51.4% of women were without offspring, 15.6% of women reported a history of induced abortion and

Figure 1. Intended choice of administration of combined hormonal contraception (patient's intent, %).

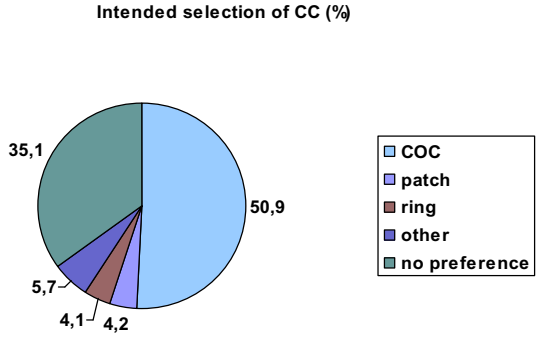
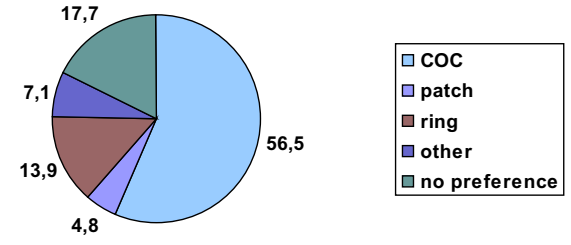


Figure 2. Intended choice of administration of combined hormonal contraception (patient's intent combined with doctor's opinion, %).



81.3% of women had a permanent partner. 31.2% of the women were unemployed.

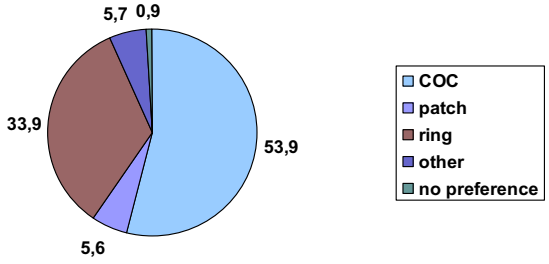
The last contraception method used by the patient was a condom in 20.7% of cases, COC in 43.6%, ring in 1.3% and patch in 3.4% of cases. The patient used no contraception in 15.9% of cases.

Characteristics of centres. As far as the selected application form is considered, participating centres were rather conservative. Combined oral contraception was the most recommended method in 94.6% of cases. The vaginal ring was recommended in 2.4% of their patients; in 2.4% of their patients intrauterine device was recommended and gestagen-only contraception was recommended in 0.8% of patients.

3. Results

Information provided by the physician (in 91.6% by comparison table) was regarded as very useful by 78.0% of women, very complete by 81.7% and highly balanced by 77.8%.

Figure 3. Selected route of administration of combined hormonal contraception.



3.1. Results of the project

The main outcome of the project is to determine the difference between the contraception intended prior to consultation and the one eventually selected. Before the consultation, 50.9% of women planned to take oral form, 4.2% patches and 4.1% rings. A further 5.7% wanted another contraceptive method and 35.1% had no serious fixed idea (Figure 1).

The participation in the CHOICE project and use of the information leaflet also affected doctors, who, in spite of previous common practices in their individual offices, considered prescription of a ring in 32.0%, COC in 19.1% and patch 2.0% to women who had no fixed preference before receiving the information. In 42.4% physicians had no prior fixed preference (Figure 2).

The most recent means of administration, the vaginal ring, benefited the most from the complex information. The increase from original assumption in the group of 1311 women who responded to both questions was 29.8% (CI 97.5% 26.9%-32.8%, p <0.0001) from the originally anticipated 4.1% to 33.9% (451 women). The weekly patch was chosen after counseling by 5.6% of the subjects whereas 4.2% intended to use it prior to consultation. The difference for the weekly patch after and prior to consultation of 1.4% was borderline statistically significant (p-value = 0.05) with a two-sided 97,5% confidence interval for the true population difference of (-0.002%- 3.0%) (Figure 3). The vaginal ring attracted 45.2% of undecided and 28.0% of those who considered other than the combined hormonal contraception method.

Even if the doctor's preferred method of contraception in case of undecided women is included into the equation, there is an apparent increase in the preference of vaginal ring from 13.7% to 33.9%. More than 88% of women who decided to use the ring made this choice after the consultation with the doctor.

3.2. Models for the choice of monthly ring and pills

The probabilities for choosing the pill, ring and patch after counseling were separately modeled with covariates for "age of the subject" (continuous, in units of 5 years) and the subject's opinion on one of the eight aspects of the contraceptive method – "prevents pregnancy effectively", "has many side effects", "can be dangerous for your health", "is easy to use", "is easy to forget", "gives you regular menstrual bleeding", "protects against certain forms of cancer" and "many women use it".

The probability of ring selection was surprisingly increasing with age by 3.8%-4.8% for each five-year age period. Generally, age had a negative impact on the probability of choosing the pill (after counseling). The likelihood of choosing the pill declines with 8.2% to 9.1% per 5-year increase in the age of the woman.

The category "No opinion/Do not know" of the opinion (of interest) was used as reference category for the opinion variable in the analysis.

3.3. The choice of the ring

Women who strongly agree/agree with the statement "The ring prevents pregnancy effectively" were 29.6% more likely to choose the ring after counseling. Women who chose "strongly disagree/disagree with it" were 10.2% less likely.

Women who strongly disagreed/disagreed with the statement "The ring has many side effects" were 29.1% more likely ($p < 0.0001$) to choose the ring.

Women who strongly agreed/agreed with the statement "The ring is easy to use" were 38.2% more likely to choose the ring after counseling ($p < 0.0001$). Women who strongly disagreed/disagreed with it were 10.5% less likely ($p < 0.0001$).

Women who strongly disagree/disagree with the statement "Starting a new ring is easy to forget" have 29.1% more probability to choose the ring ($p < 0.0001$).

Women who strongly agree/agree with the statement "The ring gives you regular menstrual bleeding", have 16.4% more probability to choose the ring ($p < 0.0001$).

Women who strongly agree/agree with the statement "The ring protects against certain forms of cancer" have 10.2% more probability to choose the ring" ($p = 0.0013$). Women who strongly disagree/disagree with the statement, have 8.1% less probability but the difference is not statistically significant ($p = 0.062$).

Women who strongly disagree/disagree with the statement "Many women use the ring" have 11.2% less probability to choose the ring ($p < 0.0001$).

3.4. The choice of the pill

Women who strongly agree/agree with the statement "The pill prevents pregnancy effectively" have 11.0% more probability to choose the pill. Women who strongly disagree/disagree with it have 42.9% less probability. Women who strongly agree/agree with the statement "The pill has many side effects" have 22.3% less probability to choose the pill after counseling ($p < 0.0001$). Women who strongly disagree/disagree with the statement have 9.2% more probability ($p = 0.0054$).

Women who strongly agree/agree with the statement "Taking the pill can be dangerous for your health" have 11.3% less probability to choose the pill ($p = 0.0035$). Women who strongly disagree/disagree with the statement have 16.9% more probability ($p < 0.0001$).

Women who strongly agree/agree with the statement "The pill is easy to use" have 30.7% more probability to choose the pill ($p < 0.0001$). Women who strongly disagree/disagree with the statement have 17.9% less probability ($p = 0.0085$).

Women who strongly agree/agree with the statement "The pill is easy to forget" have 17.3% less probability to choose the pill after counseling ($p < 0.0001$). Women who strongly disagree/disagree with the statement have 12.3% more probability ($p = 0.012$).

Women who strongly agree/agree with the statement "The pill gives you regular menstrual bleeding" have 23.3% more probability to choose the pill ($p < 0.0001$).

Women who strongly disagree/disagree with the statement "The pills protect against certain forms of cancer" have the 11.0% less probability to choose the pill ($p = 0.029$).

Women who strongly agree/agree with the statement "Many women use the pill" have 12.7% more probability to choose the pill and the difference is statistically significant (p-value = 0.011).

4. Discussion

The CHOICE project was inspired by a large Spanish study performed in 2006, which determined that 65% of women on combined hormonal contraception take the pill, 23% use vaginal ring and 12% use transdermal patch [6]. The relatively large representation of non-oral routes of administration was attributed to the fact that vaginal contraceptive ring has a strong support among gynecologists in Spain. However, even in Spain, out of 9700 women, 46% of chose the vaginal ring, 39% opted for the pill and 15% for the patch after receiving detailed advice from a doctor on all methods of combined hormonal contraception [6].

The first complete data on the results of the CHOICE project in Ukraine showed that out of 1867 women (the mean age of 27.4) 43.4% reported condom as the last method of contraception; 19.8% of women reported using the combined pill. While 27.4% of women preferred the pill, 5.8% the patch and 11.3% the ring prior to receiving more detailed information about the range of contraceptive modes, after counseling the ring became the dominant choice selected by 47.4% of the participants, followed by the pill and patch with 23.8% and 10.7% respectively [3].

The most interesting result might be the comparison of results in the Czech and Slovak Republic. These two states were connected as one republic for more than 70 years. Given the significant influence of the church on the lives of citizens in the Slovak Republic, one might be surprised by a similar proportion of women with a history of unplanned pregnancy (20.2% in Czech vs. 22.3% in Slovakia), and of induced abortion (15.6% vs. 15.0%) in the two countries. However, this fact can be explained by study inclusion criteria, that is to say, the participants were selected amongst those who were consulting in order to receive a prescription for combined hormonal contraceptives. This group likely excludes the deeply religious population.

In both populations, there were similar changes between the intended contraception and contraception selected after the counseling. In the group of 610 Slovak women, who answered both questions, there was a statistically significant ($p < 0.0001$) trend towards the vaginal ring (eventually selected by 61.3% compared to the original 10.8%). The same tendency was noted in the group of 1325 Czech women where a similar statistical significance was noted (preference increased to 33.9% from 4.1%). A higher prevalence of Slovak women initially interested in the use of the ring can be explained by its longer availability in the Slovak Republic. The increasing popularity of vaginal ring with age in the Slovak Republic (4.2%-6.8%) is similar to the increase in the Czech Republic (3.8-4.8%) [1].

The general importance of awareness of female patients regarding contraception was studied by Saeed on the group of 600 women [7]. Half the group was given information about the methods of contraception after delivery; the other half received no specific information. During follow-up, 8-12 weeks after delivery, 6.3% of women from the control group and 50.8% of women from the informed group were determined to start using contraceptives within the next 6 months. In the uninformed group, men were left responsible for the birth control in 38.8% of cases with pull-out as the primary method of contraception (36.3%). In the intervention group, women assumed responsibility for birth control in 70.9% of cases with oral contraception as the preferred method (37.1%).

Results of the Scottish study [7], aimed at consultations with women after induced abortion, are somewhat more measured. The study compared the group of 297 women receiving standard care and 316 women who received intense instruction. Use of contraception was evaluated 16 weeks after the abortion and then after 2 years. Although women who received the special consultation, left the hospital more frequently on contraception (91.2% vs. 36.3%, $P < 0.001$) with preference given to the long-acting forms (47.4% vs. 24.7%, $P < 0.001$), there was no significant difference in the prevalence of the use of contraceptives after four months. Also, the difference in the risk of undergoing another induced abortion within two years of the first one was not significant (14.6% in the intervention group vs. 10% in the control group).

In general, the methods with longer than once-daily administration schedule are less prone to failure due to lower risk of patient error, which is an important factor of contraception failure [4].

5. Conclusion

The CHOICE project has shown that women lack information on possible application routes of combined hormonal contraceptives. Following expert advice, including information on all forms of combined hormonal contraceptives, more than 33% of women in the Czech Republic chose the latest application form of combined hormonal contraception - vaginal rings.

The most important factor in the choice of mode is ease of use. This increases the probability of final choice by 30.7% for combined oral contraception and by 38.2% for path and vaginal ring. Interest in the vaginal ring and patch increase with age. Ease of use, efficacy and menstrual cycle control are the most important predictors for contraception choice. The biggest fears are connected with adverse events for pills and low frequency of usage in population for patch and ring.

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