Knowledge of university students about the risks and benefits associated with combined oral contraceptives

Conhecimento de universitárias sobre os riscos e benefícios associados aos contraceptivos orais combinados

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ABSTRACT: Type of study: Descriptive cross-sectional observational study. Objective: To evaluate the knowledge of university students concerning the risks and benefits associated to combined oral contraceptives (COC). Methods: The study group consisted of a convenience sample of female medical students. Data was collected from October to November 2017 through a structured, self-applying questionnaire consisting of 30 questions divided into sociodemographic data, contraceptive antecedents and knowledge of risks and benefits associated with the use of COC. Results: 86 university students participated in this study. Most of them were aged between 18 and 25 years (76.74%), were COC users (86.05%) and started using it by medical indication (94.59%). Few of them knew the beneficial effects of COCs in the reduction of endometrial (31.40%), ovarian (18.60%) and colorectal (8.14%) cancers. On the other hand, knowledge of the risks of deep vein thrombosis (97.67%) and stroke (88.37%) was satisfactory. Additionally, more than half of the university students associated the use of COC with weight gain (56.98%). Conclusion: The imbalance between knowledge about COC risks and benefits cannot be underestimated, and it is relevant that health professionals identify COC benefits and side effects misconceptions in order to provide an effective contraceptive counselling.

Keywords: Knowledge; Contraceptives, oral, combined; Risk assessment; Students, medical; Women’s health.

RESUMO: Modelo do estudo: Estudo observacional transversal descritivo. Objetivo: Avaliar o conhecimento de universitárias sobre riscos e benefícios associados aos contraceptivos orais combinados (COC). Método: A população do estudo foi composta por uma amostra de conveniência de estudantes de medicina do sexo feminino. Os dados foram coletados no período de outubro a novembro de 2017 por meio de um questionário estruturado, autoaplicável e composto por 34 questões divididas em dados sociodemográficos, antecedentes contraceptivos e conhecimentos sobre riscos e benefícios associados ao uso dos COC. Resultados: Participaram desta pesquisa 86 estudantes. A maioria das participantes estava na faixa etária entre 18 e 25 anos (76,74%), era usuária dos COC (86,05%) e iniciou seu uso por indicação médica (94,59%). Poucas delas conheciam os efeitos benéficos dos COC na redução dos cânceres de endométrio (31,40%), ovário (18,60%) e cólon-rectal (8,14%). Por outro lado, os conhecimentos dos riscos de trombose venosa profunda (97,67%) e acidente vascular encefálico (88,37%) foram satisfatórios. Adicionalmente, mais da metade das universitárias associou o uso dos COC a ganho de peso (56,98%). Conclusão: O desequilíbrio entre os conhecimentos sobre benefícios e riscos dos COC não pode ser subestimado, sendo relevante que os profissionais de saúde identifiquem equívocos relacionados aos benefícios e efeitos colaterais dos COC, a fim de proporcionarem um aconselhamento contraceptivo efetivo.

Descritores: Conhecimento; Anticoncepcionais orais combinados; Medicação de risco; Estudantes de medicina; Saúde da mulher.

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INTRODUCTION

One of the most important achievements in public health in the twentieth century was the development of combined oral contraceptive (COC), a mark in the female sexual and reproductive rights, offering an efficient fertility control unattended by male motivation, allowing women autonomy in tracing their life trajectory, gaining ground in the labor market, occupying political positions, thus changing the usual behavior and social role. Since the beginning of its commercialization in 1960, COCs represent the most popular form of reversible contraception worldwide, with the prevalence of use among women of reproductive age estimated at 9% worldwide and 24.1% in Brazil in 2015.

COCs consist of an association of an estrogen and a progestogen, with ovulation inhibition as main mechanism of action by suppression of pituitary gonadotropins secretion. The progestogenic component produces the main contraceptive effects, being the inhibition of the preovulatory peak of luteinizing hormone (LH) its most prominent effect. It makes the cervical mucus thick, inhibiting the sperm progression to the ampulla region of the fallopian tube, where fertilization normally occurs; decreases tubal peristaltic movements, interfering in egg capture and embryo migration to the uterine cavity; inhibits the endometrium proliferation, making it atrophic and, consequently, less receptive to embryonic implantation. The estrogenic component suppresses the follicle stimulating hormone (FSH), preventing follicular growth and the emergence of a dominant follicle. Besides, stabilizes endometrium, minimizing bleeding during COCs use and enhances the action of progestogens by intracellular progestosterone receptors increase, thus allowing the use of lower doses of this hormone for contraceptive protection.

When consistently and correctly used, COCs prevent unplanned pregnancies, an important strategy to protect the lives of women of reproductive age, especially those ones who live in high social vulnerability areas and with little access to health services. A large population-based study, with a long follow-up period, suggests that the COC is associated with mortality reduction, indicating a general benefit to women’s health.

COCs also provides significant non-contraceptive benefits. Endometrial atrophy induced by progestogen component reduces menstrual flow and colic, qualifying its use for the treatment of heavy menstrual bleeding, abnormal uterine bleeding and dysmenorrhea (primary or due to endometriosis). By increasing the production of sex hormone-binding globulin (SHBG), COCs decrease free androgens levels and thus, could be useful in preventing or reducing the effects associated with excessive exposure to androgens such as acne and hirsutism. COCs could also reduce the risks of pelvic inflammatory disease, ectopic pregnancy and occurrence of ovarian, endometrial and colorectal cancers.

On the other hand, the use of COC is associated with an increased risk of venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE). However, the incidence of VTE remains low among users (8-10 events per 10,000 women/year of exposure) when compared to non-users (5-10 events per 10,000 women/year of exposure). Initially, it was believed that the increased risk of thrombogenic events was solely due to estrogens action on hemostatic factors. Subsequently, it was found that depending on the present progestogen type in COCs, the thrombosis risk could be higher or lower, suggesting an influence of this component on clots formation. In fact, pills containing cyproterone acetate, desogestrel, drospirenone or gestodene are associated with a significantly increased risk of VTE compared to the use of those containing levonorgestrel. However, the mechanism by which this happens is still not well understood.

Since the first pill development and approval, hormone dose in formulations is being under significant reductions aiming to improve the safety and tolerability of the method. As a result, side effects from estrogens (increased blood pressure, headache and mastalgia) and progestogens (escape bleeding) have been reduced; and when present, they are usually self-limiting and improve during method use.

Despite the consolidated evidence on the benefits and side effects of COC, a recent research carried out among Romanian university students found that only 32.2% considered this method effective and safe and few knew its potential for the treatment of dysmenorrhea and acne (28% and 12.6%, respectively). Negative perceptions, such as the association between the use of COC with weight gain and reduced future fertility, were also observed. Furthermore, a study carried out in the North-Eastern region of Brazil with 294 women of childbearing age showed that 75% of them had no knowledge about possible side effects.

This scenario of misconceptions is related to COC adherence decrease, interruption of its use and, consequently, an increase on the contraceptive failure rate. This is most concerning among younger women whose have less knowledge and less use of contraceptive methods, therefore requiring a qualified contraceptive counseling.

In this sense, given the importance of this theme, the present study aimed to estimate the young university students’ knowledge about the risks and benefits associated with COC. The results could guide the development of educational strategies to assist women in more effective and safe reproductive planning, since reaching contraceptive needs is of major importance for improving public health and the physical, mental and social well-being of women and their families.
METHODS

This is a descriptive observational cross-sectional study carried out in a convenience sample composed of 86 female students, aged over 18 years, enrolled at the Medicine Course at the Federal University of Sao Carlos (UFSCar).

In compliance with Resolution 466/2012 of the National Health Council, this study was approved by the Research Ethics Committee in Human Beings at the Federal University of Sao Carlos (opinion number 2.107.608).

The recruitment of participants took place from October to November 2017, through invitation after the end of the students’ activities on more than one occasion, reducing the possibility of loss.

Data collection was performed individually and in a reserved place after voluntary signature of the Free and Informed Consent Form. A structured and self-administered questionnaire (Annex 1) was used by the researchers based on a similar research. It consisted of 30 questions distributed into three sections: 1) sociodemographic data (age, marital status, religion, color and health care system type); 2) contraceptive history (The main reason for COC use; Who recommended its use; Influence of COC risks/side effects in the decision to abandon or to never use it); 3) The knowledge about risks, benefits, side effects and myths related to COC use. In section 3, the response options were: Increase, Decrease or Do not change the risk.

To keep it privately, answered questions were returned in an unmarked envelope in an urn.

The questionnaire was previously tested in a convenience sample comprised by 11 university female students from UFSCar with the same characteristics as the investigated participants in order to confirm the adequacy of the instrument, focusing the quality of the obtained information.

The collected data were stored in Microsoft Excel 2010 spreadsheet to calculate absolute, relative and average frequencies and were presented according to descriptive analysis (frequency and percentage) through tables.

For this article, COC refers to any combination of oral contraceptive composition, excluding progestogen oral contraceptives and emergency contraception. Participants at the time of data collection were using COC or reported having used it in the past were named COC users and those who never used it were named non-users.

To analyze the questionnaire results, the researchers based themselves on the information presented in the publication of the World Health Organization (WHO), Family Planning - A Global Handbook for Health Service Providers.

RESULTS AND DISCUSSION

From the 86 participants, 74 (86.05%) classified themselves as COC users and 12 (13.95%) as non-users. Most were young, with a predominance of the age group between 18 – 25 years (76.74%). The age ranged from 18 to 51 years, with an average age of 23.91 years. Single marital status (91.86%) and self-declared white (70.93%) predominated (Table 1). These results are in accordance with the sociodemographic profile of university students at Federal Institutions from Sao Paulo State in the year of 2017, where 84% of them were aged between 18 and 24 years and 49% declared themselves white. Specifically, in Medical Courses in 2012, the percentage of white students enrolled was approximately 75%, similar to the percentage observed in our study.

Table 1. Characteristics of the participants of the study

| Characteristics         | n (%)   |
|-------------------------|---------|
| Use of COC              |         |
| User                    | 74 (86.05%) |
| Non-user                | 12 (13.95%) |
| Age group (years)       |         |
| 18 – 21                 | 33 (38.37%) |
| 22 – 25                 | 33 (38.37%) |
| 26 – 29                 | 11 (12.79%) |
| > 30                    | 9 (10.47%)  |
| Marital status          |         |
| Single                  | 79 (91.86%) |
| Married                 | 3 (3.49%)  |
| Stable union            | 3 (3.49%)  |
| Divorced                | 1 (1.16%)  |
| Widow                   | 0 (0%)    |
| Color                   |         |
| White                   | 61 (70.93%) |
| Brown                   | 16 (18.60%) |
| Black                   | 3 (3.49%)  |
| Yellow                  | 3 (3.49%)  |
| Indigenous              | 3 (3.49%)  |
| Religion                |         |
| None                    | 33 (38.37%) |
| Catholic                | 28 (32.56%) |
| Evangelical Christian Church | 12 (13.95%) |
| Spiritism               | 11 (12.79%) |
| Other religions         | 2 (2.33%)  |
| Health Care System      |         |
| Additional              | 50 (58.14%) |
| SUS                     | 36 (41.86%) |

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Note: N = total number of respondents; n = absolute frequency; % = relative frequency; COC = combined oral contraceptive; SUS = Unified Health System.

Regarding religious affiliation, 61.7% of university students declared to have any religion, predominantly Catholic (32.56%), followed by Evangelical Christian
Portuguese university students showed a tendency to opt pregnant during the first year of use correctly and consistently, only 0.3 women in 100 become reasons (17.57%) (Table 2). In fact, the effectiveness of contraception were efficacy (29.73%) and accessibility (28.38%), followed by ease of use (17.57%) and other reasons (17.57%) (Table 2). In fact, the effectiveness of COCs is an expressive attraction, because when used correctly and consistently, only 0.3 women in 100 become pregnant during the first year of use. A research study of Portuguese university students showed a tendency to opt mostly to pills use due to its high effectiveness and ease of use, as observed in our study.

Among COC users, 59.46% discontinued its use. When asked about the reasons that led them to interrupt the method, 70.45% reported concerns about health risks and side effects. Among non-users, a similar situation was observed with 66.67% of women, indicating that these concerns were the main reasons why not using the method (Table 2).

Machiyama suggests that health injury concerns represent the main reasons for not adhere to the method, exposing women to unplanned pregnancy, an important factor in maternal morbidity and mortality. On the other hand, when women have a positive perception in the information about the COC effectiveness in controlling fertility, the adherence is significantly higher.

This fact made us reflect on whether the participants’ decision to abandon the method was a consequence of inefficient contraceptive counselling, which was not expected, since the majority (94.59%) started the method on medical advice.

Table 2. Participants’ contraceptive history

| Background | COC users (N = 74) | n (%) |
|------------|-------------------|-------|
| Indicated by | Doctor | 70 (94.59%) |
| | Friends and/or family | 4 (5.41%) |
| | Another health professional | 0 (0%) |
| | Partner | 0 (0%) |
| | Other | 0 (0%) |
| Reasons for using it | Efficiency | 22 (29.73%) |
| | Easy access | 21 (28.38%) |
| | Ease of use | 13 (17.57%) |
| | Other reasons | 13 (17.57%) |
| | Health Safety | 3 (4.05%) |
| | Price | 2 (2.70%) |
| Discontinued | Yes | 44 (59.46%) |
| | No | 30 (40.54%) |
| Discontinued reasons (N = 44) | Concerns about the risk/side effects | 31 (70.45%) |
| | Other reasons | 13 (29.55%) |
| Non-COC users (N = 12) | n (%) |
| Reasons for not using COC | Concerns about the risks/side effects | 8 (66.67%) |
| | Other reasons | 4 (33.33%) |

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Note: N = total number of respondents; n = absolute frequency; % = relative frequency; COC = combined oral contraceptive.

The data in Table 3 suggests that the knowledge about COC health benefits is, in part, satisfactory, since more than half of the participants knew about the potential
of the method in reducing acne (83.72%), dysmenorrhea (83, 72%) and hirsutism (67.44%). On the other hand, important non-contraceptive benefits, such as a reduction in the occurrence of endometrial (31.40%), ovarian (18.60%) and colorectal (8.14%) cancers, as well as ectopic pregnancy (EP) (25.58%) and pelvic inflammatory disease (PID) (13.95%) were poorly recognized.

Lack of data regarding the protective effects have been found in other studies conducted among German21 and Chinese women24. For example, Vogt23 in a study of German women aged 18 to 24 years, found that they were unable to associate COC with the reduction of endometrial and ovarian cancers. Yang24 found that 68.2% of Chinese obstetricians/gynecologists were awareness of PID reduction by COC use. We were surprised that this lack of knowledge is not restricted to laywomen in general but could be extended to those ones who work at the health area.

Regarding health risks, most participants had adequate knowledge about the possibility of the occurrence of deep venous thrombosis (97.67%) and stroke (88.37%) during COC use (Table 3). Similar to our findings, Philpison25 observed that Romanian university students recognized stroke (73%) and thrombosis (70%) as risk conditions associated with COC. However, in the study conducted by Vogt23 56% of young German women did not know whether the use of COCs could increase the risk of thrombosis, 20% had denied such an association and 12% had recognized the increased risk and that it was a serious health consequence. Américo26 found that among Brazilian women aged 10 to 49 years most of them had no knowledge about COC complications and only 1.9% related to deep vein thrombosis with prolonged use of this method. In the present study, since the interviewed participants are young university students from the health field, the conclusion that most of them have knowledge about the risks of VTE related to COC use may not agree with the general Brazilian society’s pattern due to their higher access to information.

Most participants (58.14%) indicated COC beneficial effect in cervical cancer reduction, while 25.58% associated it with an increase in the probability of this occurrence (Table 3). The comparison of our results with other authors revealed a low prevalence of knowledge on this topic22,23. In a recent study carried out in the United Kingdom26, cancer incidence was evaluated in more than 40,000 women using and not using COCs over a period of 44 years and it was demonstrated that the occurrence of cervical cancer does not appear to be influenced by long-term use of this method. With statistical significance, in cases of current or recent use (less than 5 years) there was a slight increase in its incidence. However, this risk regresses with the interruption of the method and is equal to that presented by non-users after 5 to 15 years.

Regarding breast cancer, 48.84% of the participants considered that COC use does not change the risk and 37.21% reported it does change (Table 3). The close results between not changing the risk and increasing it, is in line with literature data, which are conflicting and of hard analysis, as published by the WHO in Family Planning - A Global Handbook for Healthcare Providers4. Conversely, the study by March27 suggests an increased risk of breast cancer in COC users, being even greater when 10 years or more of its use. In the same sense, Iversen28 showed increased risk in COC women using it for less than five years and that this risk disappears a few years after its suspension. However, these same studies demonstrate that the absolute risk is very low and that any effect appears to be temporary and limited to current or recent use, with no influence at later stages of life, when this disease is more prevalent29,30. In addition, WHO31 points out that it is unclear whether this increased risk with short-term use of COC is related to a biological contraceptive effect on the development of the disease or the earlier diagnosis of this disease among the users.

Estrogens play a fundamental role in the modulation and exacerbation of headache, with fluctuations in its levels, either downwards, as observed in the period before menstruation, or an increase related to the COC beginning of use could exacerbate the headache29. Among COC users this effect deserves attention, since it may be a reason for discontinuing the method32,33. The participated showed adequate knowledge on the topic, since 68.60% mentioned that the use of COC is associated with an increase in this side effect (Table 3).

Another association cited by the majority (65.12%) was a decrease in libido. The role of COCs on sexual function is not yet well established. In a meta-analysis published in the Journal of women’s health (2017)30 on the subject, there were studies indicating that there may be an increase, neutrality or decrease in libido in users of this method depending on the route of administration and the type of progestogen present in the formulation. The lack of consensus in the peer-reviewed papers reflects the difficulty of isolating the effect of contraception on sexual response, since factors such as relationship with the partner, psychosocial problems and even psychiatric illnesses (depression) can interfere with libido4.

The estrogens present in COCs increase the hepatic synthesis of angiotensinogen, which, in turn, raises systemic blood pressure from the rennin-angiotensin-aldosterone system34. In healthy women, the use of COC may cause a slight increase in blood pressure within the normal range, which regresses after the interruption of its use3. Mastalgia and escape bleeding are also common initial side effects of using COC and tend to improve with its time of use3,34. The participants demonstrated a fragility of knowledge regarding these side effects, since more than half of them (54.65%) indicated that COCs do not have effects on blood pressure, while the frequency of responses indicating increased or decreased mastalgia and escape bleeding showed a similar distribution pattern (Table 3).
In the document Family Planning - A Global Handbook for Healthcare Providers, the WHO mentions that in the female population in general there are misconceptions about COC effects on fertility, fetal formation and development and body weight. In general, the university students pointed out that infertility (79.07%) and fetal malformation (82.56%) are not related to the use of COC, demonstrating an adequate perception. However, they considered that they can cause an increase in body weight (56.98%) (Table 3), which does not correspond with current knowledge on the topic. The use of COC does not appear to result in significant changes in weight, either in gain or decrease, but since weight variations are natural throughout life, women often confuse these changes as consequences of using the method.

### Table 3. Frequency of responses in relation to the knowledge about COC of the study participants

| Knowledge (n = 86) | Reduces | Does not change | Increases |
|-------------------|---------|----------------|-----------|
| **Health Benefits** | | | |
| Acne | 72 (83.72%) | 6 (6.98%) | 8 (9.3%) |
| Dysmenorrhea | 72 (83.72%) | 10 (11.63%) | 4 (4.65%) |
| Hirsutism | 58 (67.44%) | 20 (23.26%) | 8 (9.3%) |
| Endometrial cancer | 27 (31.40%) | 41 (47.67%) | 18 (20.93%) |
| Ovarian cancer | 16 (18.60%) | 52 (60.47%) | 18 (20.93%) |
| Colorectal cancer | 7 (8.14%) | 70 (81.40%) | 9 (10.47%) |
| Ectopic pregnancy | 22 (25.58%) | 53 (61.63%) | 11 (12.79%) |
| PID | 12 (13.95%) | 53 (61.63%) | 21 (24.42%) |
| **Health Risks** | | | |
| DVT | 0 (0%) | 2 (2.33%) | 84 (97.67%) |
| CVA | 9 (10.47%) | 1 (1.16%) | 76 (88.37%) |
| Cervical cancer | 50 (58.14%) | 14 (16.28%) | 22 (25.58%) |
| Breast cancer | 12 (13.95%) | 42 (48.84%) | 32 (37.21%) |
| **Side effects** | | | |
| Headache | 9 (10.47%) | 18 (20.93%) | 59 (68.60%) |
| Decreased libido | 9 (10.47%) | 21 (24.42%) | 56 (65.12%) |
| Increased blood pressure | 2 (2.33%) | 47 (54.65%) | 37 (43.02%) |
| Mastalgia | 29 (33.72%) | 23 (26.74%) | 34 (39.54%) |
| Escape bleeding | 34 (39.53%) | 16 (18.60%) | 36 (41.87%) |
| **Myths** | | | |
| Weight gain | 5 (5.81%) | 32 (37.21%) | 49 (56.98%) |
| Infertility | 2 (2.33%) | 68 (79.07%) | 16 (18.60%) |
| Fetal malformation | 3 (3.49%) | 71 (82.56%) | 12 (13.95%) |

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Note: n = absolute frequency; % = relative frequency; COC = combined oral contraceptive; PID = pelvic inflammatory disease; DVT = deep venous thrombosis; CVA = cerebrovascular accident (CVA).

### CONCLUSIONS

The present study demonstrated that the majority of participants used COC during the data collection or used it in the past, and its use was initiated under medical advice. While the effects of COC in increasing the risk of VTE and in protecting and decreasing the occurrence of acne, dysmenorrhea and hirsutism were recognized, a significant portion of the participants associated the use of the method with weight gain and were unaware of significant benefits in reducing PID, pregnancy ectopic and endometrial, ovarian and colorectal cancers. Among the participants who never used the method or discontinued it, concerns about health risks and side effects were an important reason for this decision.

In view of this scenario, the imbalance between knowledge about the risks and benefits of COC cannot be underestimated, since many misunderstandings can be present even among more educated women with access to health services, in order to interfere in a more conscious choice about the use or not of COCs. Thus, it is of paramount importance that health professionals perform qualified contraceptive counselling, identifying such factors related to the benefits and side effects of COC that may interfere with adherence to the method.
Annex 1: Instrument of data collection

| SECTION 1: SOCIODEMOGRAPHIC CHARACTERISTICS |
|---------------------------------------------|
| 1) Age:                                      |
| 2) Marital status: ( ) single ( ) married ( ) divorced |
| ( ) in stable union ( ) widow |
| 3) Religion: ( ) Catholic ( ) Evangelical Christian Church ( ) Spiritism |
| ( ) none ( ) other: ........... |
| 4) Referred color: ( ) white ( ) black ( ) brown |
| ( ) yellow ( ) indigenous |
| 5) Health Care System you currently use: ( ) SUS ( ) Supplementary health (health insurance and private) |

| SECTION 2: CONTRACEPTIVE BACKGROUND |
|--------------------------------------|
| 6) Do you use the combined oral hormonal contraceptive (contraceptive pill)? ( ) never used |
| ( ) I already used it, but I abandoned this method |
| ( ) I currently use the pill |
| 7) If you have already used the pill and currently do not use it anymore, did the health risks and side effects influence your decision to abandon this method? ( ) Yes ( ) No |
| 8) If you never used the pill, did the health risks and side effects influence your decision not to use this method? ( ) Yes ( ) No |
| 9) If you use the pill, what was the main reason that led you to choose this method (Check only 1 answer) ( ) easy access |
| ( ) effectiveness in preventing pregnancy |
| ( ) ease of use |
| ( ) health security |
| ( ) affordable price ( ) other reason: ............ |

| SECTION 3: KNOWLEDGE |
|-----------------------|
| Regarding the risk of the events below, do you believe that the use of the pill can: |
| 11) Acne ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 12) Headache ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 13) Decreased libido ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 14) Weight gain ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 15) Hirsutism (increased amount of hair in women in places usual for men such as chin, around nipples, between breasts, buttocks and inner thighs) ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 16) Mastalgia (breast pain) ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 17) Spotting (inter-menstrual bleeding from escape) ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 18) Deep venous thrombosis ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 19) Stroke (stroke) ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 20) Increase in blood pressure ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
| 21) Dysmenorrhea (colic pain during menstruation) ( ) Increase the risk ( ) Decrease the risk ( ) Does not change the risk |
## Author's participation:

Lais Ferraz de Assis Pinto: creator of the idea of the Scientific Initiation work with participation in all phases of its development (data collection, analysis of results and writing of the manuscript). Fernanda Vieira Rodovalho Callegari: Scientific Initiation adviser with participation in all stages of its development, from its conception to data analysis and writing of the manuscript. Maristela Carbol: Scientific Initiation adviser with participation in all stages of its development, from its conception to data analysis and writing of the manuscript.

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## REFERENCES

1. Dragoman MV. The combined oral contraceptive pill - recent developments, risks and benefits. Best Pract Res Clin Obstet Gynaecol. 2014;28(6):825-34. doi: http://dx.doi.org/10.1016/j.bpobgyn.2014.06.003.

2. Bryden PJ, Fletcher P. Knowledge of the risks and benefits associated with oral contraception in a university-aged sample of users and non-users. Contraception. 2001;63:223-7. doi: https://doi.org/10.1016/S0010-7824(01)00194-9.

3. United Nations. Trends in contraceptive use Worldwide 2015. Contraception. Available from: https://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf.

4. World Health Organization, Department of Reproductive Health and Research (WHO/RHR) and Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP), Knowledge for Health Project. Family Planning: A Global Handbook for Providers (2018 update). Baltimore and Geneva: CCP and WHO; 2018. Available from: https://www.who.int/reproductivehealth/publications/FP-global-handbook/en/.

5. Vessey M, Yeates D, Flynn S. Factors affecting mortality in a large cohort study with special reference to oral contraceptive use. Contraception. 2010;82(3):221-9. doi: http://dx.doi.org/10.1016/j.contraception.2010.04.006.

6. Bartz DA, Roe A, Douglas PS. Combined estrogen-progestin contraception: Side effects and health concerns. UpToDate. [cited December 2019]. Available from: https://www.uptodate.com.

7. Dragoman MV, Tepper NK, Fu R, Curtis KM, Chou R, Gaffield ME. A systematic review and meta-analysis of venous thrombosis risk among users of combined oral contraception. Int J Gynaecol Obstet. 2018;141(3):287-94. doi: http://dx.doi.org/10.1002/ijgo.12455 -9

8. Bldaru IE, Furau G, Socolov D. Female Romanian university students' attitudes and perceptions about contraception and motherhood. Eur J Contracept Reprod Heal Care. 2016;21(1):39-48. doi: http://dx.doi.org/10.3109/13625187.2015.1066495.

9. Americo CF, Nogueira PSF, Vieira RPR, Bezerra CG, Moura ERF, Lopes MVO. Conhecimento de usuárias de anticoncepcional oral combinado sobre o método. Rev Lat-Am Enfermagem. 2013;21(4):928-34. Disponível em: https://www.scielo.br/pdf/rlae/v21n4/pt_0104-1169-rae-21-04-0928.pdf.

10. Martinez-Astorquiza-Ortiz de Zaratet T, Díaz-Martin T, Martinez-Astorquiza-Corral T. Evaluation of Factors Associated with Noncompliance in Users of Combined Hormonal Contraceptive Methods: a cross-sectional Study: results from the MIA Study. BMC Womens Health. 2013;13:38. https://dx.doi.org/10.1186%2F1472-6874-13-38.
11. Chandra-Mouli V, McCarraher DR, Philips SJ, et al. Contraception for adolescents in low and middle income countries: needs, barriers and access. Reprod Health. 2014;11:1. doi: https://doi.org/10.1186/1742-4755-11-1.

12. National Institute of Educational Studies and Research Anisio Teixeira. Statistical Synopsis of Higher Education 2017. Brasília: INEP; 2018. Available from: http://inep.gov.br/sinopses-estatisticas-da-educacao-superior.

13. Ristoff D. The new profile of the Brazilian campus: an analysis of the undergraduate student's socioeconomic profile. Evaluation: Rev Evaluation Educ Super. 2014;19(3):723-47. doi: http://dx.doi.org/10.1590/S1414-407720140000300010.

14. Silva ZP, Ribeiro MCSA, Barata RB, Almeida MF. Sociodemographic profile and pattern of use of health services in the Unified Health System (SUS), 2003-2008. Ciênc Saúde Coletiva. 2011;16(9):3807-16. doi: https://doi.org/10.1590/S1413-8123201001000016.

15. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEPE). National Student Performance Exam - Course performance report (Medicine Federal University of Sao Carlos). Brasília; 2016. Available from: http://enade.inep.gov.br/enade2016/resultado/

16. Farias MR, Leite SN, Tavares NUL, Oliveira MA, Arrais PSD, Bertoldi AD, et al. Use of and access to oral and injectable contraceptives in Brazil. Rev Saude Publica. 2016;50(Suppl 2). doi: http://dx.doi.org/10.1590/s0034-87872016050006176.

17. Simionescu A, Horobet A, Belasucu L. A statistical assessment of information, knowledge and attitudes of medical students regarding contraception use. Maedica (Buchar). 2017;12(4):267-75. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5879583/.

18. Carvalho M, Pirotta K, Chor N. Male participation in contraception from a female perspective. Rev Saude Publica. 2001;35(1):23-31. doi: http://dx.doi.org/10.1590/S0034-89102001000100004.

19. Nogueira IL, Carvalho SM, Tocantins FR, Freire MAM. Man’s participation in reproductive planning: an integrative review. Rev Fund Care Online. 2018;10(1):242-7. doi: http://dx.doi.org/10.9789/2175-5361.2018-v10i1.242-247.

20. Santos MJO, Ferreira EMS, Ferreira MMC. Contraceptive behavior of Portuguese higher education students. Rev Bras Enferm. 2018;71(Suppl 4):1706-13. doi: http://dx.doi.org/10.1590/0034-7167-2017-0623.

21. Machiyama K, Huda FA, Ahmmed F, Odwe G, Obare F, Mumah JN, et al. Women's attitudes and beliefs towards specific contraceptive methods in Bangladesh and Kenya. Reprod Health. 2018;15(1):1-15. doi: https://doi.org/10.1186/s12978-018-0514-7.

22. Tomaszewski D, Aronson BD, Kading M, Morisky D. Relationship between self-efficacy and patient knowledge on adherence to oral contraceptives using the Morisky Medication Adherence Scale (MMAS-8). Reprod Health, 2017;14(1):110. doi: https://doi.org/10.1186/s12978-017-0374-6.

23. Vogt C, Schaefer M. Disparities in knowledge and interest about benefits and risks of combined oral contraceptives. Eur J Contracept Reprod Health Care. 2011;16(3):183-93. doi: https://doi.org/10.3109/13625187.2011.561938.

24. Yang X, Li X, Wang Y, He X, Zhao Y. Practices and knowledge of female gynecologists regarding contraceptive use: a real-world Chinese survey. Reprod Health. 2018;15:1-6. doi: https://doi.org/10.1186/s12978-018-0557-9.

25. Philipson S, Wakefield CE, Kasparian N. Women's knowledge, beliefs, and information needs in relation to the risks and benefits associated with use of the oral contraceptive pill. J Womens Health (Larchmt). 2011;20(4):635-42. doi: https://doi.org/10.1089/jwh.2010.2455.

26. Iversen L, Sivasubramaniam S, Lee AJ, Fielding S, Hannaford PC. Lifetime cancer risk and combined oral contraceptives: the Royal College of General Practitioners’ Oral Contraception Study. Am J Obstet Gynecol. 2017;216(6):580.e1-580.e9. doi: https://doi.org/10.1016/j.ajog.2017.02.002.

27. Merch LS, Skovlund CW, Hannaford PC, Iversen L, Fielding S, Lidegaard O. Contemporary Hormonal Contraception and the Risk of Breast Cancer. N Engl J Med. 2017;377(23):2228-39. doi: https://doi.org/10.1056/NEJMoa1700732.

28. Calhoun AH, Batur P. Combined hormonal contraceptives and migraine: An update on the evidence. Cleve Clin J Med. 2017;84(8):631-8. doi: https://doi.org/10.3949/ccjm.84a.16033.

29. Casey PM, MacLaughlin KL, Faubion SS. Impact of contraception on female sexual function. J Women’s Health. 2017;26(3):207-13. doi: https://doi.org/10.1089/jwh.2015.5703.

30. Oelkers WK. Effects of estrogens and progestogens on the renin-aldosterone system and blood pressure. Steroids. 1996;61(4):166-71. doi: https://doi.org/10.1016/0039-128X(96)00007-4.

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