

The use of contraceptives and their nutritional impact on medical students

Jessica Caroline Visnhieski^{1*} , Lenira Gaede Senesi² , Fernanda Schier de Fraga² ,
Vivian Ferreira do Amaral^{2,3*} 

Brazilian Society of Nutrology

SUMMARY

OBJECTIVE: This study aimed to analyze the impact of contraceptives on medical students at the Federal University of Paraná and verify adherence, consequences, and lifestyle effects of the contraceptive method used.

METHODS: This is an observational, cross-sectional study in which 214 participants answered an online questionnaire composed of 30 questions. For statistical analysis, the Stata® 16.0 software was used, and the mean and standard deviation were estimated to characterize continuous variables with a normal distribution and percentages for categorical variables. For group-to-group comparisons, a one-way ANOVA was used for normal continuous variables and Fisher's exact test for categorical variables.

RESULTS: Almost 10% (9.3%) of women used condoms only, and double protection (condom+oral contraceptives) corresponds to 23.4%. Of the 214 participants, 38 reported making exclusive use of long-acting reversible contraception, and 13.6% of the interviewees used oral contraceptives exclusively. More than 88% of the interviewees believe that the medical course provided adequate education on contraception. Regarding lifestyle habits, 71.5% of the students reported alcohol intake, tobacco use, and/or other drug use.

CONCLUSION: There was a great diversity of combinations between contraceptive methods used by the medical student at Federal University of Paraná, the most prevalent being the oral contraceptive associated with male condoms. There was a greater association in the use of long-acting reversible contraception in married students. Although 88.3% of the participants believed that they had a good education about contraception at university, only half of them use condoms in sexual relationships. The rate of adherence to alcohol and tobacco among students is considerable, and such practices can negatively affect a nutritional profile, a healthy lifestyle, and safe sexual practices. Brazilian medical schools are fundamental for the advancement of medical education in contraception and for the creation of public policies on family planning.

KEYWORDS: Contraceptive agents. Women. Medicine. Students. Alcohols.

INTRODUCTION

The use of contraception by female medical students can be explained by the time-consuming nature of pregnancy. Female doctors are known to face many challenges in family planning. In North America, most female physicians enter residency after the age of 25 years, which is the average age at which a North American woman would complete her first pregnancy¹.

A survey carried out with university students in the state of Rio Grande do Sul showed that contraceptive methods are used by approximately 90% of students, with condoms being the most commonly used. It is believed that a higher level of education, as well as better sociodemographic indicators, have a greater influence on knowledge and adherence to contraceptives in this population².

The use of hormonal contraceptives in young women might have a negative impact not only on family planning but also

on nutritional profile, lifestyle, and vitamin levels. Previous studies have shown that the use of hormonal oral contraceptives may be associated with lower serum levels of vitamin B12 and folic acid³.

This study aimed to analyze the contraceptive profile of university medical students at the Federal University of Paraná (UFPR) on the Curitiba-PR and Toledo-PR campuses to verify adherence and knowledge about the contraceptive method used by the student.

METHODS

This is an observational, cross-sectional study. Female students participated in the research, from the first to the twelfth period of the medical course at the Federal University of Paraná, on the Curitiba-PR and Toledo-PR campuses, aged 18 years or over.

¹Universidade Federal do Paraná, Health Science Sector – Curitiba (PR), Brazil.

²Universidade Federal do Paraná, Department of Obstetrics and Gynaecology, Health Science Sector – Curitiba (PR), Brazil.

³Universidade Federal do Paraná, Postgraduation Program in Obstetrics and Gynecology – Curitiba (PR), Brazil.

*Corresponding authors: vivianfa2012@gmail.com; jvisnhieski@gmail.com

Conflicts of interest: the authors declare there is no conflicts of interest. Funding: none.

Received on January 24, 2023. Accepted on March 16, 2023.

Data collection was carried out in March 2022. The students were approached online through pre-established social media groups among university students. The invitation to participate in the research, which contained the link to the online form, along with the free and informed consent form (TCLE), was sent to the groups mentioned above. In the invitation sent, there was an explanation on the purpose and importance of participating in the study, as well as on the right to voluntary participation and confidentiality of information. In addition, there were data about the researchers and the number of the Certificates of Presentation of Ethical Appreciation issued by the Ethics and Research Committee of the Health Sciences Sector. The participants had their voluntary participation, answering the questions only if they felt free to do so. Response time was predicted to be 6 min.

There were 30 questions on the online form, and 2 of them were open-ended. The questions on the form were divided into five categories, namely, socioeconomic, sexuality, and previous pregnancies, contraceptive methods and knowledge, and finally side effects.

Medical students at the Federal University of Paraná on the Curitiba and Toledo campuses, from the first to the twelfth period of the course, were included in the research. Students under the age of 18 years and students who, after being exposed to the TCLE and the questionnaire, refused to participate in the research were excluded from the study.

After sending the invitation, the students had a period of 7 days to respond. A second invitation was made after 7 days to include students who could not respond at the first opportunity. The data obtained were compiled in Excel® and sent for statistical analysis.

The medical course at the Federal University of Paraná has 812 female students, with 613 enrolled on the Curitiba campus and 199 enrolled on the Toledo campus. The links were sent to all medical classes on both campuses; however, only 215 students accessed the invitation, and after exclusion criteria (refusal to participate or non-acceptance of the TCLE), 214 participants were involved.

A statistical analysis of the data obtained was performed using the mean and standard deviation to characterize continuous variables with a normal distribution. For categorical variables, percentage calculations were used. Regarding comparisons between groups, one-way ANOVA was used for normal continuous variables and Fisher's exact test for categorical variables. A p-value<0.05 was considered significant. The Stata® 16.0 software was used.

The study was approved by the Ethics and Research Committee of the Health Sciences Sector (CAAE: 49561921.8.0000.0102) on December 28, 2021.

RESULTS

The study included 214 female university students, 169 of them were from UFPR Curitiba and 45 were from UFPR Toledo.

The mean age was 25.5 years, with a standard deviation of 2.9. Approximately 54% claim to have a family income of more than R\$6,060.00, which is equivalent to about five Brazilian minimum wages today. In general, this is a woman with good purchasing power, since only 9.3% of the interviewees claim to have a family income between R\$1,212.00 and R\$2,424.00. Only one student participating in the study claimed to have an income of less than R\$1,212.00. The other characteristics of the population are described in Table 1.

Regarding life habits, 71.5% of the students reported using alcohol, tobacco, and/or other drugs (Figure 1).

Table 1. Characteristics of the population.

	n	%
Age (years)		
23.5 (2.9)*		
Campus		
Curitiba	169	79
Toledo	45	21
Family income		
Less than R\$ 1,212.00	1	0.4
R\$ 1,212.00 - R\$ 2,424.00	20	9.3
R\$ 2,424.00 - R\$ 6,060.00	76	35.5
More than R\$ 6,060.00	117	54.6
Relationship status		
Single	84	40.7
Dating	112	52.3
Married	15	7
Fixed partner for more than six months		
Yes	132	61.7
No	82	38.3
Number of partners in the last six months		
No fixed partner	25	11.7
Between one and two partners	172	80.3
Three or more	17	7.9
Sexual orientation		
Homosexual	9	4.2
Heterosexual	153	71.5
Bisexual	49	22.9
Others	3	1.4

Source: Author (2022). (*) Average age. In parentheses: standard deviation.

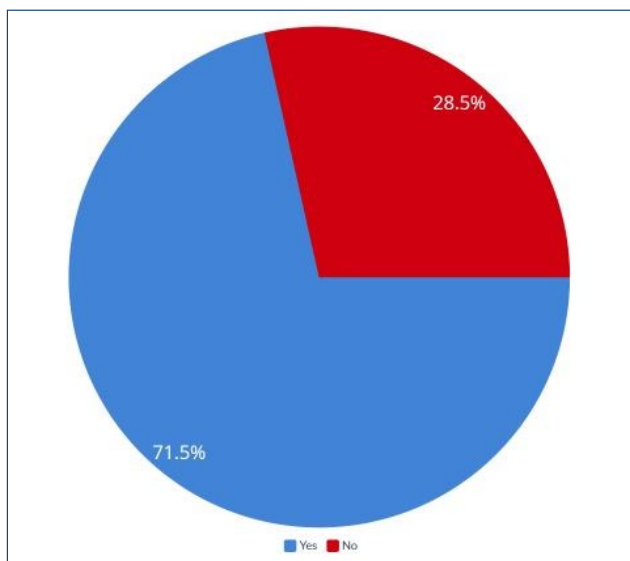


Figure 1. Consumption of alcoholic beverages, tobacco, and/or other drugs. Source: Author (2022).

The methods of contraception chosen by the students varied. In the questionnaire, it was possible to choose more than one contraceptive method alternative, generating several combinations. For statistical analysis, contraceptives were divided into 14 groups (Table 2).

Regarding the medical student’s contraceptive profile, the use of condoms alone corresponds to 29 (9.3%) of the users. When used in conjunction with oral contraceptives, this index rises to 50 (23.4%). The rates of condom use associated with hormonal and non-hormonal LARCS were 15 (7%) and 10 (4.7%), respectively. Notably, 10 students said that they associated condom use with behavioral contraceptive methods (table, coitus interruptus, and body temperature). Of the 214 participants, 38 reported using LARCS exclusively as a contraceptive method, corresponding to 17.7% of the total. In all, 19 students do not use contraceptive methods. Approximately 29 (13.6%) of the interviewees use only oral contraceptives (combined/progestogens). In addition, 27 (12.6%) of the students claim to use behavioral methods in association with some contraceptive method. Regarding the time of use, 132 (60%) students have been using the chosen contraceptive method for more than 2 years. Regarding knowledge about contraceptive methods, 88.3% of respondents believe that the medical course provided adequate education on contraception.

When comparing relationship status with a contraceptive method of choice, Fisher’s exact test showed a statistical difference ($p < 0.001$). Married women had a greater preference for hormonal LARCS (40%), while the others used condoms and oral contraceptives together (19.6 and 28.7%).

Table 2. Contraceptive profile of the medical student.

	n	%
Use of contraceptive method		
No	19	8.9
Yes	195	91.1
Contraceptive method of use		
Male or female condom	20	9.3
Oral contraceptive	29	13.6
Non-hormonal larcs	8	3.7
Hormonal larcs	30	14
Condom and oral contraceptive	50	23.4
Condom and non-hormonal larcs	10	4.7
Condom and hormonal larcs	15	7
Condom and behavioral methods	10	4.7
Oral contraceptive and behavioral methods	5	2.3
Non-hormonal larcs and behavioral methods	1	0.5
Hormonal larcs and behavioral methods	3	1.4
Triple protection (including behavioral methods)	8	3.7
Others	6	2.8

Source: Author (2022). Note: Oral contraceptives consist of combined contraceptives or progestogens alone; non-hormonal long-acting reversible contraception (LARCS) is characterized by a copper/copper and silver intrauterine device (IUD), and hormonal LARCS consists of Mirena, Kyleena, and Implanon; behavioral methods are considered table, coitus interruptus, and body temperature; vaginal rings, a monthly injection, and the morning-after pill with or without a condom were classified as “other” methods.

DISCUSSION

Approximately 91.1% of medical students at UFPR use some form of contraception, which is in line with a similar study carried out at the Faculty of Medicine in Valença-RJ, which showed that 90% of students used contraception. The most commonly cited method is the contraceptive pill alone, followed by that associated with the male condom. These indicators are maintained when observed among students in stable relationships, showing that the married medical student in Valença also opts for the contraceptive pill alone. In addition, the research showed that the studied population was predominantly composed of women who were not in stable relationships⁴.

The adherence rate to alcoholic beverages, tobacco, and other drugs is noteworthy when it is found that 71.5% of students use some type of substance. A limitation of the present study was not exploring the circumstances in which its use occurs. A similar study carried out with 125 medical students at the Centro Universitário de Anápolis in the state of Goiás found that 71% of the interviewees had already practiced sexual activity

under the influence of alcohol or other drugs, and of these 35% stated that this practice interfered with the use condom⁵.

In addition, reduced absorption of vitamins such as B1 (thiamine), B2 (riboflavin), B6 (pyridoxine), vitamins A, C, and folic acid can be caused by the use of alcoholic beverages. The abusive use of the substance results in the worsening of this condition as well as in the reduction of the intake of foods that contain vitamins, minerals, proteins, carbohydrates, and fats⁶.

A study carried out by the University of Sydney, seeking to understand the impact of oral contraceptives on plasma levels of vitamins B6, B12, and folate in university students of reproductive age, found reduced serum levels of vitamin B12 in OAC users, compared to the placebo group. It was also found that 50% of the participants were consuming lower levels of the aforementioned vitamins in their diet, showing the need to better understand the relationship between the eating behaviors of university students³.

It was surprising to note the diversity of combinations of contraceptive methods used by the UFPR medical student. However, the most cited ones do not differ from the literature. Medical students usually prefer the oral contraceptives associated with condoms, possibly due to their facility and availability. A study carried out with medical students at the University of Southern Santa Catarina that included 279 women showed that 86% used some form of contraception, the most cited being combined oral contraceptives, followed by condoms².

The use of LARCS draws attention. Adding the hormonal and non-hormonal LARCS combinations with other methods, the percentage reaches approximately 31%. When used in conjunction with a condom, this rate decreases to 11.7%. An interesting association was the predominant use of LARCS among married academics, going in the opposite direction of the study carried out by Gabriela et al.

In a married student, the choice of contraceptive method seems to demonstrate that she prioritizes the end of college and pregnancy since LARCS are currently considered the safest method. The low adherence to long-acting reversible contraceptive methods among single medical students shows the need for a greater approach to their use at the university. A study carried out with medical students at the Federal University of São Carlos (UFSCAR) showed that of the 104 participants, 60.19% of them did not know the terminology "LARC". Despite showing interest in LARCS use, the high cost and difficulty of access were the main reasons for non-adherence to the method⁷, which also seems to have occurred in our study.

Another fact that stands out is the use of condoms. When used alone, it corresponds to only 9.3% of the students. However, its adherence rises to 52.8% when associated with another contraceptive method. At the Federal University of Paraná in

2001, it was observed that 50% of the female students interviewed did not use safe sexual practices, that is, not using condoms⁸. It is therefore possible to note that the rate of condom use among students remained similar during the more than 20 years that separate the two studies. Added to this fact, the prevalence of behavioral methods associated with other contraceptive methods is highlighted. In this regard, it is relevant to question the fact that 88.3% of the students stated that the education on contraception offered in the medical course was adequate. However, the data obtained in the current study show that there is a gap in care with respect to protection against sexually transmitted infections (STIs).

Evaluating the medical student's contraceptive profile is important when data obtained show that students who value adequate contraceptive practices, as well as safe sex, are more comfortable discussing sexuality with their patients, thus transmitting knowledge and information that is so necessary today¹.

Among the limitations of the study, the difficulty of accessing the students can be mentioned. Despite the wide access to social networks, which would seem to facilitate the dissemination of the research invitation, it was noted that the students had difficulty joining, possibly due to a lack of interest. This is mainly reflected by the large difference in participation among students across the campus.

Addressing contraception not only in an academic way but also to carry out sexual health education is fundamental for advances in medical education and the creation of public policies in family planning. The medical student at the Federal University of Paraná presents heterogeneity in her socioeconomic profile. Although there is a great diversity of combinations among the contraceptive methods used, these women opt for easily accessible methods, as demonstrated by the predominance of condom and oral contraceptive pill use.

Concern about STI prevention should be encouraged, given that there are still a considerable number of students who do not use condoms. It is necessary to better understand the effects that oral hormonal contraceptives have on the vitamin profile of women of reproductive age as well as the effectiveness of vitamin supplementation in women using oral contraceptives, since there is less recent literature on the subject.

AUTHORS' CONTRIBUTIONS

JCV: Investigation, Methodology, Writing – original draft.
LGS: Writing – original draft, Writing – review & editing.
FSF: Writing – original draft, Writing – review & editing.
VFA: Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing.

REFERENCES

1. Rowen TS, Smith JF, Eisenberg ML, Breyer BN, Drey EA, Shindel AW. Contraceptive usage patterns in North American medical students. *Contraception*. 2011;83(5):459-65. <https://doi.org/10.1016/j.contraception.2010.09.011>
2. Nienkötter FE. Perfil de contracepção e efeitos colaterais relacionados ao uso de métodos contraceptivos hormonais combinados entre estudantes de medicina. repositórioanimaeducacaocombr [Internet]. 2018 [cited on Dec 16, 2022]. Available from: <https://repositorio.animaeducacao.com.br/handle/ANIMA/9371#:~:text=Houve%20associa%C3%A7%C3%A3o%20entre%20o%20uso,do%20fluxo%20menstrual%20e%20amenorreia>
3. McArthur JO, Tang H, Petocz P, Samman S. Biological variability and impact of oral contraceptives on vitamins B(6), B(12) and folate status in women of reproductive age. *Nutrients*. 2013;5(9):3634-45. <https://doi.org/10.3390/nu5093634>
4. Gabriela A, Costa S, Lima Vaz G, Roberto J, Fernandes R, Debortoli Giardini M, et al. Práticas contraceptivas entre universitárias da faculdade de medicina de valença -rj contraceptive practices between university members of the faculty of medicine of valencia -rj. *Braz J Surg Clin Res*. 2017;19(1):2317-4404.
5. Souto RD, Oliveira CRF, Candido RCL, Jesus SB, Filho EGR, Cassimiro RD, et al. Comportamento sexual dos estudantes de medicina: diferenças entre os sexos e fatores influenciadores / sexual behavior of medical students: differences between genders and influencing factors. *Braz J Dev*. 2020;6(10):76796-808. <https://doi.org/10.34117/bjdv6n10-199>
6. Sebastiani G, Borrás-Novell C, Casanova MA, Pascual Tutusaus M, Ferrero Martínez S, Gómez Roig MD, et al. The effects of alcohol and drugs of abuse on maternal nutritional profile during pregnancy. *Nutrients*. 2018;10(8):1008. <https://doi.org/10.3390/nu10081008>
7. Sorgi CM, Callegari FVR, Carbol M. Conhecimentos, atitudes e práticas de universitárias em relação aos métodos contraceptivos reversíveis de longa duração (LARC). *Medicina (Ribeirão Preto Online)*. 2019;52(3):213-22. <https://doi.org/10.11606/issn.2176-7262.v52i3p213-222>
8. Moser AM, Reggiani C, Urbanetz A. Risky sexual behavior among university students in health science courses. *Rev Assoc Med Bras (1992)*. 2007;53(2):116-21. <https://doi.org/10.1590/s0104-42302007000200014>

