Contraception use and family planning inequalities among Brazilian women

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Abstract *Background: Brazil has shown a considerable decline in fertility rates in recent decades. However, sociodemographic differences still have a direct impact on access to family planning in the country. Objective: To estimate the prevalence of contraceptive use according to sociodemographic variables among Brazilian women in reproductive age. Methods: A cross-sectional study conducted with 17,809 women who have responded to the National Health Survey. We estimated the prevalence as well as the 95% confidence intervals and we used Pearson's chi-square test at a significance level of 5% to analyze differences between groups. Results: More than 80% of the women reported to use some contraception method, the most used method was oral contraceptive (34.2%), followed by surgical (25.9%) and condoms (14.5%). Black/Brown, northerly, and low-educated women are more frequently sterilized, while white women, with higher schooling and those living in the south and southeast are the ones who use oral contraception and double protection the most. Conclusion: Despite the observed improvements, there was no decrease in the prevalence for not using any CM and there are inequalities in access to contraception in the country.*

Key words *Family planning, Public health, Women's health, Contraception, Health status disparities, Nursing*

Introduction

In recent decades, Brazil has shown a high drop in its fertility rate, as well as several Latin American countries. Data from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) have shown that the fertility rate of 6.3 children in 1960 reduced to 1.7 children per woman in 2015[1]. However, this reduction occurred differently among the social classes. First, it occurred among women who had higher schooling and who lived in urban areas. This inequality can be observed in Brazil from the 2010 Census data, which demonstrated a fertility rate of the least developed regions of the country, North and Northeast, of 2.4 and 2.0 children, respectively, while in the most developed regions, South and Southeast, they were 1.8 and 1.7 children per woman[2].

Despite this reduction, more than half of the pregnancies that occur in Brazil are not planned, according to the national survey Born in Brazil (*Nascer no Brasil*)[3]. Moreover, women who have planned their pregnancies are mostly white, with higher level of school education, over 35 years of age and in a stable relationship[4].

The demand for family planning satisfied (DFPS) indicator evaluates women who use some Contraceptive Method (CM) among those who need to use, i.e., fertile women who do not want to become pregnant in the next two years or are not sure if they want[5]. A recent research has shown that, in Brazil, the rate of DFPS among married or in stable union women was the second highest in Latin America (94.7%)[6]. However, this is a result that is limited to married women, not constituting even half of the female population of childbearing age in Brazil[7].

A study conducted in 2018 with data from 77 countries showed that the lowest levels of DFPS indicator occur among younger, poorer women and living in rural areas. This result shows that women with socioeconomic criteria who place them in a position of vulnerability are more prone to not using any CM and, consequently, have unplanned pregnancies. In addition, it evidences the need to include all women in the Reproductive Planning (RP) researches. In this research, Brazil was not considered,[8] probably due to limited data from the most recent national surveys on the subject.

In addition to the use, the ranking of the CMs, which lists the most used CMs, varies according to the socioeconomic conditions and cultural aspects of the population. In Mexico, for instance,

among the most widely used methods are the surgical ones in the female population and the Intrauterine Device (IUD)[9]. In the United Arab Emirates, condoms lead the ranking, followed by the IUD and the withdrawal method. Vasectomy does not rank in this country, which reinforces gender inequality[10].

It is also noteworthy that the National Survey of Demography and Health of Children and Women (*Pesquisa Nacional de Demografia e Saúde da Criança e da Mulher*, PNDS), 2006, was the last national survey which considered the RP as a structuring objective. However, in their publications, only women with a partner were considered to investigate the use of contraception methods in relation to their sociodemographic conditions[11], disregarding women without partners who would also benefit from contraception.

RP actions are important health interventions because the use of CMs and, consequently, the reduction in family size leads to a reduction in morbidity and mortality[12]. In Brazil, maternal mortality due to abortion complications is the fifth leading cause of death in the country[13]. Data from the 2016 National Abortion Survey showed that 13% of the women interviewed had an abortion due to unwanted pregnancies[14].

Identifying the coverage indicators, such as the proportion of people receiving the service they need[12] becomes critical for formulating public health policies aimed at maternal and child welfare[10]. In this case, we are considering all women of childbearing age, regardless of their marital status.

We believe that analyzing the prevalence of use and ranking of the CMs, according to sociodemographic characteristics, as proposed in this study, allows investigating important differences in the RP of Brazilian women. Therefore, the objectives were to estimate the prevalence of CM use, to enumerate the reasons for not using them, to show which methods are most commonly used and the prevalence of CM use, according to the sociodemographic variables among Brazilian women of reproductive age.

Material and methods

Study type and data source

This is a population-based cross-sectional study that used secondary data from the National Health Survey (NHS) for the "R Module" which contains information on Women's Health,

Reproductive Planning and Contraception and is publicly available in: https://ww2.ibge.gov.br/home/estatistica/populacao/pns/2013/default.shtm.

National Health Survey 2013 (NHS-2013)

The NHS is the most current and complete health survey, conducted in households across the country, in partnership with the IBGE, the Oswaldo Cruz Foundation (FIOCRUZ) and the Ministry of Health (MoH). Its main objective was to produce data regarding the health issues of the Brazilians, such as lifestyle, health status, access to services, health promotion, and continuity of care, among others[15].

Data collection occurred between 2012 and 2013 and the sampling plan included three stages: the first referred to Primary Sampling Units (PSUs); the second, to the draw of households; and the third, to the choice of an individual over 18 years old. At each stage, the draw was conducted by simple random sampling. The research used three questionnaires, one about the characteristics of the housing, another including their residents and the third with information of the elected resident.[16] The considered PSUs are part of a subsample of the IBGE Master Sample and the selection of municipalities was performed according to the most recent National Address Book for Statistical Purposes (*Cadastro Nacional de Endereço para Fins Estatísticos*, CNEFE) in the survey year[17].

The survey questions were separated into modules from "A" to "X". We used the questions from the "R" module regarding women's health, in which women were questioned with topics such as cervical cancer screening, mammography, menstruation and menopause, reproductive history and family planning and contraception. We also used questions from modules "A" (Household Information), "C" (General Characteristics of Residents), "D" (Education Characteristics of people 5 years of age and over) and "I" (Health Insurance Coverage)for information on sociodemographic characteristics[15].

Population

The survey included 60,202 individuals over 18 years old. Of these, 34,282 were women, of which 22,621 were in their reproductive age (18 to 49 years old). Women who reported not menstruating (n = 998) and not having sex in the last 12 months (n = 3,155) were excluded, totaling 17,809 women studied (Figure 1).

Therefore, the exclusion criteria of this study are based on the fact that these women were not exposed to the possibility of becoming pregnant. That is, those who have had hysterectomy, are in menopause or never menstruated and those who declared not sexually active[8].

The MoH defines childbearing age women as those between 10 and 49 years old[18]. However, the survey included only women over 18 years old and has data from women up to 49 years, so we defined the age group of women of reproductive age as those from 18 to 49 years old.

Dependent variables

The studied variables were the use and non-use of any contraceptive method. For the use, CMs were separated into seven categories. The first consisted of the definitive methods, that is, sterilization surgeries (tubal ligation and vasectomy). Then, the hormonal methods were segregated between the oral contraceptives and the other hormonal methods (injectable contraceptive and intradermal implant)[6,8,10]. The fourth and fifth groups originated from methods that, in addition to contraception, also prevent sexually transmitted infections (STIs): condoms (female and male) and double protection (combination of hormonal methods or Intrauterine Device or diaphragm or cream/ovum with any of the condoms)[19]. The sixth category is the Intrauterine Device (IUD). Finally, a large group called the other contraceptive methods was created, consisting of the traditional method known as calendar rhythm, low adherence methods (cream/ovum and diaphragm), emergency contraceptive pills, other methods cited by woman who was not an option in the questionnaire and other combinations that do not configure double protection[6,8,10].

Independent variables

The independent variables used were the following: region of Brazil (North, Northeast, Midwest, Southeast and South), housing area (rural or urban), marital status (with or without partner), skin color/race (white, black/brown and yellow/indigenous), age (18 to 24 years old, 25 to 34 years old and 35 to 49 years old), education (0 to 8 years of schooling, 9 to 11, 12 or more) and health insurance (yes or no).
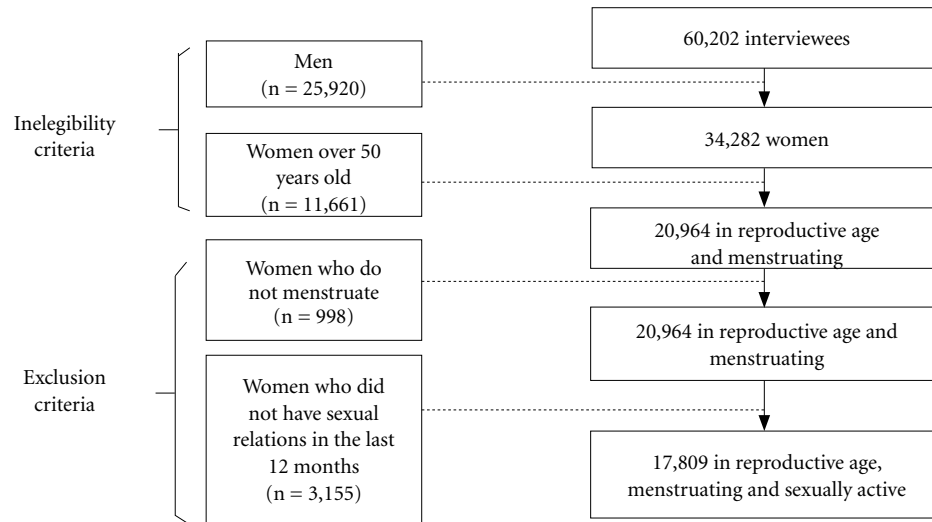
Figure 1. Flowchart of the studied population.

Source: Authors' elaboration.

Data analysis

Initially, we estimated the prevalence of CM use in the population of Brazilian women in reproductive age. Then, we estimated the prevalence of the reasons for not using the methods and then the ranking of contraception methods in descending order of use was defined. At the end, prevalence of use in relation to sociodemographic variables was analyzed. For each prevalence, 95% confidence intervals (95% CIs) were estimated and the Pearson's chi-square test (p < 0.05) was applied.

Through the statistical program *Stata* version 15.0, and the *survey* module commands, we considered the weights, PSUs and conglomerates, maintaining the representativeness of the samples.

Ethical aspects

The NHS was approved in 2013 by the National Committee of Ethics in Research for Human Beings of the Ministry of Health, under opinion No. 749/2006. The confidentiality of all participants was preserved and all agreed with the research by signing the free and informed consent form. Our study uses secondary, de-identified data and with publicly available information, which according to Resolution No. 466 of December 12th, 2012 does not require prior approval by the Ethics Committee.

Results

More than 80% of the women reported using some contraceptive method. Of the 17,809 women, aged 18 to 49 years old, who menstruate and are sexually active, 17.6% (n = 3,181) said they did not use any CM. The main reason given for not using contraceptives was willingness or not caring about getting pregnant (37.3%). Also noteworthy is the fact that 3.7% of the Brazilian women do not avoid pregnancy, because they do not know how to do so, where to go, or who to look for counseling (Table 1).

Therefore, 82.4% (n = 14,628) of the studied women reported using some contraception method. Among these, 34.2% reported the use of oral hormonal contraceptives, the method most used by Brazilian women, followed by surgical ones (25.9%) (Table 2).

Then, the CM ranking was observed according to the independent variables. We observed differences according to the sociodemographic characteristics of women (Table 3).

Table 1. Reasons for not using contraception among Brazilian women of reproductive age (18 to 49 years old).

Reason	n*	%**	95% CI***
Wants to get pregnant or doesn't mind getting pregnant	1,251	37.3	34.5-40.2
Other reasons****	855	30.6	27.7-33.7
Currently pregnant	602	16.3	14.3-18.6
Does not have sexual relations with men	233	8.0	6.4-10.1
Religious reasons	117	4.1	3.0-5.6
Not sure how to avoid	73	2.6	1.7-3.9
Not sure where to go or who to look for counseling	50	1.1	1.0-1.7

*sample; **population prevalence; ***95% confidence interval; ****other reasons specified by the woman not available in the questionnaire.

Source: Authors' elaboration.

Table 2. Ranking for the contraceptive methods used by Brazilian women in their reproductive age (18 to 49 years old).

Contraceptive Method	n*	%**	95% CI***
Oral contraceptive	4,235	34.2	32.9-35.6
Surgical[1]	4,084	25.9	24.6-27.2
Condoms[2]	2,579	14.5	13.5-15.5
Double protection[3]	1,455	9.8	8.9-10.7
Other methods[4]	1,088	7.8	7.1-8.6
Other hormonal[5]	924	6.0	5.4-6.7
IUD[6]	263	1.8	1.5-2.3
Total	14,628	100	-

*sample; **population prevalence; ***95% confidence interval.

[1]Surgical: tubal ligation and vasectomy; [2]condoms: female and male condom; [3]double protection: combination of condoms and hormonal methods, diaphragm, IUD or cream/ovum; [4]other methods: calendar rhythm method, ovum/cream, diaphragm, contraceptive emergency pill, other methods, and other combinations that do not configure double protection; [5]other hormonal: injectable and intradermal implant; [6] IUD: intrauterine device.

Source: Authors' elaboration.

The southeast region follows the same national ranking. In the Midwest, the most commonly used methods are surgical (34.4%), instead of the oral contraceptives (32.0%). In the North and Northeast Regions, sterilizations also lead the ranking, but northerners use more condoms (23.6%) than oral contraceptives (16.5%). In the South region there are significant peculiarities, since the oral contraceptives (OC) is the most used method (44.7%), followed by condoms (13.8%) and the double protection (13.6%). The surgical methods appear in fourth place in this region (13.4%).

Women who live in the urban zone followed the ranking of Brazil. Those in rural areas use double protection less, almost twice less, when compared to the national prevalence and the women in urban areas.

Regarding marital status, women living with a partner use less double protection, twice less than women without a partner. Injectable contraceptives and implants have greater adherence in the group of single women. In both marital conditions, the IUD has the same low prevalence (1.1%).

Regarding skin color, white women follow the ranking of Brazil. Black and brown, by a difference of 0.1%, are more sterilized than using oral contraceptives. Women who declared themselves yellow and indigenous use little double protection, since this method was the sixth in their ranking.

Women aged 25-34 years old follow the national ranking, and women aged 35-49 years old use almost twice as much surgical methods as the OC. Younger women use more condoms since,

Table 3. Use of contraceptive methods by Brazilian women of reproductive age (18 to 49 years old) according to their sociodemographic variables.

Sociodemographic variables	Oral contraceptive %*[R]*** 95% CI**	Surgical[1] %* [R]*** 95% CI**	Condoms[2] %* [R]*** 95% CI**	Double protection[3] %* [R]*** 95% CI**	Other methods[4] %* [R]*** 95% CI**	Other hormonal[5] %*[R]*** 95% CI**	IUD[6] % *[R]*** 95% CI**	p****
Region								< 0.0001
North	16.5%[3]	32.5%[1]	23.6%[2]	9.1%[5]	10.0%[4]	7.7%[6]	0.6%[7]	
	14.4-18.8	29.4-35.8	20.9-26.6	7.6-10.8	7.8-12.7	6.3-9.3	0.4-1.1	
Northeast	27.1%[2]	35.7%[1]	15.3%[3]	6.9%[5]	6.9%[6]	7.4%[4]	0.9%[7]	
	24.9-29.4	33.2-38.2	13.6-17.0	5.9-8.1	5.6-8.3	6.2-8.7	0.6-1.2	
Midwest	32.0%[2]	34.4%[1]	12.0%[3]	8.9%[4]	6.5%[5]	5.1%[6]	1.1%[7]	
	28.8-35.3	31.4-37.5	10.3-14.0	7.3-10.8	5.2-8.2	4.0-6.5	0.8-1.6	
Southeast	38.6%[1]	21.5%[2]	12.9%[3]	10.9%[4]	7.9%[5]	5.6%[6]	2.6%[7]	
	36.2-41.1	19.3-24.0	11.2-14.7	9.2-12.8	6.6-9.4	4.6-7.0	1.9-3.5	
South	44.7%[1]	13.4%[4]	13.8%[2]	13.6%[3]	7.5%[5]	4.5%[6]	2.5%[7]	
	41.4-48.1	11.3-15.8	11.3-16.7	11.4-16.1	5.9-9.5	3.2-6.2	1.7-3.8	
Living zone								< 0.0001
Urban	34.0%[1]	24.7%[2]	14.9%[3]	10.5%[4]	7.7%[5]	6.3%[6]	2.0%[7]	
	32.6-35.5	23.3-26.1	13.8-16.0	9.6-11.6	6.9-8.5	5.6-7.1	1.6-2.4	
Rural	35.8%[1]	34.4%[2]	11.6%[3]	5.8%[5]	7.3%[4]	4.1%[6]	1.0%[7]	
	32.6-39.1	31.2-37.8	9.9-13.6	4.5-7.4	5.3-10.1	2.9-5.7	0.5-2.2	
Marital status								< 0.0001
Has a partner	35.3%[1]	32.6%[2]	12.1%[3]	5.2%[5]	7.8%[4]	4.4%[6]	1.1%[7]	
	33.2-37.4	30.5-34.7	10.9-13.4	4.3-6.2	6.7-9.1	3.6-5.4	0.8-1.6	
No partner	33.4%[1]	20.6%[2]	16.3%[3]	13.8%[4]	7.5%[6]	7.3%[5]	1.1%[7]	
	31.6-35.3	19.2-22.1	15.0-17.8	12.4-15.3	6.5-8.5	6.4-8.4	0.8-1.6	
Skin color								< 0.0001
White	39.0%[1]	21.2%[2]	13.6%[3]	11.3%[4]	7.9%[5]	4.2%[6]	2.9%[7]	
	36.7-41.2	19.5-22.9	12.2-15.3	9.8-12.9	6.8-9.2	3.4-5.1	2.2-3.8	
Black/brown	30.1%[2]	30.2%[1]	15.1%[3]	8.9%[4]	7.2%[6]	7.6%[5]	1.0%[7]	
	28.4-31.8	28.4-31.9	13.9-16.5	7.9-9.9	6.4-8.2	6.6-8.7	0.7-1.4	
Yellow/indian	32.7%[1]	23.3%[2]	15.4%[3]	7.2%[6]	12.0%[4]	8.8%[5]	0.6%[7]	
	22.3-45.1	15.8-33.1	9.7-23.5	4.3-11.9	5.1-25.8	4.9-15.1	0.2-2.0	

it continues

when combined with the use of condoms and double protection, the prevalence reaches almost 36%, while that of older women is 17.6%. Women aged 18 to 24 have only a 0.3% prevalence of IUD.

Women who studied from 9 to 11 years follow the national ranking, while the most educated women use the IUD more than other women. Comparing them with those with less education, this difference is six-fold. Women with a lower education level use sterilization more (39.7%) than other CMs.

Having or not health insurance does not change the CM ranking since, in both cases, the national standard is followed. However, there are important differences in the prevalences. For instance, the IUD is used almost four times as often by those with health insurance compared to those without.

Discussion

Our study showed that most Brazilian women use some method of contraception and the reason most answered by those who do not use was wanting or not caring about pregnancy. Current-

Tabela 3. Uso dos métodos contraceptivos pelas brasileiras em idade reprodutiva (18 a 49 anos) segundo suas variáveis sociodemográficas.

Sociodemographic variables	Oral contraceptive %*[R]*** 95% CI**	Surgical[1] %* [R]*** 95% CI**	Condoms[2] %* [R]*** 95% CI**	Double protection[3] %* [R]*** 95% CI**	Other methods[4] %* [R]*** 95% CI**	Other hormonal[5] %*[R]*** 95% CI**	IUD[6] % *[R]*** 95% CI**	p****
Age								< 0.0001
18-24 years old	43.5%[1]	1.7%[6]	17.4%[3]	18.3%[2]	8.3%[5]	10.5%[4]	0.3%[7]	
	39.8-47.2	1.1-2.6	15.0-20.2	15.5-21.4	6.8-10.1	8.6-12.7	0.2-0.6	
25-34 years old	40.7%[1]	18.1%[2]	14.3%[3]	10.9%[4]	7.1%[5]	7.2%[6]	1.7%[7]	
	38.5-43.0	16.4-19.8	12.9-15.9	9.7-12.4	6.0-8.4	6.1-8.4	1.2-2.3	
35-49 years old	24.0%[2]	45.2%[1]	12.8%[3]	4.8%[5]	7.6%[4]	2.76%[6]	2.77%[7]	
	22.1-26.1	43.0-47.5	11.5-14.3	4.0-5.8	6.6-8.8	2.2-3.5	2.1-3.7	
Schooling (in years)								< 0.0001
0-8	30.0%[2]	39.7%[1]	11.4%[3]	5.8[5]	6.6%[4]	5.7%[6]	0.8%[6]	
	27.9-32.3	37.3-42.1	10.2-12.8	4.8-6.9	5.6-7.9	4.8-6.8	0.5-1.2	
9-11	36.3%[1]	19.5%[2]	16.2%[3]	11.7%[4]	7.5%[5]	7.2%[6]	1.5%[7]	
	34.4-38.2	18.0-21.2	14.8-17.8	10.4-13.1	6.5-8.7	6.2-8.3	1.0-2.3	
12 or more	36.9%[1]	16.0%[2]	15.4%[3]	13.6%[4]	10.0%[5]	3.1%[7]	5.1%[6]	
	33.3-40.6	13.6-18.6	12.9-18.2	10.8-16.8	7.9-12.7	2.1-4.5	3.8-6.9	
Health insurance								< 0.0001
Yes	36.8%[1]	20.8%[2]	14.2%[3]	11.5%[4]	8.4%[5]	4.6%[6]	3.8%[7]	
	34.3-39.4	18.6-23.2	12.5-16.0	9.8-13.5	7.0-10.0	3.6-5.9	2.8-5.1	
No	33.0%[1]	28.2%[2]	14.6%[3]	9.2%[4]	7.3%[5]	6.7%[6]	1.0%[7]	
	31.5-34.7	26.7-29.8	13.5-15.8	8.3-10.2	6.5-8.2	5.9-7.6	0.7-1.3	

*population prevalence; **95% confidence interval; ***[R] Ranking position of contraceptive methods; *****p of Pearson's chi-square test.

[1]Surgical: tubal ligation and vasectomy; [2]condoms: female and male condom; [3]double protection: combination of condoms and hormonal methods, diaphragm, IUD or cream/ovum; [4]other methods: calendar rhythm method, ovum/cream, diaphragm, contraceptive emergency pill, other methods, and other combinations that do not configure double protection; [5]other hormonal: injectable and intradermal implant; [6]IUD: intrauterine device.

Source: Authors' elaboration.

ly, the oral contraceptive is the most used method by women and the least used is the IUD among the studied categories. We can also infer that the type of method used by the women is related to their socioeconomic status.

Even though a large proportion of women use contraception, more than half of pregnancies in Brazil are unplanned and/or unwanted[3]. A possible explanation for this inconsistency would be that the methods found to be the most used are the short-term ones, that is, they depend on the user to ensure their effectiveness, which can lead to failures. This high prevalence by temporary methods with poor durability, such as oral contraceptives, condoms, diaphragm, calendar rhythm method, emergency contraceptive pills, among others, was also evidenced in a previous study that evaluated contraception in Latin American countries[6].

Most women who do not use contraception have no indication at all, since they do not care or want to have a pregnancy. In addition, a small portion of Brazilian women does not use any CM, because they do not know where to go, whom to look for information, or do not know how to use it. This allows us to conclude that failures in reproductive planning remains in our country, as the service does not reach all women.

There are gaps to be filled in public policies, as the latest programmatic strategies towards the sexual and reproductive health of Brazilian women were *Rede Cegonha*, from 2011 and the National Policies Plan for Women (*Plano Nacional de Políticas para as Mulheres*, PNPM) from 2013 to 2015. Another important fact was that in 2019 for the first time a World Health Organization (WHO) document, which made commitments on the sexual and reproductive health of popu-

lations with other countries, was not signed by Brazil;[20] which could be considered a milestone of the various setbacks most recently experienced in this field in the country.

We should also consider that the improvements obtained in the area of Sexual Health and Reproductive Health are due to previous structuring public policies, such as "More Health: Everyone's Right", which was part of the 2007 Growth Acceleration Program (*Programa de Aceleração do Crescimento*, PAC). This was responsible for expanding reproductive planning actions in the country[21] and by the inversion of the first with second place in the national CM ranking compared to the 2006 PNDS results[11]. The 2003 Secretariat of Policies for Women (*Secretaria de Políticas para as Mulheres, SPM*) also plays an important role in these advances. In 2005, this department has created the PNPM, whose main objective was to strengthen the coordination and articulation of policies to promote gender equality. In 2013, the PNPM was revisited and revised (2013-2015), implementing in one of its lines of action the reproductive planning assistance of Brazilians in full, as well as promoting the sexual and reproductive rights of women, intersectorally[22]. However, in 2016, drastic budget cuts were made in the Women's Health Sector and since then the PNPM has not been renewed[23]. Most recently, through Decree No. 9.417 of June 20th, 2018[24], SPW was transferred to the Ministry of Women, Family and Human Rights. These changes result in the loss of women's health space in Brazilian public policies, which can generate significant impacts on RP, an area which should be constantly monitored in the country.

Regarding the types of contraception methods used, the surgical methods, which previously topped the ranking[11], have now lost their post to oral contraceptives. Industrialization, insertion of women in the labor market, higher education, urbanization, female empowerment and the desire to control the menstrual cycle are some hypotheses for the greater adherence of women to the oral contraceptives[25]. The pills are effective if taken correctly, are practical and do not interfere with the couple's sexual life[26]. In addition, they are easily purchased at the pharmacy counter in Brazil and are available free of charge from the Unified Health System (*Sistema Único de Saúde*, SUS) public service.

Hormone use has increased in Brazil because the latest research on RP has shown that approximately one in five women aged 15 to 49 years old used the pills[11]. At present, it was evidenced that one in three use this method and approximately half of the Brazilian women use some type of hormone (oral, injectable or local, such as the implant) to prevent pregnancy. On the other hand, as presented earlier, these methods are mostly short term and depend on correct and consistent use by the user[27]. In addition, there is evidence of side effects and physiological changes in the woman's body caused by prolonged use of the OCs[26]. In Brazil, around 20% of the women using the OC have been shown they should not use, as they had some contraindication[28]. This fact reinforces that the female body, even when not indicated, is frequently medicalized.

The decline in surgical methods is an important indicator as it points out that women are currently having more information and options to choose from other equally effective but reversible methods. In addition, the most vulnerable women are more frequently submitted to sterilization, since those who use surgical methods the most are those from the North region, those who live in rural areas, black or brown, with less education, and who do not have any health insurance.

We found that only one in four Brazilian women use condoms, which reveals that sexually active women do not use STIs protection in their sexual relations frequently. The results of unprotected sex in the Brazilian scenario are perceptive. In 2017, there were the highest number of newly diagnosed HIV cases in recent years, totaling 42,420 people[29]. Acquired syphilis has also increased dramatically. In 2010, the disease rate was 2%, seven years later it was 58.1%, an increase of over 50%[30].

Double protection is the most effective and effective method against unexpected pregnancies and STIs, since it is the combination of condom use with some modern CM[31]. Our results show, on the one hand, that double protection was more used by women from the South, from the urban area, white, with higher education and health insurance. On the other hand, those who use less are those who lived in the Northeast, in the rural area, black and brown, with less education and without health insurance. Thus, it can be verified that there are differences in access and information according to the socioeconomic and demographic group in which the woman is inserted.

Women in the North and Northeast Regions are the ones who only use condoms in their relationships. Black, brown, yellow and indigenous women also use this method more than white women. Condoms do not require a prescription,

they are easily found in the SUS and, compared to other methods, are simpler to use[31]. Thus, we can infer that these women use more condoms not because it is the only method that prevents STIs or because they choose it, but because it is the most accessible, since the North and Northeast regions have less access to social resources, thus having a higher vulnerability index.

The so-called "other methods" of contraception addressed in this paper are in the fifth position in the ranking with a prevalence of almost 8%, surpassing the other hormonal methods and the IUD. This category is composed of ineffective methods and combinations of two or more methods that do not bring any benefit to the user, and these combinations are considered incoherent[31]. Not surprisingly, this category is most commonly used by women living in one of the regions with the least access to the goods and services of Brazilian society: the North region. This fact reinforces the need for improvements in the RP service of these Brazilian women, since we assume that these incoherent choices are made by lack of information or not relying on just one method. The nurse is responsible for promoting educational practices, counseling and clinical activities that empower, through information, men and women in the decision to reproduce or not[3], which may be failed in the services.

In this study, we observed that the region and the area of residence are related to the CM used by women, as well as having health insurance, skin color/race and education. This relationship occurs in the sense that Brazilian women with some degree of social vulnerability are doubly harmed. That is, there is a social vulnerability indirectly measured by sociodemographic characteristics, the greatest vulnerability in relation to RP. These health inequalities may be exemplified by the fact that women with low education have a pattern of contraception closer to women living in low-income countries, although the ranking of all women remains far from the one found in rich and developed countries[5,6,10,32].

One explanation for this may be the limitation of the ability to choose between different alternatives arising from the vulnerable life situation in the individual context[33], once the right to choose is a key concept that should underpin the RP service[34]. It is known that the SUS equity principle aims to offer more to those who have less[19]. With the health inequities pointed out in this study, we may conclude that this principle needs to be taken up more sharply when offering RP to women with social vulnerabilities, since they are the ones who most need them.

The contraceptive methods called LARC are those that have long duration and are reversible, and their effectiveness is not entirely dependent on the user[27]. The LARCs are considered highly effective and economical, but even with so many benefits, they are mostly used by women with higher incomes and health insurance[6], which was also found in this study.

The IUD is an example of a LARC, but only two out of 100 Brazilian women use it as a CM. Even when the SUS is making the copper IUD available to users, there are possibly obstacles to its use. In this context, some hypotheses are following ahead: myths about its efficacy and functioning, false contraindication criteria, need for specialized professionals for its insertion[35], religious issues, difficult access to exams and follow-up appointments, and lack of information about the benefits and action.

This research has some limitations, such as the various combinations of two or more methods considered incoherent. Besides the hypothesis on lack of information, we may infer the survey question did not limited to the CM used at the interview moment, which can generate misunderstandings. Another fact was that tubal ligation and vasectomy were not included in the questionnaire as CM, but as reasons for not avoiding pregnancy. In addition to this misconception, as surgical methods are methods of contraception[6,8], it has prevented their relation with the use of condoms, which would configure a double protection as well. Another flaw in the questionnaire was the fact that lesbians cannot answer about condom use in their sexual relations, contradicting the 2013 National Lesbian, Gay, Bisexual, Transvestite and Transgender Health Policy[36]. The impossibility of evaluating the answers to the questions about the reasons for not using CMs and the CM type being used, when opened, was also a weakness. Finally, it was not possible to know what was the composition of the oral contraceptives and injectables, nor the class of the IUD. These limitations of the questionnaire should be considered to advance future national surveys that include the RP theme. Another limitation was that women 15 to 17 years old were not included and there may be an overestimation of use, as they generally use less CMs[37]. Despite these limitations, it was possible to develop the research through the creation of broader CM categories.

Conclusions

We observed important changes in the national ranking, mainly due to the decrease in the prevalence of the use of definitive methods, although it is still far from the rankings found in first world countries, in which long-term methods are most frequently used. The methods used by Brazilian women are directly related to their socioeconomic and demographic variables. In addition, there was no decrease in CM non-usage prevalence and there are inequalities in access to contraception in the country. Thus, Brazil needs to invest more in public policies that expand access and knowledge in the field of sexual and reproductive health for those women who need it most. We also conclude that it is necessary to expand LARC methods' reach in the SUS, through more information about its advantages, functioning and training of health professionals to increase the offer of the method.

Collaborators

RE Trindade supported the study's design, conducted the analysis and interpretation of data, spearheaded the writing of the first version, participated in critical reviews, and prepared the final version. BB Siqueira and TF Paula participated in analyzing and interpreting data, writing the first version, and critical reviews of the paper. MS Felisbino-Mendes performed the study outline, design, supervised the analysis and interpretation of data, wrote the first version, participated in critical reviews of the paper and contributed to editing and preparing the final version. All authors approved the final version of the manuscript.

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