



## PRENATAL CARE ACCESS IN BRAZIL: ANALYSIS OF THE NATIONAL HEALTH RESEARCH DATA

*Acesso à assistência pré-natal no Brasil: análise dos dados da Pesquisa Nacional de Saúde*

*Accesibilidad a la atención prenatal en Brasil: análisis de los datos de la Encuesta Nacional de Salud*

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### ABSTRACT

**Objective:** To analyze the access to prenatal care in Brazil based on data from the 2013 National Health Survey (Pesquisa Nacional de Saúde - PNS). **Methods:** Cross-sectional study with descriptive analysis of the 2013 PNS data, retrieved from DATASUS between December 2016 and January 2017. Respondents to the survey were women aged 18 to 49 years who gave birth between 01/01/2012 and 07/27/2013. Prenatal coverage was defined by the proportion of women who responded positively to the question: "The last time you were pregnant, did you get prenatal care?" Data on prenatal care, age, skin color, education, counseling, receiving the prenatal care card, consultations held, and childbirth assistance by region or federated unit were collected from December 2016 to January 2017. **Results:** There was a high coverage of prenatal follow-up (97.4% 95% CI 96.5-98.4), with delivery of the prenatal card (95.3% 95% CI 93.6-97.0) and initiation under 13 gestational weeks (83.7% 95% CI 80.7-86.6), but a low proportion of pregnant women with all counseling (69.2% 95% CI 65.5-72.9) and syphilis tests (64.6% 95% CI 61.0-68.7). Among the pregnant women who got prenatal care, 69.33% indicated that all consultations were made through the Unified Health System. The North and Northeast Regions presented a higher proportion of vaginal delivery, but a lower number of prenatal consultations per pregnant woman. **Conclusion:** Despite the high coverage of prenatal care in Brazil, the indicators show that there are still inadequacies in the access to the service.

**Descriptors:** Prenatal care; Women's Health; Access to Health Services; Evaluation of health programs and projects.

### RESUMO

**Objetivo:** Analisar o acesso à assistência pré-natal no Brasil a partir dos dados da Pesquisa Nacional de Saúde (PNS) de 2013. **Métodos:** Estudo transversal com análise descritiva dos dados da PNS 2013, coletados no DATASUS entre dezembro de 2016 e janeiro de 2017. Responderam à pesquisa mulheres de 18 a 49 anos de idade que tiveram algum parto entre 01/01/2012 a 27/07/2013. A cobertura do pré-natal foi definida pela proporção de mulheres que responderam positivamente ao questionamento: "Na última vez que a senhora esteve grávida, a senhora fez pré-natal?". Os dados coletados foram: assistência pré-natal, idade, cor da pele, grau de instrução, aconselhamentos, recebimento do cartão pré-natal, consultas realizadas, assistência ao parto por região ou unidade da federação. **Resultados:** Houve elevada cobertura do acompanhamento pré-natal (97,4% IC95% 96,5-98,4), com entrega do cartão pré-natal (95,3% IC95% 93,6-97,0) e início de pré-natal com menos de 13 semanas de gestação (83,7% IC95% 80,7-86,6), porém baixa proporção de gestantes com todos os aconselhamentos (69,2% IC95% 65,5-72,9) e com exames para Sífilis (64,8% IC95% 61,0-68,7). Entre as que realizaram o pré-natal, 69,33% das gestantes indicaram que todas as consultas foram feitas através do Sistema Único de Saúde. As regiões Norte e Nordeste apresentaram maior proporção de partos vaginais, porém menor número de consultas de pré-natal por gestante. **Conclusão:** Apesar de elevada cobertura da assistência pré-natal no Brasil, os indicadores mostram que ainda há inadequações no acesso ao serviço.

**Descritores:** Cuidado Pré-Natal; Saúde da Mulher; Acesso aos Serviços de Saúde; Avaliação de Programas e Projetos de Saúde.



## RESUMEN

**Objetivo:** Analizar la accesibilidad a la atención prenatal en Brasil con los datos de la Encuesta Nacional de Salud (ENS) de 2013. **Métodos:** Estudio transversal con análisis descriptivo de los datos de la ENS de 2013 recogidos del DATASUS entre diciembre de 2016 y enero de 2017. Contestaron a la encuesta las mujeres entre 18 y 49 años de edad que realizaron parto entre 01/01/2012 y 27/07/2013. La cobertura del prenatal ha sido definida por la proporción de mujeres que contestaron positivamente a la pregunta: "Has realizado el prenatal en su último embarazo?" Fueron recogidos datos de la atención prenatal, la edad, el color de la piel, el grado de escolaridad, los consejos recibidos, el recibimiento de la tarjeta prenatal, las consultas realizadas, la atención al parto por región o unidad de la federación. **Resultados:** Hubo elevada cobertura del seguimiento prenatal (97,4% IC95% 96,5-98,4), con la entrega de la tarjeta de prenatal (95,3% IC95% 93,6-97,0) y el inicio del prenatal con menos de 13 semanas de embarazo (83,7% IC95% 80,7-86,6), sin embargo, baja proporción de embarazadas ha recibido todos los consejos (69,2% IC95% 65,5-72,9) y tenía las pruebas de sífilis (64,8% IC95% 61,0-68,7). Entre las que han realizado el prenatal, el 69,33% de las embarazadas indicó que todas las consultas han sido realizadas por el Sistema Único de Salud. Las regiones Norte y Noreste presentaron más proporción de partos vaginales pero menos cantidad de consultas de prenatal para cada embarazada. **Conclusión:** Pese a que haya una elevada cobertura de la atención prenatal en Brasil, los indicadores señalan que todavía hay inadecuaciones para el acceso al servicio.

**Descriptor:** Atención Prenatal; Salud de la Mujer; Accesibilidad a los Servicios de Salud; Evaluación de Programas y Proyectos de Salud.

## INTRODUCTION

Every minute a woman dies because of pregnancy and childbirth complications, and for every woman who dies, thirty others suffer from sequelae or chronic health problems<sup>(1,2)</sup>. Despite the estimated 45% decline in the worldwide maternal mortality, there is a disproportion between maternal mortality rates, which, in 2013, were 14-fold higher in developing regions compared to developed ones. Brazil had a maternal mortality rate of 120/100,000 live births (NV) in 1990, 85/100,000 NV in 2000, and 69/100,000 NV in 2013. Brazil is classified as "progressing" with regard to the improvement in maternal health, given the annual decline in the maternal mortality rate<sup>(3)</sup>.

Reduction in maternal mortality is part of the eight Millennium Development Goals adopted by the United Nations, with an agreement of a 75% reduction by the year 2015 and, in order to achieve this goal, a 5.5 % reduction per year<sup>(4,5)</sup>. Despite the considerable reduction in maternal mortality recorded in Brazil over the past two decades<sup>(6)</sup>, it appears that the situation of maternal mortality has experienced a stagnation since 2002<sup>(7)</sup>. Between 1990 and 2013, the country reduced the maternal mortality rate by 43%.

By the end of the first decade of the 2000s, there was a relative consensus that maternal mortality could be reduced by strengthening health systems in order to provide integrated, continuous and quality services for women during and after pregnancy, both in routine and emergency care<sup>(1,5)</sup>.

The implementation of the Prenatal and Birth Humanization Program (*Programa de Humanização do Pré-Natal e Nascimento - PHPN*) in 2000, by the Ministry of Health, and the institution, in 2011, of the Stork Network (*Rede Cegonha*, in its original Portuguese denomination), a program that structures and organizes maternal and child health care in Brazil, featuring prenatal care as one of its components, has impacted the country's indicators of access to prenatal care<sup>(1,8-10)</sup>. For effective prenatal care, it is essential to perform the recommended number of consultations, the early identification of all pregnant women in the community, the early start of prenatal care in the first trimester of pregnancy, the registration of the pregnant woman in SisPreNatal, the provision and completion of the prenatal card, the clarification on the immunization schedule and the recommended examinations, among other actions for health promotion<sup>(8,9)</sup>.

Prenatal quality assessment can be carried out by means of criteria that gauge the access, although they should consider not only the number of consultations, or the gestational age at the beginning of follow-up, but the adequacy of the content of the care provided, in addition to the inequalities in access between Brazilian regions and among population groups<sup>(11)</sup>.

However, the Brazilian reality evidences the existence of failures in prenatal care, such as difficulties in access, delayed entry, inadequate number of consultations, and incomplete implementation of the recommended procedures, which affect its quality and effectiveness. Another problem that has been identified is the lack of a link between services providing prenatal care and childbirth care, causing the pregnant woman in labor to go on a peregrination in search of a place for hospitalization, thus posing additional risks to the health of the parturient and the newborn<sup>(12)</sup>.

In general, studies show that prenatal care coverage has increased over the past 10 years in most of the country and might exceed 90% coverage, despite the persistence of a high level of inadequacy and marked regional and social disparities in the coverage and quality of services offered<sup>(12-17)</sup>. On the other hand, the studies have diverged on the coverage regarding the access to prenatal care in Brazil, according to the regions of the study, because of the difference in the target population analyzed, besides the different indicators used to gauge the quality of care<sup>(14)</sup>.

Evaluation of the prenatal care process is important for improvement of the quality of services and is indispensable to promote a reduction in maternal and perinatal mortality rates, especially in Brazil, where social, economic and regional inequalities, and inequalities in the access to health services are observed. This evaluation constitutes an important tool that can help to establish more effective public policies, and in line with the territorial reality. Identifying inequalities is a key aspect of monitoring and assessment of women's health care policies.

Within this context, this study aims at analyzing the access to prenatal care in Brazil based on data from the 2013 National Health Survey (*Pesquisa Nacional de Saúde - PNS*).

## METHODS

Descriptive cross-sectional study with data from the 2013 National Health Survey (*Pesquisa Nacional de Saúde - PNS*), which is conducted by the Brazilian Institute of Geography and Statistics (IBGE) in partnership with the Ministry of Health and the Oswaldo Cruz Institute Foundation (Fiocruz). The target population of the survey consisted of adults (age  $\geq 18$  years) living in private households in the national territory. Special census tracts (barracks, military installations, lodges, camps, boats, penitentiaries, penal colonies, prisons, jailhouses, asylums, orphanages, convents and hospitals) were not included.

The sample size was defined at 1,800 households per federated unit, considering the level of precision desired for estimation of the indicators of interest. The PNS randomly selected a total of 81,188 households, and one individual per household. After completing the collection, interviews were conducted in 64,348 households, resulting in a non-response rate of 8.1%.

The study adopted a sampling plan by clusters with stratification of the primary sampling units into three stages. The census tracts or set of sectors form the primary sampling units (PSUs), households represent second-stage units, and adult residents define third-stage units.

Sampling weights were defined for the primary sampling units, for the households and all their residents, in addition to the weight for the selected resident, which was calculated considering the corresponding household weight, the probability of the resident's selection, non-response adjustments by gender, and calibration by population totals by sex and age classes, estimated by the weight of all residents. The PNS questionnaire was divided into modules that consider the characteristics of the household, of all residents and of the selected adult<sup>(18)</sup>.

Through Module S, the PNS investigated prenatal care among women aged between 18 and 49 years who had a childbirth in the period from 01/01/2012 to 07/27/2013, and only the last childbirth was considered in responses to the questions.

In the present study, the variable "prenatal coverage" was defined as the proportion of women who responded positively to the question: "The last time you were pregnant, did you get prenatal care?" For this group of women, the following variables were analyzed: "proportion of pregnant women with prenatal card", "proportion of pregnant women who started prenatal care with less than 13 weeks" and "proportion of pregnant women with all counselings".

Access to prenatal care was evaluated according to the following aspects: the macroregions (North, Northeast, South, Southeast and Midwest), federated units (26 states and the Federal District), age group, skin color, level of education, proportion of pregnant women with requested/performed exams (blood, HIV, syphilis, urine, ultrasonography), weight measurement, blood pressure measurement, fundal height measurement, auscultation of the child's heart, medical care at birth, proportion of hospital birth, proportion of vaginal delivery, and presence of companion at delivery.

The present study evaluated the PNS data that were available on DATASUS website ([www.datasus.gov.br](http://www.datasus.gov.br)) and the analysis occurred between December 2016 and January 2017. Data were presented as values of proportions, mean, and confidence interval at 95%, evaluating the significance between the data from the intersection of the confidence intervals. Since only the data provided by DATASUS were used, the researchers only had access to the values related to each event, but not to the absolute values.

The National Health Survey (PNS) project was approved by the National Committee for Ethics in Research (*Comissão Nacional de Ética em Pesquisa - CONEP*) under no. 10853812.7.0000.0008. The present study uses secondary data from PNS, available on official websites of the Brazilian Ministry of Health, being exempted from evaluation by a research ethics committee, as stated by Resolution 466/2012 of the National Health Council.

## RESULTS

The proportion of women who reported prenatal care in Brazil was 97.4% (95% CI 96.5-98.4%), with no difference in the percentage of coverage between the urban and the rural areas, or between the age groups, although greater coverage was observed with increasing age: from 18 to 29 years (97.07%, 95 CI% 95.80-98.35), from 30 to 39 years (97.87% 95 CI% 96.39-99.35) and from 40 to 49 years (99.05% 95 CI% 97.18-100.92).

It should be noted that, as to skin color, black women had a lower coverage (93.78% 95 CI% 88.94-98.62) than brown (97.13% 95 CI% 95.79-98.47) and white women (98.57% 95 CI% 97.36-99.79). Prenatal coverage also varied according to the level of education, but with no significant differences: illiterate and incomplete primary education (96.65%), complete primary

education and incomplete secondary education (97.65%), complete secondary education and complete higher education (97.47%), and complete higher education (98.30%).

The region with the lowest prenatal coverage was the Northern region (95.4% 95 CI% 95.4), followed by the Southern (96.3 95% CI 92.7-99.9), Central-west (97.3% 95 CI% 95.0-99.7) and Southeast region (97.8% 95 CI% 96.8-99.7). The Northeast region was the only one with coverage above the national average (98.2% CI95% 96.8-99.7). The North and Northeast regions presented an average of 7 consultations per pregnant woman; in the Southeast region, the average was 9 consultations per pregnant woman and, in the Midwest and South regions, 10 or more consultations per pregnant woman.

Among the pregnant women who got prenatal care, 69.33% indicated that all consultations were made through the Unified Health System (SUS) and 3.84% reported some consultations made through the SUS. Of the women who got prenatal care through the SUS, it took place at the primary healthcare unit (basic unit/health center/Family Health Unit) for 60.52%, in specialties center or public polyclinics for 2.44%, and in public hospital/outpatient clinics for 8.93%. For the other women (27.31%), prenatal care was performed in a private medical office or clinic. In 71.19% of the cases, the consultation was performed by the physician and, in 27.63%, by the nurse.

There was a high percentage of women who got prenatal care and received the prenatal card (95.3% 95 CI% 93.6-97.0), an indicator considered high for all regions of the country, among which there was no difference. There was, however, a low proportion of women who received all counselings in the period (69.2% CI95% 65.5-72.9) (Figure 1). The ratio of “all counselings” refers to counseling in respect to not missing consultations, eating healthy, not drinking, not smoking, and not using hair dye.

As to the prenatal coverage, the federated units that registered percentages below the national value (97.40% 95% CI 96.5-98.4%) were: Rondônia (88.2%), the Federal District (91.3%), Paraná (93.8%), Amapá (93.3%), Pará (94%), Maranhão (94.9%), Rio de Janeiro (94.9%), Roraima (96.3%), Minas Gerais (96.7%), Paraíba (97%), Mato Grosso do Sul (97.1%) and Piauí (97.1%).

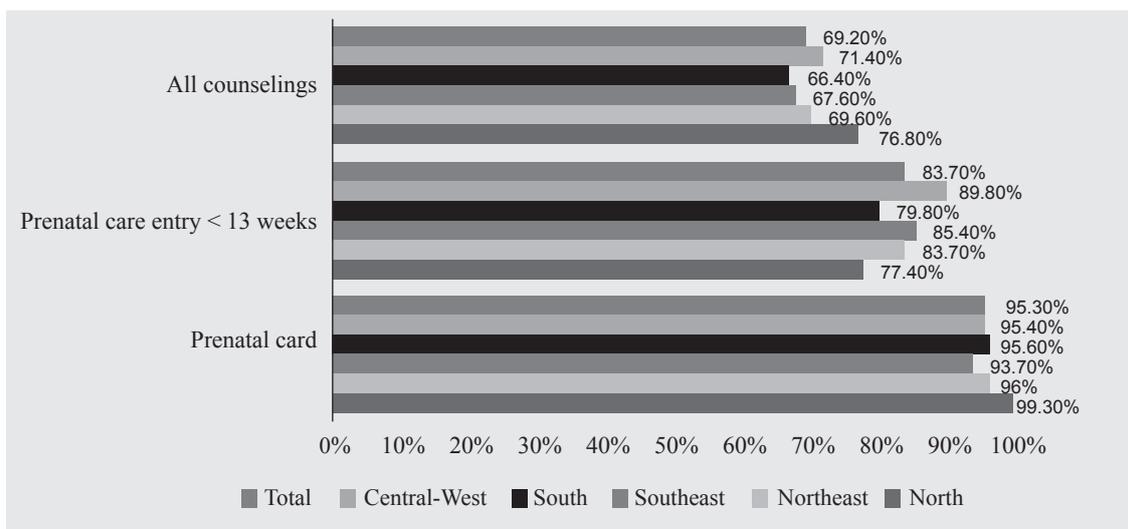


Figure 1 - Proportion of women who got prenatal care with the prenatal card, started before 13 weeks of gestational age and received all counselings, by macroregions, Brazil, 2013.

In relation to the proportion of pregnant women with prenatal card, the states below the national average (95.3% 95 CI% 93.6-97.0%) were Mato Grosso (83.6%), Sergipe (84.2%), Rio de Janeiro (90.1%), Minas Gerais (93%), Paraná (93.2%), Bahia (94,1%), Espírito Santo (94.2%), Paraíba (94.5%), São Paulo (94.9%) and Alagoas (95%). For the proportion of women with all counselings, the federated units with values below the national proportion were: Bahia (55.6%), Minas Gerais (57%), Maranhão (58.4%), Rio de Janeiro (1%), Goiás (63.3%) and Acre (68.1%) (Table I).

Table I - Proportion of women who got prenatal care and received all counselings and prenatal card by federated units, Brazil, 2013.

Federated unit	Prenatal % (95% CI)	ACounseling % (95% CI)	Prenatal card % (95% CI)
Acre	100% (100-100%)	68.1% (54.7-81.5%)	97.8% (94.4-100.0%)
Alagoas	97.80% (93.6-100%)	69.7% (54.2-85.1%)	95% (89.1-100.0%)
Amapá	93.30% (87.2-99.4%)	87.6% (78.4-96.8%)	100% (100.0-100.0%)
Amazonas	98.60% (96.8-100%)	91.3% (84.6-97.9%)	99.8% (99.3-100.0%)
Bahia	99.20% (97.8-100%)	55.6% (39.4-71.8%)	94.1% (87.4-100.0%)
Ceará	100% (100-100%)	75.1% (63.2-87.1%)	97.3% (94.4-100.0%)
Distrito Federal	91.30% (80.1-100%)	81.4% (69.3-93.5%)	100% (100.0-100.0%)
Espírito Santo	100% (100-100%)	76% (61.1-90.8%)	94.2% (84.5-100.0%)
Goiás	98.70% (96.8-100%)	63.3% (49.2-77.5%)	96.9% (93.1-100.0%)
Maranhão	94.90% (86.9-100%)	58.4% (39.0-77.7%)	98.1% (95.5-100.0%)
Mato Grosso	100% (100-100%)	74.1% (57.7-90.5%)	83.6% (68.6-98.5%)
Mato Grosso do Sul	97.10% (93.2-100%)	81% (68.3-93.7%)	100% (100.0-100.0%)
Minas Gerais	96.70% (92.2-100%)	57% (38.2-75.8%)	93% (84.5-100.0%)
Pará	94% (87.5-100%)	69.6% (56.4-82.7%)	99% (97.6-100.0%)
Paraíba	97% (93.4-100%)	88.9% (79.3-98.5%)	94.5% (89.0-100.0%)
Paraná	93.80% (86.6-100%)	66.9% (53.1-80.7%)	93.2% (85.1-100.0%)
Pernambuco	98.10% (95.2-100%)	81.4% (71.5-91.2%)	98% (95.1-100.0%)
Piauí	97.10% (92.6-100%)	80.3% (66.0-94.6%)	98.7% (96.3-100.0%)
Rio de Janeiro	94.90% (89.9-99.8%)	59.1% (46.1-72.1%)	90.1% (81.4-98.8%)
Rio Grande do Norte	100% (100-100%)	81% (64.7-97.4%)	100% (100.0-100.0%)
Rio Grande do Sul	99.30% (97.9-100%)	77.5% (65.6-89.4%)	96.1% (91.2-100.0%)
Rondônia	88.20% (80-96.5%)	74.5% (61.3-87.6%)	99.4% (98.2-100.0%)
Roraima	96.30% (92.2-100%)	70,2% (56.5-83.9%)	100% (100.0-100.0%)
Santa Catarina	98% (94.9-100%)	100% (100.0-100.0%)	100% (100.0-100.0%)
São Paulo	98.80% (97.5-100%)	72.9% (63.1-82.7%)	94.9% (89.8-99.9%)
Sergipe	100% (100-100%)	78.6% (64.9-92.4%)	84.2% (70.4-98.1%)
Tocantins	100% (100-100%)	81% (68.8-93.2%)	100% (100.0-100.0%)
Brasil	97.40% (96.5-98.4%)	69.2% (65.5-72.9%)	95.3% (93.6-97.0%)

Regarding the access to prenatal health services, the lowest proportions of serological testing for diagnosis of syphilis (64.8% 95 CI% 61.0-68.7%) and Human Immunodeficiency Virus (HIV) (88.8% 95 CI% 86.3-91.3%) stand out. (Table II).

Table II - Analysis of the variables related to access to prenatal health services, according to the proportion of women who got prenatal care by region, Brazil, 2013.

Variables	North	Northeast	Southeast	South	Central-West	Total
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Weight measurement</b>	86.60% (81.6-91.6%)	88.5% (83.7-93.2%)	95.5% (93.4-97.6%)	93.5% (88.7-98.3%)	91.3% (86.5-96.1%)	91.9% (90.1-93.8%)
<b>Blood pressure measurement</b>	87.6% (83.0-92.1%)	88.5% (83.8-93.3%)	93.7% (91.0-96.4%)	96.8% (94.3-99.3%)	93.4% (89.9-96.9%)	92% (90.2-93.9%)
<b>Fundal height measurement</b>	91.4% (84.8-98.1%)	92.6% (87.7-97.5%)	97.7% (95.6-99.8%)	95.7% (91.1-100.0%)	98% (96.0-100.0%)	95.3% (93.4-97.3%)
<b>Auscultation of the child's heart</b>	96.8% (93.4-100.0%)	93.5% (88.7-98.4%)	99.4% (98.5-100.0%)	100% (100.0-100.0%)	97.7% (95.5-100.0%)	97.4% (95.8-98.9%)
<b>High blood pressure</b>	18.7% (13.8-23.7%)	17.8% (13.6-22.1%)	19.1% (12.8-25.3%)	18.9% (11.1-26.7%)	24.4% (16.4-32.3%)	19.1% (16.0-22.1%)
<b>Blood testing</b>	95.6% (92.9-98.2%)	97% (94.8-99.2%)	97.9% (96.0-99.7%)	96.4% (92.9-99.9%)	98.8% (97.4-100.0%)	97.3% (96.2-98.4%)
<b>Syphilis testing</b>	69.5% (62.0-77.1%)	56.9% (50.1-63.7%)	63.7% (56.1-71.3%)	74.1% (66.0-82.2%)	76.1% (68.9-83.2%)	64.8% (61.0-68.7%)
<b>HIV testing</b>	90.6% (86.6-94.6%)	84.1% (78.9-89.4%)	89.5% (85.0-94.1%)	93.5% (89.5-97.5%)	91.2% (86.6-95.8%)	88.8% (86.3-91.3%)
<b>Urine analysis</b>	96.2% (93.3-99.2%)	97.1% (95.0-99.2%)	98.9% (97.8-100.0%)	99.2% (98.1-100.0%)	98.1% (96.3-99.9%)	98.1% (97.3-98.9%)
<b>Ultrasonography</b>	94.6% (91.8-97.4%)	96.4% (92.2-100.0%)	98.8% (97.8-99.8%)	99% (97.6-100.0%)	99% (98.0-100.0%)	97.7% (96.4-99.1%)

BP: Blood pressure

On the delivery care, 10.42% of the pregnant women (95% CI 8.2-12.5%) sought more than one healthcare facility, which occurred for 9.4% (95% CI 5.8-13.0%) of pregnant women in the North region and 16.4% (95% CI 11.8-21.0) in the Northeast. The proportion of vaginal deliveries stands out at 45.3% (95% CI 1.4-49.3%), with higher proportions in the North (59.8% 95% CI 52.8-66.8) and Northeast (55% 95% CI 48.9-61.2%) regions. (Table III).

Table III - Analysis of the variables related to access to delivery healthcare services, according to the proportion of women who got prenatal care by region, Brazil, 2013.

Variables	North	Northeast	Southeast	South	Central-West	Total
	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)
<b>Medical care at delivery</b>	76.1% (68.5-83.7%)	78% (71.6-84.5%)	93.8% (90.9-96.6%)	93.2% (88.6-97.9%)	94.6% (91.1-98.1%)	87.4% (84.9-89.9%)
<b>Hospital delivery</b>	95.9% (93.6-98.2%)	96.6% (94.3-99.0)	98.5% (97.3-99.7%)	99.9% (99.7-100.0%)	97.8% (95.4-100.0%)	97.9% (97.0-98.7%)
<b>Vaginal delivery</b>	59.8% (52.8-66.8%)	55% (48.9-61.2%)	37.4% (30.0-44.8%)	38.3% (27.7-48.9%)	42.4% (34.4-50.4%)	45.3% (41.4-49.3%)
<b>Companion at delivery</b>	50% (38.3-61.6%)	55.9% (46.1-65.8%)	59.4% (47.5-71.2%)	77.2% (66.1-88.2%)	42.8% (31.0-54.6%)	58% (52.3-63.7%)
<b>Elective cesarian section</b>	46.1% (37.3-54.9%)	52.9% (44.2-61.6%)	57.9% (48.8-67.0%)	47.7% (36.6-58.8%)	50.2% (38.6-61.8%)	53.5% (48.4-58.5%)

## DISCUSSION

The results of the present study demonstrate that, despite the high coverage of prenatal care in Brazil, there are still inadequacies in the service, revealed by the indicators of proportion of counseling (guidance) and access to laboratory tests, besides the disparities in coverage of some services between the Brazilian regions.

After the implementation of the Prenatal and Birth Humanization Program (PHPN), created in 2000 by the Ministry of Health, the quality of prenatal care has been studied in several regions of the country<sup>(18)</sup>. The increase in prenatal care coverage in Brazil has been observed since the 1990s and, currently, it reaches values over 90% in all regions of the country, attending to women with different demographic, social and reproductive characteristics<sup>(12,14,19-21)</sup>, in agreement with the research data.

A national hospital-based study with puerperal women and their newborns, the survey *Nascer no Brasil* (which means “Being born in Brazil”), registers prenatal care coverage of 98.7%<sup>(10)</sup>, similar to 97.4% reported in this study, figures that evidence the improvement and maintenance of coverage above 90% in the country. However, no consensus is observed on these findings. From a review of Brazilian studies conducted between 2005 and 2015, it was observed that a majority of them found prenatal care of low quality, with coverage levels varying in general from 4.5 to 66.1%<sup>(12)</sup>, and a low percentage of adequacy according to the recommendations of the Ministry of Health’s Prenatal and Birth Humanization Program<sup>(14,19-22)</sup>.

However, a lower access to prenatal care still occurs for indigenous and black women and for those with lower level of education, higher number of pregnancies, and for residents in the North<sup>(12,17)</sup> and Northeast regions. These access data are consistent with the present study, which evidences the persistence of social inequalities in access to this basic health service<sup>(17)</sup>. A cross-sectional study of 795 puerperal women served at health centers in Santa Maria, Rio Grande do Sul, Brazil<sup>(23)</sup> showed that women with lower family income, lower schooling, and non-white generally entered prenatal care late, and that the care for these women is of lower quality than that provided to women who do not feature these characteristics.

The healthcare is an indicator of the quality of maternal care<sup>(6)</sup>. The PNS data show that the Northern region presents the lowest values of entry to prenatal care with less than 13 weeks of gestation, confirming the profound inequalities in access to health services between the Brazilian regions. A study with prenatal care data from São Luís, Maranhão, reported that only 39.8% of the sample studied received adequate care<sup>(15)</sup>. On the other hand, a retrospective cohort study conducted in Londrina, Paraná revealed that 91.4% of the women included were got prenatal care, and 71.7% of them initiated prenatal care in the first trimester<sup>(16)</sup>. From the PNS, it was observed that 83.7% of the pregnant women started prenatal care in the first trimester. The late entry into prenatal follow-up evidences the fragility in the organization of health services and the gaps in the process of early pregnancy recruitment and population awareness<sup>(23)</sup>.

Regarding the regional inequalities related to the number of prenatal consultations, the findings of the present study are in line with the Ministry of Health reports<sup>(26)</sup>, which emphasize that, in the Southeast and South regions, 83% of women perform six or more prenatal consultations, whereas in the North and Northeast regions this number falls to 57% and 67%, respectively, with a higher proportion of women who reported three or fewer visits in these regions (North with 21% and Northeast with 14, 1%). In a cross-sectional survey carried out in poor areas of North and Northeast regions of Brazil, in order to evaluate gestation and childbirth care among mothers of children under 5 years of age, the results indicated that there is insufficient health coverage due to low social conditions and access difficulties in those regions, which delay the implementation of new programs and technologies in this type of care<sup>(21)</sup>.

Such regional discrepancy between the number of prenatal consultations may reflect inequalities in access to health systems. Considering the recommendation of at least eight prenatal consultations, the low number of consultations impacts the process of prevention and/or early detection of pathologies, either maternal and fetal, which and may lead to increase in the number of cases of maternal or perinatal mortality. Moreover, the low number of consultations hampers the information process and essential guidance on care during pregnancy and the puerperium, thus creating a disinformation cycle that may be harmful<sup>(4)</sup>.

During prenatal care, the prenatal card is mandatory in order to keep track of all consultations, exams and procedures performed<sup>(6)</sup>. Regarding the proportion of pregnant women with prenatal card, the Northeast region presents the lowest values in relation to the national average, followed by the Southeast region, a result that is in line with the study conducted between 2011 and 2012, with data from the survey *Nascer in Brazil*, whose the findings point that more than 90% of women received the prenatal card, although with smaller proportions in the North and Central-West regions<sup>(12)</sup>. However, the survey that analyzed prenatal care in municipalities of the Northeastern Brazil<sup>(24)</sup>, and verified the provision of prenatal card in 31 municipalities in the Northeast, found that only 74.2% of the pregnant women had had access to this monitoring instrument, showing that there are still divergent results among the studies that evaluate prenatal care in Brazil.

It is recommended that the pregnant woman monitor the gestation process, when the prenatal card represents an essential tool that contains the clinical information and main guidelines for the pregnant woman. The absence or inadequate completion of this instrument may impair the correct management of the pregnant woman’s follow-up and hinder decision-making by the professionals involved, especially in cases of risk pregnancy<sup>(4)</sup>.

Another result that stands out is the low proportion of counseling. This may be due to the fact that guidelines during the gestational period, despite essential, are not always explored by the professionals<sup>(23)</sup>. In Brazil, insufficient information on prenatal care is common and generates dissatisfaction with and disqualification of the care received<sup>(25)</sup>. Lack of guidance during consultations, failure to perform routine laboratory tests and recommended basic procedures, and lack of prescriptions are all factors contributing to the poor quality of prenatal care<sup>(13)</sup>.

Information deficiency may be linked to the poor management of essential care and, in more extreme cases, might influence the number of cases of premature birth and maternal mortality. Thus, it is imperative that the professionals be always attentive

and sensitive to the pregnant women's need for clarifications, besides being willing to provide information mainly related to the care during pregnancy, breastfeeding and the perinatal period. These counseling can be done individually or through health education groups, which can be organized in the services by multiprofessional teams, and will positively impact the quality of the gestational period of the users served, raising the standard of the service provided.

With regard to the lower proportion of examinations performed in the North and Northeast regions, the results evidenced in this study are in agreement with the findings of the study on prenatal care in Brazil, based on data from the survey *Nascer in Brazil*, which also confirm that the lowest proportion of having all examinations recorded was found in these regions<sup>(12)</sup>.

The management of the modifiable risk factors that arise during pregnancy is of great importance for the reduction of maternal mortality. Even with a downward tendency between 1990 and 2010, the main specific cause of maternal death in Brazil was high blood pressure during pregnancy<sup>(26)</sup>. Considering that prenatal examinations are indispensable to ensure good management of pregnancy and early detection of diseases that can occur during this period, having them correctly and timely performed, with diagnostic quality, is essential.

As for the professionals working in prenatal care, this practice is still based on the medical consultation, being delegated to the nursing professional the bureaucratic activities related to the scheduling of medical consultations, examinations, guidance on medical prescriptions, and collection, registration and control of information in the Health Information System (SisPreNatal)<sup>(4,25)</sup>. Despite the higher proportion of prenatal care performed by physicians, however, it was found in the present study that about 30% of the participants had consultations with nurse practitioners.

Also in agreement with the results of the present study are the findings of a cross-sectional study carried out in Rio Grande do Sul in order to evaluate the prenatal care provided in the public and private spheres<sup>(27)</sup>, in which they verified that the main entrance gate is the Family Health Strategy in Primary Care, followed by care in private clinics or medical offices, demonstrating the expansion of public services that offer prenatal care linked to the Unified Health System. However, these findings also show, by means of the indicators related to the trimester of prenatal initiation, namely the accomplishment of six or more consultations, laboratory and clinical examinations, varied guidance, consultations with the same medical professional and prenatal adjustment, that there are advantages in private care.

In Brazil, the population's access to different levels of care is one of the meanings attributed to comprehensiveness. Although constitutionally guaranteed universal access has broken down formal barriers, difficulties in access and continuity of care remain in both primary care and specialized services<sup>(28)</sup>.

Regarding childbirth care, the Ministry of Health report cites the increasing number of caesarean sections in all regions of the country between 2000 and 2012<sup>(26)</sup>. The study also cites the lower proportion of cesarean delivery in the North and Northeast regions, which corroborates the data found in this study. These regions, however, presented an increasing utilization of this type of delivery between 2000 and 2012 (45% and 48%, respectively), approaching the values found in other regions (around 60%).

The North and Northeast regions still hold the highest proportional rate of natural births, since, considering regional issues related to the difficulties to access the health services and cultural factors, they still experience the presence of midwives and home birth, as well as the individual choice in the option for normal delivery, which keeps these numbers high. It may also be related to this finding the number of multiparas in these regions, which facilitates the process of choice for normal delivery, associated with the difficulty in access to the professionals and the facilities required for cesarean delivery<sup>(21,24,26)</sup>.

In the present study, the cross-sectional design did not allow for the use of temporality as a criterion of causality, since risk factors and outcomes were measured at the same time and the reverse causality bias can not be eliminated, which thus constitutes one of the limitations of this study. The subject addressed is of a personal nature, related to the reproductive health of the woman, which, in addition to the occurrence of memory bias, may have influenced the results. However, the sample size that was reached and the adoption of correct research procedures strengthen the reliability of the data. Because this is a population survey, this study enabled the identification of the actual prenatal coverage in Brazil.

## CONCLUSION

Prenatal care in Brazil has reached almost universal coverage, but inequalities persist in access to adequate care, which would have the potential to reverse the indicators of maternal, neonatal and perinatal mortality, still observed in the country. Strategies for socially disadvantaged populations are essential to facilitate early prenatal care entry and contact with health services, ensuring effective health care.

The expansion of access to the primary care for the early entry into prenatal care and the better use of contacts with health services for accomplishment of effective health care, both in individual and collective care, are a priority in the reversal of this framework.

## CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest, including specific financial interests, relationships and affiliations relevant to the topic, or on materials discussed in the manuscript.

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