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Research Article

The impact of social determinants of health on prenatal care among pregnant women attending a Basic Healthcare Unit in Porto Alegre, Rio Grande do Sul

O impacto de determinantes sociais da saúde no acompanhamento pré-natal de gestantes usuárias de uma Unidade Básica de Saúde em Porto Alegre, Rio Grande do Sul

El impacto de los determinantes sociales de la salud en el seguimiento prenatal de mujeres embarazadas mediante una UBS en Porto Alegre, Rio Grande do Sul

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ABSTRACT

Introduction: Social Determinants of Health, such as income, education, and living conditions, directly influence the quality of prenatal care, which may contribute to inequalities in access and outcomes of care for pregnant women. Primary Health Care, through Basic Health Units (UBS; Unidade Básica de Saúde), plays a central role in the early identification of vulnerabilities and in the provision of comprehensive, continuous, and culturally sensitive care. **Objective:** To evaluate whether there is a relationship between the Social Determinants of Health and the follow-up of pregnant women who received prenatal care at UBS Santa Cecília, city of Porto Alegre, in Rio Grande do Sul state. **Methods:** This is an observational, cross-sectional study involving 103 pregnant women at UBS Santa Cecília who received prenatal care from January to December 2023. Clinical and obstetric data collected from electronic medical records were evaluated, including the number of prenatal visits, gestational age at the first visit, and laboratory screening tests for sexually transmitted infections during pregnancy. **Results:** The results showed a statistically significant difference in gestational age at the start of prenatal care between beneficiaries of the Bolsa Família Program and non-beneficiaries, with a mean of 6.68 weeks and 12.07 weeks, respectively (p=0.036 by the Mann-Whitney U test for independent samples). All pregnant women evaluated underwent laboratory tests to screen for sexually transmitted infections, and there was no statistically significant difference between the groups by race/color, age, and educational level regarding the total number of consultations and gestational age at the first consultation. **Conclusions:** The results indicate that Social Determinants of Health influence prenatal care follow-up, particularly regarding the earlier initiation of care among pregnant women who are beneficiaries of the Bolsa Família Program. Although no significant differences were observed in the total number of prenatal visits and in the performance of laboratory screening tests across different sociodemographic groups, the findings reinforce the role of Primary Health Care in promoting equity and reducing inequalities in access to prenatal care. The importance of early identification of social vulnerabilities by health care teams is highlighted as a strategy to improve the quality of care and ensure comprehensive support for pregnant women.

Keywords: Social determinants of health; Prenatal care; Access to primary care.

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RESUMO

Introdução: Os Determinantes Sociais da Saúde, como renda, escolaridade e condições de vida, influenciam diretamente a qualidade do cuidado pré-natal, podendo contribuir para desigualdades no acesso e nos desfechos da atenção à gestante. A Atenção Primária à Saúde, por meio das Unidades Básicas de Saúde (UBS), tem papel central na identificação precoce de vulnerabilidades e na oferta de cuidado integral, contínuo e culturalmente sensível. **Objetivo:** Avaliar se há relação entre os Determinantes Sociais da Saúde e o acompanhamento de gestantes que realizaram o pré-natal na UBS Santa Cecília, Porto Alegre, RS. **Métodos:** Trata-se de um estudo observacional e transversal, realizado com 103 gestantes da UBS Santa Cecília, acompanhadas no pré-natal no período de janeiro a dezembro de 2023. Avaliaram-se dados clínicos e obstétricos coletados em prontuários eletrônicos, como número de consultas de pré-natal, idade gestacional na primeira consulta e realização de exames laboratoriais de rastreio para infecções sexualmente transmissíveis durante a gestação. **Resultados:** Os resultados mostraram que houve diferença estatisticamente significativa em relação à idade gestacional de início do pré-natal entre beneficiárias do Programa Bolsa Família e não-beneficiárias, com uma média de 6,68 semanas e 12,07 semanas, respectivamente (p=0,036 pelo teste de Mann-Whitney U para amostras independentes). Todas as gestantes avaliadas realizaram exames laboratoriais para rastreamento de infecções sexualmente transmissíveis, e não houve diferença estatisticamente significativa entre os grupos por raça/cor, idade e escolaridade no que diz respeito ao número total de consultas e à idade gestacional na primeira consulta. **Conclusões:** Os resultados indicam que os Determinantes Sociais da Saúde influenciam o acompanhamento pré-natal, especialmente no que se refere ao início mais precoce do cuidado entre gestantes beneficiárias do Programa Bolsa Família. Apesar de não terem sido observadas diferenças significativas quanto ao número de consultas e à realização de exames laboratoriais entre os diferentes grupos sociodemográficos, os achados reforçam o papel da Atenção Primária à Saúde na promoção da equidade e na redução de iniquidades no acesso ao pré-natal. Destaca-se a importância da identificação precoce de vulnerabilidades sociais pelas equipes de saúde, como estratégia para qualificar o cuidado e garantir atenção integral às gestantes.

Palavras-chave: Determinantes sociais da saúde; Cuidado pré-natal; Acesso à atenção primária.

RESUMEN

Introducción: Los Determinantes Sociales de la Salud (DSS), como los ingresos, la educación y las condiciones de vida, influyen directamente en la calidad de la atención prenatal, contribuyendo a las desigualdades en el acceso y los resultados de la atención para las embarazadas. La Atención Primaria de Salud, a través de las Unidades Básicas de Salud, desempeña un papel fundamental en la identificación temprana de vulnerabilidades y en la prestación de una atención integral, continua y culturalmente sensible. **Objetivo:** Evaluar si hay relación entre los Determinantes Sociales de la Salud y el seguimiento de las embarazadas que recibieron atención prenatal en la UBS Santa Cecília, Porto Alegre, RS. **Métodos:** Estudio observacional y transversal, realizado con 103 embarazadas de la UBS Santa Cecília, atendidas en atención prenatal de enero a diciembre de 2023. Se evaluaron datos clínicos y obstétricos recolectados de historias clínicas electrónicas, como número de visitas prenatales, edad gestacional en la primera visita y realización de pruebas para ITS durante el embarazo. **Resultados:** Los resultados mostraron que hubo una diferencia estadísticamente significativa en relación a la edad gestacional al inicio de la atención prenatal entre beneficiarios del Programa Bolsa Família y no beneficiarios, con un promedio de 6,68 semanas y 12,07 semanas, respectivamente (p=0,036 mediante la prueba U de Mann-Whitney para muestras independientes). Todas las mujeres embarazadas evaluadas se sometieron a pruebas de laboratorio para detectar infecciones de transmisión sexual (ITS) y no hubo diferencia estadísticamente significativa entre los diferentes grupos por raza/color, edad y educación con respecto al número total de consultas y la edad gestacional en la primera consulta. **Conclusiones:** Los resultados indican que los Determinantes Sociales de la Salud influyen en el seguimiento del control prenatal, especialmente en lo que respecta al inicio más temprano de la atención entre las gestantes beneficiarias del Programa Bolsa Familia. Aunque no se observaron diferencias significativas en el número total de consultas prenatales ni en la realización de exámenes de laboratorio entre los diferentes grupos sociodemográficos, los hallazgos refuerzan el papel de la Atención Primaria de Salud en la promoción de la equidad y en la reducción de las desigualdades en el acceso al control prenatal. Se destaca la importancia de la identificación temprana de vulnerabilidades sociales por parte de los equipos de salud como una estrategia para mejorar la calidad de la atención y garantizar una atención integral a las gestantes.

Palabras clave: Determinantes sociales de la salud; Atención prenatal; Acceso a la atención primaria.

INTRODUCTION

Social Determinants of Health (SDH) encompass a wide range of non-medical factors that impact people's daily lives, from birth conditions to economic, social, and political influences. They play a crucial role in the occurrence of potential health inequalities, reflected in a social gradient that indicates poorer health care among those in lower socioeconomic positions.[1]

In 2009, at the 62nd World Health Assembly of the World Health Organization, SDH were defined as follows:

> *"The social determinants of health are defined as the structural determinants and conditions of daily life responsible for a major part of health inequities between and within countries. They include the distribution of power, income, goods and services, and the circumstances of people's lives, such as their access to health care, schools and education; their conditions of work and leisure; and the state of their housing and environment."*[2]

The practice of healthcare, as well as the academic training offered in the Medical Residency in Family and Community Medicine at the Hospital de Clínicas de Porto Alegre, allowed for the observation of how social determinants can influence users' access to and engagement with Primary Health Care (PHC). When it comes to prenatal care, patients are women in a stage of life that already carries many vulnerabilities, highlighting the need to provide even more attentive care to this specific population.

Despite advances in understanding the impact of SDH on the health-disease process, they remain one of the main barriers to ensuring adequate prenatal care. With a view to monitoring and evaluating the quality of care provided, it is important to define indicators that assess outcomes, effectiveness, and the need for improvements in interventions, as well as to guide priorities and planning. In terms of prenatal care, the Ministry of Health recommends that at least six visits be conducted (one in the first trimester of pregnancy, two in the second, and three in the third), with the first visit ideally taking place by the 12th week of gestation.[3] Another recommendation is to test pregnant women for syphilis and human immunodeficiency virus (HIV) to prevent vertical transmission of infections.[4]

Proper fulfillment of performance targets is linked to ensuring expanded access to PHC, with the aim of guaranteeing the universality of the Brazilian Unified Health System. It is also important to highlight the relevance of implementing strategic actions that address the health needs and priorities, recognizing the essential and derived attributes of PHC as defined by Barbara Starfield: first-contact access, continuity of care, coordination, comprehensiveness, family-centered care, community-centered care, and cultural competence.[5]

The Basic Health Unit (UBS; Unidade Básica de Saúde) plays a fundamental role in the welcoming and follow-up of pregnant women, ensuring continuous care throughout pregnancy. Welcoming in PHC involves qualified listening, the establishments of bonds, and the identification of specific social vulnerabilities, aiming for comprehensive care.[6] It is important to ensure early identification of pregnant women, as well as to provide the necessary resources for prenatal care, including the timely ordering, performance, and evaluation of tests, without disregarding the patient's intellectual, emotional, social, and cultural aspects.

Therefore, the importance of understanding the influence of SDH during prenatal care to improve care and reduce disparities is evident, requiring coordinated actions from various political sectors and civil society. The objective of this study was to investigate the quality of care provided by the UBS Santa Cecília to its users, as well as compliance with performance targets, allowing for the translation of team management outcomes into actions, programs, and strategies aimed at ensuring access to healthcare.

METHODS

This is a cross-sectional observational study conducted at the UBS Santa Cecília, administered by the Hospital de Clínicas, in the municipality of Porto Alegre, Rio Grande do Sul, Brazil. The unit serves as a referral center for the population assigned to a 4.62 km^2 territory.

Women of any age who had received prenatal care from one of the four teams at the UBS Santa Cecília and who gave birth between January and December 2023 were included. Women identified as residing outside the unit's catchment area or who, for any reason, discontinued prenatal care at the unit or experienced a miscarriage were excluded.

The sample was non-probabilistic, based on convenience, including all eligible pregnant women during the period, totaling 103 participants initially, with 84 included in the final analysis after applying the exclusion criteria.

The minimum sample size was estimated based on a cross-sectional study for estimating proportions, assuming a prevalence of 50%, a 95% confidence level, and an absolute error of 5%, resulting in an initial sample of 384 participants. Applying a correction for a finite population (N≈103), a minimum sample size of 81 participants was obtained, and the final sample (n=84) was considered sufficient for descriptive analysis of the outcomes. It should be noted, however, that the study lacks adequate statistical power for comparative analyses between subgroups, especially due to the small number of participants in some categories.

Data collection was initially based on information contained in the health facility's records, which included all pregnant women seen in 2023, dates of visits, age, race/ethnicity, education level, dates of serology tests, date of delivery, and total number of prenatal visits, as well as whether or not they were beneficiaries of the Bolsa Família Program.

Subsequently, the information was verified in individual electronic medical records available on the Management Application for University Hospitals (AGHuse) platform, where all records from physicians and nursing assistants involved in prenatal visits were evaluated, in addition to the laboratory tests performed on the pregnant women.

The primary outcome was based on guidelines from the Ministry of Health and consists of two main indicators: the proportion of pregnant women who had at least six prenatal visits, with the first occurring by the 12th week of gestation, and the proportion of pregnant women who underwent testing for syphilis and HIV. The sample size was determined by the number of pregnant women followed by all four teams at the UBS Santa Cecília during the year 2023.

Statistical analysis was performed using nonparametric and parametric tests according to the distribution of the variables. For comparisons between two independent groups, the Mann-Whitney test or Student's *t*-test was used. For comparisons among multiple groups, the Kruskal-Wallis test was employed. The correlation between continuous variables was assessed using Spearman's correlation coefficient. A significance level of 5% ($p<0.05$) was adopted.

Data were collected through review of medical records and queries to the database (QUERIES). Personal data and sensitive personal data were stored on Institutional Google Drive, both on institutional computers and the researchers' personal computers. These data were processed in an anonymized or pseudonymized manner, in accordance with the Brazilian General Personal Data Protection Law (LGPD; Lei Geral de Proteção de Dados Pessoais).

The researchers committed to conducting the project and ensuring the confidentiality of the data and the privacy of the participants, in accordance with Resolutions of the Brazilian National Health Council (CNS) 466/2012 and CNS 510/2016, as well as other applicable regulations and laws in force. They declared awareness and compliance with the requirements of the LGPD (Law No. 13,709, of August 14, 2018) regarding the processing of personal data and sensitive personal data used to conduct the research. In addition, the researchers undertook to preserve the privacy of study participants whose data

were collected from medical records or databases, as well as institutional information. They also agreed that these materials or information were used exclusively for the purpose of conducting the research and that the results would be reported without identifying the participants.

The consent process for including medical record data in the research was conducted via a Informed Consent Form (ICF), administered through an online form following telephone contact with the patients.

Given that the Hospital de Clínicas de Porto Alegre began requiring patients to sign the ICF authorizing the use of data for specific purposes, including contact for invitations to participate in research, the online electronic medical records of each potential participant was reviewed to verify whether the field "Patient agrees to the LGPD Consent Form" was selected before contact was made to invite participation in the study.

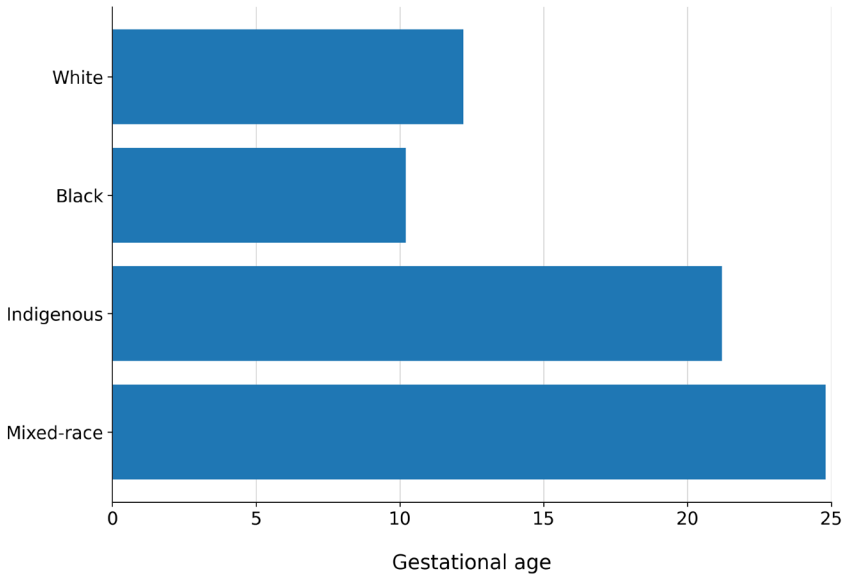
RESULTS AND DISCUSSION

Five pregnant women were excluded from the study due to abortion, one due to ectopic pregnancy, one due to fetal death, one due to incomplete prenatal care information, five due to discontinuation of prenatal care, and six who resided outside the territory served by UBS Santa Cecília.

In total, 84 patients seen in 2023 were evaluated, including 58 white, 22 black, two mixed-race, and two Indigenous women. Of these, four were beneficiaries of the Bolsa Família Program and 80 were not beneficiaries.

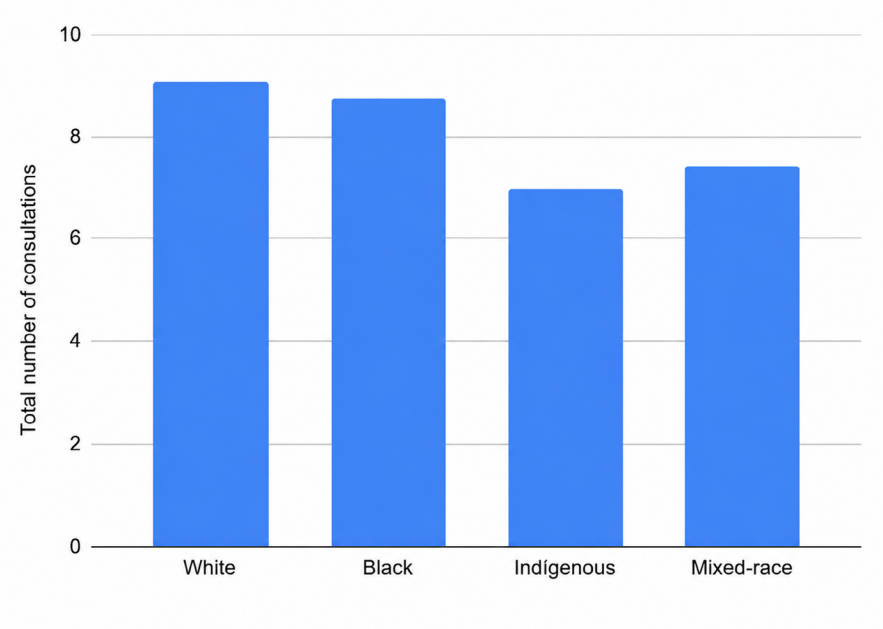
In accordance with the UBS protocol, tests for the detection of sexual transmitted infections were performed on all pregnant women evaluated, either via rapid testing or serological testing for syphilis and HIV, with no differences related to race/skin color, education level, age, or Bolsa Família Program beneficiary status.

The mean gestational age at the first visit (Figure 1) varied among race/color groups and exceeded the gestational age recommended by the Ministry of Health for the initiation of prenatal care (12 weeks) in three of the four groups. Among white women, it was 12.13 weeks; among black women, 10.19 weeks; among Indigenous women, 21.21 weeks; and among mixed-race women, 24.79 weeks.



Source: Prepared by the authors.
Figure 1. Mean gestational age at the first consultation by race/skin color group.

The average number of prenatal visits (Figure 2) also varied among the groups by race/color, although it exceeded six visits in all of them, as recommended by the Ministry of Health. Among white women, the average was 9.14 visits; among black women, 8.77; among Indigenous women, 7.0; and among mixed-race women, 7.5 visits.



Source: Prepared by the authors.
Figure 2. Mean total number of prenatal visits by race/skin color group.

In Rio Grande do Sul, a large portion of the Indigenous population lives in conditions of high social and economic vulnerability. As established in the National Policy for Healthcare for Indigenous Peoples (PNASPI No. 9,836/2002), health care for this population must be differentiated, considering the ethnic and cultural aspects that accompany the dynamics and characteristics of this group.[7]

It is possible that access to care is difficult for Indigenous women affiliated with the UBS Santa Cecília, given that there is no specific organization of Indigenous health agents and multidisciplinary teams for the health care of indigenous communities, as recommended by the PNASPI. Thus, these pregnant women may experience cultural barriers to accessing health services, which may contribute to a later entry into prenatal care and a lower number of consultations.

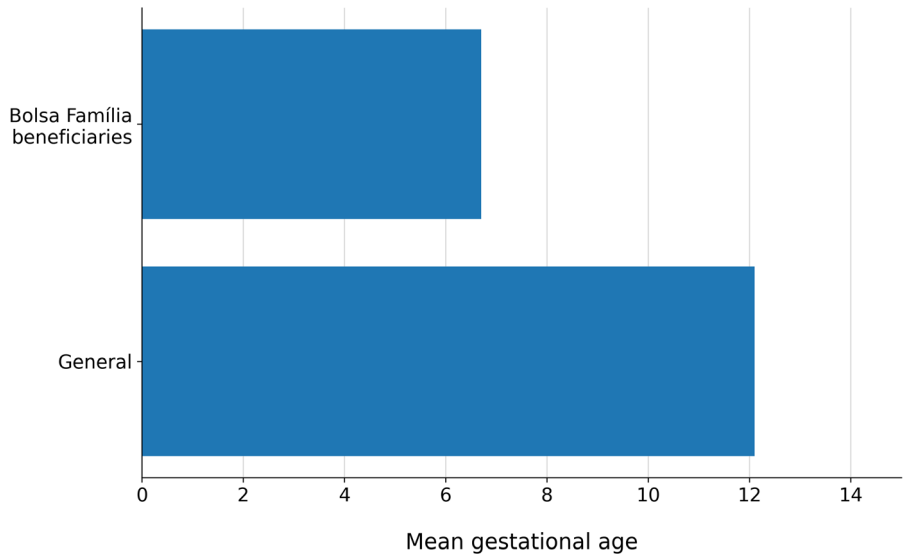
According to the 2021 technical report on the Overview of Racial Inequalities in Rio Grande do Sul (Panorama of Racial/Color Inequalities in Rio Grande do Sul), black and brown individuals have a higher proportion of households registered with the Family Health Units than white individuals, who seek care more frequently in the private sector. However, among those who received care through the Brazilian Unified Health System, a higher proportion of white individuals received care more frequently.[8]

To facilitate the statistical analysis of the sample, the subgroups of black, brown, and Indigenous women were grouped into the “non-white” category, and no statistically significant differences were observed in either the mean number of prenatal visits or the mean gestational age at initiation of prenatal care ($p=0.141$ by Mann-Whitney U test for independent samples) compared with white women.

The Bolsa Família Program, which emerged in Brazil as a federal program for direct and indirect cash transfers, integrates social assistance, health, education, and employment benefits and is intended

for families living in poverty.[9] It is known that the vast majority of beneficiaries are black and mixed-race, and data from the Ministry of Social Development show that these families are predominantly headed by black women.

Regarding the Bolsa Família Program, there was a statistically significant difference in the mean gestational age at initiation of prenatal care between beneficiaries and non-beneficiaries (Figure 3), with means of 6.68 and 12.07 weeks, respectively (p=0.036 by Mann-Whitney U test for independent samples).



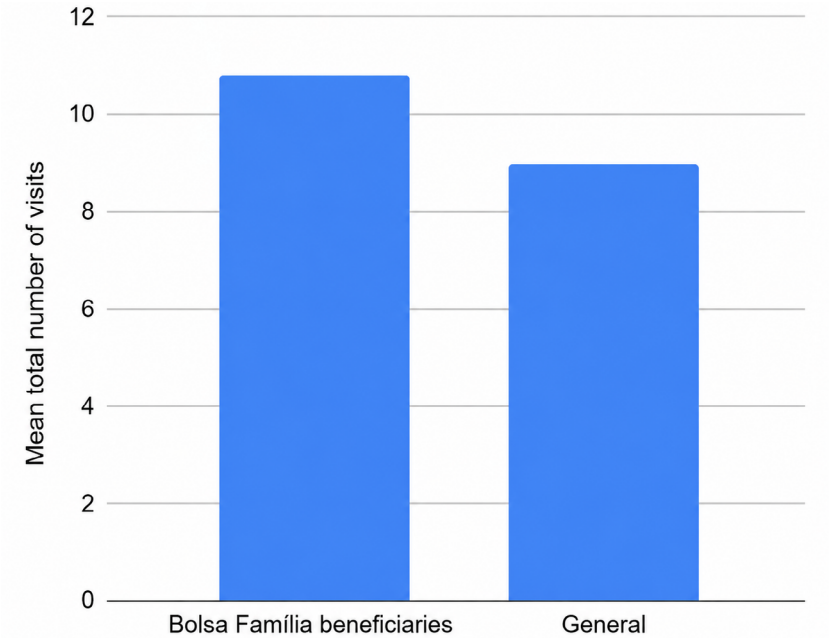
Source: Prepared by the authors.
Figure 3. Mean gestational age at the first prenatal visit among Bolsa Família Program beneficiaries.

Healthcare institutions identify pregnant women eligible for the Bolsa Família benefit. In this regard, the sooner the pregnancy is reported, the sooner the family will be enrolled in the program or receive additional benefits — which may have contributed to earlier seeking of prenatal care, thereby explaining such a difference.

Regarding the average number of prenatal visits (Figure 4), the differences did not show statistical significance between Bolsa Família beneficiaries and non-beneficiaries (p=0.400 by Student's *t*-test for independent samples).

There were no statistically significant differences in the comparison of the mean gestational age at initiation of prenatal care according to age (Spearman's correlation coefficient=-0.063) and educational level (p=0.189 by the Kruskal-Wallis test for independent samples). There was also no statistically significant difference in the mean number of prenatal visits according to these social determinants.

An important limitation of this study is that the methods used to collect data on race/color are unknown. The medical records may be based on hetero-identification — when the information is provided by another individual based on their perception of the patient; or on self-identification — a process in which the patient selects the category with which she identifies from those presented to her. The overall distribution of the subgroups evaluated by race/color, however, is similar to that described in the Annual Continuous National Household Sample Survey (PNAD Contínua Anual) for the state of Rio Grande do Sul (IBGE, 2021), in which, among women, 79.9% were white, 13.9% were mixed-race, and 5.9% were black.[8]



Source: Prepared by the authors.
Figure 4. Mean total number of prenatal visits among beneficiaries of the Bolsa Família Program.

CONCLUSIONS

This study identified that prenatal care is an important tool for the clinical follow-up of patients at the UBS Santa Cecília, ensuring access to medical and nursing consultations, as well as to testing for syphilis and HIV in all pregnant women.

The Bolsa Família Program had a notable impact on the care of pregnant women, given that beneficiaries began prenatal care significantly earlier than non-beneficiaries.

Regarding the other social determinants of health evaluated, such as age, race/color, and education level, Primary Health Care appears to have ensured equity in the services evaluated, with no statistically significant differences between the groups regarding gestational age at the first visit and the total number of visits.

Overall, pregnant women seen at UBS Santa Cecília in 2023 had a total mean number of prenatal visits within the range recommended by the Ministry of Health (at least six visits), but did not initiate prenatal care as early as expected (before 12 weeks).

Finally, in order to support strategies that promote earlier access to prenatal care and the maintainance follow-up with an adequate number of visits, it is considered important to promote new studies, including qualitative ones, to expand the analyses and better detail and understand the characteristics of each subgroup of women.

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