



PRENATAL CARE AND PERINATAL OUTCOME

Assistência pré-natal e resultado perinatal

Atención prenatal y resultado perinatal

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ABSTRACT

Objective: To relate the number of prenatal consultations to perinatal outcomes. **Methods:** Cross-sectional study conducted from September 2014 to August 2015 using a database of pregnant women attending a public maternity hospital in the city of Joinville, Santa Catarina, Brazil. The research included single pregnancy patients divided into 2 groups: a group of 6 or less prenatal consultations and a group of 7 or more prenatal consultations. The following primary outcomes were analyzed: delivery method, prematurity, low birth weight, macrosomia, perinatal death. The analysis was carried out using a multinomial logistic regression model with a 95% confidence interval. **Results:** In all, 4,260 records were analyzed: 266 (6.2%) had 6 or less prenatal consultations and 3,994 (93.7%) had 7 or more prenatal consultations. The groups presented different maternal characteristics – age ≤ 20 years (27.4% vs 21.3% $p=0.020$), incomplete primary education (28.1% vs 21% $p=0.006$) and complete secondary education (25.9% vs 36.9% $p=0.000$), systemic arterial hypertension (9.77% vs 6.5% $p=0.039$) – and different neonatal characteristics – prematurity (23.6% vs. 6.6%, $p=0.000$) and full-term birth (76.3% vs 93.3% $p=0.000$). The group of women who had 6 consultations of less was at increased odds of prematurity (OR=2.837), low birth weight (OR=1.895) and perinatal death (OR=5.584). **Conclusion:** The pregnant women who had less than seven prenatal consultations are at increased odds of prematurity, low birth weight and perinatal death.

Descriptors: Pregnancy; Prenatal Care; Pregnant Women.

RESUMO

Objetivo: Relacionar o número de consultas de pré-natal aos desfechos perinatais. **Metodologia:** Realizou-se um estudo de corte transversal, no período de setembro de 2014 a agosto de 2015, em base de dados de gestantes de uma maternidade pública na cidade de Joinville/SC/Brasil. A pesquisa incluiu pacientes com gestação única, subdividindo-os em 2 grupos: com 6 ou menos e 7 ou mais consultas de pré-natal. Utilizaram-se os desfechos primários: via de parto, prematuridade, baixo peso ao nascer, macrosomia, óbito perinatal. Analisou-se com modelo de regressão logística multinomial, com intervalo de confiança de 95%. **Resultados:** Obtiveram-se 4.260 prontuários, 266 (6,2%) realizaram 6 consultas ou menos e 3.994 (93,7%) com 7 consultas ou mais de pré-natal. Os grupos apresentaram diferença nas características maternas; na idade, menor ou igual a 20 anos (27,4% vs 21,3% $p=0,020$) entre os grupos; na escolaridade, respectivamente primeiro grau incompleto (28,1% vs 21% $p=0,006$) e segundo grau completo (25,9% vs 36,9% $p=0,000$); hipertensão arterial sistêmica (9,77% vs 6,5% $p=0,039$), diferentes características neonatais, como prematuridade (23,6% vs 6,6% $p=0,000$), e no parto a termo (76,3% vs 93,3% $p=0,000$) respectivamente. Encontrou-se maior chance de prematuridade (OR= 2,837), baixo peso (OR=1,895) e óbito perinatal (OR=5,584) no grupo que realizou 6 consultas ou menos. **Conclusão:** As gestantes com menos de sete consultas de pré-natal têm maior chance de ocorrência de prematuridade, baixo peso ao nascer e óbito perinatal.

Descritores: Gravidez; Cuidado Pré-Natal; Gestantes.



RESUMEN

Objetivo: Relacionar el número de consultas prenatales con los desenlaces perinatales. **Métodos:** Se realizó un estudio de cohorte transversal en el período entre septiembre de 2014 y agosto de 2015 en las bases de datos de embarazadas de una maternidad pública de la ciudad de Joinville/SC/Brasil. La investigación incluyó pacientes de única gestación dividiéndose en 2 grupos: con 6 o menos y 7 o más consultas prenatales. Se utilizaron los siguientes desenlaces primarios: la vía del parto, la prematuridad, el bajo peso al nacer, la macrosomía y el óbito perinatal. El análisis se realizó con el modelo de regresión logística multinomial con el intervalo de confianza del 95%. **Resultados:** De un total de 4.260 historiales clínicos, 266 (6,2%) pacientes realizaron 6 consultas o menos y 3.994 (93,7%) tuvieron 7 consultas prenatal o más. Los grupos presentaron diferencia en las características maternas; con edad de 20 años o menos (27,4% vs 21,3% $p=0,020$) entre los grupos; con educación básica incompleta (28,1% vs 21% $p=0,006$) y educación secundaria completa (25,9% vs 36,9% $p=0,000$); hipertensión arterial sistémica (9,77% vs 6,5% $p=0,039$), distintas características neonatales como la prematuridad (23,6% vs 6,6% $p=0,000$) y en el parto a término (76,3% vs 93,3% $p=0,000$) respectivamente. Se encontró más oportunidad de prematuridad ($OR=2,837$), bajo peso ($OR=1,895$) y óbito perinatal ($OR=5,584$) en el grupo que realizó 6 consultas o menos. **Conclusión:** Las gestantes con menos de siete consultas prenatales tienen más oportunidad de prematuridad, bajo peso al nacer y óbito perinatal.

Descriptor: Embarazo; Atención Prenatal; Mujeres Embarazadas.

INTRODUCTION

Prenatal care is all the pregnancy-related assistance and guidance provided to the patients, as well as the psychological support, diagnostic tests, screening, and potential prevention of maternal complications during delivery and neonatal outcomes^(1,2). It is a component of maternal and child health care.

The procedures to be carried out during prenatal care are diverse in different regions of the world. Developed countries adhere to a traditional pattern, which recommends a larger number of consultations (at least 11 consultations) and export the idea to some middle- and low-income countries⁽³⁾. However, for normal pregnancies, the World Health Organization (WHO) recommends at least 4 consultations if care and interurrences are detected more promptly and adequately treated – such monitoring enables the identification and reduction of maternal and child mortality, particularly in high vulnerability countries⁽⁴⁾. However, in low-income countries, improving clinical quality is often the most difficult issue due to socioeconomic conditions^(5,6).

In Brazil, prenatal care follows the guidelines of the Ministry of Health, which is responsible for the creation of the Program for the Humanization of Prenatal Care and Delivery (*Programa de Humanização no Pré-Natal e Nascimento – PHPN*), whose purpose is to serve women in a welcoming manner from the first trimester of pregnancy, without unnecessary interventions and with at least 6 consultations during the three gestational trimesters. The PHPN established a set of laboratory tests (hematocrit/hemoglobin count, fasting glucose, syphilis testing, blood type, simple urinalysis and anti-HIV testing)⁽⁷⁾ that should be performed, but an evaluation study identified that women who attended 6 or more prenatal consultations corresponded to 22.6% of the pregnant women in Brazil, and when the other criteria necessary for performing basic examinations and puerperal consultations were added, this percentage decreased to 5.6%, suggesting greater difficulties faced by pregnant mothers towards the set of activities and the challenge to adjust such care⁽⁸⁾. The implementation of a program created by the Brazilian government in 2013 attempted to solve emergency problems, mainly in the Primary Health Care Centers (*Unidades Básicas de Saúde – UBS*), prioritizing the care of pregnant women with longitudinal and continuous follow-up⁽⁹⁾.

Although the historical context – particularly from the 1980s on – has presented some limitations and/or few advances regarding political relations and maternal and child programs, events in Brazil have improved maternal and neonatal outcomes⁽¹⁰⁾. Maternal health care involves assistance activities carried out by professionals and the pregnant woman's knowledge about her rights during pregnancy and postpartum⁽¹⁾. Thus, prenatal care adequacy involves specific aspects and particularities of pregnant women – for instance, age and education – and new challenges and other variables, which interfere with key behaviors, such as initiation of prenatal care and the number of visits. The latter are factors that lead to a good quality of care⁽¹¹⁻¹³⁾.

However, scientific research on the causes and consequences related to the poor physician-patient interaction is still limited; it is suggested that the lower number of consultations is one of the factors affecting neonatal outcomes⁽¹⁴⁾. The present study is relevant and justified because it can help – as it brings scientific results – in the contemplation of conclusions that foster new methods to encourage pregnant women to attend more consultations, adding to the current biometric model the reconstruction of an innovative strategy⁽¹⁾. Therefore, the present research aims to relate the number of prenatal consultations to perinatal outcomes.

METHODS

This is a cross-sectional study conducted from September 1, 2014 to August 31, 2015 in a public maternity hospital in the city of Joinville, Santa Catarina, Brazil.

After obtaining approval from the maternity hospital (declaration of enforceability), the authors got access to the protocols of the pregnant women (virtual database), which include all the data and characteristics related to the pregnant women in a standardized system of information acquired during screenings at the maternity hospital. Medical records were searched virtually on a single day and the medical record of each pregnant woman was evaluated once during the year of data collection. After that, women were assigned to two groups: a group of women who attended ≤ 6 prenatal consultations and a group of women who attended ≥ 7 prenatal consultations.

The variables collected from the pregnant women's records included: age, education, associated diseases, route of delivery, and neonatal outcomes. Similarly, gestational and neonatal outcomes were collected: route of delivery, type of delivery, weight of newborn (NB), and death. The results were organized in a spreadsheet for further statistical analysis.

Exclusion criteria were: multigravida who had taken hypoglycemic drugs during pregnancy and pregnant women who did not complete prenatal care in the maternity hospital where the research took place. Only women with singleton pregnancies and who had received full medical follow-up at the hospital were included. Thus, after the acquisition of 6,283 medical records, 2,023 were excluded, remaining 4,260 medical records to be included the study.

The variables were arranged as follows: the age of the pregnant woman was classified according to the following age groups: age 0 (≤ 20 years); age 1 (21-29 years); age 2 (30-34 years) and age 3 (≥ 35 years). As for education: education 0 (literate); education 1 (incomplete primary education); education 2 (complete primary education); education 3 (incomplete secondary education); education 4 (complete secondary education); education 5 (incomplete higher education); education 6 (complete higher education), and education 7 (unable to read and write). Associated diseases were: systemic arterial hypertension before pregnancy (PreSAH); systemic artery hypertension during pregnancy (GestSAH); previous diabetes mellitus (DM) diagnosed in the first trimester of pregnancy; and gestational diabetes mellitus (GDM). Next, prematurity of the newborn (NB) and full-term birth were assessed, and the following primary outcomes were analyzed: route of delivery, prematurity, low birth weight, macrosomia, perinatal death.

Statistical analysis was performed using SPSS 21. The categorical variables present age (in age group), education (in degrees), diseases, route of delivery and parity. Categorical variables are: route of delivery and classification of NB weight. Quantitative variables were described in absolute and percentage numbers. Pearson's chi-squared test (Q^2) was used for values above five (5) and Fisher's exact test was used for values below five (5) in the analysis of proportions according to the categorical variables. The multinomial logistic regression model was used for the data corresponding to categorical variables, with crude and adjusted values for estimation of Odds Ratio. Confidence interval was set at 95% and values were considered significant when $p < 0.05$ in order to examine the chances of unfavorable gestational outcomes related to the number of consultations. The adjusted variables were: pregnant woman's age, education, PreSAH, GestSAH, DM and GDM.

This research was approved by the Research Ethics Committee of the Hans Dieter Schmidt Regional Hospital / SES / SC under Approval No. 5363. The preservation of the confidentiality of pregnant women and their children was considered a priority and complied with Resolution 466/12⁽¹⁵⁾.

RESULTS

The general characteristics of the study population, which included 4,260 medical records, were: 266 (6.2%) women attended 6 or fewer prenatal consultations and 3,994 (93.7%) attended seven or more consultations. The sum of both groups in relation to the total number of records revealed a prevalence of ages ≤ 20 years, with 926 (21.7%) pregnant women, and ages 21-29 years, with 2,021 (47.4%) pregnant women. There was a higher number of pregnant women with complete primary and secondary education, with 916 (21.5%) and 1,543 (36.2%) women in the group with ≤ 6 consultations and in the group with ≥ 7 consultations, respectively.

GDM predominated in 382 (8.9%) women and normal vaginal delivery was found in 3,786 (88.8%) women. Regarding neonatal outcomes, normal birth (full-term) was more prevalent, occurring in 3,930 (92.2%) participants. However, premature birth (preterm) stands out as it occurred in 327 (7.67%) newborns (NB) of the total sample.

Table I compares the maternal characteristics and the neonatal outcomes with the number of consultations ≤ 6 and ≥ 7 . Of the 4,260 records assessed, the two groups – with 266 and 3,994 women, respectively – presented differences in the following variables: with regard to maternal characteristics, age ≤ 20 years was found in 73 (27.4%) women in the group with ≤ 6 consultations and in 853 (21.3%) women in the group with ≥ 7 consultations, with statistical significance found for the pregnant woman's age ($p=0.02$); as for education, there were 75 (28.1%) and 841 (21%) ($p<0.01$) pregnant women with complete primary education. Likewise, pregnant women with higher education were 69 (25.9%) and 1,474 (36.9%) in the group of pregnant women with ≤ 6 consultations and in the group of pregnant women with ≥ 7 consultations, respectively.

With regard to associated diseases, GestSAH was found in 26 (9.77%) women in the group with ≤ 6 consultations and in 260 (6.5%) women in the group with ≥ 7 consultations ($p=0.03$). Similarly, prematurity was found in 63 (23.6%) women with ≤ 6 consultations compared to 264 (6.6%) women with ≥ 7 consultations ($p<0.01$). These results are equivalent to full-term birth, with 203 (76.3%) women with ≤ 6 consultations and 3,727 (93.3%) women with ≥ 7 consultations ($p<0.01$).

Table I - Number of prenatal consultations and maternal and neonatal characteristics. Joinville, Santa Catarina, 2014 - 2015.

Maternal and neonatal characteristics	≤ 6 consultations	≥ 7 consultations	p-value §
	(n= 266)% (100.0)	(n=3,994)% (100.0)	
Age (in years)			
≤ 20 ‡	73 (27.4)	8 53 (21.3)	0.020*
21 to 29 ‡	127 (47.7)	1894 (47.4)	0.919*
30 to 34 ‡	36 (13.5)	720 (18.0)	0.063*
≥ 35 ‡	30 (11.2)	527 (13.1)	0.369*
Education			
Literate ‡	8 (3)	88 (0.95)	0.392*
Incomplete primary ‡	55 (20.6)	744 (18.6)	0.407*
Complete primary ‡	75(28.1)	841 (21.0)	0.006*
Incomplete secondary ‡	39 (14.6)	491 (12.2)	0.257*
Complete secondary ‡	69(25.9)	1474 (36.9)	0.000*
Incomplete higher education‡	6 (2.25)	133 (3.32)	0.340*
Complete higher education ‡	13 (4.8)	219 (5.48)	0.678*
Unable to read and write ‡	1 (0.37)	4 (0.1)	0.203**
Associated diseases			
PreSAH‡	5 (1.87)	118 (2.95)	0.301*
GestSAH‡	26 (9.77)	260 (6.5)	0.039*
Previous DM ‡	4 (9.87)	30 (0.75)	0.182**
GDM ‡	19 (7.14)	363 (9.0)	0.282*
Route of delivery			
Vaginal ‡	230 (84.4)	3556 (89.0)	0.197*
C-section ‡	36 (13.5)	438 (10.9)	0.197*
Neonatal outcomes			
Preterm ‡	63 (23.6)	264 (6.6)	0.000*
Full term ‡	203 (76.3)	3727 (93.3)	0.000*

PreSAH - Systemic arterial hypertension before pregnancy; GestSAH - Gestational hypertension; Previous DM - diabetes mellitus diagnosed in the third trimester; GDM - gestational diabetes mellitus; ‡Absolute numbers and percentages; § p value according to the following tests: *Pearson's Q² Chi-squared test; **Fisher's Exact test; Age 0 (≤ 20); Age 1 (21 to 29); Age 2 (30 to 34); Age 3 (≥ 35); Education 0 (literate); Education 1 (incomplete primary education); Education 2 (complete primary education); Education 3 (incomplete secondary education); Education 4 (complete secondary education); Education 5 (incomplete higher education); Education 6 (complete secondary education); Education 9 (unable to read and write); Prematurity - (baby's birth before 37 weeks of pregnancy); full term - (baby's birth at 37 to 42 weeks of pregnancy)

Table II identifies the odds of unfavorable gestational outcomes in relation to the number of consultations. The analysis of the adjusted odds ratio indicated higher chances of prematurity (OR=2.837, 95%CI 1.836-4.384), low weight (OR=1.895, 95%CI, 1.184-3.034) and perinatal death (OR=5.584, 95%CI 2.638-11.819) in the group of pregnant women with ≤ 6 consultations.

Table II - Unfavorable gestational outcomes and crude and adjusted odds ratio (95%CI). Joinville, Santa Catarina, 2014 - 2015.

	Crude	p	Adjusted	p
C-section	1.189 (0.8-1.729)	0.363	1.245 (0.852-1.818)	0.257
Preterm	2.801 (1.823-4.303)	0.000	2.837 (1.836-4.384)	0.000
Low weight NB	1.911 (1.199-3.045)	0.006	1.895 (1.184-3.034)	0.008
NB Neonatal death	0.887 (0.093-7.876)	0.891	0.755 (0.081-7.048)	0.805
Stillborn NB	1.894 (0.811-4.420)	0.140	1.907 (0.802-4.531)	0.144
Perinatal death	5.739 (2.748-11.987)	0.000	5.584 (2.638-11.819)	0.000

NB - newborn; Neonatal death - Death of the newborn after birth; Stillborn - death of a baby in the uterus or during labor; previous DM - diabetes mellitus before pregnancy, GDM - diabetes mellitus during pregnancy; perinatal death - fetal and newborn death.

DISCUSSION

The present research, which compared the frequency of the number of consultations attended by a sample of postpartum women with unfavorable obstetric outcomes, demonstrated the importance of prenatal care.

As regards maternal age at pregnancy, a research conducted in the 80's identified that the age of the pregnant woman is a relevant variable in negative outcomes, which are more prevalent in mothers under 15 years of age and in women aged 40 to 45 years⁽¹⁶⁾. Age has been significantly related to a lower number of consultations and subsequent perinatal outcomes in different studies^(14,16). In the present research, pregnant women aged ≤ 20 years presented differences in relation to the highest number of prenatal consultations ($p < 0.05$), with a relevant percentage of pregnant mothers in this age group with lower number of consultations. Additionally, they had low levels of education – complete primary or secondary education.

Another relevant fact, mainly as of 2010, is the development of research on prenatal care in Brazil. The literature pointed to interurrences during pregnancy, especially in postpartum women who presented a small number of consultations during prenatal care. This frequency prevailed in relation to the reduced number of consultations and was concomitantly related to factors such as: social inequality, younger maternal age, low levels of education and low household income⁽¹⁶⁻²⁰⁾; however, association between the number of consultations and the education of pregnant women with the sociodemographic characteristics of the region has not been identified in scientific studies. It should be noted that the strong European and, mainly, German colonization predominant in the city where the present research was carried out advocates education⁽²¹⁾.

Thus, among pregnant women who participated in the present study, those with the lowest levels of education in the maternity hospital were those who attended the least number of consultations. Such basic information should be well addressed by health professionals and disseminated by the media. Studies that identified the association between education and socioeconomic status have drawn attention to the needs of multidisciplinary Family Health Care teams, which should educate the mother during pregnancy, especially pregnant women with low levels of education^(22,23).

As for the association between diseases and the number of prenatal consultations, it should be noted that different studies have shown a relevant association of GestSAH with obesity and excessive weight gain in pregnancy^(24,25). However, a recent study, conducted with 296 pregnant women found a percentage of 15.9% of pregnant women with GestSAH who attended ≤ 6 prenatal consultations⁽¹⁶⁾. In another study, researchers recognized that a higher number of consultations facilitates the early identification of interurrences, such as preeclampsia and preterm birth⁽²⁴⁾. However, the present study identified a higher number of pregnant women with GestSAH among those who attended ≥ 7 consultations and among younger women. These results reinforce conclusions and corroborate the literature as for the importance of the relationship between age group and number of consultations, and, consequently, the possible prognosis for hypertensive diseases, prematurity, and neonatal mortality^(16,18,26).

Studies have shown that diseases such as gestational diabetes mellitus (GDM) and hypertension lead to negative maternal and neonatal outcomes; therefore, pregnant women should attend a higher number of consultations^(14,16,17,25). It is important to provide prenatal care to women with GDM through biweekly consultations, maternal metabolic control and evaluation of fetal well-being⁽²⁷⁾. The results of the present study are different from most of the literature results on previous diabetes mellitus and GDM – these diseases did not present significant values in the present study.

There were no significant results in the present study with regard to the route of delivery, whether vaginal or C-section. However, a contradiction and/or an evolution was observed⁽¹⁴⁾ in pregnant women who attended the least number of prenatal consultations: women who attended ≤ 6 consultations had vaginal delivery – 59.8% of a sample of 296 women – while women with ≥ 7 consultations accounted for almost 72% of a sample of 195 pregnant women. Following that, the present study

identified differences between the groups as for preterm and full-term birth in relation to the number of consultations. Regarding preterm birth, 63 (23.6%) cases were women with ≤ 6 consultations and 264 (6.6%) were in the group with ≥ 7 consultations. Additionally, there were 203 (76.3%) and 3,727 (93.3%) women, respectively, with normal (full-term) birth.

According to the literature, a history of preterm birth may be related to a lower number of prenatal consultations and, consequently, to neonatal sepsis, low birth weight, and neonatal death⁽¹⁸⁾. The adjusted Odds Ratio showed a higher chance of prematurity in pregnant women who attended ≤ 6 consultations in the present study, whose results are similar to the scientific findings of another study⁽¹⁵⁾ which identified that the pregnant women who attended ≤ 6 consultations had extreme preterm births – with ≤ 31 weeks of pregnancy. The present study found a relevant percentage of prematurity related to the reduced number of prenatal consultations, a complication that, according to the literature, favors the delay in the motor and cognitive development of the newborn^(28,29).

Regarding the association between preterm birth and number of consultations, studies have shown great concern about the prevention through time control and screening of mother's health, especially with regard to the outcomes related to hypertension and prematurity^(25,30). Therefore, the difficulties and/or the non-tracking of conditions originating in the perinatal prenatal period should be highlighted. These conditions are described in the International Classification of Diseases (ICD-10)⁽³¹⁾ on the fetus and the newborns affected by maternal conditions (P00-P018), by infections specific to the perinatal period (P35-P39), and by cardiovascular and respiratory disorders (P20-P29). Other studies also point out the possibility of avoiding conditions during pregnancy with the highest number of consultations, the most frequent being: preeclampsia, prematurity, development of renal and urinary tract diseases, and low birth weight^(16, 18,32).

In 2016, researchers identified the odds regarding the benefits of adequate prenatal control, with chances of a higher number of consultations among younger women (OR=5.5 95%CI: 2.8-10.8)⁽³³⁾. Another study⁽³⁴⁾ focused on prenatal care as well as on strategies to encourage pregnant women, emphasizing the importance of the number of consultations and highlighting informative processes and recommendations regarding maternal and infant health care provided by obstetrics professionals and nursing teams in addition to reinforcing the subject in the family environment.

The variable that presented relevance and/or odds ratio in relation to the small number of consultations was the low weight of the NB – 1.8 (95%CI 1.1-3.0) in the present study. In other studies, education and low income were related to the number of consultations and low birth weight^(18,35).

Studies have shown that low birth weight and prematurity are statistically associated with the low number of consultations⁽¹⁶⁾. However, researchers have identified that the same association parameters were present in newborns who evolved to death in the early neonatal period⁽¹⁷⁾. On the other hand, another study comparing perinatal mortality with prenatal care did not find significant values – $p=0.50$ ⁽¹⁶⁾.

Previous studies on perinatal mortality found a strong association of such variable with low household income and low birth weight. In the literature, the potential decrease in this incidence has been a goal in maternal and child programs^(34,36). Therefore, the decrease in the number of NB with low birth weight suggests a reduction in perinatal mortality⁽³⁴⁾.

Another research, which focused on early and late neonatal death, found a prevalence of neonatal death among the following characteristics: less than 7 antenatal consultations, prematurity, low birth weight and an Apgar score of less than 7 at 1 minute⁽³⁷⁾. The neonatal death rate was 4.8% in relation to the antenatal care⁽³⁸⁾. In the present research, perinatal mortality was related to the care and/or the number of prenatal consultations, with chances of perinatal death in the group that attended ≤ 6 consultations.

The literature points out a notorious association of prematurity, low birth weight and perinatal death with a low number of prenatal care consultations^(17,39). Therefore, it was important to have experts suggest and highlight the need for the implementation of prenatal strategies and programs for the prevention of prematurity and perinatal death⁽³⁹⁾.

The present study presented some limitations, such as difficulties to interfere in the work routine in different sectors of the hospital and to establish schedules for meetings, presentations and debates on protocol data and other socioeconomic conditions.

CONCLUSION

The pregnant women who attended less than seven prenatal care consultations had a higher chance of having preterm infants with low birth weight and/or perinatal death.

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