

# EVALUATION OF PRENATAL CARE: RELEVANCE OF LABORATORY EXAMINATIONS

*Avaliação da assistência pré-natal: relevância dos exames laboratoriais*

*Evaluación de la asistencia prenatal: relevancia de las pruebas*

Original Article

## ABSTRACT

**Objective:** To evaluate the prenatal care assistance provided to women assisted at delivery and examine the relevance of laboratory tests to the quality of prenatal care. **Methods:** A cross-sectional cohort study carried out in a university referral hospital, in the city of Santa Cruz-RN, from June to July 2014, including 50 pregnant women assisted at delivery. The women were between 18-40 years old and presented low obstetric risk. Data was collected from the prenatal medical chart and through a structured questionnaire. The characterization of the prenatal assistance adequacy was developed based on guidelines of the Prenatal and Puerperium Humanization Program (PPHP) and the Prenatal and Postpartum Technical Manual (PPTM). A descriptive analysis of the data was performed and the chi-square test was used for verification of differences between proportions. **Results:** It was observed that 86% (n=43) of the women initiated the prenatal care assistance early and had an average of 7.3 appointments. The clinical obstetric procedures had five or more records in 58% (n=29) of the sample. When assessed the laboratory tests records, a low percentage of adequacy was found in the 2nd recommended routine testing (32%, n=16). According to the parameters (PPHP and PPTM), prenatal care was suitable only in 24% (n=12) of the cases. When evaluated the classification of prenatal care assistance without the use of laboratory tests, the adequacy rose to 48% (n=24), presenting a statistically significant difference ( $p < 0.001$ ). **Conclusion:** Access to prenatal care assistance was satisfactory; however, its quality was deficient, and the major weakness seems to be related to the records of laboratory tests.

**Descriptors:** Prenatal Care; Quality of Health Care; Blood Tests.

## RESUMO

**Objetivo:** Avaliar a assistência pré-natal de mulheres assistidas ao parto e verificar a relevância dos exames laboratoriais na qualidade do pré-natal. **Métodos:** Estudo de corte transversal desenvolvido em um hospital universitário de referência na cidade de Santa Cruz-RN, no período de junho a julho de 2014, com 50 parturientes assistidas ao parto. As mulheres tinham entre 18-40 anos e possuíam baixo risco obstétrico. Os dados foram coletados a partir do cartão do pré-natal e aplicação de questionário estruturado. A caracterização da adequação do pré-natal descritiva dos dados e o teste Qui-quadrado para a verificação de diferenças entre as proporções. **Resultados:** Observou-se que 86% (n=43) iniciaram o pré-natal precocemente e obtiveram uma média de 7,3 consultas. Os procedimentos clínicos obstétricos tiveram cinco ou mais registros em 58% (n=29) da amostra. Quando avaliado o foi elaborada com base nas diretrizes do Programa de Humanização do Pré-natal e Puerpério (PHPN) e no Manual Técnico de Pré-natal e Puerpério (MTPP). Realizou-se análise registro de exames laboratoriais, observou-se um baixo percentual de adequação na 2ª rotina de exame preconizada (32%, n=16). De acordo com os parâmetros (PHPN e MTPP), o pré-natal esteve adequado apenas em 24% (n=12) dos casos. Quando avaliada a classificação da assistência do pré-natal sem o uso dos exames laboratoriais, a adequação subiu para 48% (n=24), com diferença estatisticamente significantes ( $p < 0,001$ ). **Conclusão:** O acesso ao pré-natal foi satisfatório, entretanto, a qualidade do pré-natal foi deficiente e a maior fragilidade parece estar relacionada aos registros dos exames laboratoriais.

**Descritores:** Cuidado Pré-natal; Qualidade da Assistência à Saúde; Exames de Sangue.

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## RESUMEN

**Objetivo:** *Evaluar la asistencia prenatal de mujeres asistidas en el parto y verificar la relevancia de las pruebas de laboratorio para la calidad del prenatal.* **Métodos:** *Estudio transversal desarrollado en un hospital universitario de referencia de la ciudad de Santa Cruz-RN en el período entre junio y julio de 2014 con 50 parturientas asistidas en el parto. Las mujeres tenían entre 18-40 años y riesgo obstétrico bajo. Fueron recogidos los datos de la tarjeta del prenatal y aplicación de un cuestionario estructurado. La caracterización de la adecuación del prenatal fue elaborada basado en las directrices del Programa de Humanización del Prenatal y Puerperio (PHPN) y en el Manual Técnico del Prenatal y Puerperio (MTPP). Se realizó un análisis descriptivo de los datos y el test Chi-cuadrado para verificar las diferencias de las proporciones.* **Resultados:** *Se observó que el 86% (n=43) iniciaron el prenatal precoz y tuvieron una media de 7,3 consultas. Los procedimientos clínicos de la obstetricia tuvieron cinco o más registros en el 58% (n=29) de la muestra. En la evaluación del registro de las pruebas de laboratorio se observó un porcentual de adecuación bajo en la 2ª rutina de prueba establecida (32%, n=16). Según los parámetros (PHPN y MTPP), el prenatal fue adecuado solamente para el 24% (n=12) de los casos. En la evaluación de la clasificación de la asistencia del prenatal sin el uso de pruebas de laboratorio, la adecuación subió al 48% (n=24) con diferencia estadística significativa ( $p < 0,001$ ).* **Conclusión:** *El acceso al prenatal fue satisfactorio, sin embargo, la calidad del prenatal fue deficiente y la mayor fragilidad parece relacionarse con los registros de las pruebas de laboratorio*

**Descriptor:** *Atención Prenatal; Calidad de la Atención de Salud; Pruebas Hematológicas*

## INTRODUCTION

The reduction in maternal and child mortality remains a focus in public health and is one of the Millennium Development Goals<sup>(1,2)</sup>. In Brazil, the majority of deaths and complications during pregnancy, childbirth and postpartum period are mainly caused by hypertensive disorders, hemorrhages and infections, which are liable to be prevented through suitable care during the prenatal period<sup>(3-5)</sup>.

Prenatal care quality contributes to outcomes that are more favorable and allows the detection and timely treatment of diseases, in addition to the control of incidental complications to the health of the woman and baby, thus helping to reduce maternal and neonatal mortality<sup>(6)</sup>.

In this sense, the World Health Organization (WHO) has established a model, drawn from a systematic review of randomized clinical trials from several countries, which points out actions to be developed, aiming at optimizing resources without compromising the health of women experiencing low-risk pregnancy<sup>(7)</sup>. In Brazil, the Ministry

of Health established the prenatal care model through the Prenatal and Childbirth Humanization Program (PCHP). This regulates the measures to be adopted during the prenatal and postpartum period, in order to ensure access to and enhanced coverage and quality of prenatal care in the comprehensive care model, childbirth assistance, postpartum and neonatal care<sup>(8)</sup>. Assessment of the criteria established by the PCHP during prenatal care process has been performed in several studies to identify service compliance and performance and evaluate the quality of care<sup>(6,9,10)</sup>.

With the purpose of strengthening the measures proposed by the PCHP and organizing the care network and the standardization of health practices, it was released the "Prenatal and Puerperium Technical Manual: qualified and humanized care" (PPTM), which pointed the recommended procedures for the prenatal care follow-up, including clinical obstetric parameters<sup>(11)</sup>. Furthermore, in 2011, Brazil implemented the Stork Network, a strategy established by the Ministry of Health which aims at implementing a care network to ensure women a better quality of care during the prenatal, delivery and postpartum period<sup>(3)</sup>.

Researches aimed at evaluating the assistance during the prenatal period constitute a powerful guiding tool for the knowledge of advances and remaining fragilities in healthcare networks, contributing to provide the health managers with subsidies for planning and implementation of measures to reduce maternal and neonatal morbidity and mortality. Therefore, this study aimed at evaluating the prenatal care of women assisted at delivery and examining the relevance of laboratory tests to the quality of prenatal care.

## METHODS

This is a cross-sectional study, conducted at Ana Bezerra University Hospital (*Hospital Universitário Ana Bezerra - HUAB*), located in Santa Cruz, RN. HUAB is considered a referral institution in the microregion of Borborema Potiguar, as regards the specialized healthcare to pregnant women and children.

The study was conducted in the period from June to July 2014, with 50 pregnant women coming from the microregion of Borborema Potiguar, all assisted at childbirth in HUAB. Those aged between 18 and 40 years, and with low obstetrical risk (information observed in the pregnant woman's medical record and antenatal record card), were considered eligible. Parturient women who did not have the antenatal record card or did not perform any prenatal consultation were not included.

For data collection, interviews were carried out within 24 hours after delivery, using a standardized structured

questionnaire, developed for this research and based on the literature. The questionnaire included personal and sociodemographic data, comprising variables such as age, ethnicity, marital status, education level and family income.

To evaluate the data concerning pregnancy and prenatal care, information on parturition and type of delivery was collected. The data source for the evaluation of prenatal quality consisted of the records in the antenatal card. This provided information about clinical procedures (entry to prenatal care assistance, number of prenatal consultations, weight and blood pressure records) and laboratory examinations (ABO blood group and Rh factor; hemoglobin (Hb) and hematocrit (Ht); syphilis serology, i.e., Venereal Disease Research Laboratory or VDRL test; routine urinalysis; fasting blood glucose and HIV testing) that were conducted during pregnancy.

The indicator to assess the adequacy of assistance received in the prenatal period was built by joining together the criteria established by the Prenatal and Childbirth Humanization Program (PCHP)<sup>(8)</sup> and the Prenatal and Puerperium Technical Manual (PPTM)<sup>(11)</sup>.

The assistance was rated into three categories: *Adequate* - when the antenatal card had records of six or more prenatal consultations; prenatal care beginning before the 20th week of pregnancy; five or more records of measurement procedures of blood pressure, weight, uterine height, and calculation of gestational age; four or more records of fetal heart rate; at least one record of ABO/Rh, Ht/Hb, VDRL, urinalysis, fasting blood glucose, and HIV tests, in the first consultation; and new records of VDRL, urinalysis, and blood glucose, approximately at the 30th week of pregnancy. *Inadequate* - when the antenatal card contained record of the first prenatal consultation after the 28th week of pregnancy or less than three registered consultations; two or fewer records of uterine height, gestational age, blood pressure, weight, fetal heart rate; and no record of laboratory tests. *Intermediate* - when the assessment resulted in situations other than these.

Attempting to verify the relevance of laboratory examinations to the adequacy of prenatal care, the assistance rating was also performed after removal of the criteria established for those examinations, thus constituting the PCHP-PPTM modified indicator.

Data was stored in specific software, with double entry, to favor the detection of incidental typing errors. Statistical analyses were performed using SPSS version 20.0, and data analysis procedures involved descriptive statistics and bivariate analyses. The chi-square test was used to verify differences between the proportions, adopting  $p < 0.05$  as the level of statistical significance.

This study was previously approved by the Research Ethics Committee of the Onofre Lopes University Hospital (*Hospital Universitário Onofre Lopes - HUOL*) of the Federal University of Rio Grande do Norte (UFRN), under opinion no. 289,309. Any data was only collected after obtaining the participants' voluntary acceptance and signature on the Informed Consent form.

## RESULTS

The sample comprised 50 participants with mean age of  $25.8 \pm 5.1$  years, mostly distributed in the age range of 18 to 24 years (46%,  $n=23$ ) (Table I).

The participants were predominantly brown-skinned (64.6%;  $n=31$ ), married or in a common-law union (84%;  $n=42$ ), with education level up to complete junior high school (59.2%;  $n=29$ ). The majority of the participants' families had income up to one minimum wage (84%;  $n=42$ ) and consisted of  $3.7 \pm 1.5$  persons per household, on average (Table I).

The women had previous delivery to the last one, ranging between 0 and 2 children (mean  $1.45 \pm 1.4$ ). Regarding the type of delivery, it was observed that most (78%;  $n=39$ ) had natural childbirth during the study period (Table I).

On the quality of prenatal care, according to the parameters described in PCHP-PPTM, for most (70%;  $n=35$ ) participants, assistance was classified as intermediate, with only 24% ( $n=12$ ) cases found adequate.

When tests were applied to assess whether there was association between the quality of prenatal care and sociodemographic characteristics of the population, it was observed that these variables were statistically independent (Table I).

The evaluation of criteria used for prenatal care rating, in a separate way, is described in Table II. Data shows the average number of  $7.3 \pm 2.7$  consultations attended by women, during pregnancy. Additionally, 86% ( $n=43$ ) of the respondents had early access to prenatal care assistance, with their first consultation taking place before the 20th gestational week. The records of clinical obstetric procedures performed at each consultation were also mostly (58%;  $n=29$ ) with the recommended frequency ( $\geq 5$  records), especially as regards the weight (80%;  $n=40$ ) and blood pressure (86%;  $n=43$ ). The record of fetal heart rate, recommended to be higher or equal to four, was found in this study with mean of  $4.2 \pm 2.4$  records.

Table III presents the laboratory examinations recorded in the antenatal card. Compliance to the examinations recommended to be performed at the first prenatal consultation, as listed by PCHP, was considered satisfactory

Table I - General characteristics of parturients and newborns included in the study, according to the prenatal care quality rating. Santa Cruz, RN, 2014.

Variables	n (%)	Prenatal care adequacy [n (%)]			p value <sup>#</sup>
		Adequate	Intermediate	Inadequate	
<b>Age (years) (n=50)</b>					
≤ 20 years	9 (18)	2 (22.2)	6 (66.7)	1 (11.1)	0.68
21-24	14 (28)	5 (35.7)	8 (57.1)	1 (7.1)	
25-30	15 (30)	2 (13.3)	12 (80)	1 (6.7)	
>30	12 (24)	3 (25)	9 (75)	0	
<b>Ethnic group (n=48)</b>					
White	14 (29.2)	2 (14.3)	12 (85.7)	0	0.14
Brown	31 (64.6)	9 (29.0)	20 (64.5)	2 (6.5)	
Black	1 (2.1)	1 (100)	0	0	
Yellow	2 (4.2)	0	1 (50)	1 (50)	
<b>Civil status (n=50)</b>					
Married	42 (84)	10 (23.8)	30 (71.4)	2 (4.7)	0.73
Not married <sup>b</sup>	8 (16)	2 (25)	5 (62.5)	1 (12.5)	
<b>Education level (n=49)</b>					
Literate	7 (14.3)	3 (42.9)	4 (57.1)	0	0.20
Complete junior high school	22 (44.9)	3 (13.6)	17 (77.3)	2 (9.1)	
Complete high school	20 (40.8)	6 (30)	14 (70)	0	
<b>Family income (n=50)</b>					
Up to 1 minimum wage <sup>†</sup>	42 (84)	9 (21.4)	30 (71.4)	3 (7.1)	0.40
From 1 to 2 minimum wages	6 (12)	3 (50)	3 (50)	0	
≥ 2 minimum wages	2 (4)	0	2 (100)	0	
<b>No. persons/household (n=49)</b>					
Up to 2 persons	10 (20.4)	3 (30)	7 (70)	0	0.51
From 3 to 5 persons	33 (67.3)	9 (27.3)	22 (66.7)	2 (6.1)	
More than 5 persons	6 (12.3)	0	5 (83.3)	1 (16.7)	
<b>Occupation (n=49)</b>					
Agriculture	6 (12.2)	2 (33.3)	4 (66.7)	0	0.94
Industry and commerce	3 (6.1)	1 (33.3)	2 (66.7)	0	
Public servant or self-employed	2 (4.1)	0	2 (100)	0	
Domestic worker	36 (73.5)	7 (19.5)	26 (72.2)	3 (8.3)	
Others	2 (4.1)	1 (50)	0	1 (50)	
<b>Parturition (n=49)</b>					
0 (Nulliparous)	14 (28.6)	3 (21.4)	11 (78.6)	0	0.23
1 (Primiparous)	16 (32.7)	2 (12.5)	12 (75)	2 (12.5)	
2 (Secondiparous)	10 (20.4)	5 (50)	5 (50)	0	
≥ 3 (Multiparous)	9 (18.4)	2 (22.2)	6 (66.7)	1 (11.1)	
<b>Type of delivery</b>					
Natural	39 (78)	8 (20.5)	28 (71.8)	3 (7.7)	0.30
Cesarean	11 (22)	4 (36.4)	7 (63.6)	0	

<sup>†</sup>R\$ 678.00; <sup>a</sup>(formally or informally); <sup>b</sup>(single, widow, separated)

<sup>#</sup> Chi-square test.

(64%; n=32). High record rates were identified for blood glucose and VDRL, both with 91.8% (n=46); blood group/Rh factor and hematocrit/hemoglobin, with frequency of 89.8% (n=45); urinalysis, 87.8% (n=44); and HIV, 73.5% (n=37).

However, when evaluated the record of examinations to be repeated next to the 30th gestational week (second routine of examinations), a significant decrease was observed (32%; n=16). In the latter period, fasting blood glucose and VDRL tests, for example, were present in only 36.7% (n=18) and 36.6% (n=18) of the interviewees' antenatal cards, respectively. Urinalysis was the test with the highest number of records, being present in 42.9% (n=21) of the assessed cards. On the anti-HIV testing, which,

according to PCHP, should be repeated whenever possible in the third trimester of pregnancy, only 6.1% (n=3) of the analyzed cards had record of this in the second routine of examinations.

By using the modified PCHP-PPTM (PCHP-PPTM without laboratory tests), to evaluate whether the absence of laboratory tests was contributing to the low quality of prenatal care, the adequacy percentage rose to 48% (n=24). Mothers at first classified as being provided intermediate-quality prenatal care were thus considered with adequate prenatal care in a significant percentage, as shown in Figure 1. The chi-square test was then applied, and a statistically significant difference ( $p < 0.001$ ) was observed between that percentage and the previously found ratio of 24% (n=12) (Figure 1).

Table II - Clinical obstetric procedures performed in the prenatal period. Santa Cruz, RN, 2014.

Variables	Mean ( $\pm$ SD)	n (%)
<b>Gestational age at entry</b>		-
< 20 weeks	12.2 ( $\pm$ 6.8)	43 (86)
20 - 28 weeks		4 (8)
>28 weeks		3 (6)
<b>No. of prenatal consultations</b>		-
$\geq$ 6 consultations	7.3 ( $\pm$ 2.7)	38 (76)
3 - 5 consultations		9 (18)
< 3 consultations		3 (6)
<b>Weight</b>		-
$\geq$ 5 records	6.8 ( $\pm$ 2.4)	40 (80)
3 - 4 records		6 (12)
$\leq$ 2 records		4 (8)
<b>Blood pressure</b>		-
$\geq$ 5 records	6.9 ( $\pm$ 2.3)	43 (86)
3 - 4 records		4 (8)
$\leq$ 2 records		3 (6)
<b>Calculation of gestational age</b>		-
$\geq$ 5 records	7.3 ( $\pm$ 2.7)	43 (86)
3 - 4 records		4 (8)
$\leq$ 2 records		3 (6)
<b>Uterine height</b>		-
$\geq$ 5 records	5.2 ( $\pm$ 2.5)	34 (68)
3 - 4 records		8 (16)
$\leq$ 2 records		8 (16)
<b>Fetal heart beat</b>		-
$\geq$ 4 records	4.2 ( $\pm$ 2.4)	31 (62)
= 3 records		6 (12)
$\leq$ 2 records		13 (26)

SD=standard deviation.

Table III - Laboratory examinations performed in the prenatal period. Santa Cruz, RN, 2014.

Tests performed (n=49)	1st Routine of examinations	2nd Routine of examinations
	n (%)	n (%)
<b>Blood group and Rh factor</b>	-	-
Yes	44 (89.8)	
No	5 (10.2)	
<b>Hemoglobin / Hematocrit</b>	-	-
Yes	44 (89.8)	
No	5 (10.2)	
<b>Anti-HIV test</b>	-	-
Yes	36 (73.5)	
No	13 (26.5)	
<b>Blood glucose</b>	-	-
Yes	45 (91.8)	18 (36.7)
No	4 (8.2)	31 (63.3)
<b>Urinalysis</b>	-	-
Yes	43 (87.8)	21 (42.9)
No	6 (12.2)	28 (57.1)
<b>VDRL test</b>	-	-
Yes	45 (91.8)	18 (36.6)
No	4 (8.2)	31 (63.3)

HIV: Human immunodeficiency virus; VDRL: *Venereal Disease Research Laboratory*

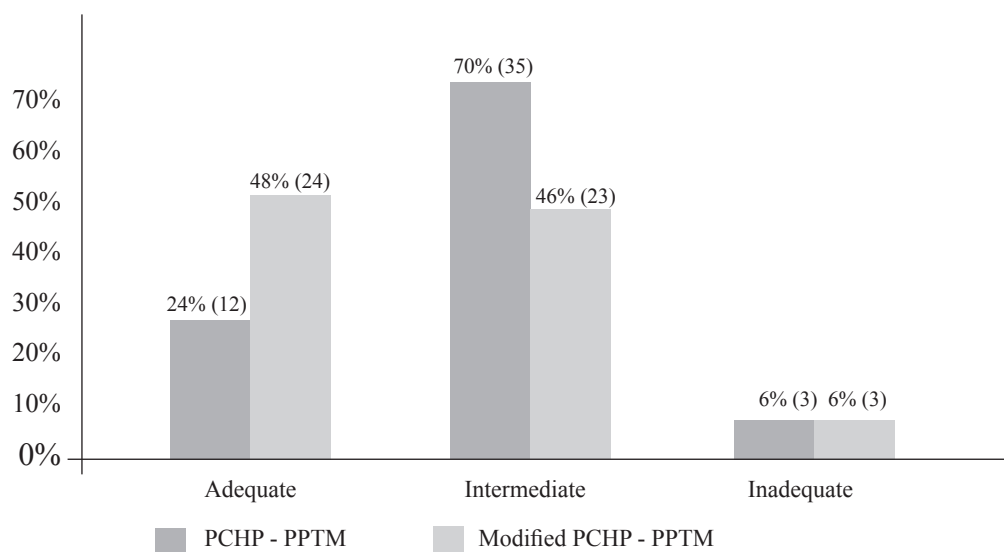


Figure 1 - Prenatal adequacy with and without laboratory tests. Santa Cruz, RN, 2014.

Data displayed in percentage and frequency; PCHP-PPTM = index created from the clinical and laboratory criteria of the Prenatal and Childbirth Humanization Program (PCHN) and the Prenatal and Puerperium Technical Manual (PPTM). Modified PCHP-PPTM = index created from the clinical criteria in the absence of laboratory tests according to the Prenatal and Childbirth Humanization Program (PCHN) and the Prenatal and Puerperium Technical Manual (PPTM).

## DISCUSSION

The data obtained in this study identified prenatal assistance with high level of coverage, considering the criteria recommended by the PCHP<sup>(8)</sup> and PPTM<sup>(11)</sup>. There was, however, a low frequency of women with prenatal care classified as adequate, and that low quality was emphasized when the criteria included the accomplishment of laboratory testing.

The Ministry of Health emphasizes that assistance in antenatal care should be comprehensive and provided from the beginning of pregnancy, aimed at monitoring the mother's and the fetus' health, and better outcomes<sup>(6)</sup>, since the prenatal care quality is seen as the main target to be met when seeking to reduce maternal and child morbidity and mortality rates<sup>(6,12)</sup>.

Given that, the quality of prenatal care began to be assessed by means of the number of consultations and the gestational age at entry into the health service<sup>(4,12)</sup>. In this context, the early monitoring and the number of consultations during the prenatal period, found in this study, were considered favorable and similar to results of other studies<sup>(9,10,12)</sup>. The importance of these findings is related to the fact that greater coverage of care provided to pregnant women can represent more opportunity for them to receive preventive care and health promotion. However, the literature also evidences that only those parameters are not sufficient to ensure quality care, and the content of care provided to these women should also be evaluated<sup>(10,13,14)</sup>. Monitoring during prenatal care should, thus, prioritize a qualified and humanized care and promote actions to integrate all levels of care, in compliance with Brazilian Unified Health System (SUS) guidelines and the principles established by PCHP<sup>(8)</sup>, which provide basis to establish criteria for maternal care. Observing the number of consultations and the gestational age at entry, it should additionally consider assistance and clinical aspects, as well as health education activities, which nowadays complement the prenatal care evaluation<sup>(8,10,14,15)</sup>.

A recent survey conducted with 23,894 women in a hospital environment, which used the clinical obstetric characteristics and laboratory examinations, similar to those used in this study, as criteria for the classification of prenatal care quality, found adequate frequency of prenatal care (24%), corroborating the data in this study<sup>(10)</sup>. On the contrary, other study, which evaluated the quality of prenatal care by means of diverse classification indexes, based solely on the number of consultations and/or early entry to prenatal care assistance, found higher percentages of adequate prenatal care<sup>(12)</sup>. These findings demonstrate the importance of evaluating various parameters used in prenatal care assistance, as done in this study.

This research, by analyzing the clinical procedures performed during prenatal care, considering the PPTM<sup>(11)</sup> recommendations, found a high frequency of measurement for all parameters, including weight, calculation of gestational age, and measurement of blood pressure and uterine height. Such results are in line with other studies, which pointed the measurements of pregnant women's weight and blood pressure as the procedures with the lowest percentage of absence<sup>(13,14,16)</sup>.

The conduction of laboratory examinations during pregnancy is considered timely to prevent, identify and correct the abnormalities that might affect the mother and fetus, and to guide the treatment of existing diseases or others that may occur during pregnancy<sup>(4)</sup>. In the Northeast of Brazil, in 89.1% cases of live births, mothers underwent testing at least once during pregnancy<sup>(7)</sup>. That data corroborates the present study, in which the hemogram/hematocrit was also recorded in the antenatal cards with relevant frequency at the first gestational consultation. The same happened to other laboratory tests recommended by PCHP, such as blood glucose, blood type, and HIV and syphilis serology.

Nevertheless, a worrying data was found in this study, when observing information on the tests recommended by the 30th week of gestation (second routine). There was a significant decrease in the number of records of laboratory examinations, and HIV and VDRL tests were the ones with the greatest reduction. Previous study of pregnant women observed similar results to this study, in which half the evaluated population of pregnant women underwent HIV screening only once during the prenatal period, and just over a quarter of the sample got tested twice<sup>(15)</sup>.

In view of these facts, high percentages of failure to record variables related to important maternal complications, such as anemia, urinary tract infections, diabetes mellitus, and positive serology to syphilis and HIV, are worrisome<sup>(16,17)</sup>. Vertical transmission of HIV and syphilis, for instance, poses a challenge to public health that needs to be faced by health policies in Brazil, though some progress has already been achieved in this regard. Although the presence of HIV testing in the second routine of examinations was not considered for the prenatal care adequacy in this study, performing that examination, whenever possible, as recommended by PCHP, is of paramount importance, since the mother-to-child transmission of HIV, without any treatment, can reach rates of 20%, and around 65% of these cases might occur in the peripartum<sup>(15,18)</sup>.

The incidence of congenital syphilis is also an important indicator of the quality of maternal and child care because its congenital form is a major cause of perinatal mortality<sup>(10,18)</sup>. Its prevention is exclusively performed in the prenatal

period, and can not be conducted in the intervals between deliveries or in postpartum, what highlights the direct relationship between the frequency of the disease and the quality of services provided to women within the primary care network<sup>(19,20)</sup>. In this study, we observed a significant reduction in screening for this disease, by means of the VDRL test, after the 30th week. This is a worrying situation, given the severity of the disease and its effects on maternal and child health.

In this research, not recording/performing the biochemical tests recommended by PCHP was considered one of the most critical points to ensure the quality of prenatal care. This was verified after the intentional removal of the laboratory tests from the prenatal care quality criteria, thus demonstrating the critical nature of the accomplishment and, mainly, the repetition of such tests. Similar data was reported in a recent study in the Brazilian state of Espírito Santo, in which more than 20% of pregnant women did not undergo serological tests for syphilis and, even more, approximately 30% did not perform HIV testing. These data demonstrate that the non-repetition of such important tests as VDRL and HIV, is a failure that directly hinders prevention and early treatment, compromising the control of vertical transmission of HIV and the eradication of congenital syphilis in the country<sup>(9)</sup>.

In the present study, however, since data collection was carried out from the woman's antenatal card, it was not possible to identify the cause of the absence of such information, as a limitation of the study. The lack of such information may reflect no record of the results in the antenatal card by health professionals, no request of the examinations, or else, difficulty in performing the tests or obtaining the results, due to failures in the test conduction, lack of specific inputs, damaged equipment, sample loss, delay in returning the results, among other reasons, which result in the waste of resources, as seen in some studies<sup>(9,16,21,22)</sup>. This become a worrying issue, since pregnant women are liable to complete the prenatal period with no information in their medical record<sup>(21,23)</sup>.

Other limitation found in this study was the small sample studied, which makes necessary the continuation of research involving a larger number of cases and the inclusion of women with high-risk pregnancies.

Given the facts brought to light, the present study data point out that, despite the early entry to prenatal care assistance and the appropriate number of consultations, as observed for the majority of the women, the quality of care is not ideal yet. These parameters, apart from others, cannot guarantee quality care, as this will depend on the implementation of the set of actions considered in the minimum criteria required for the PCHP<sup>(8)</sup> and PPTM<sup>(11)</sup>.

Faced with this situation, the need for a discussion involving health professionals, service managers and community is highlighted, in an effort to raise awareness about their rights and duties in relation to the quality of prenatal care assistance and, consequently, the maternal and child health.

## CONCLUSION

Prenatal care assistance in this study was satisfactory, but still deficient in quality, having as its major fragility the failure to record the laboratory tests, which have potential to reverse the adverse perinatal indicators still observed. Strategies aimed at identifying flaws in prenatal care and measures able to improve the quality of this attention are essential, especially with regard to the accomplishment of laboratory examinations, seeking to reduce diseases and maternal and child mortality.

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