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Adequacy of prenatal care for women in the Jequitinhonha Valley, Minas Gerais – Brazil

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Abstract

Prenatal care is directly related to the health levels of mothers and their children, since the absence or low quality of this care is associated with the highest maternal mortality rate and the results of birth. Having prenatal assessment data, in a region, makes it possible to plan, allocate resources, and improve the assistance offered. This study aimed to assess the adequacy of prenatal care according to data on the pregnant woman's Maternity Card and the adapted Kessner Index. This is a cross-sectional study based on the card data of 309 parturient women seen from July to September 2018. The prevalence of adequate prenatal care was 78.6%, 196 (63.4%) started follow-up before the 13th week of pregnancy, and (88.7%) had more than six consultations. The quality of this assistance was associated with education (p=0.02), marital status (p=0.01), pregnancy planning (p<0.001), and the number of children (p=0.01) of the parturient. Of the puerperal women, only nine (2.9%) reported having planned the current pregnancy. The Maternity Card of 55 pregnant women (17.8%) were incomplete for several variables. Prenatal care proved to be adequate due to the Kessner index, and is influenced by the higher level of education, the stable union of the couple, the previous planning of the pregnancy, and the experience of already having one to two children.

Keywords: Maternal health. Prenatal care. Pregnant women. Humanization of care. Quality of health care.

INTRODUCTION

Attention to women's health has been one of the key points for the improvement of national health indicators. Among all the recommended actions, prenatal care stands out, which aims to contribute to the reduction of maternal and child morbidity and mortality. Good quality of care must develop useful and welcoming actions for pregnant women in healthcare networks, seeking to ensure the adequate offer of care with pregnancy and childbirth[1,2].

This assistance is related to the health levels of mothers and their children, since the absence or low quality of which is associated with the high rate of maternal mortality. Promoting the health of the population can positively collaborate with the diagnosis and proper treatment of conditions as well as verify risk factors that lead to complications in the health of the baby and the woman[1].

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Within the Brazilian reality and in order to improve the quality of prenatal care, one of the first steps of the Ministry of Health (MS) of Brazil was the institution of the Humanization Program for Prenatal and Birth (HPPB), in June of 2000. HPPB's main plan is to improve access, coverage, quality of care for pregnant women, assistance for childbirth, newborns, and women in the puerperium from the perspective of citizenship rights[3].

HPPB recommends carrying out the woman's first consultation until the fourth month of pregnancy and ensuring that the following procedures are carried out: at least six prenatal consultations, preferably one in the first trimester of pregnancy, two in the second, and three in the third; a postpartum consultation, up to 42 days after birth; as well as perform the following laboratory tests during pregnancy: ABO-Rh at the first consultation; VDRL at the first consultation and another one near the thirtieth week; routine urine exam at the first consultation and around the thirtieth week; fasting blood glucose exam one at the first consultation and another one near the thirtieth week; hemoglobin/hematocrit at the first consultation; and offer of anti-HIV testing at the first consultation[3].

In addition to these objective criteria, reception, breastfeeding and delivery guidelines, reproductive planning, among others, should be considered. In view of this, in March 2011, the Ministry of Health launched the Rede Cegonha consisting of a set of measures to guarantee all Brazilian women adequate service and, in this context, it emerges as a strategy to solidify and expand the measures initiated with HPPB. This care network aims to ensure women the right to reproductive planning and humanized care for pregnancy, childbirth, and the puerperium, with the purpose of gradually structuring and organizing maternal and child health care. The beginning of its implementation relies on the observation of the epidemiological criterion, the infant mortality rate, the maternal mortality rate, and the population density. Therefore, the strategy relies on the partnership of states, the Federal District, and municipalities for the evaluation of its components: prenatal care, childbirth and birth, puerperium and comprehensive child health care, and logistical systems (health transport and regulation)[4].

Using prenatal adequacy indices has been widely adopted for public health research, planning, and resource allocation. The present study can contribute to the evaluation of gestational follow-up, as the results allow us to reflect on the care that is being offered to women in prenatal care so that they can reach a humanized and good quality practice through a systematic, individual, and contextualized care process.

Good quality prenatal care is considered to be early, frequent, complete, and with a broad coverage[4,5]. The start of follow-ups in the first trimester of pregnancy allows the timely implementation of preventive actions, earlier diagnoses and health promotion actions. In addition, it allows the identification, at the right time, of high-risk situations that involve referrals to other points of care for better care planning6. Some studies have already been published evaluating the adequacy of prenatal care in different regions of Brazil[2,5,6]. However, no study has investigated the variables related to follow-ups in parturients in Vale do Jequitinhonha in Minas Gerais (MG).

Thus, this study used the Kessner index to check the adequacy of prenatal care considering that its quality goes beyond the early start and number of consultations. It became essential to complement the information with the data available on the pregnant women's Maternity Card. Thus, the aim of this study was to assess the adequacy of prenatal care according to data on pregnant women's Maternity Cards and the adapted Kessner Index.

METHODOLOGY

This is a cross-sectional study conducted with parturients attended from July to September 2018 at a referral hospital for gynecology and obstetrics specialties for the entire Extended Health Region of Jequitinhonha in Minas Gerais.

This hospital is based in the municipality of Diamantina (MG), located in Vale do Jequitinhonha. It has 15 maternity beds in joint accommodations, three pre-delivery, delivery, and post-delivery (PPP), a surgical block, and 10 beds of Unit Neonatal Intensive Care Unit (NICU). It serves patients from the Unified Health System (UHS), private users, and has contracts with some plans. In addition to low complexity care, the hospital is a reference in health care for high-risk pregnancies for 31 municipalities in the health macro-region, covering a population of 407,645 thousand inhabitants[7].

The sample calculation followed the Barbetta[8] formula that uses population size and tolerable error fixed at 2%. The population size was based on the average number of deliveries performed at this hospital (130 deliveries/month). A total of 309 pregnant women attended for childbirth procedures and who carried the Maternity Card[9] were obtained; this card is a primary registration document, provided at the first consultation, in which sociodemographic data, previous, and current medical history are recorded.

The sample was random, simple, casual, in which women were identified in the list of parturients registered daily at the maternity hospital. All postpartum women with hospital births (vaginal or cesarean) were considered eligible, with an outcome of a live birth, regardless of weight or gestational age, or an outcome of stillbirth, weighing more than 500 g or gestational age greater than 22 weeks. Postpartum women who did not present their prenatal maternity card during hospitalization were excluded.

The data were extracted from the prenatal maternity cards by means of the scans and later the data was entered into a standardized form.

The variables collected were: age, gestational age, number of prenatal care visits, health insurance, vaccination, skin color, marital status, education, number of children, instructions received for childbirth and breastfeeding, physical examination, laboratory tests performed during gestation, occurrence of prior pregnancy planning, and stratification of pregnancy risk.

The Kessner index (KI) was the indicator considered to assess the quality of prenatal care. It is an algorithm based on the quarter in which prenatal care starts, as well as the number of consultations performed, adjusted for gestational age, and is defined by three categories of use: adequate, intermediate, and inadequate prenatal care. The original Kessner index considers pregnant women who started prenatal care in the second trimester to be in the intermediate category and prenatal care started in the third trimester (or not performed)[10] as inadequate[10]. In this study, the referred index was adapted for two categories, after the merger of the intermediate with the inadequate category. Thus, prenatal care starting up to the 13th week of gestation and the performance of at least six consultations in pregnancies greater than or equal to 36 weeks was considered adequate, and prenatal care initiated after the 14th week of pregnancy and/or with number of consultations less than six in pregnancies greater than or equal to 37 weeks was considered inadequate.

The data obtained were entered and analyzed using the statistical program Statistical Package for the Social Sciences (SPSS) IBM® version 22.0. Initially, the procedures of descriptive statistics were applied. For the analysis of associations between categorical variables, the chi-squared

test or Fisher's exact test was used. To verify the association between continuous and categorical variables, the Mann-Whitney test was used, since it was identified that the data were non-parametric. The value of $p<0.05$ was considered statistically significant.

This study was approved by the Research Ethics Committee of the Federal University of Vales do Jequitinhonha e Mucuri (CEP/UFVJM), through Opinion no. 2.800.312.

RESULTS

The average age of the 309 parturients from the 31 municipalities that make up the Extended Health Region Jequitinhonha was 27 years old (±6.67), with a minimum age of 13 and a maximum age of 43 years old. Regarding race and skin color, 50 (16.2%) considered themselves brown, 42 (13.6%) black, 32 (10.4%) white, and four (1.3%) indigenous, while 193 women were without information on the card. In all, 251 (81.2%) parturients were attended by the Unified Health System (UHS) and 117 (37.9%) were primiparous.

The prevalence of adequate prenatal care was 78.6%. Regarding the beginning of prenatal care, 196 (63.4%) started before the 13th week of pregnancy, 58 (18.8%) from 13 to 27 weeks, and five (1.8%) at over 28 weeks of pregnancy.

Regarding the number of prenatal consultations, 32 (10.4%) women had up to six consultations, while 274 (88.7%) had more than six consultations.

Of the puerperal women included in this study, only nine (2.9%) reported having planned the current pregnancy. The prenatal care maternity cards of 55 women (17.8%) were incomplete for different variables.

Association tests showed that the quality of prenatal care was statistically associated with the following sociodemographic characteristics: marital status, education, pregnancy planning, and number of children (Table 1).

Regarding the guidelines, nine (2.97%) women were informed about activities to facilitate childbirth, with 298 (97.1%) of the parturients not having their card filled out in relation to this variable. For the topic of breastfeeding, 10 (3.2%) were instructed during prenatal care (Table 2).

Regarding the filling out of the charts, on the woman's maternity card, 93.9% of the parturients did not have the Nutritional Assessment (NA) chart filled out and in 95.5% of the cases the Uterine Assessment (UA) chart was also not filled out. When considering the vaccination rates, it was possible to identify that only 36 (11.7%) of the pregnant women had the complete immunization schedule dT + dTpa, and 78 (25.2%) for dTpa. Only 57 (18.4%) puerperal women were vaccinated against influenza and 97 (31.4%) against Hepatitis B.

There was a high prevalence of most laboratory tests in the first trimester, with only the COOMBS test showing a lower rate of performance. The tests most frequently performed in the first trimester were: VDRL, Anti-HIV, ABO-Rh, and Hb/Ht. In the third trimester, the most frequently performed tests were: anti-HIV and VDRL, as described in Table 3.

Table 4 shows the prevalence of actions related to physical examinations recorded on the women's maternity cards. It was found that 250 (80.9%) of the women did not have their body mass index (BMI) measured in the consultations, while two (1.3%) women did not have their blood pressure measured. Regarding the performance of ultrasound exams to monitor the fetus, 100 (32.3%) performed four or more exams. Only three women did not undergo ultrasound exams during prenatal care.

Table 1 – Adequacy prevalence of prenatal care according to sociodemographic characteristics of parturients attended at a maternity hospital in Vale do Jequitinhonha, Minas Gerais, 2018 (n=309).

			Prenatalcare Adequacy		
Exposure variables/ category	**Not Informed**	**Total (100%)**	**Inadequate (%)**	**Adequate (%)**	**p-value**
Age (mean ± SD) years	17	292	25.60 (8.69)	27.36 (5.97)	0.063
Skin color	193	116			
White			5 (16.7)	25 (83.3)	0.077
Black or brown			29 (33.7)	57 (66.3)	
Marital status	105	204			
Married / stable union			36 (23.5)	117 (76.5)	0,015*
Single			21 (41.2)	30 (58.8)	
Education	111	198			
Up to elementary school			8 (24.2)	25 (75.8)	0.020*
High school			37 (33.3)	74 (66.7)	
Higher education			7 (13.0)	47 (87.0)	
Health care	56	253			
Private			6 (14.6)	35 (85.4)	0.068
Public (UHS)			60 (28.3)	152 (71.7)	
Planned Pregnancy	230	79			
Yes			5 (12.2)	36 (87.8)	<0.001*
No			19 (50.0)	19 (50.0)	
Number of children	84	225			
None			27 (28.1)	69 (71.9)	0.018*
One or two			22 (0.2)	87 (79.8)	
Three or more			10 (50.0)	10 (50.0)	
Risk stratification	265	44			
Usual risk			14 (41.2)	20 (58.8)	0.221
High risk			2 (20.0)	8 (80.0)	

Table 2 – Orientation and immunization actions performed in the prenatal consultation of puerperal women attended at a maternity hospital in Vale do Jequitinhonha, Minas Gerais, 2018 (n=309).

	n	%
Childbirth guidelines		
Yes	9	2.9
Not reported	298	97.1
Breastfeeding guidelines		
Yes	10	3.2
Not reported	297	96.1
Filled NA chart		
Yes	17	5.5
No	290	93.9
Filled UA chart		
Yes	12	3.9
No	295	95.5
Vaccination dT+ Dtpa		
Immunization with one dose - dtpa	18	5.8
Immunization with two doses – dtpa + dT	16	5.2
Immunization with 3 doses - 2dT + dtpa	56	18.2
Sem registro	217	70.2
Not reported		
Yes	57	18.4
Not reported	248	80.3
Hepatite B		
Yes	97	31.4
No	9	2.9
Not reported	195	63.1

Table 3 – Prevalência de exames laboratoriais realizados no pré-natal de puérperas atendidas em uma maternidade no Vale do Jequitinhonha/ Minas Gerais, 2018 (n = 309).

Laboratory exam	1st Trimester		3rd Trimester	
	n	%	n	%
ABO-Rh	282	91.3		
Hb/Ht	279	90.3	111	35.9
Fasting Glucose	279	90.3	84	27.2
Toxoplasmosis	274	88.7	85	27.5
Uroculture	248	80.3	106	34.3
Anti-HIV	283	91.6	278	90.0
VDRL	285	92.2	266	86.1
HBsAg	270	87.4	84	27.2
COOMBS	96	31.3	34	11.0

Table 4 – Prevalence of actions related to physical examination performed in the prenatal care of puerperal women attended at a maternity ward, in Vale do Jequitinhonha, Minas Gerais, 2018 (n=309).

	n	%
BMI		
Yes	56	18.1
No	253	81.9
Blood pressure		
Yes	305	98.7
No	4	1.3
Uterine Height		
Yes	299	96.8
No	10	2.2
Fetal heartbeat		
Yes	298	96.4
No	11	3.6
Number of Ultrasounds		
0	3	1.0
1	49	15.9
2	88	28.5
3	61	19.7
≥4	100	32.3

DISCUSSION

Pregnancy is a period that needs more attention to health to avoid complications for women and newborns. The prenatal consultation is a measure to assess the health of the woman and the fetus, guaranteeing well-being, identifying risk factors, and directing the pregnant woman to more complex referral centers that ensure early treatment of abnormal conditions. Despite the increase in coverage of prenatal care stimulated by federal government programs, the results of this study demonstrate points that should be addressed by managers and health professionals to improve the adequacy of care for pregnant women.

In this study, a higher proportion of pregnant women with more than six consultations during prenatal care prevailed. Even so, approximately 10% of the studied population had six or less consultations, which demonstrates a gap in equitable, comprehensive, and universal health care. When comparing the results of pregnant women from the east side of São Paulo who had a minimum of three consultations and only one round of examinations in 56.9% of women[11], the results of the present study were satisfactory. A larger number of consultations can mean more opportunity to receive preventive care and health promotion. However, the most important discussion resides in the quality of these consultations and contacts with health services to ensure the indicators recommended by HPPB[12].

We identified adequate prenatal care, based on the Kessner index (number of consultations and gestational age at the

beginning of prenatal care) of 79.6%. This data is higher than that found in a study carried out in Montes Claros, a municipality located in the north of MG, in which the monitoring of pregnant women was considered adequate for 68.5% of pregnant women[13].

The proportion of pregnant women with early onset of prenatal care and with a sufficient number of consultations (Kessner index) was better in married women, with a higher education, with planned pregnancies, and with one to two children. A similar data was found in the national survey "Nascer no Brasil" which used a methodological design similar to that of this study[14]. This same study corroborates the data that more than half of the women interviewed did not wish to become pregnant at that time, reinforcing the need to discuss reproductive planning even in prenatal care.

In an attempt to expand the evaluation of prenatal care, seeking indicators other than the Kessner index, we found the unsatisfactory coverage of laboratory tests recommended by the Ministry of Health to be obstacles. In addition, the absence of filling out the woman's maternity card (mainly for information about planned pregnancy, guidelines for facilitating childbirth and breastfeeding, risk stratification, vaccines, nutritional history chart (NA), uterine height (UH), vaccination, BMI, ineffective care with blood glucose, toxoplasmosis, HBsA, and COOMBS tests) mainly for the third trimester of gestation, which deserves greater attention from health professionals and is a similar situation to that found in the study "Nascer no Brasil"[14].

The variables of laboratory tests and clinical evaluations performed on parturient women included in this study were based upon HPPB of the Ministry of Health (MH), which requests laboratory tests such as ABO-Rh in the first trimester, and Hb/Ht, VDRL, fasting glucose, toxoplasmosis, urine culture, HBsAg, and COOMBS requested at the first consultation and another one close to the 30th week of pregnancy. For the test for HIV detection, the request for the exam was evaluated at the first consultation and at the third trimester of pregnancy. It is known that the request and adequate interpretation of the results of exams during prenatal care is an important way of monitoring women to classify their gestational risk[15].

Regarding the performance of laboratory tests, high coverage was identified in the first quarter with rates above 80%. One of the critical points to ensure the quality of prenatal care is the performance of mandatory laboratory tests. In this study, we identified a reduction in the prevalence of these tests in the third trimester, especially for blood count, fasting blood glucose, urine culture, serology for toxoplasmosis, and HBSAG. Other studies have shown greater coverage of exams in the first quarter compared to the third quarter in Sergipe[15] and Rio Grande do Norte[16].

A study carried out by Parada *et al.*[17], evaluated prenatal and puerperal care in the municipalities of São Paulo, and observed that women started care before reaching 120 days of gestational age and 75% of them had at least six consultations during pregnancy. In addition, they highlighted the difficulty of recording the clinical history of pregnant women, and better coverage of exams occurred in the first trimester of pregnancy (above 75%) while a lower coverage was seen at the end of pregnancy (13.9%). It is known that the request and adequate interpretation of the results of exams during the prenatal period is a key factor for monitoring the woman and for classifying her gestational risk. Therefore, this practice must be adopted adequately in all follow-ups performed in public and private services in the country[18].

The test for HIV infection (90%) was

higher than the national-based study that found coverage of 81% among the pregnant women evaluated; however, there is still the possibility for improvement[19].

This study showed a total of 161 mothers who underwent three or more ultrasound exams during prenatal care. The performance of this exam practically universally covered, although it is neither mandatory nor a criterion for assessing the quality of prenatal care. This result is repeated in several national studies, showing an inversion of values, as mandatory prenatal exams and procedures have not shown the same effectiveness[14,20,21].

Among the quality criteria of prenatal care according to the recommendations of the HPPB is the puerperal consultation; however, this was not the subject of this study. Its importance in assessing the recovery of women in the postpartum period, instituting the use of reproductive planning methods, monitoring breastfeeding, and maternal and neonatal health is well known. Further studies are suggested addressing this theme.

The high rate of missing information on the women's maternity cards is an important point to highlight. The causes for the failure of these records may involve the failure to request tests due to the difficulty in carrying out or obtaining the results or due to failures in the performance of these tests; specifically, the lack of specific inputs, damaged equipment, loss of samples, and the delay in the return of results[16]. Thus, it is essential to invest in the infrastructure in a decentralized manner in primary care centers to guarantee conditions of access to the complete assessment of care for pregnant women. Another sphere that involves the lack of reported exam results by the professionals involved may be related to the overload of activities in the work sector and the lack of education regarding the relevance of health records. In this sense, it is important to invest in continuous training with health professionals who perform prenatal care to minimize the underreporting of relevant data. Although the missing data represent a limitation for this study, we believe that they also represent an important result for directing health actions in Vale do Jequitinhonha, Minas Gerais.

CONCLUSION

The data demonstrated adequate prenatal care according to the adapted Kessner index. However, analyzing other data on women's maternity card identified a need for structuring the vaccination, guidelines, reproductive planning, and low coverage in the third trimester exams, such as blood glucose, toxoplasmosis, HBsAg, COOMBS as recommended by the Ministry of Health.

In addition, there is a need for improvements in the conduct of prenatal care by health professionals, who must offer a good quality consultation, meeting all the requirements proposed and recommended by HPPB. It is essential to properly fill out the women's maternity cards, since it is their main document.

Thus, the results of this work may contribute to direct the creation of strategies that improve the quality of prenatal care in the health macro-region, resulting in a powerful tool for the municipal and state management bodies. It is suggested that the professionals become sensitized and trained to improve the records on the cards, implement and encourage adherence to the protocols, carry out systematic evaluations and monitoring of the services by the professionals themselves, and seek alternatives to promote, together with the pregnant women, their partner and family, the implementation of prenatal care in an appropriate manner.

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