



ANALYSIS OF THE QUALITY OF THE PRENATAL CARE IN THE FRAMEWORK OF THE FAMILY HEALTH STRATEGY

ANÁLISE DA QUALIDADE DA ASSISTÊNCIA PRÉ-NATAL NO ÂMBITO DA ESTRATÉGIA DE SAÚDE DA FAMÍLIA

ANÁLISIS DE LA CALIDAD DE LA ATENCIÓN PRENATAL EN EL CONTEXTO DE LA ESTRATEGIA SALUD DE LA FAMILIA

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ABSTRACT

Objective: to analyze the quality of prenatal care provided by nurses and physicians from the Family Health Strategy. **Method:** observational, descriptive, transversal study with quantitative approach. The data source was the prenatal card. Data were collected using a form extracted from the modified Kessner Index. An Excel spreadsheet based on the variables was elaborated, later transferred to the Statistical Package for Social Science 18.0 program, the results were presented by means of tables. **Results:** the prenatal evaluation performed by nurses and physicians presented, according to the Kessner Index, 67.6% and 68.5% of adequacy, respectively. The influence of this care on the weight of the newborn and on the Apgar Index was verified. **Conclusion:** most of the time, there is superior quality in prenatal care provided by nurses and physicians compared to other services. There is homogeneity between the assistance provided by both professionals. **Descriptors:** Prenatal Care; Nursing Care; Family Health Strategy.

RESUMO

Objetivo: analisar a qualidade do pré-natal prestada pelos enfermeiros e médicos da Estratégia de Saúde da Família. **Método:** estudo observacional, descritivo, transversal com abordagem quantitativa. A fonte dos dados foi o cartão pré-natal. Os dados foram coletados por meio de um formulário respaldado no Índice de Kessner modificado, foi elaborada uma planilha do programa Excel com base nas variáveis, posteriormente transferida para o programa Statistical Package for Social Science 18.0, os resultados foram apresentados por meio de tabelas. **Resultados:** a avaliação do pré-natal realizado por enfermeiros e médicos apresentou-se, segundo o Índice Kessner, 67,6% e 68,5% de adequação, respectivamente. Constatou-se a influência desta assistência sobre o peso do recém-nascido e sobre o Índice de Apgar. **Conclusão:** na maioria das vezes, há qualidade superior na assistência pré-natal prestada por enfermeiros e médicos em comparação com outros serviços. Há homogeneidade entre a assistência prestada por ambos profissionais. **Descritores:** Assistência Pré-Natal; Cuidados de Enfermagem; Estratégia de Saúde da Família.

RESUMEN

Objetivo: analizar la calidad de la atención prenatal por los médicos y enfermeros de la Estrategia Salud de la Familia. **Método:** estudio observacional, transversal, descriptivo, con un enfoque cuantitativo. La fuente de datos fue la tarjeta prenatal. Los datos fueron recolectados a través de una forma obtenida del índice de Kessner modificado, hubo elaboración de una hoja de cálculo en el programa Excel basada en las variables, después transferido al Statistical Package for Social Science 18.0, los resultados se presentan en las tablas. Se presentó la evaluación de la atención prenatal realizado por enfermeros y médicos, según el índice de Kessner, el 67,6% y el 68,5% de la adecuación, respectivamente. **Resultados:** se encontró la influencia de esta asistencia en el peso del recién nacido y la puntuación de Apgar. **Conclusión:** la mayoría de las veces, la atención prenatal por los enfermeros y los médicos es de primera calidad en comparación con otros servicios. La asistencia proporcionada por los dos profesionales es homogénea. **Descriptores:** Atención Prenatal; Atención de Enfermería; Estrategia de Salud Familiar.

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INTRODUCTION

The importance of evaluating health services is notorious, as is the discussion of health policies and the feasibility of services.¹ In this context, the evaluation of prenatal care occupies an important place in the health care of the population. The programmatic actions inherent to prenatal care allow the follow-up during the pregnancy cycle, which allows identifying risk situations for the mother-fetus binomial and acting early in order to make necessary interventions.²

One of the primary objectives of the prenatal care guided by quality is minimizing the occurrence of negative outcomes, such as delayed uterine growth, prematurity, low birth weight, which directly affect infant mortality, an indicator of the health and life condition of a population.^{3-4-5,2,25}

Like infant mortality, maternal mortality is an indicator for assessing the health status of a population, since, depending on the conditions in which women and children die, it allows assessing the development of certain society.^{3,5}

In the context of the Family Health Strategy (FHS), the interdisciplinary team is responsible for the receptivity and the reception of primary care users, especially pregnant women. Care focused on pregnancy includes prevention of diseases, health promotion and treatment of problems during the pregnancy-puerperal cycle, for both the woman as the newborn.⁶⁻⁷ Based on these assumptions, the FHS aims to guide and to clarify prenatal, childbirth and newborn care, aiming at reducing the rates of maternal and infant morbidity and mortality, since the causes are avoidable and dependent on the quality of the care provided during gestation.⁸⁻⁹

Few studies evaluate the performance of the FHS in prenatal care compared to the traditional model. Some results indicate that the strategy operates with better quality service, particularly in the health care of pregnant women.¹⁰⁻²

Given the need for indicators that can assess the performance of prenatal care programs, the Institute of Medicine of the National Academy of Sciences of North America developed a composite indicator, known as the Kessner Index, which covers the month of the onset of prenatal care and the total number of consultations.¹³⁻⁴ This indicator has undergone alterations, in order to be adequate, highlighting the work of Kotelchuck, who, starting from the previous index, weighted the number of antenatal

consultations by gestational age and created categories of adequacy of prenatal care.¹⁵ This work uses the Kessner Index adapted by Takeda.¹⁶

The objective of the present study was to analyze the quality of prenatal care provided by nurses and physicians from the Family Health Strategy.

METHOD

Observational, cross-sectional, descriptive study, with quantitative approach, using information recorded on prenatal cards and the relationship of this care with newborn weight and the Apgar Index complying with the Prenatal and Birth Humanization Program (PHPN).

Data collection occurred at the Obstetrics Service of the Clemente Faria University Hospital (HUCF), a university hospital of the State University of Montes Claros - Unimontes, located in the city of Montes Claros (MG), Brazil, on the resolution of pregnancy, in the period from January 2011 to June 2011.

The study population consisted of 200 pregnant women (cards of pregnant women) attended at the obstetrics service of the referred hospital, at the time of pregnancy resolution. The inclusion criterion for analysis considered the pregnant women attended at the HUCF obstetrics service who had performed prenatal care exclusively at the Family Health Strategy of the municipality of Montes Claros (MG), whose prenatal care was classified as at risk according to the classification of the Ministry of Health. Pregnant women who performed prenatal care at health centers or private offices and whose prenatal care was classified as high risk according to the Ministry of Health classification were excluded from data collection and analysis.

A form based on the modified Kessner Index was elaborated, contemplating the variables of the index and associating to the variables extracted from the PHPN. Data collection was done as a checklist based on the information recorded in the pregnant woman's card, since this is the last means of communication among the pregnant women attended by the Family Health Strategy teams and maternity professionals. From it, an Excel spreadsheet was elaborated based on the variables, later transferred to the program Statistical Package for Social Science (SPSS) 18.0.

The choice of variables based on the Ministry of Health's Prenatal and Birth Humanization Program (PHPN), being

selected: gestational age at the first visit, number of prenatal consultations, performed laboratory tests - such as blood group and Rh factor, hemoglobin and hematocrit at the first visit, the VDRL (Venereal Disease Research Laboratories), requested at the first consultation and another at the 30th week of gestation; urine type I (summary of urine/urine routine), one examination at the first visit and another close to the 30th week of gestation; fasting blood glucose, one examination at the first visit, and another at the 30th week of gestation. Regarding the HIV test, the request for the examination was evaluated at the first visit and at the third trimester of gestation.

The vaccine state of the pregnant woman was investigated with the following criteria: tetanus vaccine application up to the immunizing dose (second) of the recommended regimen, or booster dose in already immunized women. Other variables according to the routine of the Municipality of Montes Claros (MG), Brazil, were considered, as follows: serology for rubella and toxoplasmosis, serology for HBsAg (hepatitis B), oncotic colpociology.

The technical procedures performed during prenatal care by prenatal nurses and physicians were other variables used in the study: blood pressure (BP), uterine height (UH), fetal movement (FM); weighing of the pregnant woman and calculation of body mass index (BMI), auscultation of fetal heart rate (FHR). These procedures were considered as performed, taking into account the number of times they were recorded.

In relation to the newborn, the following variables were used to establish a relationship between the quality of the provided care and its repercussion on these variables: birth weight and Apgar score.

The selected sample of pregnant women's card was divided into two groups: Group one, consisting of cards of pregnant women who received prenatal care by nurses; and Group two, consisting of cards of pregnant women whose prenatal care was provided by physicians.

The adequacy of prenatal follow-up was assessed in three ways: Combining the number of visits with the time of onset of prenatal care according to the modified Kessner Index: *adequate* = six or more visits and beginning of prenatal before the fourth month of gestation¹⁷; *inadequate* = onset of prenatal care after the fourth month of gestation, or less than three visits; *intermediate* = other situations.

In addition to the modified Kessner Index, the number of repetition of the following complementary exams was used: the hemoglobin/hematocrit, blood typing and determination of the maternal Rh factor, urinalysis type I, VDRL, fasting glycemia, repeating the last three exams at 30th week of gestation, anti-HIV testing (at the first visit), rubella and toxoplasmosis serology. The adequacy was thus defined: in addition to the previous criteria, a minimum of one record of each exam, emphasizing the repetition of the type I urine, VDRL and fasting glycemia tests at the 30th week of gestation. The registration of behaviors mediating results of the exams will also be observed: inadequate = beginning of prenatal care after the fourth month of gestation, or less than three weeks, or no recorded examination; Intermediate = other situations.

Furthermore, the number of recorded prenatal consultation procedures was also observed: blood pressure (BP), uterine height (UH), fetal movement (FM), weighing of the mother and auscultation of the fetal heart rate (FHR). For this last criterion, cutoffs will be set in order to configure inadequacy, intermediate situation and adequacy. Such procedures directly relate to the ideal of at least six prenatal consultations, fetal heart rate is possible at 17 weeks of pregnancy, on average, and at 19 weeks in almost all pregnancies in non-obese women, using the Pinard.

In order to describe the procedures performed in the consultations, the gestational age when the prenatal care began, the number of subsequent consultations, the weight and the Apgar Index of the newborn, descriptive statistics techniques were used, such as frequency distribution, mean, median and standard deviation.

In order to verify the existence of homogeneity between the quality of prenatal care provided by nurses and physicians at the Family Health Strategy, a Chi-square test was performed, which allowed observing and comparing the frequencies of the three types of cards of pregnant women in both groups.

The proportions with which each procedure and laboratory test were performed in the two groups will be compared using the chi-square test.

The analysis of variance (ANOVA) and the Kruskal-Wallis test will be used to identify an association between the quality of prenatal care provided at the Family Health Strategy and the newborn's Apgar score and weight.

By comparing the Kessner Index among the prenatal accompanied by nurses and

physicians, the interest was to evaluate whether the classification of the different Kessner indices was similar for the group of medical professionals and nursing professionals, that is, one sought to verify if the adequacies were statistically significant and similar between the two groups. Such comparisons used the Chi-Square test. A significance level of 5% was used for all tests, that is, there was a difference between groups when p-value was lower than 0.05.

In the comparison of the results obtained by the three Kessner Index assessments separately of nursing and medical prenatalists, the interest was to evaluate whether the results obtained by the three Kessner Index assessments were similar to each other. In this way, one tried to verify if the found classifications were statistically significant and similar among the indices. This analysis was performed separately for medical professionals and for nursing professionals.

These comparisons used the non-parametric Friedman test. All tests used a significance level of 5%, that is, there was a difference between groups when p-value was lower than 0.05.

The study complied with all the ethical and legal aspects recommended by Resolution #466/2012¹⁸, of the National Health Council, which deals with the guidelines and norms that govern the development of researches involving human beings. The Research Ethics Committee (CEP) of the State University of Montes Claros - Unimontes, approved the research (Constituted opinion #1075).

RESULTS

Considering the three adopted indices, 67.6% and 68.5% of the prenatal care units followed by physicians and nurses, respectively, are classified as adequate, without the criterion of inadequacy for both groups. When applying the chi-square test with significance level of 5%, there is no statistically significant difference between

the indices evaluated for each group, since the test does not present a p-value lower than 0.05, as shown in Table 1.

Table 2 presents results obtained by the evaluation of the modified Kessner Index, separately for each prenatalist. Thus, prenatal care performed by the physician was adequate in 67.6% for the Kessner Index, 66.7% for the same index, when adding laboratory tests and prenatal procedures. For the other criteria, the values are similar, which presented no statistically significant difference between the adequacy criteria established according to p-value less than 0.05. The same happens to the results presented for the adequacy criteria of the prenatal assisted by the nurse, with 67.4%, classified as adequate for the Kessner Index, and, when adding laboratory tests and procedures performed during the prenatal period, 68.5%, classified as adequate for the Kessner Index with the same result of statistical significance adopted.

The analysis of variance used to establish the association between the quality of prenatal care provided by nurses and physicians at the Family Health Strategy in the Municipality of Montes Claros, with the weight and Apgar Index of the newborn, found a higher weight than the one considered low birth weight for prenatal newborns at normal risk, that is, weight less than 2,500g with a mean of 3,081.6g and deviation - SD = 467.0g for newborns of pregnant women followed by physicians. For newborns of pregnant women followed by nurses, the average was 3,169.3g and standard deviation - SD = 462.8g. The Apgar Index at the first and fifth minutes of life of the newborn showed a value considered normal for the evaluated groups, but this association did not reach the established statistical significance ($p<0.05$) for both analyzed variables, as presented In Table 3.

Table 1. Classification of the prenatal performed by nurses and physicians applying the Kessner Index modified by Takeda, performed at the Family Health Strategy. Montes Claros (MG), Brazil, 2011.

		Professional who registers the data in the prenatal card				p-value*
		Physician		Nurse		
		n	%	n	%	
Kessner Index	Adequate	75	67.6%	61	68.5%	0.884
	Intermediate	36	32.4%	28	31.5%	
Kessner Index plus laboratory tests**	Adequate	74	66.7%	60	67.4%	0.715
	Intermediate	36	32.4%	27	30.3%	
	Inadequate	1	0.9%	2	2.2%	
Kessner Index plus performed procedures*** in the prenatal	Adequate	74	66.7%	60	67.4%	0.979
	Intermediate	36	32.4%	28	31.5%	
	Inadequate	1	0.9%	1	1.1%	

*Statistically significant p-value: p<0.05 **Routine laboratory tests according to the indicators of the Prenatal and Birth Humanization Program of the Ministry of Health ***Routine procedures performed during prenatal care in the municipality of Montes Claros (MG).

Table 2. Classification of the prenatal performed by nurses and physicians applying the Kessner Index modified by Takeda by specific groups at the Family Health Strategy. Montes Claros (MG), Brazil, 2011.

	Physician						p-value*
	Kessner Index		Kessner Index plus laboratory tests**		Kessner Index plus performed procedures*** in the prenatal		
	n	%	n	%	n	%	
Adequate	75	67.6%	74	66.7%	74	66.7%	0.368
Intermediate	36	32.4%	36	32.4%	36	32.4%	
Inadequate	0	0%	1	9%	1	0.9%	
	Nurse						P-valor
	Kessner Index		Kessner Index plus laboratory tests**		Kessner Index plus performed procedures*** in the prenatal		
	N	%	N	%	N	%	
Adequate	61	68.5%	60	67.4%	60	67.4%	0.223
Intermediate	28	31.5%	27	30.3%	28	31.5%	
Inadequate	0	0%	2	2.2%	1	1.1%	

*Statistically significant p-value: p<0.05, **Routine laboratory tests according to the indicators of the Prenatal and Birth Humanization Program of the Ministry of Health, ***Routine procedures performed during prenatal care in the municipality of Montes Claros (MG).

Table 3. Relation between the newborn's weight and Apgar score according to prenatal care performed by nurses and physicians at the Family Health Strategy. Montes Claros (MG), Brazil, 2011.

		Professional who registers the data in the prenatal card		p-value*
		Physician	Nurse	
Newborn's weight	n	111	89	0.187
	Mean	3081.6	3169.3	
	Median	3135	3115	
	Standard Deviation	467.0	462.8	
	Minimum	1465	2110	
	Maximum	4200	4425	
APGAR first minute	n	111	89	0.167
	Mean	7.6	7.8	
	Median	8	8	
	Standard Deviation	1.5	0.9	
	Minimum	1	3	
	Maximum	10	9	
APGAR fifth minute	n	111	89	0.392
	Mean	8.9	9.0	
	Median	9	9	
	Standard Deviation	1.2	0.6	
	Minimum	0	8	
	Maximum	10	10	

*Statistically significant p-value: p<0.05.

DISCUSSION

Regarding the adequacy of prenatal care performed by nurses and physicians, in order to identify the similarity between the studied groups, there were no differences in the adequacy of prenatal care between the studied groups. Among the results obtained by the evaluation of the three Kessner indexes (Kessner Modified), inadequacy is not present in both groups, considering only the Kessner Index; it was evident that the classification was similar disregarding the index.

A study presented to evaluate prenatal care at a philanthropic institution in the city of São Paulo¹³, which also used the modified Kessner Index (number of visits, prenatal start age, laboratory tests and technical procedures), following the routine recommended by PHPN, found an inadequacy in the prenatal quality of 24.7%, 28.3% and 30.6%, taking into account the three indexes, respectively, and no adequate prenatal care when considering the addition of laboratory tests to the Kessner Index.

From this experience, we can compare the data presented by the present study, in which no prenatal care was considered inadequate considering the Kessner Index, and presented similar results among the groups studied when considering other indices.

A study carried out at Amparo Maternal in São Paulo¹¹ through an audit that investigated 653 attended pregnant women revealed that 38.4% of the pregnant women had prenatal care classified as adequate in relation to the Kessner index, a result lower than the values found in the study that evaluates the quality of prenatal care provided by nurses and physicians at the Family Health Strategy in the municipality of Montes Claros, in which prenatal care was considered adequate in the prenatal attended by nurses and physicians.

When adding the laboratory tests to this index, the classification, again, appears as adequate, intermediate and inadequate at the Family Health Strategy of Montes Claros, considering that the adequacy criterion presents a greater proportion and the inadequacy criterion presents little significant values, when compared to the São Paulo Maternal Support data, which does not present the adequacy criterion to any pregnant woman when adding the exams recommended by the PHPN, confirming that the quality of care provided by prenatalists in the municipality of Montes Claros is higher than in other places, according to data from other studies.

In a cross-sectional study of 702 pregnancies¹⁹, whose resolution of pregnancy occurred at the General Hospital of the University of Caxias do Sul, based on the criteria of the Prenatal and Birth Humanization National Program of the Ministry of Health (PNHPN, 2000), 35.2% of the pregnant women included in the study had their prenatal care classified as adequate and 57.6% had not undergone all the recommended exams. This shows a deficit in the quality of prenatal care compared to those found in the study evaluating the quality of prenatal care in the city of Montes Claros, when considering the Kessner Index added to the laboratory tests.

It cannot be affirmed that the prenatal care performed by nurses and physicians influences the weight or the Apgar Index in the first and fifth minutes of life, since the values do not disclose statistically significant differences between the studied groups. A study that established the factors associated with low birth weight in newborns in a low-income population²⁰ allowed associating maternal advanced age, prematurity, number of prenatal consultations, arterial hypertension, smoking habit, and absence of prenatal care with the low birth weight in newborns.

The present study had as exclusion criterion the pregnant women classified with high-risk prenatal care, which hampered analyzing variables that could influence the weight and the Apgar Index of the newborn, which was not the goal.

The evaluation of the quality of prenatal care provided by nurses and physicians at the Family Health Strategy in the municipality of Montes Claros showed that newborns present a satisfactory outcome in relation to the weight variable for newborns whose prenatal care was followed by physicians and nurses, which also shows that the adequacy of prenatal care does not have an unequivocal effect on the newborn.²

Moreover, the Apgar Index presented similar averages for the groups of pregnant women followed up at the Family Health Strategy prenatal in the municipality of Montes Claros, and there was no statistically significant difference between the groups ($p < 0.05$). The study carried out at the FHS of Montes Claros only compared the Apgar Index of the prenatal performed by both prenatalists; it did not use normal delivery as reference variable and cesarean delivery as exposure variable in order to establish an association between the type of delivery and the low vitality of the newborn.

The Apgar Index is widely used to verify the vitality of the newborn in the first minutes of life. The score is quantified from 0 to 10 according to the evaluation and five objective signs: heart rate, respiratory effort, muscle tone, reflex irritability and skin color. These items are evaluated in the first and fifth minutes of life. After evaluating the newborn, an Apgar score is established, considering 0 to 6 as low and 7 to 10 as normal.²¹⁻²²

In São Paulo²¹, an analysis of vitality of the newborn by type of delivery for the live births of that state in 2003 was proposed, being evaluated 245,005 vaginal deliveries and 250,740 cesarean deliveries, with control of variables such as birth weight, duration of the consultation, number of prenatal consultations, age, marital status and years of mother's study. The study presented a rate of live births with an Apgar score lower than 7, recorded 7.9 per thousand live births in the state of São Paulo, 8.4 for vaginal delivery and 7.4 for cesarean delivery.

Still in the cited study, after statistical analysis, this could consider the cesarean delivery as a protection factor for low vitality of the newborn; but when performing multiple logistic regression, controlling obstetric, demographic and social factors, the variable type of delivery was no longer statistically significant.

Using only the number of visits and the gestational age when prenatal care began as a prenatal care quality assessment criteria does not allow evaluating the service in a broader way. However, adding the register of collected tests to the Kessner Index and other evaluation criteria, such as the addition of technical procedures (blood pressure measurement, fetal heart rate, pregnancy weight, body mass index, uterine height) involved in the follow-up of pregnant women, allowed expanding the evaluation of the service provided to the pregnant women, as described in this study.

CONCLUSION

The limitation of the study was the lack of records of some data in the prenatal card that may influence the outcome of the study. The type of evaluation performed in this research, especially using the adequacy index, constitutes a feasible and effective methodological process, which can be done routinely by providing concrete subsidies to evaluate and improve the quality of prenatal care.

It was possible to verify the existence of a homogeneity between care provided by nurses and physicians, which verifies that the

pregnant women began prenatal care in the first trimester of pregnancy and performed a number of consultations superior to the recommendation of the Ministry of Health, having access to laboratory tests methods recommended by the PHPN. In addition, technical procedures are present during the provided assistance. Regarding weight and Apgar Index, prenatal care at the FHS in the municipality of Montes Claros (MG) presented a satisfactory outcome, which shows that the adequacy of prenatal care does not have an unequivocal effect on the newborn.

When assessing the prenatal care service, the study did not intend to assess the structure, but rather the process and outcome as Donabedian proposes.²³ Thus, it is not possible to deny the need to evaluate the interrelationship and interdependence among all the components, such as structure, process and result, through specific studies. Finally, a study carried out in the State of São Paulo with nursing professionals showed that prenatal care eminently focused on medical care in that state, with the presence of a few specialist nursing professionals, pointing out that they acquired experience only in the practice due to the contact with other professionals.

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