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High risk pregnancy: epidemiological profile and factors associated with referral to a specialized service

Gestação de alto risco: perfil epidemiológico e fatores associados com o encaminhamento para serviço especializado

Embarazo de alto riesgo: perfil epidemiológico y factores asociados a la derivación a un servicio especializado

ABSTRACT

Objective: To verify the epidemiological profile of pregnant women and the factors associated with referring pregnant women to a specialized service. **Method:** Retrospective cross-sectional study, carried out on the medical records of pregnant women classified as high risk, from January to December 2019. A descriptive, bivariate and multivariate analysis was performed. **Results:** Of the 405 medical records, mean age was 29 years, 19% were chronic hypertensive patients, 14.2% developed gestational diabetes. The average difference between the date of the first consultation and the date of referral by primary care was 4 weeks. The logistic regression showed that: pregnant women from other cities, with low economic income and difference in referral time have interference in the beginning of prenatal care. **Conclusion:** The analyzes carried out may contribute to the development of intersectoral policies in search of health promotion for pregnant women.
Keywords: Prenatal Care; Pregnancy High-Risk; Quality of Health Care; Secondary Care; Nurse.

RESUMO

Objetivo: Verificar o perfil epidemiológico das gestantes e os fatores associados com o seu encaminhamento para um serviço especializado. **Método:** Estudo transversal retrospectivo, realizado nos prontuários de gestantes classificadas em alto risco, período de janeiro a dezembro de 2019. Realizou-se análise descritiva, bivariada e multivariada. **Resultados:** Dos 405 prontuários, a média de idade foi 29 anos, 19% eram hipertensas crônicas, 14,2% desenvolveram diabetes gestacional. A diferença média entre a data da primeira consulta e a data do encaminhamento pela atenção primária foi de 4 semanas. A regressão logística mostrou que: gestantes de outros municípios, com baixa renda econômica e diferença no tempo de encaminhamento possuem interferência no início do pré-natal. **Conclusão**: As análises realizadas poderão contribuir para a elaboração de políticas intersetoriais em busca da promoção da saúde de gestantes.
Descritores: Cuidado Pré-Natal; Gravidez de Alto Risco; Qualidade da Assistência à Saúde; Atenção Secundária à Saúde; Enfermagem.

RESUMEN

Objetivo: Verificar el perfil epidemiológico de la gestante y los factores asociados a la derivación de gestantes a un servicio especializado. **Método**: Estudio retrospectivo, transversal, realizado sobre las historias clínicas de gestantes clasificadas como de alto riesgo, de enero a diciembre de 2019. Se realizó un análisis descriptivo, bivariado y multivariado. **Resultados**: De las 405 historias clínicas, la edad promedio fue de 29 años, el 19% eran hipertensos crónicos, el 14,2% desarrolló diabetes gestacional. La diferencia media entre la fecha de la primera consulta y la fecha de derivación por atención primaria fue de 4 semanas. La regresión logística mostró que: mujeres embarazadas de otras ciudades, con bajos ingresos económicos e diferencia en el tiempo de derivación tienen interferencia en el inicio de la atención prenatal. **Conclusión:** Los análisis realizados pueden contribuir a la elaboración de políticas intersectoriales en busca de promoción de la salud de la gestante.
Descriptores: Atención Prenatal; Embarazo de Alto Riesgo; Calidad de la Atención de Salud; Atención Secundaria de Salud; Enfermería.

Helisamara Mota Guedes[1]
0000-0001-9848-4936

Andriene Adelha Sousa[1]
0000-0003-0312-3885

Bárbara Ribeiro Barbosa[1]
0000-0002-7694-4468

Liliane da Consolação Campos Ribeiro[1]
0000-0003-1828-8914

Juliana Augusta Dias[1]
0000-0002-7482-2301

Endi Lanza Galvão[1]
0000-0002-5648-3932

[1]Universidade Federal dos Vales do Jequitinhonha e Mucuri, Diamantina-MG, Brazil.

Corresponding author:
Helisamara Mota Guedes
E-mail:helisamara.guedes@ufvjm.edu.br

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INTRODUCTION

A high-risk pregnancy is one that has any condition that interferes or may interfere with maternal or fetal well-being[1]. High risk is present in about 15.0% of pregnancies and may refer to personal factors, unfavorable socioeconomic conditions, previous maternal diseases, previous reproductive history and/or current pregnancy. High-quality prenatal care helps to identify factors that are unfavorable to pregnancy and allows for continuous assessment of gestational risk based on early intervention. In this case, it is important to understand the categories that may be directly related to health and disease conditions[2]. The most common maternal conditions are pre-eclampsia, eclampsia, chronic arterial hypertension, gestational or pre-existing diabetes mellitus, prematurity, maternal Rh factor isoimmunization, hepatitis B and C, sexually transmitted infections, among others[3].

Prenatal care plays a key role in the detection of both maternal and fetal pathologies, allowing for the healthy development of babies and reducing the risks for pregnant women, since it allows the identification of silent diseases present in the body, as well as fetal malformation. Prenatal care is the time when the pregnant woman will be guided in relation to the care she needs for the pregnancy and will have her doubts resolved [4]. Prenatal care cannot predict delivery complications in most women; however, health promotion and risk identification may favor the maternal prognosis[5].

The main policy implemented by the government in the context of pregnancy has been the Stork Network, established through Ordinance nº 1459, dated June 24, 2011, which is a package of actions that seeks to provide quality care from reproductive planning to the first two years of life of the child within the Brazilian Unified Health System (SUS, as per its Portuguese). It is structured into four components: prenatal care, delivery and birth, puerperium and comprehensive child health care, and the sanitary transport system and regulation[6].

It is important that women benefit from technological resources such as medicines, examinations and other medical materials, in addition to specialized care, preventing harm throughout the reproductive period[7]. Thus, access to specialized care and integration among primary care services, which detect complications and refer women to appropriate treatment, constitute an intervention with great potential to reduce maternal and fetal morbidity and mortality.

Accordingly, the objective of this study was to check the epidemiological profile of pregnant women and the factors associated with the early referral of high-risk pregnant women to a reference health service in Vale do Jequitinhonha, Minas Gerais.

METHODS

This is a retrospective and cross-sectional study, conducted through the analysis of secondary data from the records of the gynecology and obstetrics service provided in the State Center for Specialized Care (CEAE, as per its Portuguese acronym), which is managed by the Alto Jequitinhonha Health Intermunicipal Consortium (CISAJE, as per its Portuguese acronym). CEAE is a program structured by the Health Department of the State of Minas Gerais, with the objective of expanding the access of pregnant women and high-risk children to follow-up services and specialized outpatient care.

CEAE CISAJE is headquartered in Diamantina, Minas Gerais (MG) and is a reference for 15 cities that compose the Diamantina Health Region (MG): Alvorada de Minas, Carbonita, Coluna, Congonhas do Norte, Couto Magalhães de Minas, Datas, Diamantina, Felício dos Santos, Gouveia, Itamarandiba, Presidente Kubitschek, Santo Antônio do Itambé, São Gonçalo do Rio Preto, Senator Modestino Gonçalves and Serro. It serves a population of 174,912 inhabitants through an autonomous initiative of the surrounding cities that join together to collectively manage and provide services related to the promotion, protection and recovery of the health of their populations[8].

This research was approved by the Research Ethics Committee of the Federal University of Vales do Jequitinhonha e Mucuri under Opinion nº 4.048.757 and CAAE: 31501120.2.0000.5108, and obtained previous authorization from the institution to carry out the research, with the anonymity of pregnant women being guaranteed.

The study included all pregnant women classified at high risk[9], referred to receive care in CEAE CISAJE from January to December 2019, whose sample was non-probabilistic. Data collection took place from medical and multidisciplinary records. Data were transcribed into a standardized data collection instrument, designed specifically for this study. The variables of interest collected and included in the analysis were

demographic and socioeconomic data, namely: age in complete years, education, marital status, family income, clinical and obstetric history, origin, previous pregnancy and abortion, previous cytopathological examination, Hepatitis B tests, syphilis, HIV, toxoplasmosis, alcohol consumption, date of first consultation in the specialized service and referral date. The minimum wage in Brazil in 2020 was considered, whose value was R$1,045.00.

The collected data were entered into the Microsoft Excel® program and analyzed in the R program, version 3.6.2, with activation of the coda and sandwich packages. Prevalence of referrals of high-risk pregnant women to the reference service after 12 weeks of pregnancy was calculated in the categories of the selected variables and the respective 95% confidence intervals (95% CI). Independent variables include sociodemographic characteristics related to high-risk pregnant women and characteristics of pregnancy care that could influence the outcome "early start of prenatal care in a specialized service". Subsequently, bivariate and multivariate analysis with logistic regression was performed, which presents the odds ratio as an effect measure. The crude and adjusted odds ratios were calculated with the respective 95% CI.

RESULTS

A total of 405 medical records of women referred as high-risk pregnant women to receive care in CEAE CISAJE in 2019 were analyzed. The average age was 29.06 years (SD ± 6.67), ranging between 13 and 46 years. Regarding the sociodemographic profile, 35.5% of women were married and 37% had complete high school education. Regarding the morbidity profile, 19% of women were hypertensive when they became pregnant and 14.2% developed gestational diabetes. Table 1 shows the social, economic and clinical characteristics of the pregnant women included in this study.

Table 1 – Social and economic characteristics of pregnant women cared for in CEAE CISAJE. Diamantina-MG, 2019 (n=405)

Variable		n	%
Age			
	13 to 19 anos	34	7.6
	20 to 29 anos	184	41.3
	30 to 39 anos	166	37.3
	40 years or older	21	4.7
Education			
	Illiterate	5	1.2
	Incomplete elementary school	59	14.6
	Complete elementary school	27	6.7
	Incomplete high school	67	16.5
	Complete high school	150	37.0
	Incomplete higher education	32	7.9
	Complete higher education	53	13.1
	Not declared	12	2.9
Family Income			
	Without income	14	3.5
	Up to 1 minimum wage	160	39.5
	More than 1 to 2 minimum wages	155	38.3
	More than 2 to 3 minimum wages	37	9.1
	More than 3 to 5 minimum wages	11	2.7
	More than 5 minimum wages	2	0.5
	Bolsa Família Program	8	2.0
	Not declared	18	4.4
Marital Status			
	Single	114	25.6
	Married	158	35.5
	Stable union	108	24.3
	Widowed	3	0.7
	Divorced	6	1.3
	Not declared	16	4

(continue)

Variable		n	%
Clinical History			
	Chronic Arterial Hypertension	77	19
	Thyroid diseases	33	8.1
	Psychiatric diseases	28	6.3
	Diabetes Mellitus	19	4.7
	Other causes	248	61.2
Clinical and Obstetric Conditions			
	Gestational diabetes	63	14.2
	Toxoplasmosis	23	5.7
	Fetal malformation	24	5.9
	Gynecological diseases	21	5.2
	Urinary tract infection	12	2.7
	Bleeding	18	4.0
	Pre-eclampsia	14	3.1
	Other causes	230	56.7

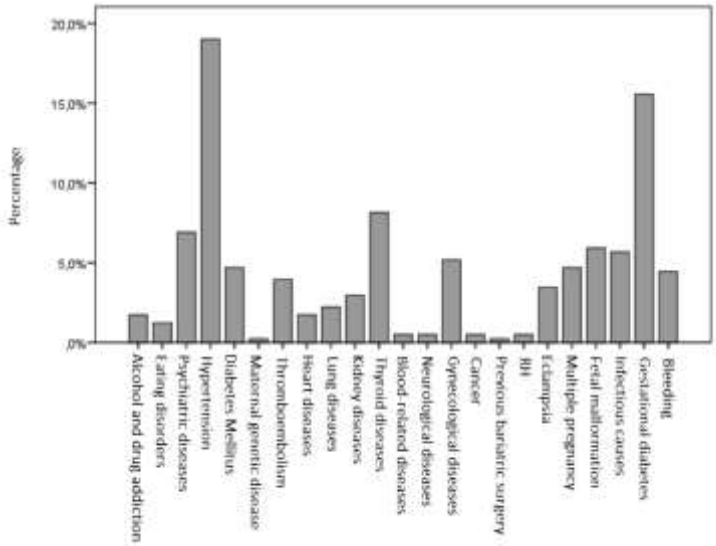
Source: Research data

The month of the year with the highest number of referrals from high-risk pregnant women was April, with 53 pregnant women (13.1%), followed by September, with 41 pregnant women (10.1%), with no statistical difference. As for the waiting time for specialized care, the average difference between the date of the first consultation in CEAE CISAJE and the date of referral by primary care was 4.23 weeks (SD ± 3.87).

The highest prevalence of both HIV and syphilis occurred in the age groups from 20 to 29 years (45%) and from 30 to 39 years (41%). Among women with HIV and syphilis, 69% were married or in a stable union. There was a statistically significant association between these two sexually transmitted infections (p<0.001). Vaccination coverages against tetanus and hepatitis B among high-risk pregnant women was 72.8% and 74.1%, respectively. Nevertheless, 47.4% of the assessed women were not immunized with the diphtheria–tetanus–acellular pertussis (DTPa) vaccine, which is a triple shot aimed at adults.

The greatest cause of referral to the reference service was high blood pressure (17.3%), followed by gestational diabetes (14.2%), while the smallest factors that contributed to this referral were previous bariatric surgery and genetic maternal disease (Figure 1).

Figure 1 - Distribution of the factors that compose the referral to the CEAE CISAJE reference service. Diamantina, MG, 2019.



Source: Research data

Table 2 shows the bivariate analysis of factors associated with the outcome “early start of prenatal care in the specialized service”.

Table 2 – Bivariate analysis of variables related to early care of high-risk pregnant women in the reference service (CEAE CISAJE, year 2019) and socioeconomic and clinical variables (n=405) **. Diamantina-MG, 2019.

Variable	Early care in CEAE		Crude OR	95% CI
	No	Yes		
Age group (years) *				
13 – 19	3 (8.8)	31 (91.2)	1	-
20 – 29	32 (17.6)	150 (82.4)	0.45	0.10 - 1.37
30 – 39*	48 (29.6)	114 (70.4)	0.22	0.05 - 0.68
40 or older	4 (19.0)	17 (81.0)	0.41	0.07 - 2.07
Education *				
Up to elementary school *	13 (14.8)	75 (85.2)	2.68	1.29 - 5.80
Up to high school	46 (21.4)	169 (78.6)	1.71	0.96 - 2.98
Complete higher education or in progress	27 (31.8)	58 (68.2)	1	-
Family income *				
Up to one minimum wage *	54 (26.7)	148 (73.3)	1.98	1.19 - 3.33
More than one minimum wage	28 (15.6)	152 (84.4)	1	-
Marital status				
Married or in a stable union	56 (21.3)	207 (78.7)	1	-
Single	27 (24.1)	85 (75.9)	0.85	0.50 - 1.45
Widowed or Divorced	2 (22.2)	7 (77.8)	0.94	0.22 - 6.47
Origin *				
Diamantina	52 (29.5)	124 (70.5)	1	-
Other cities	35 (15.7)	188 (84.3)	2.25	1.39 - 3.68
Previous pregnancy				
No	26 (19.8)	105 (80.2)	1	-
Yes	61 (22.8)	207 (77.2)	0.84	0.49 - 1.39
Previous abortion				
No	65 (20.7)	249 (79.3)	1	-
Yes	22 (25.9)	63 (74.1)	0.74	0.43 - 1.32
Previous cytopathological examination *				
No	49 (17.7)	228 (82.3)	1	-
Yes	38 (32.2)	80 (67.8)	0.45	0.27 - 0.74
Alcohol consumption during pregnancy				
No	49 (19.4)	203 (80.6)	1	-
Yes	8 (22.2)	28 (77.8)	0.84	0.37 - 2.08
HIV *				
No	4 (11.8)	30 (88.2)	1	-
Yes	83 (22.7)	282 (77.3)	0.45	0.13 - 1.18
Syphilis *				
No	2 (9.1)	20 (90.9)	1	-
Yes	85 (22.6)	291 (77.4)	0.34	0.05 - 1.20
Hepatitis B *				
No	5 (13.2)	33 (86.8)	1	-
Yes	82 (22.8)	278 (77.2)	0,51	0.17 - 1.24
Toxoplasmosis				
No	41 (19.9)	165 (80.1)	1	-
Yes	45 (23.7)	145 (76.3)	0.80	0.49 - 1.29
Difference between the GA at admission to the specialized service and the referral*	4.23 (±3.87)		1.31	1.16 - 1.52

*p-value < 0.20 referring to the chi-square test ** data not declared or missing in the medical records were disregarded in the analyses, causing a lower frequency for some variables.

Source: Research data

In the bivariate analysis, it was found that the proportion of women referred to the specialized health service for pregnant women after 12 weeks of pregnancy was higher among those with education up to elementary school, with a family income of up to one minimum wage, from other cities outside the CEAE CISAJE headquarters, and which showed a greater difference between the gestational age at admission to the specialized service and the gestational age at which the referral to the specialized service occurred. The lowest chance of referral to a specialized service after 12 weeks of pregnancy occurred among women aged between 30 and 39 weeks and among women with previous cytopathological examination.

The following variables were selected to compose the multivariate analysis: age between 30 and 39 years (p = 0.019), education (p = 0.025), family income of up to one minimum wage (p = 0.008), city of origin (p = 0.001), previous cytopathological examination (p = 0.001), presence of HIV (p = 0.138), syphilis (p = 0.136) and hepatitis (p = 0.172), in addition to the time between the gestational age at admission to the CEAE service and the referral by primary care (p < 0.001). Table 3 shows the variables that composed the final model.

Table 3 – Multiple logistic regression model of variables related to the outcomes "early start of prenatal care" in pregnancy care in a specialized service in high-risk pregnancy, CEAE CISAJE. Diamantina-MG, 2019.

Variables	OR (adjusted)	95% CI	P-value *
Outcome "early start of prenatal care in CEAE"			
Patient origin			
Diamantina	1.000	-	0.036
Other cities	2.026	1.06 – 3.913	
Difference in referral/service time	1.293	1.143 – 1.497	0,017
Income			
Up to one minimum wage	2.189	1.140 – 4.338	0.023
More than one minimum wage	1.000	-	

* Multiple logistic regression

Source: Research data

The logistic regression model showed that pregnant women from other cities outside the CEAE CISAJE headquarters had a 2.0 times greater chance of starting prenatal care late (> 12 weeks) in the specialized service when compared to pregnant women living in the city of Diamantina. In addition, for each gestational week delayed in the time of referral to the specialized service and the time of admission to this service, the chance of late start of prenatal care in the specialized service increased by 1.2 times. Another significant variable in the model was family income of up to one minimum wage, which increased the chance of high-risk pregnant women to be seen after the first 12 weeks of pregnancy by 2.1 times compared to higher-income pregnant women.

DISCUSSION

Adequate prenatal care with the early detection and intervention of risk situations, as well as a rapid referral system and specialized care for high-risk pregnant women constitute important factors in terms of improving maternal and fetal morbidity and mortality rates. In the current study, in addition to identifying the sociodemographic and clinical profile of high-risk pregnant women referred to a specialized care center in Vale do Jequitinhonha (MG), it has identified factors associated with the time elapsed between the referral to primary care and the first consultation in the reference service. These results represent maternal health indicators that have the potential to support public health policies in the studied region.

Vale do Jequitinhonha represents a region of high economic and social vulnerability in the state of Minas Gerais[8]. Nonetheless, few studies have been published so far in order to identify the sociodemographic and epidemiological profile of the population enrolled in this region.

The influence of individual characteristics, such as age, on the early start of specialized care has a significant influence on the assessed outcome. In this epidemiological context and considering that the longer time between referral by primary care and specialized care for pregnant women is a potential risk for the health status of high-risk pregnant women[10], our results indicate that it is essential to expand the care and access to health care for pregnant women aged 30 to 39 years in the studied region.

In this study, women with an income of up to one minimum wage and with education up to high school prevailed. Maternal socioeconomic status has been identified as a factor associated with obstetric complications[2]. In this same sense, our results showed that low-income women had a greater chance of delaying access to specialized health services when compared to women with a monthly income equal to or greater than two minimum wages. Although it is not possible to check the universality of access to health services in this study, as the design would require checking all referrals conducted by primary health care, this result reinforces the need for more equitable care in the studied region.

In the current study, it was also observed that the opportunity for early access to the service

was greater among women living in the city that hosts the specialized center. An important factor that may be related to this finding is the difficulty on the part of patients in accessing services, due to financial difficulties in bearing non-medical direct costs, such as tickets and meals, and costs with caregivers[11]. Weakness can also be present in the system that regulates access to care, which must offer a balance between supply and demand efficiently, in a timely and equitable manner, and guided by risk prioritization criteria[12]. It is up to nursing staff to participate in the logistical system of organization of the network of services agreed upon by the cities, thus seeking to minimize the barriers that hinder early access to secondary health services.

Delay in the referral from primary care to the reference service was another determining factor in the late start of prenatal care in the specialized service. The quality of prenatal care is influenced by several factors, including the number of consultations, the number of ultrasounds in the first trimester and the interval between the last prenatal consultation and the delivery process[13]. Accordingly, it is essential that the assessment and risk stratification of the pregnant woman take place at each prenatal consultation, thus allowing for adequate guidance and referrals at an appropriate time during the pregnancy.

This work reinforces the need to practice the recommendations established by the guidelines implemented by the Brazilian Ministry of Health and the State Health Department, mainly understood in the parameters that compose the Prenatal and Birth Humanization Program (PHPN, as per its Portuguese acronym), with the objective of developing actions aimed at the promotion, prevention and health care of pregnant women and newborns[14]. Some epidemiological parameters raised in this paper can collaborate with the definition of strategies.

The most prevalent comorbidities among high-risk pregnant women were systemic arterial hypertension and gestational diabetes. Systemic arterial hypertension can trigger maternal and child harm, especially when associated with unfavorable socioeconomic conditions, previous obstetric diseases or other clinical complications, during the fetal period[15-16]. In turn, gestational diabetes can affect a woman by predisposing her to a higher incidence of cesarean section, the development of pre-eclampsia and the risk of developing diabetes after the delivery process. For the conceptus, this disease can cause prematurity, macrosomia, shoulder dystocia, hypoglycemia and perinatal death[17].

Sexually transmitted infections that impact both maternal and fetal health[18] were found to be highly prevalent in the assessed pregnant women, such as HIV, syphilis and hepatitis, in addition to the lack of previous cytopathological examination. In Brazil, sexually transmitted infections persist as a serious public health problem, especially among mothers and babies. In 2016 alone, 37,436 cases of syphilis were reported in pregnant women, 20,474 cases of congenital syphilis and 185 deaths in children less than one year of age[19]. In this same context, the importance of requesting tests should be highlighted, since the non-detection of HIV during prenatal examination is a lost opportunity for intervention in pregnant women with the virus, thus reducing the chance of decreasing the rate of vertical transmission. Most pregnant women are unable to perform the anti-HIV test during prenatal care due to their social conditions, failure in SUS care, lack of prenatal care or prenatal care with less than six consultations[20]. The accomplishment of the cytopathological examination can reduce the incidence and mortality of women from cervical cancer. It is a low-cost and easy-to-implement test offered by the public system, without costs to the patient. The experience of some countries with comprehensive health systems shows that, as long as high-quality cytological screening is carried out and women are properly and promptly followed-up, and good follow-up is held, the incidence of cervical cancer can be reduced by approximately 80% [21].

Although this study provides important information about the health of pregnant women, limitations must be considered. It should be underlined that the prevalence of high-risk pregnant women found in this study is representative only of people who sought care in the CEAE CISAJE service, being a highly selected population. These women represent only a portion of public health services that are referred by other levels of health care or that are able to access the provided service. As pregnant women were being followed-up, the prevalence of vaccination coverage may be biased by the chance of vaccination after data collection. Considering the limitations, the results of this study can contribute to regional health planning, since the actions related to the follow-up of the pregnant and baby binomial can reduce the occurrence of preventable injuries, from the early start of adequate prenatal care and sharing of comprehensive and quality

care[22-23], in addition to reducing feelings of fear related to pregnancy and death[24].

CONCLUSION

It is recommended to encourage prenatal care and raise awareness of the health team in the care provided during pregnancy in terms of sensitizing patients. It is worth emphasizing that health and education awareness actions carried out by health professionals can be strategies to provide knowledge and self-care. There are also signs that, with the consultation of a multidisciplinary team, the adequate follow-up of the pregnant woman may be related to the reduction in the number of new complications during pregnancy.

Through the understanding that high gestational risk arises from several factors, the recognition of social determinants of health, from individual to distal conditions, provide subsidies to achieve comprehensive care for women, identify vulnerabilities and foster new policies, with a view to achieving better maternal-fetal outcomes, thus reducing the morbidity and mortality rates of this population.

As a contribution to the nursing field, this study brings the need to organize, together with managers, a network flow that pays attention to high-risk pregnant women referred from other cities and those with low economic income. In addition, it is worth emphasizing the importance of carrying out and recording nursing consultations, as well as those held by other professionals in the multidisciplinary team, as a way of ensuring quality and holistic care.

The analyses carried out may contribute to the development of intersectoral policies, which encompass different contexts in the search for health promotion, through the improvement of the living conditions of high-risk pregnant women.

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Responsible Editors:
Patrícia Pinto Braga
Kellen Rosa Coelho

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