Revista ARACÊ
ISSN: 2358-2472

EPIDEMIOLOGICAL PROFILE OF WOMEN WITH PRE-ECLAMPSIA IN MARABÁ, PARÁ: FIELD STUDY IN A REFERENCE HOSPITAL

https://doi.org/10.56238/arev7n1-078

Submission date: 12/07/2024 **Publication date: 01/07/2025**

Beatriz Carminati Pedroso[1], Maria Eduarda de Souza[2], Sarah Menezes Albuquerque de Oliveira[3], Rubens de Paulo Rodrigues[4], Itallo Oliveira Dias Correia[5], Allan Kardec Lima Brandão[6], Jamille Cristina Conceição Santos[7], Ana Costa de Oliveira[8],

[1]Medical Student
State University of Pará (UEPA)
E-mail: beatrizcpedroso4@gmail.com
LATTES: https://lattes.cnpq.br/1175859312147640
[2]Medical Student
State University of Pará (UEPA)
E-mail: mesouza2812@gmail.com
LATTES: https://lattes.cnpq.br/8770262732991294
[3]Medical Student
State University of Pará (UEPA)
E-mail: sarah.oliveira@aluno.uepa.br
ORCID: https://orcid.org/0009-0003-8019-4828
LATTES: https://lattes.cnpq.br/2059054655027714
[4] Medical Student
State University of Pará (UEPA)
E-mail: rubens.d.p.rodrigues@gmail.com
LATTES: https://lattes.cnpq.br/5944827945676837
[5]Medical Student
State University of Pará (UEPA)
E-mail: itallo.odcorreia@aluno.uepa.br
ORCID: https://orcid.org/0009-0000-7112-4543
LATTES: https://lattes.cnpq.br/4919550922768108
[6]Master's student in Surgery and Experimental Research - CIPE/UEPA
State University of Pará (UEPA)
E-mail: allan.kl.brandao@aluno.uepa.br
ORCID: https://orcid.org/0009-0008-9392-4937
LATTES: https://lattes.cnpq.br/1286637938073384
[7]Master's student in Surgery and Experimental Research - CIPE/UEPA
State University of Pará (UEPA)
E-mail: jamillefisio52@gmail.com
LATTES: https://lattes.cnpq.br/6154648672937211
[8]Master's student in Surgery and Experimental Research - CIPE/UEPA
State University of Pará (UEPA)
E-mail: ana.cd.Oliveira@uepa.br
ORCID: https://orcid.org/0000-0002-1732-5587
LATTES: https://lattes.cnpq.br/6092669353052383

Revista ARACÊ
ISSN: 2358-2472

Fernanda Póvoas dos Anjos[9], Claudia Dizioli Franco Bueno[10], Amanda da Costa Silveira-Sabbá[11] and Lorena de Oliveira Tannus[12]

ABSTRACT

Introduction: Preeclampsia (PE) is a systemic vascular disorder predominantly characterized by increased blood pressure and is one of the most relevant causes of morbidity and mortality in pregnant women and fetuses. Objective: To define the epidemiological profile of women with preeclampsia (PE) in the city of Marabá - Pará. Methods: Observational field research, through the application of a questionnaire prepared for pregnant women with PE - from March to September 2024, at the Hospital Materno Infantil de Marabá (HMI), where a sample of 9 participants was collected, who agreed to undergo the research. Results: The sample had a majority profile of brown, single women, aged 18 to 25 years, primiparous women with a family history of systemic arterial hypertension, who underwent more than 5 prenatal consultations. Furthermore, 8 of the 9 pregnant women received guidance on the pathology during prenatal care; Regarding medication, 100% of the women used Methyldopa, followed in decreasing order by the use of Hydralazine, Nifedipine, and ASA (Acetylsalicylic Acid). Conclusion: the characterization of the clinical and socioeconomic profile of women with PE allows for the implementation of more personalized care in high-risk prenatal care.

Keywords: Field Study. Pregnant Women. Epidemiological Profile. Preeclampsia.

[9]Master's student in Surgery and Experimental Research - CIPE/UEPA
State University of Pará (UEPA)
E-mail: fernanda.pd.anjos@aluno.uepa.br
ORCID: https://orcid.org/0009-0001-5220-0464
LATTES: https://lattes.cnpq.br/6479690649009304
[10]Specialist in Pediatric Emergencies from the Albert Einstein College of Health Sciences Einstein
Physician, professor of the Medicine course
State University of Pará (UEPA)
E-mail: cdizioli@uol.com.br
LATTES: https://lattes.cnpq.br/4167541584600306
[11]Doctor in Parasite Biology in the Amazon
from the State University of Pará
Dentist, professor of the Medicine course
State University of Pará (UEPA)
E-mail: amanda.silveira@uepa.br
ORCID: https://orcid.org/0000-0001-9463-4677
LATTES: http://lattes.cnpq.br/3512649355304138
[12]Master in Surgery and Experimental Research - CIPE/UEPA
Physiotherapist, professor of the Medicine course
State University of Pará (UEPA)
E-mail: lorena.otannus@uepa.br
LATTES: https://lattes.cnpq.br/3887621214342902

Revista ARACÊ
ISSN: 2358-2472

INTRODUCTION

Hypertensive syndromes occurring during pregnancy are defined by the Brazilian Federation of Gynecology and Obstetrics Associations as a set of pathologies that cause an increase in systemic blood pressure. These conditions include: I. Chronic Arterial Hypertension; II. Gestational Hypertension; III. Preeclampsia (PE); IV. Gestational Hypertension superimposed on Preeclampsia (FEBRASGO, 2017). Due to the specific conditions of PE, it is important to delve deeper into the social distribution of this pathology, due to the metabolic and immunological disorders of high gestational risk.

From this perspective, in the analysis of the epidemiology of preeclampsia (PE) in Latin America, it is observed that approximately 2% to 8% of pregnant women are affected by the disease, among these, responsible for a quarter of maternal deaths in this region. In Brazil, between 2009 and 2018, approximately 15.84% of maternal deaths were associated with PE, of which 44.1% were attributed to this condition as the main cause. These data demonstrate that morbidity and mortality related to preeclampsia directly impacts the living conditions of Brazilian mothers, and this is a significant figure in the country in question (Guida et al., 2022; Rodrigues, 2022).

Thus, preeclampsia (PE), a systemic vascular disorder, has been characterized by its high rates of maternal and perinatal morbidity and mortality for centuries in global health. This comorbidity presents a great risk due to the appearance of a predominant high blood pressure profile, generally above 140x90 mmHg, accompanied or not by proteinuria, that is, the presence of protein in the urine, largely albumin. These changes cause damage to target organs, negatively affecting pregnant women and fetuses (Phipps et al., 2019).

It is important to emphasize, first of all, that the diversity of the condition related to PE can occur in two variations, namely: early onset and late onset. The first type is well known for its main origin of placental involvement. The second is related “to placental senescence and maternal genetic predispositions for cardiovascular diseases” (Burton et al., 2019).

In this context, the development of the pathology originates in the maternal-fetal interface, where the etiological factors of PE increase the occurrence of serious complications in early pregnancy by 3 to 25 times. Among these complications, premature placental abruption, disseminated intravascular coagulation, pulmonary edema, and aspiration pneumonia stand out. Furthermore, the progression of the disease can affect multiple organic systems, and in its most severe forms, it is associated with renal, cardiac,

Revista ARACÊ
ISSN: 2358-2472

pulmonary, hepatic, and neurological dysfunctions, as well as hematological disorders, fetal growth restriction, which can culminate in stillbirth and maternal death. (Christopher et al., 2020) (Robillard et al., 2016).

Another relevant fact, under a sociodemographic analysis, (PE) is linked to 10% to 15% of direct maternal deaths, with 99% of these deaths originating in countries with lower income. Furthermore, mortality increases with maternal age, and black women are 3.1 times more likely to die than white women (Naljayan, 2013). In parallel, it is necessary to consider that maternal and perinatal outcomes are better in patients with mild disease that develops after 36 weeks of gestation, who have higher morbidity and mortality in patients who develop the disease before 33 weeks. In this case, systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥ 90 mmHg on at least two occasions, measured 4 hours apart in previously normotensive women (Brown, 2018).

Regarding treatment, the first-line approach indicated for pregnant women includes the use of nifedipine (calcium channel blocker), methyldopa (alpha-2-adrenergic agonist), labetalol (non-selective alpha-blocker and beta-blocker), and hydralazine. These medications are used in cases of severe hypertension during pregnancy, with the main objective of reducing the period of exposure to high blood pressure levels, thus minimizing the impacts on the fetus (Ferreira, et al., 2021).

Therefore, considering the pathological complexity of preeclampsia, it is essential to analyze its risks, the epidemiological profile of affected women, and the implications for maternal and neonatal health. In this context, the present study aims to outline the epidemiological profile of women diagnosed with preeclampsia in the city of Marabá, Pará, investigating their health conditions during the gestational period and in the puerperium.

METHODOLOGY

This study is a field research, with a cross-sectional analytical observational design and a descriptive quantitative approach. The research was approved by the Research Ethics Committee (CEP) of the State University of Pará (UEPA) - campus VIII, under opinion 6,694,727, by

The exclusion criteria were: I. Refusal to participate in the study; II. Failure to complete the questionnaire; III. Illiterate women, pregnant or in the postpartum period, who

Revista ARACÊ
ISSN: 2358-2472

are not accompanied by a person they trust, given that their presence is necessary to pass on the provisions contained in the TCLE.

Data collection was performed by applying a questionnaire developed by the authors, specifically focused on the theme of pre-eclampsia. The instrument was made available to participants who met the previously established inclusion criteria, which consisted of: agreeing to sign the Free and Informed Consent Form (TCLE), being over 18 years of age, being in the twentieth week of pregnancy or the postpartum period. The questionnaire was made available to participants in printed format, without the use of information from medical records, to investigate clinical, social, and economic aspects related to pre-eclampsia in pregnant women. The instrument comprised 20 questions, organized into three main sections: (I) Sociodemographic profile, with 5 questions, 4 of which were objective and 1 subjective; (II) Clinical aspects of the pathology, with 9 objective questions; and (III) Section exclusively for postpartum women, consisting of 6 questions, of which 5 were objective and 1 subjective. Data collection was carried out from March to September 2024, culminating in a final sample composed of 9 participants who met the previously defined inclusion criteria. After the collection stage, the data were organized and tabulated in electronic spreadsheets in Excel software (Microsoft), allowing an initial structuring of the information obtained. This stage included the calculation of absolute and relative frequencies and correlations between the main variables, aiming to identify relevant patterns and associations. This analytical process was essential for outlining the epidemiological profile of the participants and for understanding the clinical, social, and economic factors associated with pre-eclampsia.

RESULTS

At the end of the questionnaire application period at the Maternal and Child Hospital (HMI) in Marabá-PA, relevant information was obtained from 9 patients diagnosed with pre-eclampsia. From this, it was possible to outline the epidemiological profile consistent with the social spectrum associated with the pathology in the region, mainly regarding race, education, income, age, marital status, and number of pregnancies. Thus, this information is described in Table 1 below.:

Here is the translated table in English:

Revista ARACÊ
ISSN: 2358-2472

Table 1. Socioeconomic Information of the 9 Patients Treated for Preeclampsia at the Maternal and Child Hospital (HMI) in the Municipality of Marabá.

Socioeconomic Data	Variables	Absolute Frequency (n)	Relative Frequency (%)
Race	Mixed-race	9	100%
Marital Status	Married	3	33.33%
	Single	4	44.44%
	Stable union	2	22.22%
Education	Higher education	5	55.55%
	Secondary education	3	33.33%
	Primary education	1	11.11%
Income	More than 1 minimum wage	6	66.66%
	Less than or equal to 1 minimum wage	3	33.33%
Age	18-25 years	4	44.44%
	26-30 years	2	22.22%
	31-35 years	1	11.11%
	36-40 years	2	22.22%
First Pregnancy	Yes	5	55.55%
	No	4	44.44%

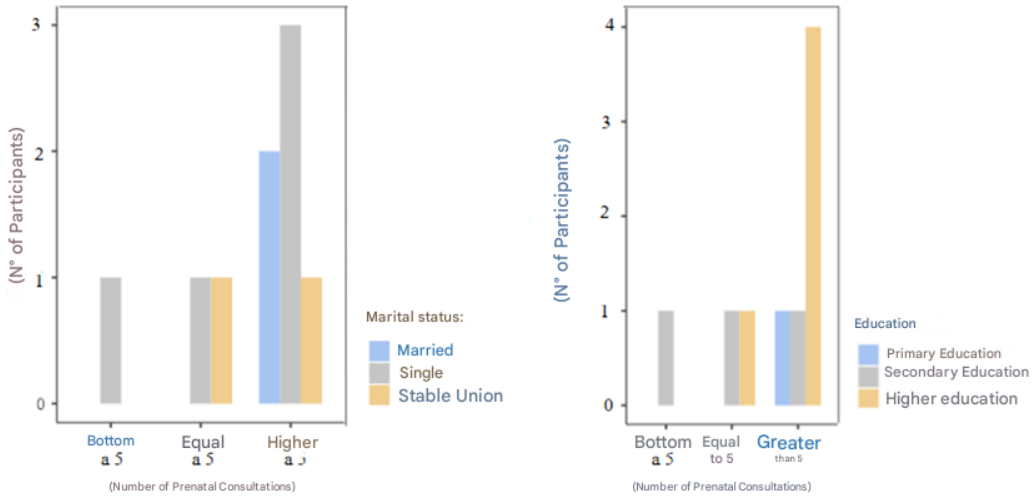
Source: Prepared by the authors.

This report demonstrates the relevance of the brown population affected by pre-eclampsia, as well as the predominance of young adult women, between 18 and 25 years old, representing 44.44% of the sample. In this regard, it is also worth mentioning that the income ratio among women who have a source of income greater than 1 minimum wage is double that of the 9 women surveyed, in a ratio of 6:3.

In addition, another important factor to be considered is the level of education of individuals affected by syndromic pathologies, such as Pre-Eclampsia (PE). This can be understood from the perspective that it depends on the patient's level of access to information, which can invariably determine prognoses and the course of the natural history of the disease, culminating in direct impacts on quality of life (Conceição et al., 2020). This correlation is represented in the graph below, Figure 1, which exemplifies the level of education, marital status, and number of prenatal consultations by patients diagnosed with PE.

Revista ARACÊ
ISSN: 2358-2472

Figure 1- Distribution of the number of prenatal consultations according to level of education and marital status, in a reference hospital in Marabá



AUTHORS.

In the meantime, it is possible to correlate the number of prenatal consultations performed, as shown in Figure 1, with other clinical aspects, as observed in Table 2 below. In this context, it is important to consider the intrinsic questions regarding the quality of prenatal care experienced by these high-risk patients, as well as their personal and family history of blood pressure. This active search phase was necessary to define both the clinical profile and the prenatal care profile of the pregnant women participating in the research.

Table 2 - Prenatal health information of women with PE in a referral hospital in Marabá

Prenatal health data of pregnant women	**Variables**	**Absolute Frequency (n)**	**Relative Frequency (%)**
Number of prenatal consultations	More than 5	6	66.66%
	Equal to 5	2	22.22%
	Less than 5	1	11.11%
When was PE detected during pregnancy?	Before the 9th month	7	77.77%

Revista ARACÊ
ISSN: 2358-2472

	After the 9th month	2	22.22%
Predominant Blood Pressure	Above 140x90	7	77.77%
	Equal to 140x90	1	11.11%
	Below 140x90	1	11.11%
Had hypertension before?	Yes	5	55.55%
	No	4	44.44%
Was instructed about PE during prenatal care?	Yes	8	88.88%
	No	1	11.11%
Do other family members have hypertension?	Yes	9	100%
	No	0	0%
Was informed about the disease before diagnosis?	Yes	7	77.77%
	No	2	22.22%
Treated PE with medication without medical guidance?	Yes	1	11.11%
	No	8	88.88%
Source: Prepared by the authors.			

Additionally, the women participating in the research were also questioned about which antihypertensive medications they used during pregnancy/postpartum to control pre-eclampsia. Monotherapy with Methyldopa was widely prescribed, and other polypharmacy modalities were also frequent, including drugs such as Hydralazine, Nifedipine, and ASA (Acetylsalicylic Acid). This information is described in Table 3 below:

Table 3 - Information on medications used by women with PE in a referral hospital in Marabá

Revista ARACÊ
ISSN: 2358-2472

Medication for BP control	Absolute Frequency (n)	Relative Frequency (%)
Methyldopa	3	33.33
Methyldopa + Hydralazine	1	11.11
Methyldopa + Hydralazine + Nifedipine	4	44.44
Methyldopa + Hydralazine + ASA	1	11.11
Source: Prepared by the authors.		

DISCUSSION

Thus, regarding the data collected based on race, it was found that the entire sample (100%) self-identified as "mixed-race." Although this data is significant, it is observed that mixed-race skin color is not a predisposing factor for developing the reported comorbidity, as it does not have a direct genetic influence but is instead related to Brazil's racial diversity and miscegenation. Consequently, it is challenging to establish a causal relationship between health-disease processes and race/color that allows for generalizations (Moraes et al., 2019).

Regarding the age of the participants, 44.44% of pregnant women with pre-eclampsia were between 18 and 25 years old, while 22.22% were between 36 and 40 years old. These data align with findings from other studies conducted by (Da Silva et al., 2017) and (Rodrigues, 2022), which also report similar distributions in different Brazilian states. However, these results differ from international scientific literature, where cases are more predominant in women over 35, indicating a Brazilian specificity regarding local parameters, and highlighting the need for adequate health control in the national context (Da Silva et al., 2017).

Another important factor to consider in terms of pregnant women's quality of life is the influence of marital status on pregnancy outcomes. This correlation can be analyzed in Table 1, which shows that most patients diagnosed with PE are single, making them potentially more vulnerable to pregnancy risks due to a lack of emotional support from a partner. This situational imbalance may be linked to a higher susceptibility to risk factors

Revista ARACÊ
ISSN: 2358-2472

such as illicit substance use and depression, resulting in lower maternal-fetal health care (Carvalho et al., 2021; Gadelha et al., 2024).

Additionally, 66.66% of the investigated women attended more than five prenatal consultations, meeting the minimum recommended by the Ministry of Health, which is essential for early identification and control of maternal-fetal comorbidities and serves as an indicator of care quality. This positive finding is also associated with the educational level of participants, as 7 out of 9 had at least completed high school, suggesting a broader perception of health and greater adherence to prenatal consultations, as shown in Figure 1 (Moraes et al., 2019; Silveira, 2020).

Concerning a family history of hypertension, all participants (n=9) reported a family history of this comorbidity. This finding highlights the importance of considering a family history of hypertension during prenatal consultations, given the higher risk of pre-eclampsia occurrence in genetically predisposed women. These data corroborate literature evidence that associates genetic predisposition with increased vulnerability to developing the pathology (Moura et al., 2010; Soares et al., 2019).

Furthermore, during the research, it was found that 8 out of 9 pregnant women received guidance about pre-eclampsia (PE) during prenatal care. This reflects a positive aspect of the informational assistance provided to high-risk pregnant women in Marabá, Pará, as shown in Table 2. This scenario aligns with findings in other Brazilian municipalities, which, despite challenges in care quality, have shown increasing efforts in policies aimed at women's health and improving perinatal care (Silveira, 2020).

During data collection, the importance of evaluating the medication used for blood pressure control in pregnant women was highlighted. As presented in Table 3, all participants (100%) used Methyldopa, considered the first-line antihypertensive drug for treating gestational hypertension due to its proven safety and efficacy. Additionally, Methyldopa was associated with Hydralazine in 6 out of 9 participants, reinforcing its importance as part of therapeutic management (Pereira et al., 2021).

Among the patients, 4 also used a third medication, Nifedipine, which is indicated as a second-line pharmacological therapy for more challenging cases. Furthermore, some participants used acetylsalicylic acid (ASA), a drug widely used to reduce the risk of early-

Revista ARACÊ
ISSN: 2358-2472

onset pre-eclampsia and minimize severe cases, as described in the literature (Pereira et al., 2021).

CONCLUSION

The epidemiological characterization of pregnant women in this study revealed a predominant distribution of pre-eclampsia among mixed-race, single women aged 18 to 25 with a family history of systemic arterial hypertension, with most of them having attended more than five prenatal consultations. These data highlight the clinical and socioeconomic profile of affected women, emphasizing the importance of specialized monitoring during high-risk prenatal care.

A major limitation of this study is the small sample size. Therefore, further studies with larger samples are recommended to confirm the prevalence of the obtained results and expand the understanding of pre-eclampsia in affected women in Marabá-PA. Expanding the sample will allow for a more robust analysis of the pathology, enabling more precise generalizations and improving personalized care for affected pregnant women.

Revista ARACÊ
ISSN: 2358-2472

REFERENCES

1. Brown, M. A., et al. (2018). The hypertensive disorders of pregnancy: ISSHP classification, diagnosis, and management recommendations for international practice. Hypertension, 72(1), 24–43. https://doi.org/10.1161/HYPERTENSIONAHA.117.10803

2. Burton, G. J., Redman, C. W., Roberts, J. M., & Moffett, A. (2019). Pre-eclampsia: Pathophysiology and clinical implications. British Medical Journal, 366, l2381. https://doi.org/10.1136/bmj.l2381

3. Carvalho, L. L., Fernandes, N. S., Fernandes, N. M. S., & Grincenkov, F. R. S. (2021). Aspectos psicossociais da gestação de alto risco: Análise de mulheres grávidas hospitalizadas. Psico, 52(4), e36341. https://doi.org/10.15448/1980-8623.2021.4.36341

4. Christopher, W. I., et al. (2020). Preeclampsia—Pathophysiology and clinical presentations: JACC state-of-the-art review. Journal of the American College of Cardiology, 76(14), 1690–1702. https://doi.org/10.1016/j.jacc.2020.08.014

5. Conceição, D. S., Viana, V. S. S., Batista, A. K. R., Alcântara, A. dos S. S., Eleres, V. M., Pinheiro, W. F., Bezerra, A. C. P., & Viana, J. A. (2020). A educação em saúde como instrumento de mudança social / Health education as an instrument for social change. Brazilian Journal of Development, 6(8), 59412–59416. https://doi.org/10.34117/bjdv6n8-433

6. da Silva, P. L. N., et al. (2017). Cuidados pré-natais e puerperais às gestantes de um centro de saúde de Minas Gerais quanto ao risco de pré-eclâmpsia: Aspectos clínicos, nutricionais e terapêuticos. Journal of Health & Biological Sciences, 5(4), 346–351. https://doi.org/10.12662/2317-3076jhbs.v5i4.346.p346-351.2017

7. FEBRASGO. (2017). Pré-eclâmpsia nos seus diversos aspectos. São Paulo, (8).

8. Ferreira, J. P. N., et al. (2021). Síndromes hipertensivas específicas da gestação em adolescentes e suas repercussões maternas e perinatais: Uma revisão integrativa de literatura. Revista Brasileira de Desenvolvimento, 3, 32204–32217. https://doi.org/10.34117/bjdv7n3-567

9. Gadelha, I. P., et al. (2024). Sociodemographic and obstetric factors associated with health-related quality of life of high-risk pregnant women. International Journal of Gynecology & Obstetrics, 164(3), 925–932. https://doi.org/10.1002/ijgo.15122

10. Guida, J. P. de S., et al. (2022). Prevalence of preeclampsia in Brazil: An integrative review. Revista Brasileira de Ginecologia e Obstetrícia, 44(7), 686–691. https://doi.org/10.1055/s-0042-1743099

Revista ARACÊ
ISSN: 2358-2472

11. Moura, E. R. F., et al. (2010). Fatores de risco para síndrome hipertensiva específica da gestação entre mulheres hospitalizadas com pré-eclâmpsia. Cogitare Enfermagem, 15(2), 260–266.

12. Moraes, L. S. L., et al. (2019). Síndromes hipertensivas na gestação: Perfil clínico materno e condição neonatal ao nascer. Revista Baiana de Saúde Pública, 43(3), 422–436.

13. Naljayan, M. V., & Karumanchi, S. A. (2013). New developments in the pathogenesis of preeclampsia. Advances in Chronic Kidney Disease, 20(3), 265–270. https://doi.org/10.1053/j.ackd.2013.02.003

14. Phipps, E. A., Thadhani, R., Benzing, T., et al. (2019). Pre-eclampsia: Pathogenesis, novel diagnostics and therapies. Nature Reviews Nephrology, 15(5), 275–289. https://doi.org/10.1038/s41581-019-0119-6

15. Pereira, B. S., et al. (2021). Abordagem terapêutica da pré-eclâmpsia sobreposta à hipertensão arterial não controlada. ACTA MSM - Periódico da Escola de Medicina Souza Marques, 8(3), 133. https://doi.org/10.36079/ActaMSM.2021.v8i3.133

16. Robillard, P. (2017). Historical evolution of ideas on eclampsia/preeclampsia: A proposed optimistic view of preeclampsia. Journal of Reproductive Immunology, 123, 72–77. https://doi.org/10.1016/j.jri.2017.09.002

17. Rodrigues, I. R., et al. (2022). Distribuição espacial e perfil sociodemográfico dos óbitos maternos por pré-eclâmpsia no Brasil de 2009 a 2018. Brazilian Journal of Case Reports, 2(3), 631–636. https://doi.org/10.52600/2763-583X.bjcr.2022.2.3.631-636

18. Salles, S. D. A. A. I. (2024). Síndromes hipertensivas na gestação: Relato de caso sobre pré-eclâmpsia sobreposta. Congresso Médico Acadêmico UniFOA, 10.

19. Silveira, L. I., et al. (2020). Fatores associados ao número de consultas no pré-natal: Análise segundo a autopercepção de usuárias da Atenção Primária no Brasil. Arquivos Catarinenses de Medicina, 49(2), 29–42.

20. Soares, T. C., et al. (2019). Fatores de risco relacionados à pré-eclâmpsia: Uma revisão integrativa da literatura. Revista Eletrônica Acervo Saúde, 20(20), e437. https://doi.org/10.25248/reas.e437.2019

21. Tomimatsu, T., et al. (2017). Preeclampsia: Maternal systemic vascular disorder caused by generalized endothelial dysfunction due to placental antiangiogenic factors. International Journal of Molecular Sciences, 20(17), 4246. https://doi.org/10.3390/ijms20174246