






LETTER TO THE EDITOR

SCREENING, PREVENTION AND EARLY DIAGNOSIS OF PREECLAMPSIA: NEED FOR AN UPDATED PROTOCOL IN PERU

Rommy H. Novoa ^{1,a}, Carlos Pérez-Aliaga ^{1,b}, Jose E. Castañeda-Apolinario ^{2,c}, Alexandra I. Ramírez-Moreno ^{2,c}, Luis Meza-Santibañez ^{1,3,b}

¹ National Maternal Perinatal Institute. Lima, Peru.

² Alberto Hurtado Faculty of Medicine, Universidad Peruana Cayetano Heredia. Lima, Peru.

³ San Fernando Faculty of Medicine, Universidad Nacional Mayor de San Marcos, Lima, Peru.

^a Gynecologist-Obstetrician, master of Science in Epidemiological Research,

^b Gynecologist-Obstetrician, ^c physician

To the Editor. Preeclampsia is a multisystem disorder of gestation characterized by placental perfusion impairment resulting in maternal vascular endothelial injury causing blood pressure elevation $\geq 140/90$ mm Hg and multiorgan injury ^(1,2). In addition, it can cause fetal growth restriction and intrauterine death. It constitutes the second cause of maternal death after hemorrhage in Peru and the world ^(3,4), and is a significant cause of long-term morbidity in the mother and fetus ⁽²⁾.

Delivery is the treatment for preeclampsia. However, the optimal timing should take into account the balance between decreasing disease progression and thus maternal risks, and decreasing neonatal complications due to prematurity. Current management, aimed at achieving the best maternal and perinatal outcomes, is focused on prediction, prevention and early diagnosis ⁽¹⁾. Validated screening strategies are based on the evaluation of a combination of clinical risk factors, serum markers such as placental growth factor (PIGF) and pregnancy-associated placental protein A (PAPA-A) and Doppler

flow analysis of maternal uterine arteries ^(1,2), before 14 weeks of pregnancy. A high-risk screening ($>1/150$) determines treatment with aspirin, 100 to 150 mg, before 16 weeks of gestation. This is the only preventive medication backed by solid scientific evidence, that reduces the risk of developing preeclampsia before 37 weeks of pregnancy up to 62% ⁽¹⁾. Likewise, early diagnosis can be achieved by identifying angiogenic imbalance, since circulating levels of soluble fms-like tyrosine kinase 1 (sFlt1), an anti-angiogenic factor, are markedly increased in women with preeclampsia, and PIGF is decreased. This imbalance precedes the onset of clinical signs of preeclampsia and correlates with disease severity ⁽⁵⁾.

We assessed the prevalence of pregnancy hypertensive disorders (PHD) in all patients (N=22782) from the Instituto Nacional Materno Perinatal (INMP), a high-complexity referral center in gynecological-obstetric pathology in Peru, between January 2020 and June 2021 (Figure 1A). The overall prevalence of PHD was 7.2% (1640/22782) and of these cases, 41.4% (679/1640) presented preeclampsia with signs of severity, being 32.0% (215/679) of them far from term (less than 34 weeks of gestation). In addition, we evaluated a sample of 185 women with severe preterm preeclampsia (less than 37 weeks) of whom 87.4% were referred for care of pregnancy complications during the second and third trimester. Only 8% (15/185) of the patients had a first-trimester preeclampsia risk assessment, and of these, 27% (4/15) received aspirin prophylaxis (Figure 1, B). This study complied with the ethical principles in research and had the ethical approval of the Institutional Ethics Committee (006-2022-CIEI/INMP).

The Ministry of Health through its 2013 Technical Health Standard for Comprehensive Maternal Health Care (NTS No. 105-MINSA/DGSP-V.01), protocols prenatal control at all levels of care in the country. This standard establishes refocused prenatal care, which consists of surveillance and comprehensive evaluation of pregnant women before 14 weeks to provide timely care that allows detection of risk factors and management of pregnancy complications. The aim is to achieve a minimum of 6 prenatal care visits as a synonym of quality prenatal care ⁽⁶⁾. However, there is no modern protocol for risk assessment of preeclampsia, nor any national policy for prevention or early diagnosis in accordance with the current scientific evidence that guides modern obstetrics. Moreover, reports show that the implementation of a first trimester screening program for preeclampsia and early intervention with aspirin in women at high risk is associated with cost savings in the health care system. Thus, by preventing a significant number of cases of preeclampsia with inexpensive measures such as aspirin and ultrasound, compared to managing the disease per se, the care of women with severe preeclampsia and premature neonates in Intensive Care Units, which generate extremely

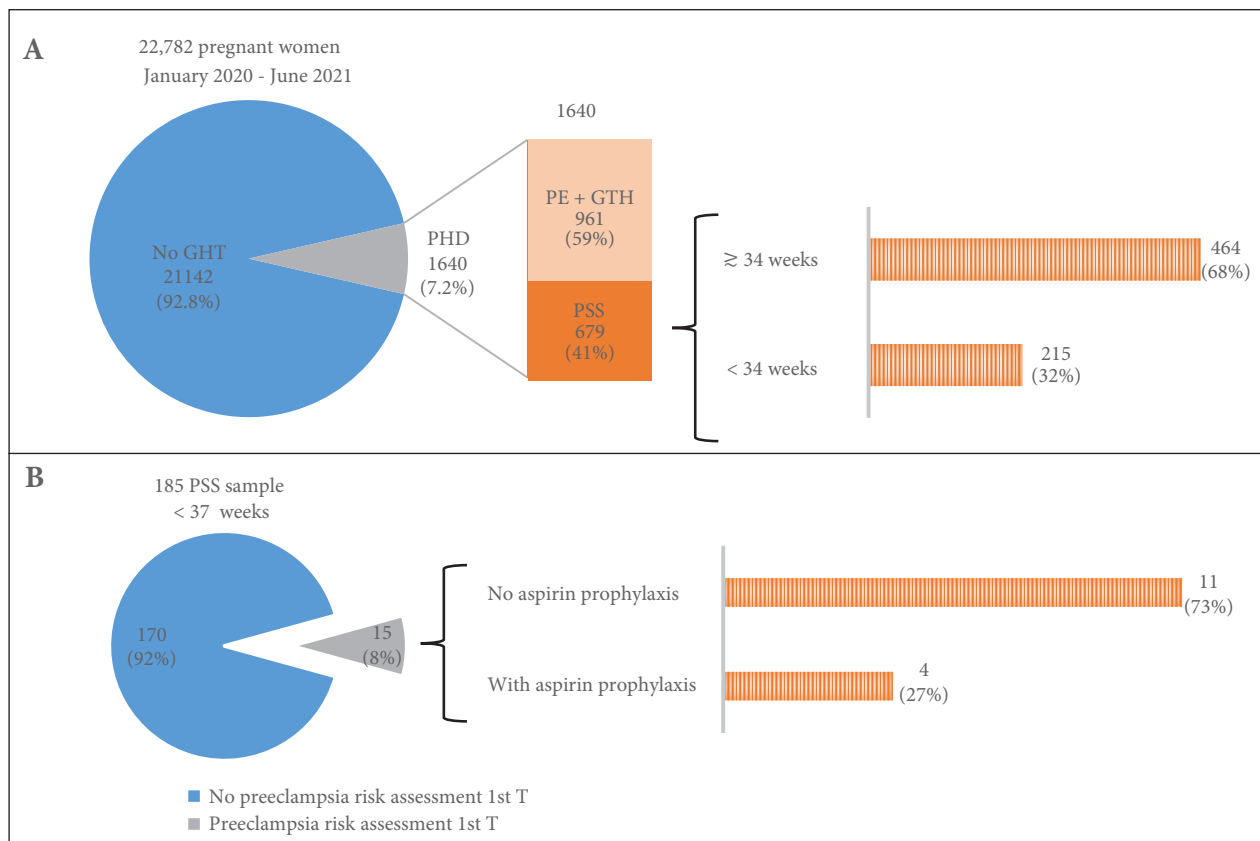
Cite as. Novoa RH, Pérez-Aliaga C, Castañeda-Apolinario JE, Ramírez-Moreno AI, Meza-Santibañez L. Screening, prevention and early diagnosis of preeclampsia: need for an updated protocol in Peru. *Rev Peru Med Exp Salud Publica.* 2024;41(3):321-3. doi: [10.17843/rpmpesp.2024.413.13793](https://doi.org/10.17843/rpmpesp.2024.413.13793).

Correspondence. Rommy H. Novoa, rommy.h.novoa@gmail.com

Received. 20/03/2024 **Approved.** 05/06/2024 **Online.** 30/07/2024



This work is licensed under a Creative Commons Attribution 4.0 International



PSS: Preeclampsia with signs of severity
 PHD: Pregnancy hypertensive disorder
 PE: preeclampsia
 GHT: gestational hypertension.

Figure 1. Analysis of births at the National Maternal Perinatal Institute in Lima, Peru 2020-2021. (A) Prevalence of pregnancy hypertensive disorders according to severity. (B) Risk assessment in the first trimester of pregnancy and application of aspirin prophylaxis in a sample of 185 women with preeclampsia with signs of severity (PSS). PHD: pregnancy hypertensive disorder, PE: preeclampsia, GHT: gestational hypertension

high costs to the health system and can be associated with permanent disabilities, would be avoided ⁽⁷⁾. In line with this, the INMP published in 2023 a complete protocol on prediction, prevention, diagnosis and treatment of hypertensive disorders within the update of its guidelines and procedures in obstetrics ⁽⁸⁾, which should be a model for updating the national protocol.

In conclusion, we report the lack of preeclampsia risk assessment and the use of aspirin as prophylaxis in patients who developed severe preterm preeclampsia. In this context, the absence of a protocol for prediction, prevention and early diagnosis in the Technical Standard for maternal care in force in Peru since 2013 stands out. An update of the technical standard and establishing a national protocol aimed at universal screening of pregnant women is urgently required

to focus preventive measures on those at high risk and reduce maternal and perinatal morbidity and mortality due to preeclampsia in Peru.

Author contributions. The authors of the study declare that each of them meets the four ICMJE authorship criteria.

Roles according to CRediT. RHN, CPA participated in the conception of the article, RHN, CPA and LMS were involved in the methodology, data analysis, validation of the information, literature review, evaluation of the evidence, drafting and critical revision of the article, as well as approval of the final version.

Funding. Self-funded. Authors declare that this study was not funded by any entity.

Conflicts of interest. The authors declare that they have no conflicts of interest.

REFERENCES

1. Magee LA, Brown MA, Hall DR, Gupte S, Hennessy A, Karumanchi SA, *et al.* The 2021 International Society for the Study of Hypertension in Pregnancy classification, diagnosis & management recommendations for international practice. *Pregnancy Hypertens.* 2022;27:148-169. doi: [10.1016/j.preghy.2021.09.008](https://doi.org/10.1016/j.preghy.2021.09.008).
2. Magee LA, Nicolaides KH, von Dadelszen P. Preeclampsia. *N Engl J Med.* 2022;386(19):1817-1832. doi: [10.1056/NEJMra2109523](https://doi.org/10.1056/NEJMra2109523).
3. GBD 2015 Maternal Mortality Collaborators. Global, regional, and national levels of maternal mortality, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016;388(10053):1775-1812. doi: [10.1016/S0140-6736\(16\)31470-2](https://doi.org/10.1016/S0140-6736(16)31470-2).
4. Ministerio de Salud. Boletín Epidemiológico del Perú SE 52 - 2023. Centro Nacional de Epidemiología, Prevención y Control de Enfermedades. Ministerio de Salud. Lima-Perú, 2023.
5. Rana S, Burke SD, Karumanchi SA. Imbalances in circulating angiogenic factors in the pathophysiology of preeclampsia and related disorders. *Am J Obstet Gynecol* 2022;226:S1019-S1034. doi: [10.1016/j.ajog.2020.10.022](https://doi.org/10.1016/j.ajog.2020.10.022).
6. Ministerio de Salud. Norma Técnica de Salud para la Atención Integral de Salud Materna, aprobada por Resolución Ministerial N° 827-2013/MINSA. Lima-Perú: Ministerio de Salud; 2014.
7. Ortved D, Hawkins TL, Johnson JA, Hyett J, Metcalfe A. Cost-effectiveness of first-trimester screening with early preventative use of aspirin in women at high risk of early-onset pre-eclampsia. *Ultrasound Obstet Gynecol.* 2019;53(2):239-244. doi: [10.1002/uog.19076](https://doi.org/10.1002/uog.19076).
8. Instituto Nacional Materno Perinatal. Guías de práctica clínica y de procedimientos en Obstetricia y Perinatología. Lima-Perú, 2023.