

PRENATAL CARE AND HYPERTENSIVE DISORDERS DURING PREGNANCY: A CROSS- SECTIONAL STUDY

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Abstract: Introduction: Hypertensive disorders during pregnancy constitute a major public health problem affecting pregnant women worldwide, being more common in developing countries. This condition not only has consequences for the mother's health during pregnancy and postpartum, but also imposes an increase in costs in obstetric and neonatal care, making it both an economic and social problem. **Objective:** To determine the effect of prenatal check-ups in postpartum patients who presented hypertensive disorders during their pregnancy at the Matilde Hidalgo Specialized Hospital in Procel in the period from May to August 2022. **Material and method:** The research design is non-experimental, observational - cross-sectional. **Conclusion:** Performing prenatal check-ups does not reduce complications in pregnant women with hypertensive disorders.

INTRODUCTION

Hypertensive disorders in pregnancy represent a serious public health problem affecting pregnant women around the world and more frequently in developing countries; (1) it not only has repercussions for women during pregnancy and the puerperium, but also for the health system by generating additional costs in obstetric and neonatal care, which makes this condition an economic and social problem. (2) (3)

Hypertensive disorders of pregnancy (HDP) include chronic hypertension (CH), gestational hypertension (GH), preeclampsia with and without signs of severity, chronic hypertension with superimposed preeclampsia and eclampsia. (4)

To diagnose hypertension in pregnancy, blood pressure must be measured with a value greater than 140/90 mmHg on at least 2 occasions with 4 hours difference. (5) CH occurs before the beginning of pregnancy or the 20th week of gestation; Unlike GH,

which appears after week 20, both in the absence of proteinuria. (6) On the other hand, preeclampsia is characterized by hypertension that appears after week 20 but is accompanied by proteinuria, and eclampsia is a complication of severe preeclampsia, where tonic-clonic seizures and target organ damage appear. (7) (8)

As is generally known, hypertensive disorders are the second cause of maternal mortality after obstetric hemorrhage; it corresponds to 26% of maternal deaths in Latin America and the Caribbean and 16% in developed countries. (9) In Ecuador, the first cause of maternal morbidity and mortality is preeclampsia. (10) (1)

The risk factors for developing any type of hypertensive disorder can be modifiable and non-modifiable, as well as gynecological-obstetric, which have to do with previous reproductive conditions. (12) (13)

The importance of early recognition of this broad group of diseases is the cardiovascular risk it represents for pregnant and postpartum women both in the short and long term. On the other hand, increased blood pressure can cause a decrease in blood flow to the placenta, reducing the amount of resources available to the fetus, which in turn can cause low birth weight, premature birth, intrauterine growth restriction, oligohydramnios, placental abruption, fetal suffering and death. (14) (15)

Prenatal check-ups are the most appropriate way to evaluate patients to prevent complications during childbirth and postpartum. This study is based on determining the effect of prenatal check-ups in postpartum patients who presented hypertensive disorders during their pregnancy at the Matilde Hidalgo Specialized Hospital in Procel in the period from May to August 2022.

DEVELOPMENT

Hypertensive disorders of pregnancy are a broad group of diseases that have not only been shown to be associated with high cardiovascular risk for the mother and her fetus at the time of diagnosis, but also represent an important cause of morbidity and mortality of the same nature in the future. (16)

In order to speak of hypertensive disorders, it is necessary to define that all pregnant women must have a record of their blood pressure with a value greater than or equal to 140/80 millimeters of mercury, at rest to avoid false positive results; it is also necessary to corroborate that the first reading is correct through a second reading, with a time gap of at least 4 hours from the new reading and on the same arm; (17) in the event of identifying values that exceed 160/110 millimeters of mercury, this figure will be considered as severe arterial hypertension. (18) Although until a few years ago the existence of proteinuria with or without edema was required to be able to give the name of hypertensive disorders, nowadays these definitions are more flexible and in some cases the term is still given even though these last two alterations cannot be recognized in the patient. (19) (20)

The diseases that are included within the hypertensive disorders of pregnant women are: gestational hypertension, chronic hypertension, preeclampsia, eclampsia and preeclampsia superimposed on chronic hypertension. In addition to an abnormal blood pressure record, it is taken into account during the evaluation of the patient if she does not have any serious signs or symptoms at that moment, where the target organs such as the heart, brain, kidneys and retina are compromised. (21)

In Latin America and the Caribbean, they are responsible for around 20% of maternal deaths and 12% of fetal deaths. (22)

In terms of mortality, the figures are lower in those countries considered developed and first world, the opposite situation occurs in underdeveloped countries where attributed mortality reaches up to 16%. (23)

At the national level, in Ecuador hypertensive disorders, through preeclampsia, became the first cause of maternal morbidity and mortality, this until 2006, a situation that instead increased much more until 2014, where 27.53% of reported maternal deaths were due to causes related to this condition; (24) finally Chimborazo represents the province with the highest prevalence figures, where it is reported that both preeclampsia and eclampsia reach a percentage value of 28.16%. (25) (26).

PROBLEM FORMULATION

What effect does compliance with prenatal check-ups have on postpartum patients between 15 and 45 years of age who presented hypertensive disorders during their pregnancy at the Matilde Hidalgo Specialized Hospital in Procel?

JUSTIFICATION

Hypertensive disorders in pregnancy are the cause of 5 to 10% of pregnancy complications worldwide and are one of the main causes of maternal, fetal and neonatal morbidity and mortality. (18) Maternal risks include placental abruption, cerebrovascular disease, multi-organ failure and disseminated intravascular coagulation. (19)

This major problem makes it necessary to identify obstacles to managing hypertensive disorders in pregnancy, in order to reduce mortality rates for pregnant women and their offspring, and thus serve as a vehicle for better control of the pathology, improved prognosis and a better quality of life. (20)

This research work is carried out in order to analyze the relationship between the number of prenatal check-ups that pregnant women with hypertensive disorders had and complications during their pregnancy and puerperium. At the end of the project, with the information collected from the research, it will be possible to determine if there is any effect between prenatal check-ups and hypertensive disorders.

GENERAL GOAL

To determine the effect of prenatal check-ups in postpartum patients who presented hypertensive disorders during their pregnancy at the Matilde Hidalgo Specialized Hospital in Procel in the period from May to August 2022.

SPECIFIC GOALS

- To determine the number of prenatal check-ups performed during pregnancy in postpartum patients who developed hypertensive disorders at the Matilde Hidalgo Specialized Hospital in Procel.
- To record the number of postpartum women who presented hypertensive disorders during pregnancy at the Matilde Hidalgo Specialized Hospital in Procel.
- To describe the maternal complications presented during pregnancy in postpartum patients who presented hypertensive disorders at the Matilde Hidalgo Specialized Hospital in Procel.

HYPOTHESIS

H0: Prenatal check-ups do not reduce complications in postpartum women who presented hypertensive disorders during their pregnancy.

H1: Prenatal check-ups reduce complications in postpartum women who presented hypertensive disorders during their pregnancy.

METHODOLOGY

In the present investigation, the type of approach chosen was quantitative, since it converts the data provided by gynecological clinical records, which are qualitative data, into numerical data, making them easily analyzable with statistical methods; a non-causal relationship was established between the study variables “Prenatal Controls” and “Hypertensive Disorders in Pregnancy”, to determine their impact on the gynecological population.

The research design is non-experimental, observational; of the patients treated at the Matilde Hidalgo Specialized Hospital in Procel.

The type of design is cross-sectional because the variables will be measured on a single occasion and the patients will not be followed up; According to its time of occurrence, it is retrospective because it uses events that already occurred in the past, it will collect the data found in the medical records of the patients treated in May - August 2022.

The level of research is correlational, since it is determined if there is a relationship between the variables “prenatal check-ups” and “hypertensive disorders in pregnancy”, in order to verify the research hypothesis.

The research work is carried out at the Matilde Hidalgo de Procel Specialized Hospital located in Guasmo Sur-Guayaquil. It is a Gynecological-Obstetric Hospital corresponding to the third level of care and the second moment of complexity, which belongs to the Ministry of Public Health, serving 24 hours a day. Among the services it provides are Emergency, Surgical Surgery, Neonatology, Hospitalization, Outpatient Consultation, Clinical Laboratory, Transfusion Medicine, Pharmacy, Imaging. It has a multidisciplinary team of human talent, made up of general practitioners, specialist doctors, obstetricians, nurses, nursing assistants, dentists, psychologists, etc. Located in the province of Guayas, canton of

Guayaquil, parish of Ximena, District 09 D02.

On Av-12-S-E between 54CS-E Fernando López Lara Street 54B and Second Pedestrian.

The population is made up of 200 postpartum patients between 15 - 45 years old who presented hypertensive disorders during their pregnancy and their births were attended at the Matilde Hidalgo de Procel Specialty Hospital in the city of Guayaquil, province of Guayas. Data collected from the project during the period from May to August 2022.

It corresponds to the 132 postpartum patients between 15 - 45 years of age who presented hypertensive disorders during pregnancy that meet the inclusion criteria at the Matilde Hidalgo de Procel Specialty Hospital in the City of Guayaquil, Guayas province in the period from May to August 2022.

Non-probabilistic sampling.

INCLUSION CRITERIA

- Pregnant women with hypertensive disorders whose births were attended at the Matilde Hidalgo Specialized Hospital in Procel.
- Patients who during their pregnancy and postpartum period presented complications typical of hypertensive disorders.
- Age range between 15 and 45 years.
- Research period between May and August 2022.

EXCLUSION CRITERIA

- Pregnant women with hypertensive disorders whose births were not attended at the Matilde Hidalgo Specialized Hospital in Procel.
- Patients who during their Pregnancy and Puerperium presented complications that are not typical of hypertensive disorders.
- Age range below 15 years or above 45 years

- Research period not included between May and August 2022.

A qualitative analysis was carried out for data collection in which the clinical histories of pregnant women between 15 - 45 years old with a diagnosis of a hypertensive disorder and the complications they presented during their puerperium were studied.

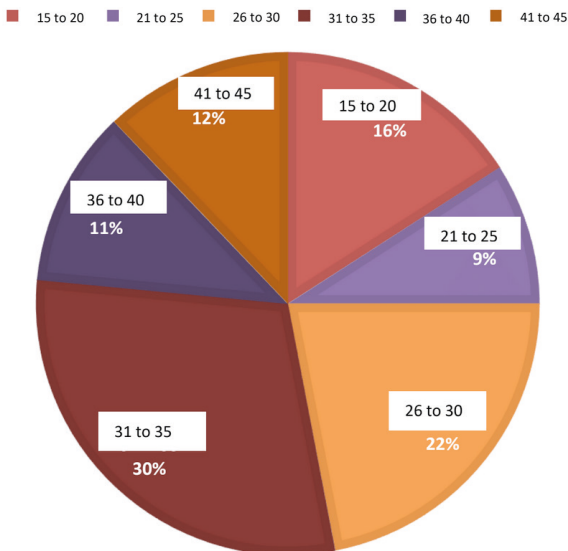
RESULTS

AGE GROUP	TOTAL	PERCENTAGE	MODE	MEDIAN
15 TO 20	21	16%	28	30
21 TO 25	12	9%		
26 TO 30	29	22%		
31 TO 35	39	30%		
36 TO 40	15	11%		
41 TO 45	16	12%		
TOTAL	132	100%		

Table 1. Age group of presentation of hypertensive disorders during pregnancy

Source: Hospital Matilde Hidalgo de Procel

AGE



Graphic 1: Percentage of age of onset of hypertensive disorders during pregnancy

Analysis: The most affected age range corresponds to patients aged 31 to 35 years, representing 30% of the total, with a mode of 28 years and a median of 30 years.

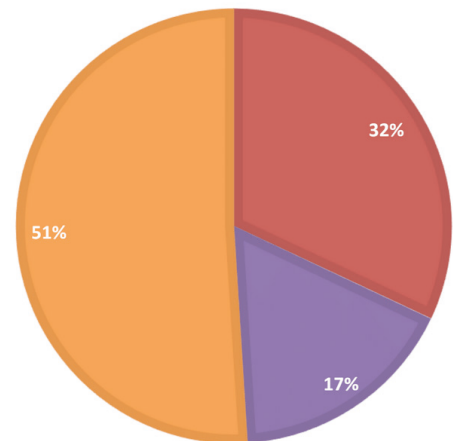
ORIGIN	TOTAL	PERCENTAGE
URBAN	42	32%
COUNTRYSIDE	23	17%
URBAN MARGINAL	67	51%
TOTAL	132	100%

Table 2. Origin of postpartum patients who presented hypertensive disorders during their pregnancy

Source: Hospital Matilde Hidalgo de Procel

ORIGIN

■ Urban ■ Count ryside ■ Urban marginal



Graphic 2: Percentage of origin in postpartum patients who presented hypertensive disorders during their pregnancy

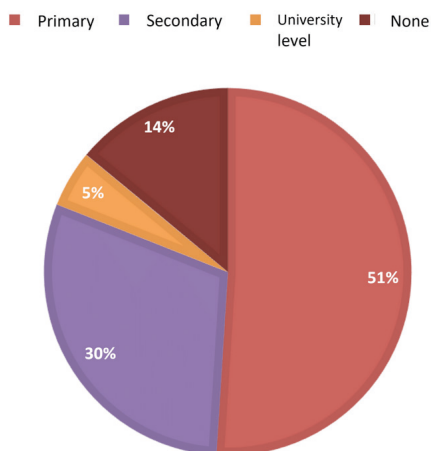
Analysis: In the sample analyzed, it was observed that the most frequent origin was urban marginal, representing 51% of the cases.

LEVEL OF EDUCATION	TOTAL	PERCENTAGE
NONE	19	14%
PRIMARY	67	51%
SECONDARY SCHOOL	40	30%
UNIVERSITY LEVEL	6	5%
TOTAL	132	100%

Table 3. Level of education in postpartum patients who presented hypertensive disorders during their pregnancy

Source: Hospital Matilde Hidalgo de Procel

EDUCATION



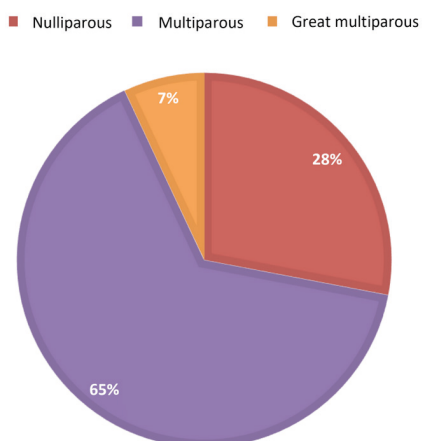
Graphic 3: Percentage of educational level in postpartum patients who presented hypertensive disorders during their pregnancy

Analysis: The educational level of the sample mostly had primary education 51%, followed by secondary education at 30%.

PARITY	TOTAL	PERCENTAGE
NULLIPAROUS	37	28%
MULTIPAROUS	86	65%
GREAT MULTIPAROUS	9	7%
TOTAL	132	100%

Table 4. Parity in postpartum patients who presented hypertensive disorders during pregnancy
Source: Hospital Matilde Hidalgo de Procel

PARITY



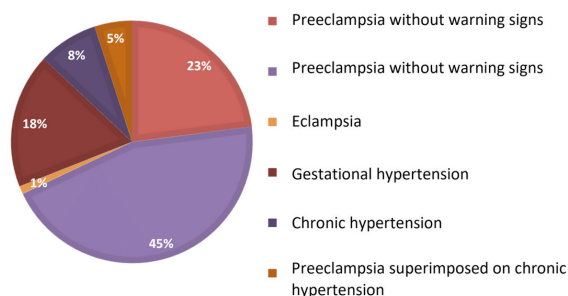
Graphic 4: Percentage of parity in postpartum patients who presented hypertensive disorders during their pregnancy

Analysis: Regarding the parity of the sample under study, 65% were multiparous.

CLINIC	TOTAL	PERCENTAGE
PREECLAMPSIA WITHOUT WARNING SIGNS	30	23%
PREECLAMPSIA WITH WARNING SIGNS	60	45%
ECLAMPSIA	1	1%
GESTATIONAL HYPERTENSION	24	18%
CHRONIC HYPERTENSION	10	8%
PREECLAMPSIA SUPERIMPOSED TO CHRONIC HYPERTENSION	7	5%
TOTAL	132	100%

Table 5. Clinic in postpartum patients who presented hypertensive disorders during their pregnancy
Source: Hospital Matilde Hidalgo de Procel

CLINIC

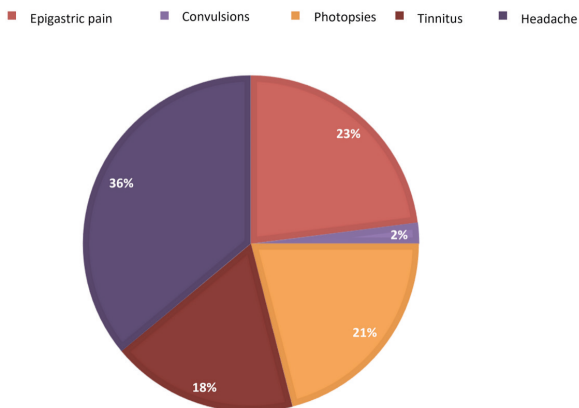


Graphic 5: Percentage of clinical presentation in postpartum patients who presented hypertensive disorders during their pregnancy
Analysis: The most frequent clinical form was preeclampsia with 68% followed by gestational hypertension with 18%.

CLINICAL MANIFESTATIONS	TOTAL	PERCENTAGE
EPIGASTRIC PAIN	30	23%
CONVULSIONS	3	2%
PHOTOPSIES	28	21%
TINNITUS	24	18%
HEADACHE	47	36%
TOTAL	132	100%

Table 6. Common clinical manifestations in pregnant women with hypertensive disorders
Source: Hospital Matilde Hidalgo de Procel

MANIFESTATIONS CAUSED



Graphic 6: Porcentaje de manifestaciones clínicas frecuentes en embarazadas que presentaron trastornos hipertensivos

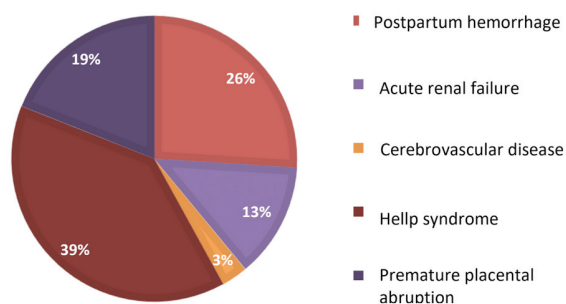
Analysis: The most frequent clinical manifestations were headache (36%), followed by epigastric pain (23%), photopsia (21%), tinnitus (18%), and seizures (2%).

MATERNAL COMPLICATIONS	TOTAL	PERCENTAGE
POSTPARTUM HEMORRHAGE	34	26%
ACUTE RENAL FAILURE	17	13%
CEREBROVASCULAR DISEASE	4	3%
HELLP SYNDROME	52	39%
PREMATURE PLACENTAL DETACHMENT	25	19%
TOTAL	132	100%

Table 7. Maternal complications in patients who presented hypertensive disorders during their pregnancy

Source: Hospital Matilde Hidalgo de Procel

MATERNAL COMPLICATIONS



Graphic 7: Percentage of maternal complications in patients who presented hypertensive disorders during their pregnancy

Analysis: The most frequent maternal complication was Hellp syndrome with 29% followed by postpartum hemorrhage with 21%.

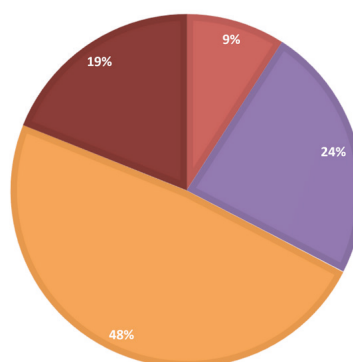
NUMBER OF PRENATAL CHECKS	TOTAL	PERCENTAGE
NONE	12	9%
1 TO 3	31	24%
4 TO 5	64	48%
OVER 5	25	19%
TOTAL	132	100%

Table 8. Number of prenatal check-ups in pregnant women who presented hypertensive disorders

Source: Hospital Matilde Hidalgo de Procel

NUMBER OF PRENATAL CHECK-UPS

None 1 to 3 4 to 5 Over 5



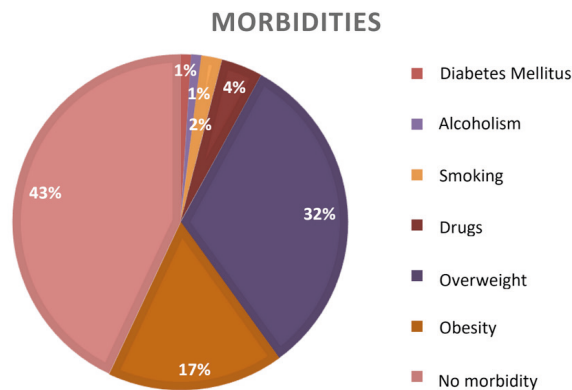
Graphic 8: Percentage of number of prenatal check-ups in pregnant women who presented hypertensive disorders

Analysis: In the sample analyzed, it was observed that the majority of patients had 4 to 5 prenatal check-ups, representing 48% of the total.

MORBIDITIES	TOTAL	PERCENTAGE
DIABETES MELLITUS	2	1%
ALCOHOLISM	2	1%
SMOKING	3	2%
DROUGS	5	4%
OVERWEIGHT	42	32%
OBESITY	22	17%
NO MORBIDITY	56	43%
TOTAL	132	100%

Table 9. Morbidities in pregnant women with hypertensive disorders

Source: Hospital Matilde Hidalgo de Procel



Graphic 9: Porcentaje de morbilidades en embarazadas que presentaron trastornos hipertensivos

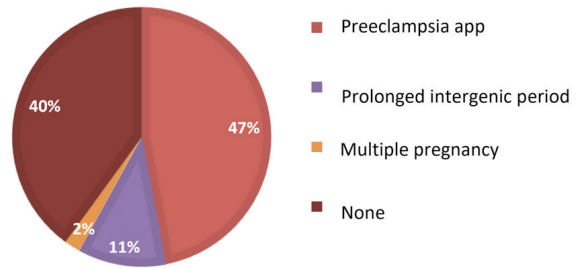
Analysis: Regarding the morbidities found in the patients studied, the most frequent was not finding any type of associated morbidity with 43%, followed by overweight with 32%.

OBSTETRIC GYNECOLOGY HISTORY	TOTAL	PERCENTAGE
PREECLAMPSIA APP	62	47%
PROLONGED INTERGENESIS PERIOD	15	11%
MULTIPLE PREGNANCY	3	2%
NONE	52	40%
TOTAL	132	100%

Table 10. Gynecological and obstetric history in patients who presented hypertensive disorders during their pregnancy

Source: Hospital Matilde Hidalgo de Procel

OBSTETRIC GYNECOLOGY HISTORY



Graphic 10: Percentage of gynecological-obstetric history in patients who presented hypertensive disorders during their pregnancy

Analysis: In the sample studied, the most frequent history was preeclampsia (47%).

DISCUSSION

Worldwide, hypertensive disorders of pregnancy are a leading cause of morbidity, mortality, hospitalization, and resource utilization for both mothers and their newborns. (27) In developed countries, hypertensive disorders are often diagnosed at preconception visits. (28) Prenatal care provides the opportunity for prevention, early diagnosis, and management of hypertensive disorders. (29)

In the present study entitled “Effect of prenatal check-ups in postpartum patients who presented hypertensive disorders in pregnancy” it was shown that the most affected age range was comprised of pregnant women between 31-35 years, data that coincide with the research on Hypertensive Disorders in pregnancy carried out by Yorika Estefani Panduro Córdova in Peru where the author found that 62.7% of pregnant women were between 20 and 34 years old. (30)

This project showed that 65% of pregnant women were multiparous, 48% had 4-5 prenatal check-ups and 45% had preeclampsia with warning signs, coinciding with the research carried out at the Santa María del Socorro Hospital in Peru, in which the results obtained were that the highest percentage

of pregnant women were multiparous, their attendance at preconception check-ups was less than 5 and the most frequent hypertensive disorder was preeclampsia with warning signs.

The research carried out by Belinda Olga García Inga, Jenny Giovana Poma Salinas, Edith Suasnabar Cueva at the Regional Maternal and Child Hospital of El Carmen - Huancayo in Peru, regarding comorbidities; (31) It was observed that the majority of patients were obese, no patient had diabetes, a minimal percentage consumed alcohol and tobacco, coinciding with the present study in terms of associated morbidities, the highest percentage was obese and a minimum had diabetes, tobacco and alcohol consumption during pregnancy occurs although not in the majority of patients but it is an issue that must be taken into account. (32) (33)

Evelin Jazmín Morejón Alarcón and Jhosselin Raquel Sepa Costales, authors of the study entitled Characterization of hypertensive disorders and their complications in adult pregnant women, carried out in Riobamba, Ecuador in 2019-2020, present that 86% of the patients had preeclampsia with warning signs, 69.4% had less than five preconception controls, the two most frequent manifestations were occipital headache with 51% and epigastralgia with 31%, maternal complications were premature placental abruption in 3% and HELLP syndrome in 1%. (34) Coinciding with the present project that reflects that the majority of patients presented Preeclampsia with warning signs, the predominant clinical manifestations are headache and epigastric pain, as for the most frequent maternal complications are HELLP syndrome, followed by postpartum hemorrhage and premature placental abruption, and the average number of prenatal check-ups is 4-5.

CONCLUSIONS

- Prenatal screening does not reduce complications in pregnant women with hypertensive disorders.
- The number of prenatal check-ups performed during pregnancy by postpartum women who developed hypertensive disorders was between 4 and 5, however, a small sample size had insufficient check-ups.
- The figures for postpartum women who presented hypertensive disorders correspond mostly to Preeclampsia, followed by Gestational Hypertension, Chronic Hypertension and Eclampsia.
- The most frequent maternal complications presented during pregnancy and puerperium were HELLP Syndrome and Postpartum Hemorrhage respectively.

RECOMMENDATIONS

- Perform a statistical analysis to establish the correlation between sufficient prenatal check-ups and the development of complications in hypertensive disorders of pregnancy.
- Conduct prenatal check-up talks and emphasize prevention measures on complications caused by hypertensive disorders in pregnant women in the outpatient clinic of the Matilde Hidalgo Hospital in Procel.
- Adequate measurement and recording of blood pressure in each prenatal check-up for pregnant women with a diagnosis or history of a hypertensive disorder.
- Promotion of the recruitment of pregnant women with a history of hypertensive disorders in the first level of health care.

REFERENCES

1. Buelvas-Ochoa YM, Bula-Romero J, Cuadrado-Banda CJ. Resultados maternos y neonatales en mujeres con trastornos hipertensivos en embarazos lejos del término. *Revista Colombiana de Enfermería*. 13 de julio de 2021;20(1):e032-e032.
2. Acuña E, Córdoba A, Bustamante M del R, Garzón LS, Rojas JL, Franco A, et al. Trastornos hipertensivos en el embarazo con infección urinaria. *Revista Repertorio de Medicina y Cirugía* [Internet]. 25 de enero de 2019 [citado 27 de febrero de 2023];28(1). Disponible en: <https://revistas.fucsalud.edu.co/index.php/repertorio/article/view/875>
3. Dra. Maria Isabel García-Hermida, Dr. Celio Guillermo García-Remirez, Dra. Cecilia Alejandra García-Ríos. Comportamiento clínico epidemiológico de gestantes adolescentes con hipertensión arterial. 2020;(Archivo Medico Camaguey). Disponible en: <http://revistaamc.sld.cu/index.php/amc/article/view/7571/3601#:~:text=En%20Ecuador%2C%20la%20preeclampsia%20y,14%20%25%20de%20las%20muestras%20infantiles.>
4. Vesna D. Garovic, Ralf Dechend, Thomas Easterling, S. Ananth Karumanchi, Suzanne mcMurtry Baird, et al. Hipertensión en el embarazo (AHA). 23 de marzo de 2022;(Intramed). Disponible en: <https://www.intramed.net/contenido.asp?ContenidoId=99889&Source=relacionados>
5. Patricia Eva, Medina LLontop. Perfil clínico y epidemiológico de los trastornos hipertensivos del embarazo en el hospital san juan de kimbirí - vraem, 2018 - 2020 [Internet]. 2021. Disponible en: <https://repositorio.unh.edu.pe/bitstream/handle/UNH/3712/TESIS-SEG-ESP-OBSTETRICIA-2021-MEDINA%20LLONTOP.pdf?Sequence=1&isallowed=y>
6. Odigboegwu O, Pan LJ, Chatterjee P. Use of Antihypertensive Drugs During Preeclampsia. *Frontiers in Cardiovascular Medicine* [Internet]. 2018 [citado 27 de febrero de 2023];5. Disponible en: <https://www.frontiersin.org/articles/10.3389/fcvm.2018.00050>
7. Das S, Das R, Bajracharya R, Baral G, Jabegu B, Odland JØ, et al. Incidence and Risk Factors of Pre-Eclampsia in the Paropakar Maternity and Women's Hospital, Nepal: A Retrospective Study. *International Journal of Environmental Research and Public Health*. Enero de 2019;16(19):3571.
8. Ying W, Catov JM, Ouyang P. Hypertensive Disorders of Pregnancy and Future Maternal Cardiovascular Risk. *J Am Heart Assoc*. 28 de agosto de 2018;7(17):e009382.
9. Preeclampsia Prevalence, Risk Factors, and Pregnancy Outcomes in Sweden and China | Global Health | JAMA Network Open | JAMA Network [Internet]. [citado 27 de febrero de 2023]. Disponible en: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779753>
10. Mendoza-Cáceres MA, Moreno-Pedraza LC, Becerra-Mojica CH, Díaz-Martínez LA, Mendoza-Cáceres MA, Moreno-Pedraza LC, et al. Desenlaces materno-fetales de los embarazos con trastornos hipertensivos: Un estudio transversal. *Revista chilena de obstetricia y ginecología*. Febrero de 2020;85(1):14-23.
11. Lezcano Cabrera G, Sánchez Padrón A, Torres Álvarez AY, Sosa Rodríguez OL, Álvarez Escobar MC, Corona Navarro JP, et al. Consideraciones y actualización sobre definición, etiopatogenia y diagnóstico de los desórdenes hipertensivos del embarazo. *Revista Médica Electrónica*. Octubre de 2019;41(5):1242-58.
12. Luna SD, Martinovic TC. Hipertensión y embarazo: revisión de la literatura. *Revista Médica Clínica Las Condes*. 1 de enero de 2023;34(1):33-43.
13. Pérez LAR, Cruz LAR, Vega MDV, Cruz AER, Cruz AER. Preeclampsia - eclampsia diagnóstico y tratamiento. *Revista Eugenio Espejo*. 6 de diciembre de 2019;13(2):79-91.
14. Betancourt Ruiz AM, García MY. Factores asociados a la no adherencia del control prenatal en gestantes. *Revista Arbitrada Interdisciplinaria de Ciencias de la Salud Salud y Vida*. 2020;4(7):74-96.
15. La preeclampsia, problema de salud pública | *Revista Peruana de Investigación Materno Perinatal*. 13 de octubre de 2022 [citado 27 de febrero de 2023]; Disponible en: <https://investigacionmaternoperinatal.inmp.gob.pe/index.php/rpinmp/article/view/147>

16. Claudia Amalia CR, Juan David SEB. EFECTOS MATERNOS Y FETALES DE LA HIPERTENSIÓN GESTACIONAL. En: cibamanz2021 [Internet]. 2021 [citado 27 de febrero de 2023]. Disponible en: <https://cibamanz2021.sld.cu/index.php/cibamanz/cibamanz2021/paper/view/834>
17. Múnera-Echeverri AG, Muñoz-Ortiz E, Ibarra-Burgos JA, Múnera-Echeverri AG, Muñoz-Ortiz E, Ibarra-Burgos JA. Hipertensión arterial y embarazo. *Revista Colombiana de Cardiología*. Febrero de 2021;28(1):3-13.
18. Yorika Estefani Panduro Córdova. Complicaciones materno perinatales de los trastornos hipertensivos del embarazo en el hospital regional de loreto enero a junio 2021. 2022; Disponible en: <http://repositorio.ucp.edu.pe/bitstream/handle/UCP/1862/YORKA%20ESTEFANI%20PANDURO%20C%3%93RDOVA%20-%20TESIS.pdf?Sequence=1&isallowed=y>
19. Mamani Contreras Fريس. “Trastorno hipertensivo en el embarazo relacionada a complicaciones obstétricas en gestantes atendidas en el hospital santa maria del socorro, ica 2019” [internet]. 2021. Disponible en: <http://repositorio.autonomaedica.edu.pe/bitstream/autonomaedica/1019/1/MAMANI%20CONTRERAS.pdf>
20. Belinda Olga García Inga, Jenny Giovana Poma Salinas, Edith Suasnabar Cueva. Factores de riesgo para trastornos hipertensivos del embarazo en la Unidad de Cuidados Intensivos del Hospital Regional Docente Materno Infantil El Carmen. 2020; Disponible en: <https://revistas.uroosevelt.edu.pe/index.php/VISCT/article/download/1/1/2>
21. Evelin Jazmín Morejón Alarcón, Jhosselin Raquel Sepa Costales. Caracterización de los trastornos hipertensivos y sus complicaciones en gestantes adultas. Hospital Provincial General Docente. Riobamba, 2019-2020. [Internet]. 2021. Disponible en: <http://dspace.unach.edu.ec/bitstream/51000/8111/1/Morej%C3%B3n%20E.%20y%20Sepa%20J.%20%282021%29%20Caracterizaci%C3%B3n%20de%20los%20trastornos%20hipertensivos%20y%20sus%20complicaciones%20en%20gestantes%20adultas.%20Hospital%20Provincial%20General%20Docente.%20Riobamba%2c%202019-2020..pdf>
22. * Leidy Vásquez Valerio. ESTADOS HIPERTENSIVOS DEL EMBARAZO. 2018;(Revista Médica Sinergia). Disponible en: <https://www.medigraphic.com/pdfs/sinergia/rms-2018/rms173c.pdf>
23. Sociedad Española de Ginecología y Obstetricia. Trastornos hipertensivos en la gestación. 2020;(Revista Oficial de la Sociedad Española de Ginecología y Obstetricia). Disponible en: <https://sego.es/documentos/progresos/v63-2020/n4/GAP-Trastornos%20hipertensivos%20gestacion.pdf>
24. Adrián Danilo Condori Mancilla. Factores asociados a enfermedad hipertensiva del embarazo en gestantes atendidas en el hospital regional de cusco, 2010- 2015 [Internet]. 2019. Disponible en: http://repositorio.unsaac.edu.pe/bitstream/handle/UNSAAC/3575/253T20190020_TC.pdf?Sequence=1&isallowed=y
25. Adolfo De Jesús-García, María Valeria Jimenez-Baez, Dione Guadalupe González-Ortiz. Características clínicas, epidemiológicas y riesgo obstétrico de pacientes con preeclampsia-eclampsia. 2018;(Rev Enferm Inst Mex Seguro Soc). Disponible en: <https://www.medigraphic.com/pdfs/enfermeriamss/eim-2018/eim184e.pdf>
26. Centre de Medicina Fetal i Neonatal de Barcelona. Protocolo: hipertensión y gestación. 2020;(medicinafetalbarcelona). Disponible en: <https://medicinafetalbarcelona.org/protocolos/es/patologia-materna-obstetrica/hipertensi%C3%B3n%20y%20gestaci%C3%B3n.pdf>
27. Dres. Yazmín Abuabara Turbay, Virgil Carballo Zárate. Hipertensión en embarazo. 2019;(Acta Med Colomb). Disponible en: <http://www.actamedicolombiana.com/anexo/articulos/2019/01S-2019-16.pdf>
28. Dr. Gipsy Lezcano Cabrera, Dr. Alfredo Sánchez Padrón, Dra. Arling Yuliet Torres Álvarez. Consideraciones y actualización sobre definición, etiopatogenia y diagnóstico de los desórdenes hipertensivos del embarazo. 2019;(Rev.Med.Electrón). Disponible en: http://scielo.sld.cu/scielo.php?Script=sci_arttext&pid=S1684-18242019000501242
29. European Journal of Preventive Cardiology. Preeclampsia: aumenta el riesgo cardiovascular a largo plazo. 23 de enero de 2023;(Intramed). Disponible en: <https://www.intramed.net/contenidover.asp?ContenidoId=103317>
30. Varsha Velumani. Preeclampsia: una mirada a una enfermedad mortal. 2021;(Rev. Fac. Med. (Méx.)). Disponible en: https://www.scielo.org.mx/scielo.php?Script=sci_arttext&pid=S0026-17422021000500007

31. Zoila Andrea Moncayo Párraga, Karla Alejandra Ramírez Medranda, Karina Isabel Moreira Alava. Evaluación del riesgo de preeclampsia. Últimos avances. 2022;(Reciamuc). Disponible en: <https://reciamuc.com/index.php/RECIAMUC/article/view/842>
32. José Luis Castañeda Campos. Factores metabólicos asociados al diagnóstico de preeclampsia en gestantes del hospital sergio e. Bernales, enero - diciembre 2018 [Internet]. 2019. Disponible en: https://repositorio.urp.edu.pe/bitstream/handle/URP/2259/T030_73631695_T%20%20CASTA%C3%91EDA%20CAMPOS%20JOS%C3%89%20LUIS.pdf?Sequence=1&isallowed=y
33. Andrea Anabel Hernández Vaca, Jenny Pilar Paguay Tenempaguay. Prevalencia y complicaciones de la preeclampsia en mujeres adolescentes. Riobamba, 2018 [Internet]. 2020. Disponible en: <http://dspace.unach.edu.ec/bitstream/51000/6817/1/TESIS%20Jenny%20Pilar%20Paguay%20Tenempaguay%20Y%20Andrea%20Anabel%20Hernandez-MED.pdf>
34. Dr. C. Danilo Nápoles Méndez. Nuevas interpretaciones en la clasificación y el diagnóstico de la preeclampsia. 2016;(MEDISAN). Disponible en: http://scielo.sld.cu/scielo.php?Script=sci_arttext&pid=S1029-30192016000400013
35. Betsy Micol Zapata Díaz, Juan Orestes Ramírez Cabrera. Diagnóstico y manejo oportunos del síndrome HELLP. 2020;(Rev. Peru. Ginecol. Obstet). Disponible en: http://www.scielo.org.pe/scielo.php?Script=sci_arttext&pid=S2304-51322020000100057
36. María Belén Calle Pérez, Valeria Alexandra Rivera Rodríguez. Características del síndrome hellp en gestantes con preeclampsia severa y eclampsia atendidas en hospital “josé carrasco arteaga”, julio 2015 – junio 2020. [Internet]. 2020. Disponible en: <http://dspace.ucuena.edu.ec/bitstream/123456789/34994/1/PROYECTO%20DE%20INVESTIGACION.%20CARACTERISTICAS%20DEL%20S%20c%28ndrome%20HELLP%20EN%20GESTANTES%20CON%20PREECLAMPسيا%20SEVERA%20Y%20ECLAMPسيا%20ATENDIDAS%20EN%20HOSPITAL%20e%28%9cjos%20c%28%9c%20CARRASCO%20ARTEAGA%20e%28%9d%2c%20JULIO%202015%20e%28%93%20J.pdf>
37. Dra. Paula Araya Calvo, 2Dr. Sofia Araya Villavicencio. Síndrome de HELLP, una triada que puede llegar a ser mortal, revisión breve. Julio de 2022;(Revista Médica Sinergia). Disponible en: <https://www.medigraphic.com/pdfs/sinergia/rms-2022/rms227p.pdf>
38. Alejandro Mayorga-Garcés, Melina Chaguaro-Torres, Brayan Paredes-Vásquez. Actualización sobre el síndrome de HELLP. 2023;(Revista de Ciencias Medicas Pinar del Rio). Disponible en: <https://revcmpinar.sld.cu/index.php/publicaciones/article/view/5851/pdf>
39. Alberto Arriaga López, Alfredo Álvarez Torres. Reporte de seis casos de eclampsia en un hospital rural de la selva de Chiapas. 2022;(Revista de la Facultad de Medicina de la UNAM). Disponible en: <https://www.medigraphic.com/pdfs/facmed/un-2022/un223d.pdf>