MEDIATORS OF RACIAL AND ETHNIC DISPARITIES IN HYPERTENSIVE DISORDERS OF PREGNANCY AND TARGETED INTERVENTIONS

Xudayberdiyeva Ruqiya
Sayfullayeva Hilola
Axtamova Nilufar Akbarjanovna

Samarkand State Medical University

Abstract

Racial and ethnic disparities in hypertensive disorders of pregnancy (HDP) extend beyond direct demographic factors, involving mediating elements such as allostatic load, environmental chemical exposures, nativity status, and provider bias. This thesis explores these mediators' roles in exacerbating HDP risks, particularly among non-Hispanic Black and Hispanic populations compared to non-Hispanic White groups. Utilizing recent cohort and retrospective data, it highlights how chronic stress embodiment (allostatic load), differential chemical exposures, immigration-related protections, and biased clinical responses contribute to unequal outcomes. Interventions proposed include bias mitigation training, universal escalation protocols, community-engaged research on cumulative exposures, and policies addressing structural inequities. A synthesis of 2024-2025 studies emphasizes the urgency of integrating these mediators into clinical and public health frameworks to reduce HDP morbidity and mortality gaps.

Keywords: hypertensive disorders in pregnancy, racial disparities, allostatic load, environmental exposures, nativity, provider bias, mediation analysis, maternal mortality, bias training, escalation protocols.

Introduction

Hypertensive disorders in pregnancy (HDP), encompassing gestational hypertension and preeclampsia/eclampsia, disproportionately affect racial and ethnic minority groups, with mechanisms involving physiological, environmental, and systemic factors. Non-Hispanic Black pregnant individuals face elevated HDP risks linked to chronic stress and structural racism, while nativity offers protective effects for foreign-born Hispanic and Black women. Environmental exposures vary by race/ethnicity, yet do not fully mediate disparities, suggesting interactions with social determinants. Provider bias delays clinical escalation, contributing to higher maternal mortality in marginalized groups. This thesis examines these mediators and proposes targeted strategies, drawing from contemporary evidence to inform equitable care models.

Materials and Methods

A systematic review was conducted using databases like PubMed, PMC, and ScienceDirect, with searches for "racial ethnic disparities hypertensive disorders pregnancy mediators 2024 2025" yielding 20 results, focusing on studies from 2024-2025 for currency. Inclusion criteria targeted cohort, retrospective, and review articles on mediators (e.g., allostatic load, exposures, nativity, bias) and interventions in HDP disparities. Five core articles were analyzed in-depth for methodologies, including mediation analyses, cohort data, and qualitative syntheses. Data extraction covered prevalence rates, adjusted risk ratios, mediation effects, and intervention recommendations. Qualitative synthesis integrated findings without original data collection.

Results and Discussion

Causal mediation analyses show first-trimester allostatic load partially mediates HDP disparities between non-Hispanic Black and White participants (ACME: 0.027, 95% CI: 0.013-0.040, $p<0.001$; 28.9% mediated), reflecting embodied chronic stress from racism. Environmental chemicals

exhibit race-specific patterns, with higher traditional phthalates in Black participants and lower perfluoroalkyls in Hispanics, but no mediation of HDP risks, indicating need for mixture analyses. Nativity reduces gestational hypertension prevalence in foreign-born Black (8.0% vs. 12.6% US-born, $p<0.001$) and Hispanic (7.2% vs. 9.5%, $p<0.001$) women, suggesting healthy immigrant effects. Provider bias delays escalation, with Black women experiencing higher untreated hypertension rates and mortality (11.8% severe vs. 4.5% White), driven by implicit perceptions and protocol inconsistencies. These mediators interact with structural barriers, amplifying disparities; interventions like bias training and metrics could mitigate them.

Conclusion and Recommendations

Mediators like allostatic load, environmental patterns, nativity, and bias underscore the multifactorial nature of HDP disparities, necessitating holistic approaches. Recommendations: (1) Integrate allostatic load assessments in prenatal screening; (2) Study chemical mixtures and non-chemical factors collaboratively; (3) Leverage nativity insights for immigrant health policies; (4) Mandate bias training and standardized escalation; (5) Develop accountability via race-disaggregated metrics. These can foster equity in maternal health.

References

1. Fram, M. R., Denney, J. M., & Quinn, K. H. (2025). Nativity, race, ethnicity, and hypertensive disorders during pregnancy. Journal of Clinical Medicine, 14(13), Article 4594. https://doi.org/10.3390/jcm14134594

2. Graves, C. R., Firoz, T., Smith, S. N., Hernandez, N., Haley, S., Smith, K., D'Oria, R., & Celi, A. C. (2024). Addressing racial disparities in the hypertensive disorders in pregnancy: A plan for action from the Preeclampsia Foundation's Racial Disparities Task Force. Journal of Racial and Ethnic Health Disparities. Advance online publication. https://doi.org/10.1007/s40615-024-02126-6

3. Liu, H., Kress, A. M., Yu, E. X., Ning, X., Ghassabian, A., Kahn, L. G., Mehta-Lee, S., Brubaker, S., Alshawabkeh, A., Meeker, J., Camargo, C. A., Jr., Suglia, S. F., Elliott, A. J., Ferrara, A., Zhu, Y., Gern, J. E., Bendixsen, C., Gold, D. R., & Cassidy-Bushrow, A. E. (2025). Racial and ethnic disparities in environmental chemical exposures and hypertensive disorders of pregnancy: The ECHO-wide cohort study. Environmental Pollution. Advance online publication. https://doi.org/10.1016/j.envpol.2025.127452

4. Ray, M., Heinsberg, L. W., McNeil, R. B., Grobman, W. A., Lueth, A., Silver, R. M., Bairey Merz, C. N., Levine, L. D., Yee, L. M., Weeks, D. E., Conley, Y. P., & Catov, J. M. (2025). Allostatic load mediates associations between race, ethnicity, and hypertensive disorders of pregnancy. Obstetrics & Gynecology. Advance online publication. https://doi.org/10.1097/AOG.0000000000006062

5. Severini, C., Martin, L., Salazar, S., Idsassi, M., Okafor, N., Patel, K., Fraiser, K., & Goldstein, L. B. (2025). Provider bias and delayed clinical escalation contribute to racial disparities in maternal mortality from hypertensive disorders of pregnancy. International Journal of Clinical Reports and Studies. https://doi.org/10.31579/2835-8295/136