

# HEALTH IMPACTS OF GESTATIONAL DIABETES: RISK FACTORS AND OPPORTUNITIES FOR INTERVENTION

By: Ama Boadu

## Background

Gestational Diabetes Mellitus (GDM) is a condition in which blood sugar levels are high during pregnancy.<sup>1</sup> The prevalence of this disease has increased in the recent decades. The estimated prevalence for gestational diabetes in the United States is 6-9%.<sup>2</sup> Gestational diabetes can harm both the mother and the baby when left untreated. More than 70% of women with a history of GDM go on to develop Type 2 Diabetes after pregnancy.<sup>3</sup> Even though treatment for this disease is available, not every woman has equal access to the treatments.

## Objectives

- Apply to Social Ecological Framework to examine underlying factors associated with increased risk of GDM.
- Discuss the long-term consequences of untreated GDM
- Identify interventions to manage GDM.

## Methods

A literature review was conducted to analyze:

- The underlying factors associated with increased risk for GDM.
- The long-term consequences of untreated GDM.

35 articles were selected from the following websites:

1. Pub Med
2. American College of Obstetrics and Gynecology
3. American Diabetes Association
4. Wiley online Library
5. Cochrane Library
6. BMJ

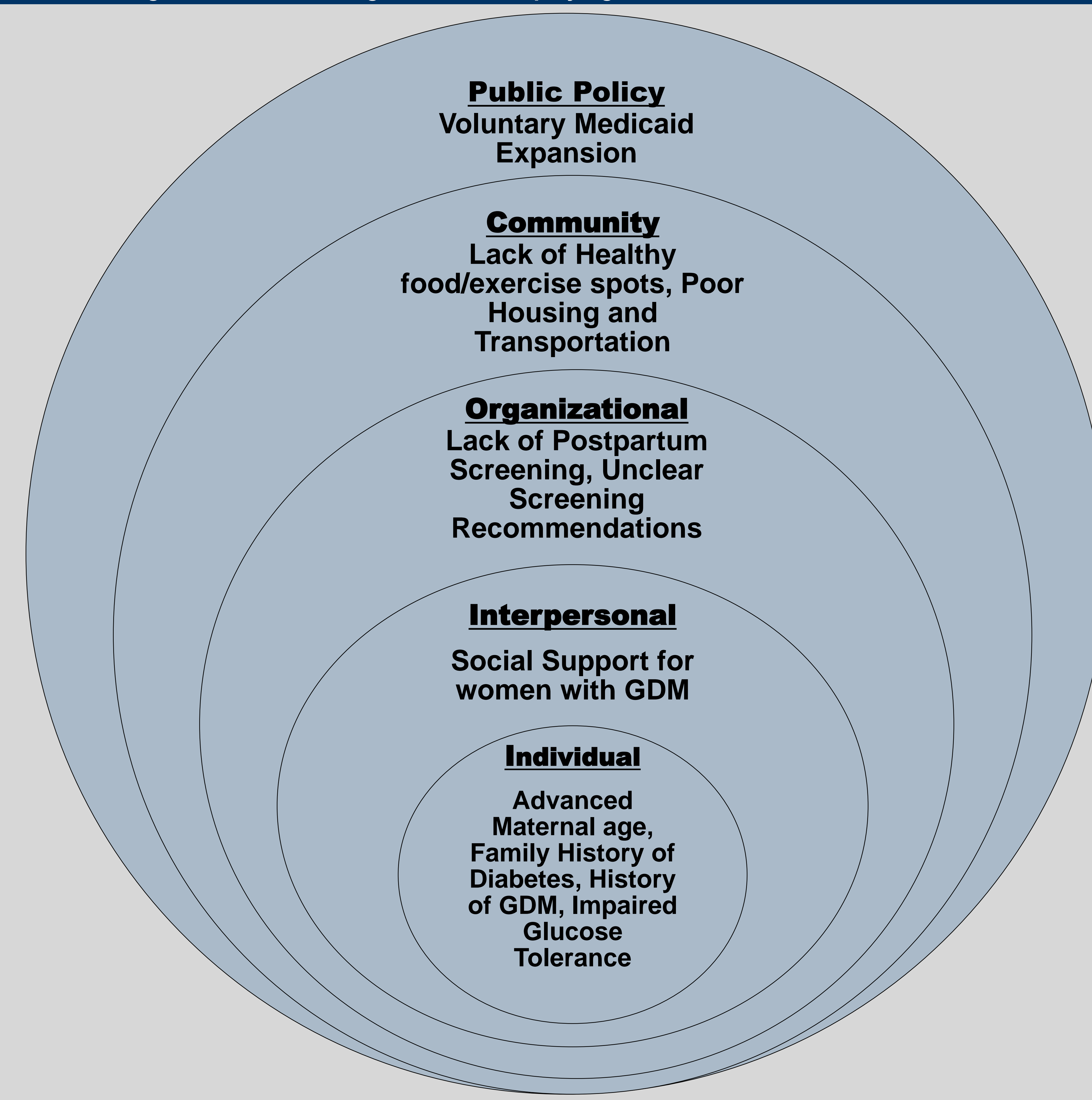
Filter features used to look for the articles

- 5-year timeframe articles (2016-2021)

## Results

- Women with a history of GDM have a 7-fold higher risk of being diagnosed with Type 2 Diabetes compared to women without GDM.<sup>4</sup>
- The risk of developing Type 2 Diabetes after GDM is significantly higher in the minority population (Black and Hispanic women).<sup>5</sup>
- Pre-term birth, independent of gestational diabetes, can lead to an increased risk of Type 2 Diabetes.<sup>6</sup>
- Immigrants have a higher risk of developing GDM compared to U.S. born women.<sup>7</sup>
- Successful programs/interventions for GDM at all 5 socio-ecological levels include Efficient health systems intervention,<sup>8</sup> Lifestyle Programs,<sup>9</sup> Social Determinants of Health program,<sup>10</sup> and Medicaid Expansion.<sup>11</sup>

Figure 1. Social Ecological Model Displaying Risk and Protective Factors for GDM



## Discussion/Conclusion

### Strengths

1. Large Sample Sizes
2. Diverse Populations
3. Robust Study Designs
4. Lack of Dropouts

### Limitations

1. Data from Birth Certificates and Self Reports
2. Retrospective studies lead to recall and measurement bias
3. Most GDM interventions don't have a psychosocial component.

### Future Implications

- More research on gestational diabetes for black and immigrant women
- More research on the effectiveness of the psychosocial component of GDM interventions
- In practice, improve efficiency of health systems and include psychosocial part in GDM interventions
- In policy, increase Medicaid reimbursement rates

## References

1. Dolatkhan N, Hajifaraji M, Shakouri SK. Nutrition Therapy in Managing Pregnant Women With Gestational Diabetes Mellitus: A Literature Review. *J Family Reprod Health.* 2018;12(2):57-72.
2. Centers for Disease Control and Prevention. Diabetes during Pregnancy. <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/diabetes-during-pregnancy.htm>. Assessed June 12, 2018.
3. Daneshmand SS, Storz S, Morrissey R, Faksh A. Bridging Gaps and Understanding Disparities in Gestational Diabetes Mellitus to Improve Perinatal Outcomes. *Diabetes Spectr.* 2019;32(4):317-323. doi:10.2337/ds19-0013
4. Battarbee AN, Yee LM. Barriers to Postpartum Follow-Up and Glucose Tolerance Testing in Women with Gestational Diabetes Mellitus. *Am J Perinatol.* 2018;35(4):354-360. doi:10.1055/s-0037-1607284
5. James-Todd T, Janevic T, Brown FM, Savitz DA. Race/ethnicity, educational attainment, and pregnancy complications in New York City women with pre-existing diabetes. *Paediatr Perinat Epidemiol.* 2014;28(2):157-165. doi:10.1111/ppe.12100
6. James-Todd T, Wise L, Boggs D, Rich-Edwards J, Rosenberg L, Palmer J. Preterm birth and subsequent risk of type 2 diabetes in black women. *Epidemiology.* 2014;25(6):805-810. doi:10.1097/EDE.000000000000167
7. Janevic, T., Zeitlin, J., Egorova, N., Balbierz, A., & Howell, E. A. (2018). The role of obesity in the risk of gestational diabetes among immigrant and U.S.-born women in New York City. *Annals of epidemiology*, 28(4), 242-248. <https://doi.org/10.1016/j.annepidem.2018.02.006>
8. Bower JK, Butler BN, Bose-Brill S, Kue J, Wassel CL. Racial/Ethnic Differences in Diabetes Screening and Hyperglycemia Among US Women After Gestational Diabetes. *Prev Chronic Dis.* 2019;16:E145. Published 2019 Oct 24. doi:10.5888/pcd16.190144
9. Gilbert L, Gross J, Lanzi S, Quansah DY, Puder J, Horsch A. How diet, physical activity and psychosocial well-being interact in women with gestational diabetes mellitus: an integrative review. *BMC Pregnancy Childbirth.* 2019;19(1):60. Published 2019 Feb 7. doi:10.1186/s12884-019-2185-y
10. Importance of social determinants of health and cultural awareness in the delivery of reproductive health care. ACOG Committee Opinion No. 729. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2018;131:e43-8
11. Taylor J. Promoting Better Maternal Health Outcomes by Closing the Medicaid Postpartum Coverage Gap. The Century Foundation. Published 2020 Nov 16.

## Faculty Advisor

Marlene Camacho-Rivera, ScD MPH