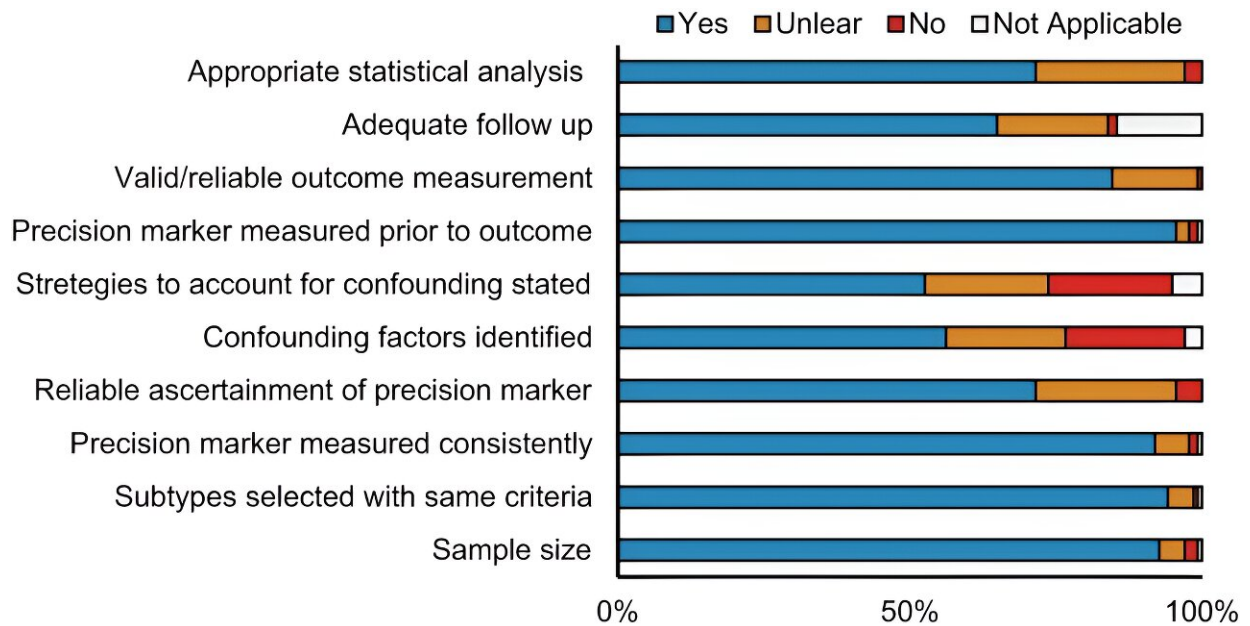


# Study charts possibilities for a better way to diagnose gestational diabetes

December 22 2023, by Nakaysha Gonzalez



Quality assessment of the included studies by critical appraisal domain. The risk of bias and overall quality of each study was assessed independently or in duplicate using the Joanna Briggs Institute (JBI) Critical Appraisal Tool for cohort studies, which was modified specifically for the objectives of the current systematic review. For each question, a reviewer could indicate “not applicable” (blank filled bars), “yes” (blue filled bars), “unclear” (orange filled bars), “no” (red filled bars). An answer of “yes” indicates less risk of bias and greater quality, and answer of “no” indicates a higher risk of bias and lower quality.

Credit: *Communications Medicine* (2023). DOI: 10.1038/s43856-023-00393-8

A Rutgers professor and other researchers have performed a systematic review and meta-analysis to evaluate studies comparing perinatal outcomes among individuals with gestational diabetes mellitus. Pregnancy weight and biochemical markers measured in blood from women with gestational diabetes mellitus (GDM) were related to increased risk of poor pregnancy outcomes, suggesting a new direction for precision diagnostics, according to researchers.

The [study](#) led by Ellen C. Francis, an assistant professor in the Department of Biostatistics and Epidemiology at Rutgers School of Public Health, and published in *Communications Medicine*, evaluated the diagnostic value of these markers before or at the time of screening for GDM, a type of diabetes that can develop during pregnancy.

"Although we found that obesity is a risk factor for offspring born larger for their gestational age, evidence suggests that the metabolic alterations that accompany obesity increase the risk of adverse outcomes," said Francis. GDM, characterized by elevated [blood sugar](#) (glucose) levels during pregnancy, is the most common metabolic condition among pregnant women and poses risks to both mother and child. While standard treatments are applied, clinical outcomes can differ among individuals.

Francis said the research demonstrates the need for a more nuanced approach to diagnose GDM, which may help improve outcomes. It is the first [systematic review](#) of the literature to assess the potential of subtypes in GDM and to examine whether nonglycemic markers could refine risk stratification. Francis said some of the literature suggested insulin profiles and triglyceride levels may serve as promising non-glucose indicators of risk.

"To really assess the clinical implications of precision diagnostics in GDM, we first need to understand if [insulin resistance](#) or higher

triglycerides are causally linked to adverse outcomes and whether we can safely target them in pregnancy," Francis said.

Overall, researchers found a critical gap in the existing literature in which most studies hadn't focused on comparing clinical, biochemical or sociocultural differences among women who develop GDM.

"In our full-text screening of 775 studies, we found that only recently has there been a focus on clinical, biochemical, or sociocultural markers that could improve who is at greatest risk of poor outcomes and on comparing [clinical outcomes](#) between different subtypes of GDM," said Francis. "The data from these studies indicate that in the future, we may be able to refine how we diagnose GDM by using anthropometric or biochemical information in combination with current diagnostic approaches."

Future research should delve into [mechanistic studies](#) on precision biomarkers, large diverse population studies for replication, and multinational studies focusing on environmental and behavioral factors, Francis said. It should also explore potential insights on casual pathways of heterogeneity within GDM and its outcomes from genetic and multi-omics data using advanced analytical approaches.

Study co-authors include researchers from collaborating institutions in the United States, the United Kingdom, Singapore, South Korea, and Australia.

**More information:** Ellen C. Francis et al, Refining the diagnosis of gestational diabetes mellitus: a systematic review and meta-analysis, *Communications Medicine* (2023). [DOI: 10.1038/s43856-023-00393-8](https://doi.org/10.1038/s43856-023-00393-8)

Provided by Rutgers University

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