

# Adverse pregnancy outcomes increase stroke risk

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Investigators from the Smidt Heart Institute at Cedars-Sinai found that women who experience an adverse pregnancy outcome—such as gestational hypertension, preeclampsia or preterm birth—have a higher

risk of developing stroke in their lifetime, and at a younger age.

The findings, published today in the peer-reviewed journal *Stroke*, also found that compared to women with one uncomplicated [pregnancy](#), a woman who had two or more pregnancies impacted by an adverse pregnancy outcome had a twofold higher increase of stroke.

"We understand from past studies in the U.S. that women have a greater risk of experiencing a stroke and a disproportionate burden of disability after a stroke than men," said Natalie Bello, MD, MPH, director of Hypertension Research in the Smidt Heart Institute and senior author of the study. "This study deepens our understanding of *why* women may be more greatly impacted by [stroke risk](#) and opens the door to more meaningful conversations about pregnancy history among patients and their clinicians."

It is estimated that 1 in 5 pregnancies in the U.S. are affected by an adverse pregnancy outcome, and rates are on the rise.

To reduce the risk of pregnancy-related complications, Bello says recent [research](#) suggests that lifestyle interventions like a healthy diet and increased physical activity may help. There is also robust evidence for the use of low-dose aspirin to prevent preeclampsia in individuals at increased risk.

Investigators analyzed data from 144,306 women from the FinnGen Study, a public/private partnership of Finnish health registry data. This cohort included women who gave birth after 1969 when the hospital discharge registry was established.

Of these women, a total number of 316,789 births were recorded. Key findings include:

- 17.9% had at least one pregnancy with an adverse pregnancy outcome, and 2.9% of women experienced an adverse pregnancy outcome with two or more pregnancies.
- Women with adverse pregnancy outcomes had more medical comorbidities, including obesity, hypertension, [heart disease](#) and migraine.
- Of women in this study who had a stroke, the stroke occurred at an earlier age—52.6 years on average—in women who experienced two or more adverse pregnancy outcomes, compared with 54.8 years in women with one adverse pregnancy outcome, and 58.3 years in women who had uncomplicated pregnancies.

"Most notably, women with recurrent adverse pregnancy outcomes had more than twice the stroke risk before age 45," said Bello. "This emphasizes the need for women to share their pregnancy history with their doctors, especially if they experience neurologic symptoms concerning for stroke or transient ischemic attack (TIA) that tends to resolve within minutes to hours."

A stroke happens when [blood flow](#) to the brain is stopped; it is considered a medical emergency requiring immediate attention. A stroke might affect a person's ability to move, speak, eat, drink, swallow, see clearly, think and remember, solve problems, or control bodily functions like urination and emotions.

Bello hopes a similar study can be conducted in the United States, in a group of women with greater diversity in race and ethnicity than those studied in the Finnish database.

"We also need future research to consider the impact of adding an adverse pregnancy outcome into stroke risk calculators. This may better help us risk stratify women and strategize how to apply prevention strategies like getting cholesterol and [blood pressure](#) under control,"

Bello said.

Shlee S. Song, MD, director of the Comprehensive Stroke Center and Telestroke Program at Cedars-Sinai, who was not involved in the study, says there are several preventive strategies women—especially young women with a history of stroke, migraine headaches or TIAs—can focus on to protect against the risk of [stroke](#).

The first, Song says, is that women should feel empowered to collect their own health data by monitoring their blood pressure and sharing their recorded readings during their medical appointments.

Women—and men—should also avoid hyperextending their neck, Song says, because the neck has critical blood vessels that are near the bone and can be injured if too much force or quick twisting motions are applied.

"Avoid deep tissue massages at the neck, as well as chiropractic neck manipulations," said Song, professor of Neurology.

Another preventive strategy, she says, is for [women](#) on hormone treatment to be cautious not to increase clotting risk by smoking or getting dehydrated.

"To decrease clot risk and dehydration, limit alcohol to one glass or serving per day and if having a second, on the occasion, hydrate with water in between," said Song. "And, when flying—which can cause dehydration or prohibit movement—wear compression stockings and move and stretch your legs whenever you can."

**More information:** Risk of Midlife Stroke after Adverse Pregnancy Outcomes: the FinnGen Study, *Stroke* (2023). [DOI: 10.1161/STROKEAHA.123.043052](https://doi.org/10.1161/STROKEAHA.123.043052)

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