

Pre-pregnancy hypertension is associated with use of fertility treatment among women in the US: Results from a nationally-representative sample of live births in 2017

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Introduction

- Despite years of research showing an association between higher rates of adverse reproductive health outcomes and chronic diseases, little is known about the effects of pre-pregnancy hypertension, a common comorbidity among women of reproductive age.
- In addition, there is a dearth of research on the effects of hypertension on the method of fertility treatment used. Thus there is a need for quantification of such effects to guide future policy or practice targeted at mitigating the effects of pre-pregnancy hypertension on fertility.

Objectives

- Quantify the magnitude of the measure of association between pre-pregnancy hypertension and use of fertility treatment among recorded US births in 2017.
- Identify the variable associations between pre-pregnancy hypertension and method of infertility treatment used among women in the US.

Material and Methods

- This cross-sectional study used individual-level birth data from the Centers for Disease Control and Prevention Vital Statistics Online Data Portal to explore the relationship between diagnosed pre-pregnancy hypertension and use of fertility treatment among all recorded live births in the US in 2017.
- Descriptive statistics were calculated to characterize the prevalence and distribution of demographic and health characteristics by use of fertility treatment.
- Three multivariate logistic regression models were developed to calculate multivariate-adjusted odds ratios (ORs) and 95% confidence intervals (CIs) to determine the association between diagnosed pre-pregnancy hypertension and Model 1) use of any fertility treatment, Model 2) use of fertility enhancing drugs or artificial insemination (FED/AI), and Model 3) use of assisted reproductive technology (ART) including in vitro fertilization.
- All models were adjusted for mother's age, race, educational level, Body Mass Index (BMI), smoking status, and presence of pre-pregnancy diabetes.

Results

Table 1: Characteristics of users and non-users of fertility treatment.

	Users (N=72,331)		Non-Users (N=3,792,423)	
	Mean or N (%)	SD	Mean or N (%)	SD
Age	34.42	5.24	28.74	5.77
BMI	27.88	11.49	28.83	13.24
Pre-pregnancy hypertension (yes)	2,353 (3.3)		70,719 (1.9)	
Marital status (married)	60,098 (92.5)		1,972,105 (59.3)	
Mother's smoking status (yes)	1,195 (1.7)		343,514 (9.1)	
Pre-pregnancy diabetes	826 (1.1)		34,539 (0.9)	
Race				
White	59,136 (81.8)		2,806,875 (74.0)	
Black	4,414 (6.1)		654,346 (17.3)	
American Indian/Alaska Native	202 (0.3)		41,736 (1.1)	
Asian/Pacific Islander	8,579 (11.9)		289,466 (7.6)	
Mother's educational level				
≤ High school	5,878 (8.3)		1,475,388 (39.4)	
College	40,207 (56.9)		1,835,047 (49.0)	
Graduate	24,607 (34.8)		433,840 (11.6)	

Table 2: Three Logistic Regression Models: Overall use of fertility treatment (Overall Use), use of fertility enhancing drugs (Drugs), and use of assisted reproductive technology (ART).

Model	OR	95% CI
(1) Overall Use (N=3,792,423)	1.473	1.410 – 1.538
(1) Drugs (N=76,117)	1.115	1.024 – 1.215
(1) ART(N=76,117)	1.026	0.939 – 1.122

- Of the 3,864,754 births in 2017, 72,331 (1.90%) used some form of fertility treatment.
- Mean maternal age was 34.42 years (SD ± 5.24) and 28.74 years (SD ± 5.77) while mean pre-pregnancy BMI was 27.88 kg/m² (SD ± 11.49) and 28.83 kg/m² (SD ± 13.24) for users and non-users of any fertility treatment, respectively.
- Prevalence of pre-pregnancy hypertension was 3.30% and 1.90%, for users and non-users of any form of fertility treatment, respectively.
- All models showed that women who had pre-pregnancy hypertension were at 48% significantly greater odds of using any form of fertility treatment (OR = 1.47, 95% CI [1.41, 1.54]), 12% significantly greater odds of using FED/AI (OR = 1.12, 95% CI [1.02, 1.22]) and 3% greater odds of using ART (OR = 1.03, CI [0.94, 1.12]) compared to those without pre-pregnancy hypertension.

Conclusion

- These results demonstrate that pre-pregnancy hypertension increases the likelihood for use of fertility treatment among women giving birth in the US.
- However more research is required to identify additional factors mediating this relationship and to determine causality.

Implications for Policy or Practice

- These findings emphasize the need to adopt and expand hypertension prevention and control efforts during preconception care especially considering the exorbitant costs associated with fertility treatment.

References

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Note

- The work presented here was done for the purposes of a course and is not our thesis or dissertation.