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Probabilistic Sensitivity Analysis: Gestational Hypertension and Differentially Misclassified Maternal Smoking During Pregnancy

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Although maternal smoking during pregnancy is a well-known risk factor for numerous adverse outcomes, two systematic reviews in 1999 and 2015 concluded that smoking mothers have lower risk of hypertensive disorders in pregnancy compared with nonsmokers. Recent studies examined the trimester-specific effect of maternal smoking and suggested that the association varies by the timing of exposure: Mothers who persistently smoked during all three trimesters had lower risk of gestational hypertension (GH) than nonsmokers, whereas mothers who quit smoking before the onset of the third trimester had roughly the same risk as non- smokers. However, these reports optimistically assumed near- perfect reporting of smoking by pregnant women. Because of the retrospective design, the accuracy of self-reported maternal smoking may differ between GH cases and noncases in either di- rection: GH cases may have greater incentive, because of their health concerns, to thoroughly search their memories and recall past risk behaviors; however, it is also possible for GH cases to underreport their smoking exposure, a socially undesirable behavior to seek to avoid blame. In either situation, the misclassi- fication of exposure will be differential by the outcome, which makes its impact on the association estimate hard to predict. In this study, we quantified the potential bias in the association of GH with quitting in early pregnancy versus continuing to smoke in the context of our published research.

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