Associations Between Introduction and Withdrawal of a Financial Incentive and Timing of Attendance for Antenatal Care and Incidence of Small for Gestational Age: Natural Experimental Evaluation Using Interrupted Time Series Methods

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ABSTRACT

The Health in Pregnancy Grant (HiPG), introduced April 2009, was a one-time payment of £190 payable to all pregnant women residing in the United Kingdom after the 25th week of gestation, contingent on them receiving routine antenatal care. The HiPG was withdrawn after a 2010 general election, and women were only able to claim the payment if they reached the 25th week of pregnancy before January 1, 2011. National guidance recommends the first antenatal visit to occur at the latest by the 18th week of gestation; however, women living in more deprived circumstances often undergo this visit later.

This experimental, interrupted time series study aimed to determine if the introduction and withdrawal of the HiPG was associated with a change in the timing of the first antenatal visit or small for gestational age (SGA) birth outcome. Data were gathered in 2015 from a tertiary hospital in Northern England. Participants included women who completed the 25th week of pregnancy in the 75 months before HiPG introduction, 21 months during HiPG availability, and 36 months after withdrawal of the HiPG. The primary study outcome was mean gestational age at booking of the first antenatal care appointment. Changes in mean gestational age at booking were calculated using counterfactual data generated using trends before introduction of the HiPG. The 2 secondary outcomes were the proportion of women booking by 10, 18, and 25 weeks of gestation, and the proportion of babies that were SGA.

A total of 34,589 women delivered at the study hospital and completed the 25th week of gestation between January 2003 and December 2013. Introduction of the HiPG was associated with both a reduction in the mean gestational age at booking and an improvement in the trend of timing of booking and proportion booking by 10, 18, and 25 weeks. Twenty-one months after introduction of the HiPG, there was a 4.8-day reduction in the mean gestational age at booking (95% confidence interval [CI], 2.3–8.2), a 2.2% increase in the proportion of women booking by 18 weeks (95% CI, 1.2–3.9), and a 1.9% increase in the proportion of women booking by 25 weeks (95% CI, 0.6–3.5). Withdrawal of the HiPG was associated with a change in the trend toward delay in mean gestational age at booking and the proportion booking by 10 and 18 weeks declined. Twenty-four months after withdrawal of the HiPG, there was a 14.0-day increase in the mean gestational age at booking (95% CI, 2.8–16.8). The introduction and withdrawal of the HiPG was not associated with a change in the prevalence of SGA births.

The data shows that a universal financial incentive for timely antenatal care is associated with a decrease in mean gestational age at first visit and a higher proportion achieving prenatal care initiation by 10, 18, and 25 weeks’ gestation. However, this change was not associated with a similar change in the prevalence of SGA births.

EDITORIAL COMMENT

(There is a wide body of evidence that women of lower socioeconomic status (SES) have worse pregnancy outcomes. Low SES has been associated with higher rates of preterm birth, fetal
growth restriction, and stillbirth (BMC Pregnancy Childbirth. 2016;16:15). The causal relationship between low SES and these outcomes is less clear. One hypothesis is that it is related to lifelong and ongoing stress. This would suggest that if you could lessen this stress that there would be an improvement in outcomes. There are studies that support this. One paper demonstrated that women who were born in a lower SES stratum who became upwardly mobile and improved their status had lower rates of preterm birth (Am J Public Health. 2011;101:714–719). In terms of stress reduction during pregnancy, one body of literature that examines the use of Centering Pregnancy (group prenatal care) and finds a reduction in preterm birth in some studies suggests that it is the stress reduction from peer support that is leading to the lower preterm birth rates (Obstet Gynecol. 2003;102:1051–1057).

Another causal model proposed related to lower SES and poorer pregnancy outcomes is that such women get worse prenatal care leading to worse outcomes. One might see that certainly in a high-risk pregnancy that regular ongoing care is important for the control of the high-risk medical condition, and without such care, a greater rate of pregnancy complications may occur. This has been demonstrated in the setting of diabetes, for example, where women who began their prenatal care later had higher rates of stillbirth (J Matern Fetal Neonatal Med. 2018;31:93–97). There are certainly other studies that find that women who get fewer prenatal visits or begin prenatal care later have worse outcomes (J Obstet Gynaecol Can. 2011;33:235–243). However, other studies have found that while women of lower SES might have fewer prenatal visits, there were minimal or no differences in pregnancy outcomes when confounders were properly controlled (J Perinatol. 2016;36:178–181). This causal pathway from prenatal care to improved outcomes is critical to elucidate because if impactful, this could be an approach to improve perinatal outcomes in such women. Alternatively, if there really is no benefit, resources could be deployed elsewhere, perhaps in the stress reduction approaches such as group prenatal care.

The current study abstracted above attempts to examine whether financial incentives can reduce the mean gestational age at which prenatal care is initiated. In the study, a program called the HiPG was deployed in the United Kingdom for a 21-month period after which it was cancelled. This program provided a financial incentive, several hundred dollars, to women who started their prenatal care by 17 to 18 weeks' gestation. The authors examined the gestational age at prenatal care initiation and the proportions of women who obtained prenatal care by 10, 18, or 25 weeks gestation. They also examined the rate of SGA. Since the program both started and stopped during the study, the authors were able to examine the impact of starting the program, but also the contrasting impact of stopping the program. As hoped, the program decreased the mean gestational age at prenatal care initiation and increased the proportion who obtained prenatal care by 10, 18, or 25 weeks' gestation. When the program was stopped, the opposite occurred and the mean gestational age at initiation increased by 2 weeks. Despite these findings, the gestational age at initiation did not impact the rate of SGA in the offspring.

It would be easy to consider this a negative study and dismiss regular prenatal care out of hand. Unfortunately, the authors did not examine how many prenatal visits were attended or a wide range of other perinatal outcomes to see how they might be impacted. In addition, it is likely that the content of prenatal care matters. In one study, while the number of prenatal visits did not change the rate of complications, women who received specific evidence-based educational content had a lower rate of complications (JAMA. 1994;271:1340–1345). Thus, while it is certainly not simply getting women in for prenatal care visits alone that will improve outcomes, they do need to come in to get particular content if it is going to improve outcomes. In the end, we need both, impactful prenatal care content delivered to an interested, engaged pregnant woman. Perhaps the group prenatal care approach doesn’t necessarily reduce stress, but through the focus on content and design, that has improved as well.—ABC)