

# Do unconditional income supplements improve poor pregnant women's birth outcomes?

Marni D. Brownell, Mariette J. Chartier, and Nathan C. Nickel

---

Marni D. Brownell is Professor of Community Health Sciences at the University of Manitoba, and a Senior Research Scientist at the Manitoba Centre for Health Policy. Mariette J. Chartier is Assistant Professor of Community Health Sciences at the University of Manitoba, and Research Scientist at the Manitoba Centre for Health Policy. Nathan C. Nickel is Assistant Professor of Community Health Sciences at the University of Manitoba, and Research Scientist at the Manitoba Centre for Health Policy.

---

Prenatal development is crucial to a child's health, not only in infancy, but also throughout her life. Exposure to risk factors such as material stress, poor prenatal nutrition, and substance abuse can lead to adverse birth outcomes such as low birth weight (under 2,500 grams or 5.5 pounds) and preterm birth (birth before 37 completed weeks of gestation).<sup>1</sup> These birth outcomes are in turn associated with health and development challenges throughout the life course. Women who live in poverty are more likely than women above the poverty line to have risk factors for poor birth outcomes, including high stress levels, inadequate nutrition, and smoking, drinking alcohol or using drugs during pregnancy; they are also more likely to give birth to preterm or low birth weight children.<sup>2</sup> This article describes three approaches to improve birth outcomes, and summarizes a study we conducted that assessed whether an unconditional cash transfer was associated with improved birth outcomes.<sup>3</sup>

## Improving birth outcomes for low-income women

Much effort has been made, in both developed and developing countries, to improve birth outcomes for women living in poverty. Program models include cash transfers (with or without conditions attached) and in-kind programs that offer services during the prenatal and postnatal time periods.

The research summarized here is reported at length in Marni D. Brownell, Mariette J. Chartier, Nathan C. Nickel, Dan Chateau, Patricia J. Martens, Joykrishna Sarkar, Elaine Burland, Douglas P. Jutte, Carole Taylor, Robert G. Santos, and Alan Katz, "Unconditional Prenatal Income Supplement and Birth Outcomes," *Pediatrics* 137, No. 6 (June 2016).

## Conditional cash transfers

Conditional cash transfer programs have been developed in several Latin American countries, among other places. These programs, including Oportunidades in Mexico and the Bolsa Familia program in Brazil, tie cash payments to particular behaviors such as obtaining prenatal care. Although many of these programs were not designed specifically for the prenatal period, they have been found to influence birth outcomes.<sup>4</sup> A review of ten conditional cash transfer programs found strong evidence of positive effects on health care use and health outcomes, although the specific role that cash payments played in these efforts was unclear.<sup>5</sup> An evaluation of the Mexican Oportunidades program concluded that its health benefits were attributable to the cash payment itself.<sup>6</sup>

## In-kind transfers

Programs in the United States that promote prenatal health for women in poverty tend to follow a different model, providing in-kind transfers rather than conditional cash payments.<sup>7</sup> For example, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides low-income women with food supplements, nutrition education, and access to health care services, during the prenatal and postnatal time periods. Identifying an appropriate comparison group for WIC recipients is challenging, and evaluations of the program have not yet produced definitive results.<sup>8</sup> One review concluded that previous studies may have overestimated positive associations between WIC and birth outcomes.<sup>9</sup>

## Unconditional cash transfers

Our study examined a program in the Canadian province of Manitoba that offers a cash transfer, but unlike the conditional programs described above, the low-income pregnant women who receive these payments do not have to meet any conditions beyond eligibility. Manitoba began offering the Healthy Baby Prenatal Benefit (HBPB) in 2001, hoping to improve prenatal health and birth outcomes. Canada's universal health care system already provides free prenatal care. HBPB augments the health care with a cash benefit of up to \$81.41 in Canadian dollars each month (around \$60 in current U.S. dollars) to low-income women in their second and third trimesters. The monthly payments are accompanied by pamphlets containing information about the importance of good prenatal nutrition, breastfeeding, and healthy infant development, but the mothers are free to spend the money as they choose.

Any woman with an annual income under \$32,000 in Canadian dollars whose pregnancy has been confirmed by

a physician can enroll in HBPB. Data were collected for over 14,500 women who had received cash welfare and who gave birth in Manitoba during the period from 2003 through 2010.<sup>10</sup> Pregnant women receiving welfare represent a very-low-income population that is at particular risk for poor birth outcomes. About three-quarters of the women in the study received the HBPB; the remaining one-quarter did not. Both groups had mean annual incomes of slightly under \$10,000 in Canadian dollars, so the HBPB increased the average monthly income of study participants receiving the benefit by nearly 10 percent.

### Improved birth outcomes for those who received an unconditional cash transfer

Women who received the HBPB had better birth outcomes than those who did not. Looking first at unadjusted rates, about 5 percent of those in the group receiving the benefit had infants with low birth weight, compared to about 8 percent of those in the group that did not receive the benefit. Similarly, about 8 percent of the HBPB group and 11 percent of the no-HBPB group had preterm births.

After adjusting for differences in measured characteristics between the two groups, we calculated ratios that represent the declines in low birth weight and preterm birth that could be achieved in the population by providing HBPB.<sup>11</sup> As illustrated in Figure 1, we found that the reductions in low birth weights and preterm births associated with HBPB translate into the prevention of 21 percent of all low birth weight births and 17.5 percent of all preterm births for the population of women receiving welfare.

Most benefit programs impose multiple conditions on the recipients, such as providing in-kind transfers good only for particular goods or services, or requiring recipients to participate in specific activities, rather than trusting low-income people to make good choices. Indeed, when the Manitoba HBPB program was introduced, concerns were raised about the program's lack of conditions or

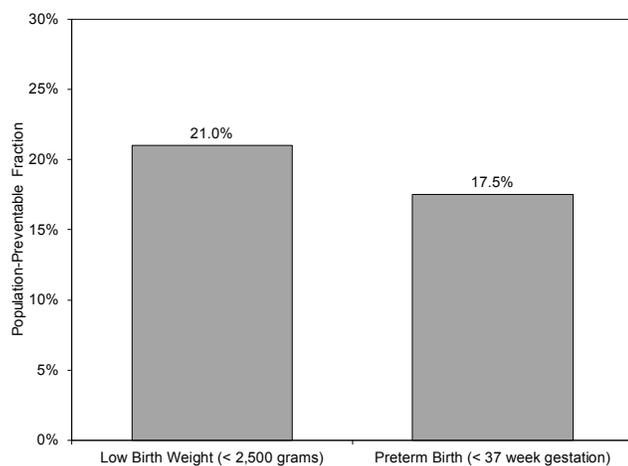


Figure 1. Estimated population decreases in low birth weight and preterm birth associated with HBPB.

accountability for receipt. The evidence suggests these concerns were unfounded. In fact, among the very-low-income population of women receiving welfare, those who received the unconditional cash benefit had more favorable birth outcomes than those who did not. This finding is in line with a growing body of evidence showing that increased family income is associated with improved child outcomes.<sup>12</sup>

Although our study did not address the mechanisms through which the HBPB improved birth outcomes, there are a number of possible pathways, including that the additional money was used to purchase more nutritious food, or that stress was reduced because important bills could be paid in time. This aligns with findings from other programs. For example, research on the Earned Income Tax Credit suggests that increased income improves women's nutritional intake, decreases the proportion of pregnant women who smoke, and increases receipt of prenatal care.<sup>13</sup> The receipt of Food Stamps has been found to be associated with increased infant birth weight, suggesting that improved prenatal nutrition may have a positive effect on birth outcomes.<sup>14</sup>

### Accounting for potential bias in results

It is possible that there are systematic differences between women who did and did not apply for HBPB, and that these differences, rather than the benefit itself, explain any observed differences between the two groups. We attempted to account for any such bias in three ways. First, to ensure comparability of income between the group receiving HBPB and the group that did not, we limited our evaluation to women receiving welfare. Low-income women who received HBPB but were not on welfare were excluded from the study. This approach limits the generalizability of our findings, although the very-low-income population we examined may be similar enough to women participating in the WIC program to make our findings applicable to that population.

Second, we used propensity scores to adjust for differences between the groups in measured characteristics. We were fortunate to have access to data on a wide variety of characteristics for all study participants, including risk factors for poor birth outcomes such as maternal mental illness, smoking during pregnancy, and pregnancy or labor complications. Using these data, a propensity score was calculated for each study participant representing the probability of receiving HBPB given an individual's measured characteristics. Use of propensity scores makes the groups receiving and not receiving HBPB more comparable.

Third, we conducted sensitivity analyses to measure how robust the results were to differences between the two groups in unmeasured characteristics. For example, there could be differences between the two groups in whether the pregnancy was planned, or in self-care factors such as nutritional intake and stress reduction. It is also possible that these differences in unmeasured characteristics, rather than receipt of HBPB, could explain any observed differences

between the two groups. The sensitivity analyses determine how strongly related an unmeasured variable would need to be to nullify any statistically significant results. Based on these analyses, our findings that receipt of HBPB was associated with decreases in the proportion of newborns with low birth weight and preterm birth were robust to variation between the groups in unmeasured variables.

## Conclusions

Poor women are at greater risk for poor birth outcomes, and efforts to improve these outcomes have met with varying degrees of success. Our study evaluated receipt of an unconditional prenatal income supplement by low-income pregnant women and found it was associated with reductions in low birth weight and preterm births. Since birth outcomes improved without requiring any specific actions from recipients in order to receive the income benefit, these results suggest that placing conditions on income supplements may not be necessary to improve birth outcomes. Future research should include qualitative analyses to explore the mechanisms through which HBPB improved birth outcomes for low-income pregnant women, and to identify any barriers that prevent eligible women from participating in the program. ■

<sup>10</sup>About one-half of those eligible for HBPB receive welfare. Only women who had a singleton birth (as opposed to a multiple birth) were included in the study.

<sup>11</sup>The study included additional outcome variables, see Brownell et al., “Unconditional Prenatal Income Supplement and Birth Outcomes” for details.

<sup>12</sup>See, for example: R. K. Q. Akee, W. E. Copeland, G. Keeler, A. Angold, and E. J. Costello, “Parents’ Incomes and Children’s Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits,” *American Economic Journal: Applied Economics* 2, No. 1 (January 2010): 86–115.

<sup>13</sup>K. W. Strully, D. H. Rehkopf, and Z. Xuan, “Effect of Prenatal Poverty on Infant Health: State Earned Income Tax Credits and Birth Weight,” *American Sociological Review* 75, No. 4 (2010): 534–562; R. Hamad and D. H. Rehkopf, “Poverty, Pregnancy, and Birth Outcomes: A Study of the Earned Income Tax Credit,” *Paediatric and Perinatal Epidemiology* 29, No. 5 (September 2015): 444–452 ; and H. Hoynes, D. Miller, and D. Simon, “Income, the Earned Income Tax Credit, and Infant Health,” *American Economic Journal: Economic Policy* 7, No. 1 (February 2015): 172–211.

<sup>14</sup>D. Almond, H. W. Hoynes, and D. Whitmore Schanzenbach, “Inside the War on Poverty: The Impact of Food Stamps on Birth Outcomes,” *The Review of Economics and Statistics* 93, No. 2 (May 2011): 387–403.

---

<sup>1</sup>B. J. M. H. Jefferis, C. Power, and C. Hertzman, “Birth Weight, Childhood Socioeconomic Environment, and Cognitive Development in the 1958 British Birth Cohort Study,” *The BMJ* 325 (August 10, 2002): 305–308.

<sup>2</sup>P. Blumenshine, S. Egerter, C. J. Barclay, C. Cubbin, and P. A. Braverman, “Socioeconomic Disparities in Adverse Birth Outcomes: A Systematic Review,” *American Journal of Preventive Medicine* 39, No. 3 (2010): 263–272.

<sup>3</sup>This article draws on M. D. Brownell, M. J. Chartier, N. C. Nickel, D. Chateau, P. J. Martens, J. Sarkar, E. Burland, D. P. Jutte, C. Taylor, R. G. Santos, and A. Katz, “Unconditional Prenatal Income Supplement and Birth Outcomes,” *Pediatrics* 137, No. 6 (June 2016).

<sup>4</sup>S. L. Barber and P. J. Gertler, “The Impact of Mexico’s Conditional Cash Transfer Programme, Oportunidades, on Birthweight,” *Tropical Medicine and International Health* 13, No. 11 (November 2008): 1405–1414.

<sup>5</sup>M. Lagarde, A. Haines, and N. Palmer, “The Impact of Conditional Cash Transfers on Health Outcomes and Use of Health Services in Low and Middle Income Countries,” *Cochrane Database of Systematic Reviews* 4 (October 2009).

<sup>6</sup>L. C. H. Fernald, P. J. Gertler, and L. M. Neufeld, “Role of Cash in Conditional Cash Transfer Programmes for Child Health, Growth, and Development: An Analysis of Mexico’s Oportunidades,” *The Lancet* 371, No. 9615 (March 2008): 828–837.

<sup>7</sup>Opportunity NYC—Family Rewards was a conditional cash transfer program that operated from 2007 through 2010. However, that program did not offer payments specifically targeted to pregnant women.

<sup>8</sup>B. Abrams, “Preventing Low Birth Weight: Does WIC Work? A Review of Evaluations of the Special Supplemental Food Program for Women, Infants, and Children,” *Annals of the New York Academy of Sciences* 678 (March 1993): 306–315.

<sup>9</sup>E. M. Foster, M. Jiang, and C. M. Gibson-Davis, “The Effect of the WIC Program on the Health of Newborns,” *Health Services Research* 45, No. 4 (August 2010): 1083–1104.