

## Race and preterm birth rates in North America

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See also [www.cmaj.ca/lookup/doi/10.1503/cmaj.150464](http://www.cmaj.ca/lookup/doi/10.1503/cmaj.150464)

In a linked study, McKinnon and colleagues compare risk ratios and risk differences for preterm birth and very preterm birth between Canada and the United States among babies born to black and white women during 2004–2006.<sup>1</sup> Racial disparities in perinatal outcomes receive considerable attention from public health practitioners in the US at the national, state and local levels, with a primary focus on disparities between non-Hispanic white and non-Hispanic black mothers.<sup>2</sup> Preterm birth has also attracted much attention, both in the US and Canada, because its incidence rose over the past 25 years.<sup>3</sup> Quality-improvement strategies to reduce non-medically indicated obstetric interventions before 39 weeks' gestation, together with more widespread availability and use of 17- $\alpha$ -hydroxyprogesterone caproate, among other factors, have led to some modest recent reductions in preterm birth rates.<sup>4</sup> However, both the cause of preterm birth and preventive strategies remain elusive. One area that holds promise is the examination of factors associated with the 1.5- to twofold increased incidence of preterm birth among non-Hispanic black women compared with non-Hispanic white women.<sup>5</sup>

Although previous studies have compared trends in perinatal outcomes between the US and Canada,<sup>6,7</sup> race and ethnicity have not been featured, mainly because of major differences in administrative health databases between the two countries. In the US, certificates of live birth and fetal death are generally standardized across vital registration units. In Canada, however, vital registration forms are less similar, and they contain considerably fewer data elements concerning maternal health, prenatal care and infant characteristics. Although the implementation of the 2003 revised national standard certificates in the US was a gradual and protracted process, resulting in complete national coverage only in calendar year 2015, all states have reported maternal and paternal race and ethnicity characteristics using the same questions and categories.<sup>8</sup> Canadian provinces, on the other hand, use a variety of groupings for birth certificate items regarding race, with a focus primarily on categorizing birth

events among indigenous populations rather than the broader race and ethnic categories used by the US National Center for Health Statistics. This has limited the ability of Canadian researchers interested in examining racial disparities in birth outcomes in Canada.

McKinnon and colleagues<sup>1</sup> overcame the limitations of Canadian vital statistics by linking live births, infant deaths and stillbirths for a two-year period to the 2006 Canadian census, which does contain variables measuring race. The authors focused on risk ratios and risk differences for preterm birth and very preterm birth between babies born to black and white women in Canada and in the US during 2004–2006. Adjusting for demographic covariates (maternal age and education, marital status, birth order, infant sex, and paternal age, race or ethnicity), risk ratios and risk differences for preterm (< 37 wk) and very preterm (< 32 wk) births compared with term (37–41 wk) gestation were similar in both countries.

Linking birth certificates to national census data also ensures more complete reporting of paternal age, race and ethnicity than typically occurs in vital records in the US. For calendar year 2004 in the US, paternal age was missing for 14% of births overall, for 24% of births to women less than 25 years of age and for more than 35% of births to unmarried women.<sup>9</sup> As noted by McKinnon and colleagues, only 3.0% of Canadian records studied were missing paternal information. Given that non-Hispanic black women were more likely to be unmarried and more likely to have missing paternal information in both

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### KEY POINTS

- Previous studies have compared trends in perinatal outcomes between the US and Canada, but race and ethnicity were not featured.
- A new record-linkage study shows that preterm birth rates are lower in Canada than in the US among both black and white women.
- The study also shows that black women in both countries have a similarly increased risk of delivering a preterm infant.
- What remains a mystery is whether this phenomenon has its origins in the social, educational, occupational and economic circumstances that women face before and during their pregnancies, or whether it is underpinned by some inherent difference in culture, institutional factors or response to stress.

countries, but especially so in the US, the possibility for information bias must be considered in examining these estimates. Overall, McKinnon and colleagues' findings are not surprising: the incidence of preterm birth was lower among Canadian women than among women in the US, both for infants born to white women and for those born to black women, but the increased risk for infants born to black women was generally similar across the two countries.

The authors focus on comparing risk ratios and risk differences in preterm birth between black and white women in the US and Canada. A potentially more rewarding use of the linked Canadian data set of vital statistics and census data lies in the opportunity to obtain direct and neighbourhood-level measures of socioeconomic status from the census data and using these to interpret the risk ratios for birth outcomes by race on a deeper level. Meng and colleagues<sup>10</sup> developed a multilevel framework for examining the contribution of community measures of socioeconomic status to low birth weight and preterm birth, but their analysis used Ontario birth certificates that did not provide data on race, and curiously did not use a measure of race or residential segregation at the neighborhood level. Wood and colleagues<sup>11</sup> conducted a similar analysis in Alberta, also examining the role of race, and found a slight gradient in spontaneous preterm birth across strata of neighbourhood socioeconomic status. On the other hand, Anthopolos and colleagues,<sup>12</sup> in a North Carolina study, examined the contribution that community-level measures of racial residential segregation and built environment made to individual-level preterm birth outcomes, but they had limited measures of socioeconomic status at the individual level.

McKinnon and colleagues should be encouraged to continue their work with the linked Canadian data set, and to consider developing comprehensive multilevel models to elucidate more fully the direct contributions of maternal and paternal

characteristics, reproductive health factors and household socioeconomic status, and their indirect effects and interactions, within the context of community-level measures. Such an analysis would be difficult to conduct in the US at present, but the Canadian data set used in their current study has the potential to answer a perplexing question: Does the disparity in preterm birth among white and black women observed in both the US and Canada have its origins in the social, educational, occupational and economic circumstances that women face before and during their pregnancies, or is an inherent difference resulting from cultural factors, institutional factors or differing biophysiological responses to accumulated stressors?

## References

1. McKinnon B, Yang S, Kramer MS, et al. Differences in preterm birth between black and white women in Canada and the United States. *CMAJ* 2015 Nov 9 [Epub ahead of print].
2. Willis E, McManus P, Magallanes N, et al. Conquering racial disparities in perinatal outcomes. *Clin Perinatol* 2014;41:847-75.
3. Goldenberg RL, Culhane JF, Iams JD, et al. Epidemiology and causes of preterm birth. *Lancet* 2008;371:75-84.
4. Oshiro BT, Kowalewski L, Sappenfield W, et al. A multistate quality improvement program to decrease elective deliveries before 39 weeks of gestation. *Obstet Gynecol* 2013;121:1025-31.
5. Culhane JF, Goldenberg RL. Racial disparities in preterm birth. *Semin Perinatol* 2011;35:234-9.
6. Ananth CV, Liu S, Joseph KS, et al.; Fetal and Infant Health Study Group of the Canadian Perinatal Surveillance System. A comparison of foetal and infant mortality in the United States and Canada. *Int J Epidemiol* 2009;38:480-9.
7. Fell DB, Joseph K. Temporal trends in the frequency of twins and higher-order multiple births in Canada and the United States. *BMC Pregnancy Childbirth* 2012;12:103.
8. Kirby RS, Salihu HM. Back to the future? A critical commentary on the 2003 U.S. National Standard Certificate of Live Birth. *Birth* 2006;33:238-44.
9. Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2004. *Natl Vital Stat Rep* 2006;55:1-104.
10. Meng G, Thompson ME, Hall GB. Pathways of neighbourhood-level socio-economic determinants of adverse birth outcomes. *Int J Health Geogr* 2013;12:32.
11. Wood S, McNeil D, Yee W, et al. Neighbourhood socio-economic status and spontaneous premature birth in Alberta. *Can J Public Health* 2014;105:e383-8.
12. Anthopolos R, Kaufman JS, Messer LC, et al. Racial residential segregation and preterm birth: built environment as a mediator. *Epidemiology* 2014;25:397-405.

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