

The Association Between Race/ Ethnicity and Major Birth Defects in the United States, 1999–2007

Canfield MA, Mai CT, Wang Y, O'Halloran A, Marengo LK, Olney RS, Borger CL, Rutkowski R, Fornoff J, Irwin N, Copeland G, Flood TJ, Meyer RE, Rickard R, Alverson CJ, Sweatlock J, Kirby RS, for the National Birth Defects Prevention Network. The Association Between Race/Ethnicity and Major Birth Defects in the United States, 1999–2007. *American Journal of Public Health*. 2014; 104(9): e14–e23.

This study used data from 13.5 million live births occurring between 1997–2007 from 12 states. Poisson regression analyses were used to calculate the prevalence estimates and crude prevalence ratios for 27 major birth defects and 13 racial/ethnic groupings. Multivariable analyses were used to calculate the adjusted prevalence ratios (aPRs), which were adjusted for maternal state of residence at delivery and maternal age.

Main findings from this research

- ◇ American Indians/Alaska Native had a significantly higher, 50% or greater prevalence for 7 birth defects, compared to non-Hispanic Whites:
 - Anotia/Microtia (aPR=3.97)
 - Cleft lip with or without cleft palate (1.92)
 - Trisomy 18 (1.85)
 - Encephalocele (2.14)
 - Limb deficiency (upper=1.51, lower=1.91, and any=1.51)
- ◇ Cubans and Asians (especially Chinese and Asian Indians) had either significantly lower or similar prevalences of the 27 birth defects studied, compared to non-Hispanic Whites.
- ◇ Spina bifida, anotia/microtia, and Down syndrome had significantly lower and higher prevalence ratios across the 13 racial/ethnic groups; these defects showed the greatest variation.

Conclusion and discussion

This is the largest and most comprehensive study to date that has been conducted to examine the relationship between birth defects and racial/ethnic groups, including those that have been historically under-studied. Based on findings from this study, future research should consider stratifying each racial/ethnic group by nativity status and limiting to isolated birth defect cases to determine if the relationship changes. Additionally, the higher prevalence of birth defects observed in American Indians/Alaskan Native should be further investigated.

Previous studies have been conducted to examine the racial/ethnic variation of birth defects. However these studies were generally limited by the number of racial/ethnic groups or birth defects it included. In this population-based study, pooled data was used from 12 state-based birth defects surveillance systems, making it the largest study conducted to date to investigate the relationship between 13 racial/ethnic groupings and 27 major birth defects.

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Link to abstract:

<https://www.ncbi.nlm.nih.gov/pubmed/25033129>