Session

Epidemiology of Racial/Ethnic Disparities in Perinatal Outcomes

Jenifer Allsworth, PhD, Biomedical and Health Informatics, UMKC School of Medicine, Kansas City, MO

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Abstract

Black-white Infant Mortality and Healthy People Goals: A 34-Year Trend Analysis

Brittney Butler, MPH and Arthur James, MD
The Ohio State University, Columbus, OH

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Background: There has been a long-standing disparate gap between Black and white infant mortality rates (IMR) in the U.S. The objective of this research was to examine IMRs from 1980-2014 and explore disparity trends in achieving Healthy People (HP) goals by race. Methods: Annual infant mortality reports were pulled from the National Center for Health Statistics. Black and white infant deaths were examined for the 34-year time period, and IMR trends compared to the HP goals from 1990-2020 were examined to identify disparities in goal achievements. Results: The long-term downward trend in U.S. infant mortality has not benefited Blacks and whites equally. The disparity gap has consistently widened over time, from 2.0 in 1980 to 2.2 in 2014. When comparing rates, the historical lowest Black IMR (11.05) in 2014 is still larger than the highest white IMR (10.86) from 1980. The U.S has never achieved the set Black IMR HP goal by the scheduled date, while white IMR goals were consistently reached well before the scheduled date with the exception of 2010. However, in 2010, the U.S. did achieve the HP 1990 goal for Black infants. The current HP goal for 2020 is to achieve an overall IMR of 6.0 across racial groups, however this goal was achieved for whites in 1998. Conclusions: Our results show a 35-year time lag for Blacks achieving comparable IMR to whites. If this trend remains, Blacks will have to wait until 2048 to achieve comparable IMRs to current white IMRs.

Epidemiology

Abstract

Risk Differences in Cause-Specific Infant Mortality Between Black and White US Infants, 1968-2015: Epidemiologic Investigation

Laurens Holmes Jr., MD, DrPH[1], David Mage, PhD[2] and E. Maria Donner, PhD[3]
(1)Nemours/Alfred I. DuPont Hospital for Children, Wilmington, DE, (2)SIDS and Infant Mortality Research Groupo, Newark, DE, (3)DuPont Haskell, Newark, DE

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OBJECTIVE: Black/African American (AA) infants had been persistently observed with survival disadvantage compared to White infants in the United States, implying excess mortality of black infants. While reliable epidemiologic data continue to illustrate these disparities, data are yet to provide a substantial explanation to the observed rates and risk differences over the past six decades. We aimed in this study to examine the infant mortality risk difference by temporal trend , and to provide an ecologic and non-concurrent explanation for the persisted variability. METHODS: A retrospective design with aggregate data from the Center for Disease Control and Prevention (CDC) was used to assess the risk difference in cause-specific mortality, while stratification analysis was utilized for the risk ratio estimation. We also estimated the percent change for the infant mortality trends. RESULTS: There were temporal trends in infant mortality between 1968 and 2015 with excess infant mortality among black/AA children. The International Classification of Disease (ICD-10) cause-specific mortality namely, digestive system(53.0% vs.58.4%) , genito-urinary disorders (25.6% vs. 30.7%), mental disorder (52.8% vs.69.0%), muscle skeleton connective tissue disorder (34.0% vs.66.6%)

indicated increasing trends in mortality risk ratio comparing the initial period (1968-1978) to (1979-1998) and (1999-2015). Except for neoplasm, and the initial study period for congenital anomalies, black/AA infants indicated survival disadvantage, implying excess mortality ratio relative to their white counterparts. CONCLUSION: In summary, cause-specific infant mortality was higher among black/AA except for neoplasm, and increasing percent changes were observed in mental disorders, digestive, genitourinary and muscle and connective tissue disorders. These findings are suggestive of the pressing needs to examine the cause of these disparities for specific risk-adapted intervention.

Clinical medicine applied in public health Diversity and culture Epidemiology Public health or related public policy Social and behavioral sciences

Abstract

Declining maternal mortality ratio in California: Contributions of shifting maternal age and race/ethnicity to the statewide decline

Marina J. Chabot, MSc[1], Dan Sun, MPH[2], Mike Curtis, PhD[3] and David J. Reynen, DrPH, MA, MPPA, MPH, CPH[4]
(1)University of California, San Francisco, Sacramento, CA, (2)University of California San Francisco, CA, (3)Maternal, Child and Adolescent Health Division, Sacramento, CA, (4)California Department of Public Health, Sacramento, CA

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Background: The maternal mortality ratio (MMR, deaths per 100,000 live births) has dropped in California. While various factors (e.g., public policies, social, cultural and economic factors) have potentially contributed to the decline, we focus on the contribution of population subgroups –age and race/ethnicity– to the MMR decline.

Objective: To determine the individual contribution of each population subgroup to MMR decline between time period 1 (i.e., 2004-2008) and time period 2 (i.e., 2009-2013) by using decomposition analysis.

Methods: We used California's vital statistics (birth and death records) for two periods, aggregated 2004-2008 and aggregated 2009-2013, to provide stable estimates of MMR. The Kitagawa decomposition analysis was conducted to identify the contribution of the shifting population composition (specifically, in terms of age and race/ethnicity) to the overall observed MMR difference between the two time periods. First, the contribution of age was partitioned into two components: 1) age distribution of births; and 2) age-specific MMR. Maternal age was categorized as ≤19, 20-24, 25-29, 30-34, 35-39, and ≥40 years. Second, the contribution of race and Hispanic ethnicity was partitioned into two components: 1) race and Hispanic ethnicity distribution of births; and 2) race and Hispanic ethnicity MMR. The Kitagawa decomposition method breaks down the total change over time, partitioning changes in the population composition (component 1) and population-specific MMR (component 2), to determine the contribution attributable to a given population subgroup.

Results: California's overall absolute MMR decline was -4.8 per 100,000 live births between 2004-2008 (13.1 per 100,000 live births) and 2009-2013 (8.3 per 100,000 live births). The decomposition analysis showed that the change in age distribution (component 1) contributed to the MMR decline only among adolescent (<19 years of age) and young mothers aged 20-24 years. In contrast, the age distribution component for mothers aged ≥ 25 years, specifically for mothers aged 30-34 years, offset this decline. The change in age-specific MMR (component 2) contributed to the MMR decline across all age groups, except for adolescents. Mothers aged 20-29 years contributed 52.3%, while mothers aged 30 and above contributed 50.0% to the MMR decline but was offset by 2.3% among adolescent mothers. Considering the contribution of race/ethnicity group components, the results showed that Hispanic, White, and Black groups contributed 63.1%, 17.1%, and 15.3%, respectively to the MMR decline. The remaining racial group (American Indian/Alaska Native, Asian/Pacific Islander, and multiple race) components contributed 4.5%.

Conclusion: The overall MMR decline between 2004-2008 and 2009-2013 is related in part to the shifting maternal age distribution, mostly contributed by younger mothers. Although Black mothers contributed to the

decline, they remain the group with the highest MMR. Sustaining the current efforts in MMR reduction and tailoring services to specific population subgroups may help narrow the disparity in MMR.

Epidemiology Public health or related research

Abstract

Life-course Analysis of Residential Poverty and Racial-Ethnic Disparities in Preeclampsia in California

Michelle Pearl, PhD, MPH[1], Victor Poon, MS[2], Jennifer Ahern, PhD MPH[3] and Martin Kharrazi, PhD, MPH[1]
(1)California Department of Public Health, Richmond, CA, (2)Sequoia Foundation, Richmond, CA, (3)University of California, Berkeley, Berkeley, CA

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background: Women's early-life experiences of residential poverty may have long-term effects on their health during pregnancy. Life-course studies have shown increased low birth-weight and preterm delivery with residential poverty from early childhood and adulthood. However little is known about life-course neighborhood social context and preeclampsia, a multisystem hypertensive pregnancy disorder that is a leading cause of maternal and infant mortality and morbidity and a risk factor for future cardiovascular disease. objectives: We conducted a life-course analysis of the relation of high neighborhood poverty in early childhood and adulthood to risk of preeclampsia during pregnancy. We further assessed the potential contribution of high neighborhood poverty at both points in the life-course to racial-ethnic disparities in preeclampsia. methods: We linked census tract poverty data to two generations of California live births from 1982 to 2011 for 399,343 white, black, or Latina mother-infant pairs. Preeclampsia was identified from diagnostic codes from linked hospital discharge records. We estimated race-ethnicity specific risk differences per 100 (RD/100) and 95% confidence intervals (CI) comparing high neighborhood poverty (≥20% poverty) in early life (based on address at the time of their own birth) and/or adulthood (based on address at the time of their infant's birth) to low neighborhood poverty. In single time-point and longitudinal targeted maximum likelihood estimation models, we adjusted for covariates including maternal age, parity, education, public insurance, and whether the mother was born preterm or low birth-weight. results: Prevalence of preeclampsia was 5.5% for black women, 4.5% for Latina women, and 3.7% for white women. Preeclampsia risk increased with high neighborhood poverty in early life for white women (RD/100=0.4, 95% CI [0.2, 0.8]) and Latina women (RD/100=0.3, 95% CI [0.1, 0.4]), and with high neighborhood poverty in adulthood among Latinas only (RD/100=0.6, 95% CI [0.5, 0.8]). High poverty in both early life and adulthood was associated with increased preeclampsia among Latina mothers (RD/100=0.8, 95% CI [0.6, 1.0]). In black women, neighborhood poverty was not related to preeclampsia. Under hypothetical conditions of low adult or combined low early-life and adult neighborhood poverty, the Latina-white disparity in preeclampsia decreased by 33% and 27%, respectively. conclusion: In this first study of life-course neighborhood context and risk of preeclampsia, we found that residential poverty experiences over the life-course may explain up to a third of the Latina-white disparity in preeclampsia. Additional attention should be paid to social determinants of perinatal health in Latinas.

Epidemiology Public health or related research