Racial/Ethnic Disparities in Mortality Related to Congenital Heart Defects among Children and Adults in the United States

Background: Congenital heart defects (CHD) are the most common birth defect and are a major cause of childhood illness and death. Recent progress in management of persons with CHD may have decreased CHD-related mortality.

Methods: Year 2000 US death records were used to determine CHD-related mortality by age, sex, and race/ethnicity in children and adults. CHD-related mortality was defined as all deaths with any mention of CHD on the death certificate. Age-, sex-, and racial/ethnic-specific population counts were obtained from the 2000 US Census and used as denominators in mortality rates.

Results: In 2000 there were 5441 (.23%) CHD-related deaths and CHDs were mentioned 6121 times as the underlying or contributing cause of death. In 68.4% of CHD-related deaths, CHD was the underlying cause of death. Non-Hispanic Black males had greater risk of CHD-related death than did non-Hispanic White males (RR 1.25, 95% CI 1.08–1.45). Both Hispanic males and females had lower rates of CHD-related deaths than did non-Hispanic Whites (RR .72, 95% CI .60–.85; RR .52, 95% CI .42–.65, respectively). “Unspecified congenital malformation of the heart” was the most common cause of death overall; however, “malformation of the coronary vessels” was most often a cause of death for non-Hispanic Blacks and children aged 10–19 years.

Conclusions: Racial/ethnic differences in CHD-related mortality exist in the United States. Management of CHD, access to adequate care, and misclassification in cause of death reporting on death records may explain the observed differences. (Ethn Dis. 2008;18:442–449)

Key Words: Mortality, Congenital Heart Defects, Disparities, Epidemiology, Race/Ethnicity

The purpose of this study was to determine mortality related to CHD and examine age, racial/ethnic, and sex disparities in mortality related to CHD in children and adults.

INTRODUCTION

With an annual prevalence of 7–10 per 1,000 live births, congenital heart defects (CHD) are the most common and multifaceted family of birth defects.1–5 CHDs have serious consequences, in terms of short- and long-term morbidity and mortality.6,7 During the past several decades, many advances have been made in the management of CHD, including improvement in prenatal diagnosis, fetal interventions, postnatal diagnosis, and both surgical and percutaneous interventions.8–11 Because of these advances, more children with CHD survive into adulthood.12,13 Despite these extraordinary technical advances, previous research suggests sex and racial/ethnic disparities14,15 in mortality among persons with CHD. These disparities have not been fully described or explored; therefore, the purpose of this study was to determine mortality related to CHD and examine age, racial/ethnic, and sex disparities in mortality related to CHD in children and adults.

METHODS

Our study population consisted of all residents of the United States in 2000. We obtained multiple-cause mortality public-use data files from the National Center for Health Statistics, which annually compiles data from all death certificates filed in the United States. These files contain demographic and geographic information on decedents, International Classification of Disease (ICD) codes for the underlying cause of death, and up to 20 additional conditions listed on the death certificate. The ICD Tenth Revision (ICD-10) was implemented in 1999.

We determined the number of deaths for which a CHD (ICD-10 codes Q20.0–Q26.9) was listed anywhere on the death certificate. These codes include most congenital malformations of the heart and circulatory system but exclude malformations of the peripheral vascular system. We defined CHD-related deaths as all deaths that had at least one mention of a CHD on the death certificate, as either an underlying or contributing cause of death.

We analyzed several specific demographic groups in this study, including males and females, three racial/ethnic groups (non-Hispanic Whites, non-Hispanic Blacks, and Hispanics), and six age groups (<1, 1–4, 5–14, 15–19, 20–64, and ≥65 years). Age-, sex-, and racial/ethnicity-specific population counts were obtained from the 2000 US Census of Population and Housing and used as denominators for calculat-