Decreasing mortality in patients with simple congenital heart disease: a Danish nationwide study

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Background: The long-term mortality in patients with simple congenital heart disease (SCHD) compared with the general population is not well-described.

Purpose: To investigate the 10-year mortality in individuals with and without SCHD and whether it has changed since 1977 using contemporary data.

Method: By linking Danish nationwide registries, we identified all individuals with and without a SCHD diagnosis who were alive at age 40 between 1977–2006. Excluded were individuals with moderate or severe congenital heart disease. SCHD was defined as isolated ventricular septal defect (VSD), atrial septal defect (ASD), patent ductus arteriosus (PDA) or pulmonary stenosis (PS). The population was followed from age 40 until death or emigration, whichever came first. We predicted 10-year all-cause mortality according to each year of inclusion. Reported was 10-year all-cause mortality and mortality ratios (SCHD vs non-SCHD) with 95% confidence intervals (CI) by calendar year groups (1977–1986, 1987–1996, 1997–2006).

Results: We identified 2,040 individuals with SCHD (VSD: 27.5%, ASD: 62.2%, PDA 6.8%, PS: 3.5%), of which 1,121 (55.0%) were female, and 2,083,277 individuals without SCHD, of which 1,028,769 (49.4%) were female. In individuals with SCHD the 10-year all-cause mortality decreased over time in both men (1977–1986: 12.3% [11.8–12.9%], 1987–1996: 9.0% [7.4–10.5%], 1997–2006: 5.0% [4.3–5.7%]) and women (1977–1986: 7.7% [7.5–7.9%], 1987–1996: 4.9% [3.9–6.0%], 1997–2006: 1.2% [0.7–1.7%]), whereas the 10-year risks were somewhat stable in individuals without SCHD for both men (1977–1986: 3.2% [3.2–3.2%], 1987–1996: 3.3% [3.2–3.3%], 1997–2006: 2.9% [2.7–3.0%]) and women (1977–1986: 2.4% [2.3–2.4%], 1987–1996: 2.1% [2.1– 2.2%], 1997–2006: 1.7% [1.6–1.8%]) (Figure 1, panel A). The mortality ratio decreased over time in both men (1977–1986: 3.9 [3.7–4.1], 1987–1996: 2.7 [2.3–3.2], 1997–2006: 1.7 [1.5–1.9]) and women (1977–1986: 3.3 [3.2–3.3], 1987–1996: 2.3 [1.8– 2.7], 1997–2006: 0.7 [0.4–1.0]) (Figure 1, panel B) remaining significantly higher for men, but not women, in 1997–2006.

Conclusion: In individuals with simple congenital heart disease aged 40 years, the 10-year mortality decreased dramatically over time for both men and women. Despite decreasing mortality, men with SCHD, but not women, remained at a higher 10-year mortality compared to individuals without SCHD.

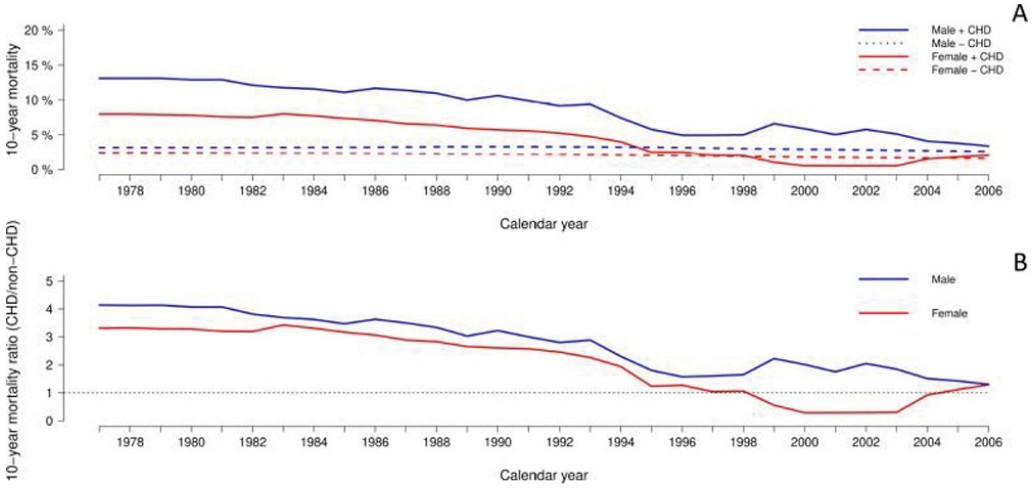

Figure 1. Temporal trends in 10-year mortality