

### **BMI in patients with CHD compared with the general population**

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**Objectives:** Children with congenital heart disease (CHD) often have unique metabolic challenges such as exercise intolerance or failure to thrive, as well as potential recommendations of activity restriction. The purpose of this study was to examine the prevalence of obesity and underweight in the CHD population as stratified by disease severity with comparisons to the general population.

**Methods:** Since 1991 the Children's Database has recorded height, weight and body mass index (BMI) as measured by medical doctors and nurses at annual school-based preventive health checks offered to all Danish children. Using the Danish National Patient Registry we identified all individuals born and diagnosed with CHD in Denmark during 1991-2012. A unique personal identifier enabled identification of CHD subjects with at least one BMI measurement recorded in the Children's Database. BMI measurements were categorized in one-year increments (6-12). For each year increment, we identified a general population sample, matched (1:10) on age and gender. Obesity was defined as BMI above the 95th percentile and underweight as BMI less than the 5th percentile for age and gender. We determined the prevalence of obesity and underweight and used conditional logistic regression to compute the corresponding odds ratios (OR). CHD was stratified by severity (mild, moderate, and complex).

**Results:** We identified 2,394 CHD patients with at least one BMI measurement recorded. The prevalence of obesity in the CHD population was 5.3%, and the prevalence for underweight was 9.3%. The corresponding ORs were 1.1 (95% CI:0.9 – 1.3) and 1.9 (95% CI:1.7 – 2.2), respectively. The ORs for obesity were 1.2 (95% CI:0.9 – 1.5) for mild, 0.7 (95% CI:0.4 – 1.4) for moderate, and 1.1 (95% CI:0.8 – 1.6) for complex CHD. For underweight the ORs were 1.6 (95% CI:1.3 – 2.1) for mild, 2.6 (95% CI:1.8 – 3.8) for moderate, and 2.6 (95% CI:2.0 – 3.4) for complex CHD.

**Conclusion:** We found no evidence to suggest an increased prevalence of obesity in children with CHD compared with the general population. The CHD population had an increased prevalence of underweight, in particular individuals with moderate and complex CHD.