**The prevalence of obesity in children with congenital heart disease**

John L. Byl1\* MPH, BS, RDCS (AE, PE), Darcy N. Marckini1 MS, Jessica L. Parker2 MS, GStat, Bennett P. Samuel1 MHA, BSN, RN, Emy M. Kuriakose1,3 MD

1Congenital Heart Center, Spectrum Health Helen DeVos Children’s Hospital, Grand Rapids, MI; 2Spectrum Health Offices of Research Administration, Grand Rapids, MI; 3Pediatrics and Human Development, Michigan State University College of Human Medicine, Grand Rapids, MI

\*Presenting author, Cardiac Sonographer, john.byl@helendevoschildrens.org

Background: Overweight and obesity is a growing concern among children with congenial heart disease. However, little is known about prevalence among children with complex congenital heart disease compared to patients with innocent murmurs. We performed a retrospective chart review study to determine the prevalence of overweight/obesity among children with congenital heart disease in a tertiary medical center in the Midwest.

Methods: We recorded height and weight of 1,053 patients to calculate body mass index (BMI) and BMI z-score. Body surface area (BSA) was calculated using the Mosteller formula. One-way ANOVA was used for statistical analysis for the three patient groups: 1) innocent murmurs (n=308), 2) congenital heart disease in patients with two ventricles (n=686), and 3) congenital heart disease with single ventricle physiology (n=59).

Results: Patients in Group 1 were on average noted to have a higher BMI percentile than patients in Groups 2 and 3 (f=11.03, p=<0.0001). Moreover, Group 3 had lower BMI percentile than Group 2. Group 3 also had lower BMI z-scores than Groups 1 and 2 (f=9.76, p=<0.0001). Following propensity matching, Group 3 had lower BMI percentile on average than Groups 1 and 2 (f=10.60, p<0.0001) as well as lower BMI z-score (f=9.02, p=0.0002). No significant difference in BSA was observed between the three groups (f=0.27, p=0.7628) even with propensity matching (f=0.61, p=0.5453).

Conclusions: In our patient population, there is a higher prevalence of overweight/obesity in patients with innocent murmurs than congenital heart disease. The small sample size of patients with single ventricle physiology is a major limitation. The lower BMI percentile and z-scores in patients with single ventricle physiology requires further exploration including lipid panel. Finally, the difference in estimation of overweight/obesity between BMI and BSA may have implications for future research and clinical practice.