

# Health Related Quality of Life in Youth with Hypercholesterolemia

<sup>1</sup>Nicole Jamieson, BS; <sup>2</sup>Luke Hamilton, MS; <sup>2</sup>Don P Wilson, MD

From the <sup>1</sup>Burnett School of Medicine, Texas Christian University, and the <sup>2</sup>Department of Endocrinology, Cook Children's Medical Center, Ft. Worth, Texas

## Introduction

In the U.S. and developed countries, cardiovascular disease (CVD) is the leading cause of death in adults. Children with hypercholesterolemia, especially those with genetic disorders of dysregulated low-density lipoprotein cholesterol (LDL-C) metabolism, are considered high risk for developing CVD. In addition to their physical health, there is a need to assess and optimize this at-risk population's quality of life. This is particularly compelling in children, who encounter medical conditions during a vulnerable time of cognitive and emotional development. The Pediatric Quality of Life Inventory (PedsQL<sup>®</sup>) has been shown to reliably measure Health Related Quality of Life (HRQoL) in healthy youth, and in youth with a wide variety of medical conditions<sup>1,2</sup>. While previous research has shown that youth with medical conditions have significantly lower perceived PedsQL<sup>®</sup> than their healthy peers, no prior studies have evaluated HRQoL in youth with hypercholesterolemia.

## Research Question

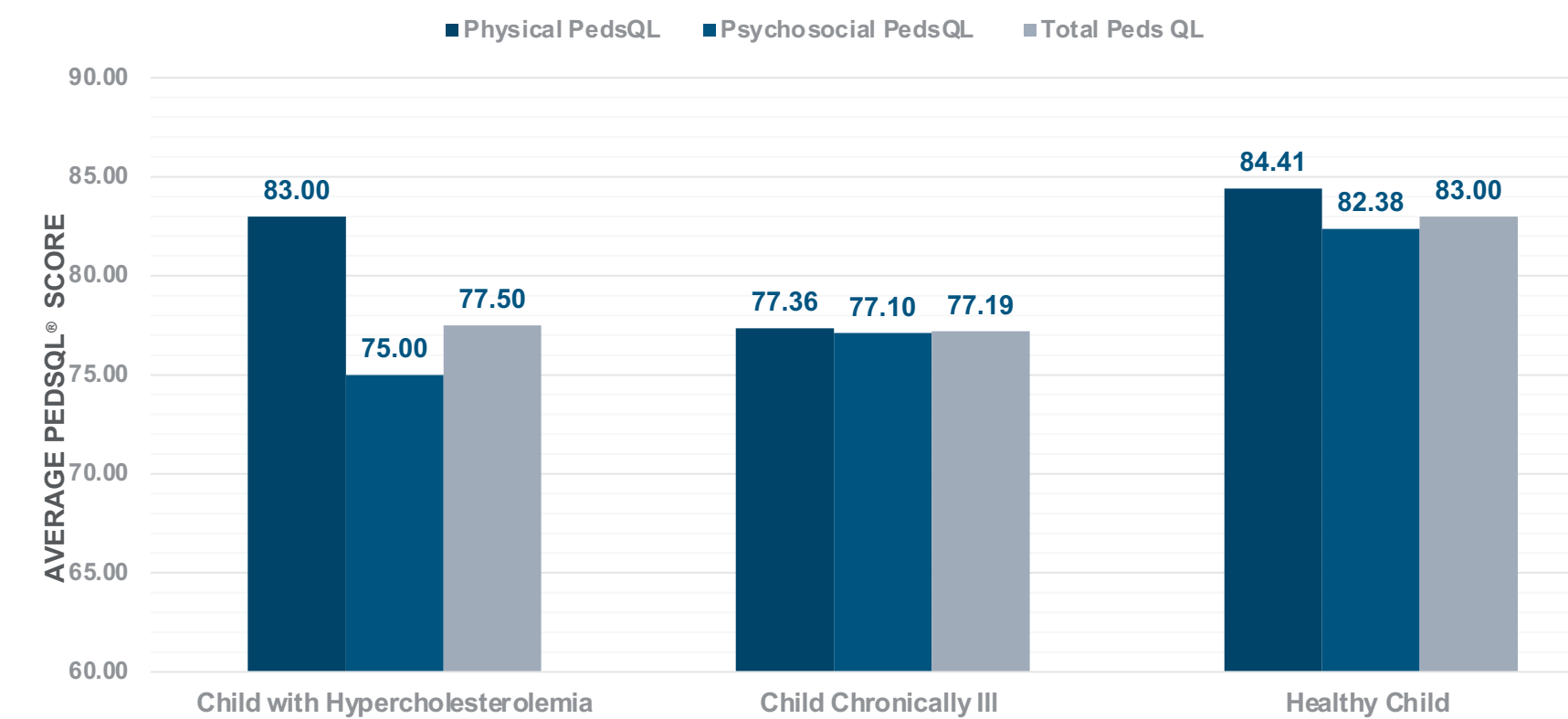
Is health related quality of life different in youth <18 years-of-age with hypercholesterolemia compared to healthy peers?

## Materials and Methods

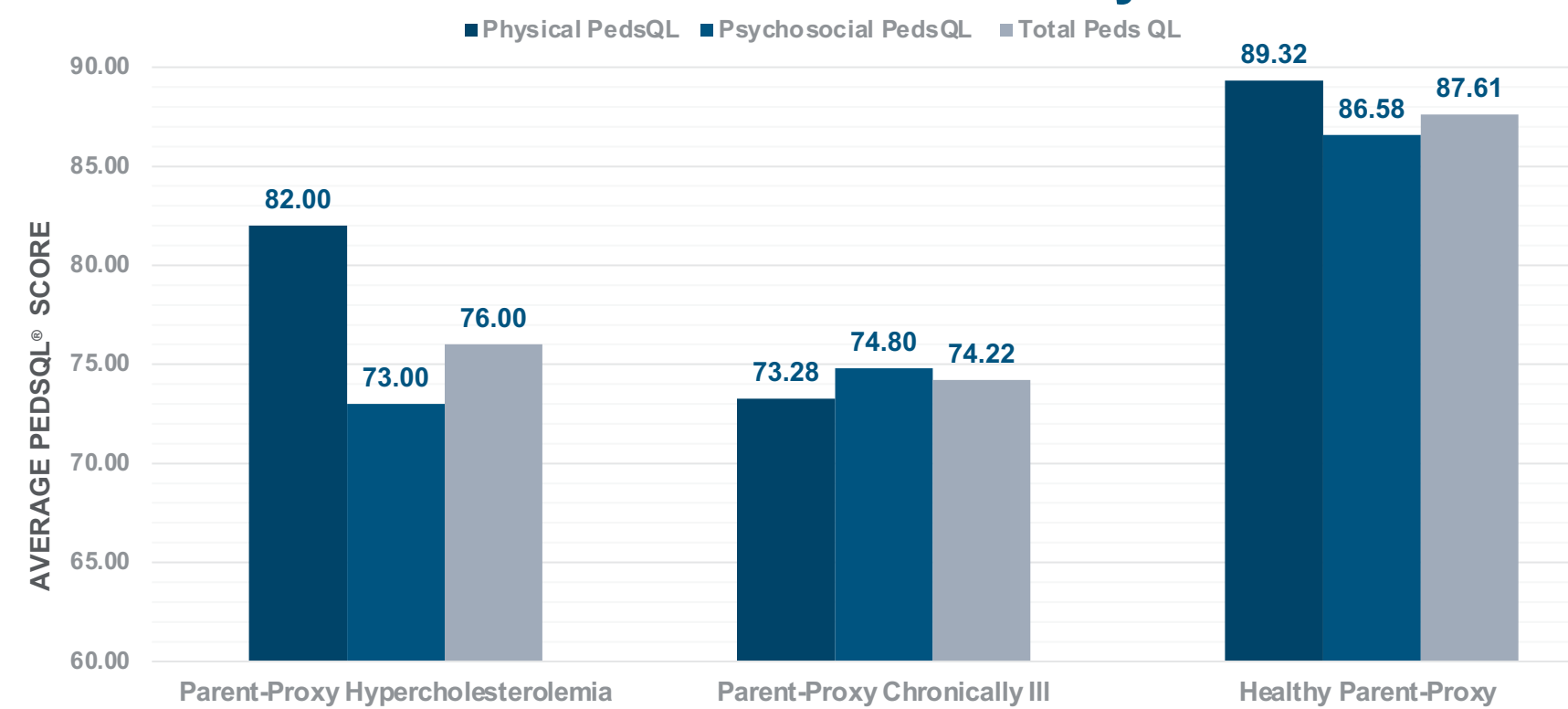
The PedsQL<sup>®</sup> 4.0 Generic Core Scales are multidimensional child self-report and parent proxy-report scales that have been amply validated<sup>1</sup>. The PedsQL<sup>®</sup> 4.0 Generic Core Scales consist of 23 items applicable for healthy school and community populations, as well as pediatric populations with acute and chronic health conditions. These scales measure physical, emotional, social, and school functioning. The REACH (Risk Evaluation to Assess Cardiovascular Health) clinic was created to better understand the cause(s) of premature CVD. Youth with hypercholesterolemia are asked to complete the PedsQL<sup>®</sup>. Completed child self-reported and parent-proxy questionnaires were compared to published data of healthy peers and those with chronic illness<sup>1</sup>.

## Results

### PedsQL<sup>®</sup> Child Report



### PedsQL<sup>®</sup> Parent-Proxy



### Percentage Difference in Average Scores

	Child Hypercholesterolemia vs Chronically Ill Child	Child Hypercholesterolemia vs Healthy Child	Parent-Proxy Hypercholesterolemia vs Parent-Proxy Chronically Ill	Parent-Proxy Hypercholesterolemia vs Healthy Parent-Proxy
Physical PedsQL <sup>®</sup>	7.3	-1.7	11.9	-8.2
Psychosocial PedsQL <sup>®</sup>	-2.7	-9.0	-2.4	-15.7
Total PedsQL <sup>®</sup>	0.4	-6.6	2.4	-13.3

### Mean Anthropometric and Laboratory Measurements

BMI Percentile	77%
Total Cholesterol	220 md/dL
HDL-C	47 mg/dL
LDL-C	146 mg/dL
Lipoprotein(a)	85 nmol/L

## Results

243 parents and 231 patients, completed the PedsQL<sup>®</sup>. The average age of children was 11.3 years (77.8% White/Caucasian, 12.8% Black/African American, 3.7% Asian, 3.3% Other, 2.5% not reported). 50.2% were female; 50.8% male. Children with hypercholesterolemia demonstrated a significant difference in their perceived HRQoL compared healthy peers; and similar to children with chronic illness. When comparing the average child report PedsQL<sup>®</sup> scores of children with hypocholesterolemia to the chronically ill population, the results demonstrate the populations are similar in the Total PedsQL<sup>®</sup> score and 2.7% less in the Psychosocial PedsQL<sup>®</sup> population. Additionally, the average child report PedsQL<sup>®</sup> in children with hypercholesterolemia is less than the Healthy Child report in the Total, Physical, and Psychosocial PedsQL<sup>®</sup> scores. When assessing the average parent-proxy scores in those with a child with hypercholesterolemia, the scores were similar to that of the chronically ill population in Total and Psychological PedsQL<sup>®</sup> scores, and higher in the Physical PedsQL<sup>®</sup> score. The average parent-proxy scores in children with hypercholesterolemia were lower in Total, Psychosocial, and Physical PedsQL<sup>®</sup> scores when compared to a healthy population.

## Discussion

Our preliminary data demonstrate that children with hypercholesterolemia have a lower HRQoL than their healthy counterparts, and one similar to that of a chronically ill population. Such findings would have implications on the care of this unique population. Impaired physical, psychosocial, emotional, social, and school functioning need further study and if confirmed, strategies to address these important domains.

## References

- Virani SS, Alonso A, Benjamin EJ, Bittencourt MS, Callaway CW, Carson AP, Chamberlain AM, Chang AR, Cheng S, Delling FN, et al.; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics-2020 update: a report from the American Heart Association. *Circulation*. 2020 141:e139–e596.
- Schwimmer JB, Burwinkle TM, Varni JW. Health-Related Quality of Life of Severely Obese Children and Adolescents. *JAMA*. 2003;289(14):1813–1819. doi:10.1001/jama.289.14.1813