

Title: Age-specific and gender-specific reference intervals for non-fasting lipids in French-Canadian children

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Background: Dyslipidemias, including familial hypercholesterolemia (FH), are a risk factor for cardiovascular diseases (CVD). FH is a genetic disorder that affects cholesterol metabolism, leading to high levels of low-density lipoprotein cholesterol (LDL-C) and early cardiovascular disorders. The most common form of FH is heterozygous familial hypercholesterolemia (HeFH). This condition has a higher prevalence in French-Canadian population due to a founder effect. Even if the major complications of CDV occur in adulthood, atherosclerosis can begin in childhood. The latter is a critical period to screen for dyslipidemia. To do that, it is essential to have reference values adapted to the target population.

Aim: The purpose of this study is to establish reference values for lipids in non-fasting state in healthy French-Canadian children, specific to gender and age, and considering the stage of puberty.

Methods: Non-fasting blood samples were obtained from 386 children included in the GESTE cohort in Sherbrooke, Quebec. Lipid profiles, containing total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG), non-HDL cholesterol (non-HDL-C) and apolipoprotein B (ApoB), were measured. Age- and gender-specific reference values and percentile curves were estimated with the *GAMLSS* method in the software *RStudio*.

Results: Reference curves and 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles values were determined thanks to 356 samples of healthy non-obese children (n=204 aged 6-7 years and n=152 aged 9-13 years). 82 children were present at both follow-ups. As expected, significant difference

was obtained for HDL-C ($p < 0,05$) between girls and boys. Higher levels of TC ($p < 0,0001$), HDL-C ($p < 0,0001$) and TG ($p < 0.05$) were observed in boys, in prepubertal stage as compared to puberty.

Conclusions: Here, we reported for the first-time reference values for the French-Canadian children that could lead to a better diagnosis of dyslipidemia, and a better prevention against CVD.