

## **Insulin resistance, inflammation and metabolic syndrome in normal weight and overweight/ obese primary school children in Kuala Lumpur**

### **ABSTRACT**

**Introduction:** Studies on metabolic syndrome (MetS) of children are important in view of rising prevalence of childhood obesity worldwide. This study compares the risks of insulin resistance, inflammation and metabolic syndrome between overweight/obese (OW/OB) and normal weight (NW) children in Kuala Lumpur. **Methods:** A cross-sectional study was conducted in 12 primary schools selected using multi-stage stratified random sampling. Height and weight were taken of a total of 1971 children aged 10-11 years. Based on BMI-for-age, 235 OW/OB children matched for age, sex and ethnicity with 226 NW children were selected for the study. Overnight fasting blood samples were collected to determine insulin, high-sensitivity C-reactive protein (hsCRP), glucose and lipid profiles. Logistic regression analysis was conducted to estimate associations between weight status and metabolic risk factors. **Results:** Prevalence of MetS among OW/OB children was 3.8% compared to 0% in the NW. Prevalence of insulin resistance among OW/OB was 45.5% compared to 18.6% among NW children. High risk of inflammation was found in 28.1% of the OW/OB children compared to 12.4% in the NW. The odds ratio of having insulin resistance, inflammation and metabolic risk factors among OW/OB were 3.66 (95% CI: 2.40-5.59), 2.76 (95% CI: 1.69-4.50), 4.93 (95% CI: 3.42-7.10), respectively compared to the NW. **Conclusion:** The OW/OB children in this study showed higher risks of developing insulin resistance, inflammation and MetS compared to the NW counterparts. Further studies are suggested to better understand the relationships between insulin resistance, inflammation and MetS in children.

**Keyword:** Children; Insulin resistance; hsCRP; Metabolic syndrome; Obesity