Adipose Tissue, Appetite, and Obesity

INTEGRATED PHYSIOLOGY OF OBESITY AND METABOLIC DISEASE

Adiposity Profiles and Insulin Resistance in Urban and Rural Indonesian Young Adults and Its Association With Gut Inflammation Marker Lipocalin-2

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Obesity and type 2 diabetes (T2D) prevalence are increasing worldwide, including in the young adult population. In general, the prevalence is higher in urban than in rural. Relatively higher calories and fat intake with more sedentary lifestyle in urban population can cause a surplus in energy homeostasis that will eventually be stored as body fat. This change might influence the gut environment, which based on recent studies, could interact with the immune system leading to inflammation and contribute to the pathogenesis of obesity and T2D. Our study aimed to assess the differences in adiposity profiles and insulin resistance between urban and rural Indonesian young adults and its association with serum lipocalin-2, a marker for systemic and gut inflammation. In this study, 242 individuals from urban and 233 subjects originating from rural areas were recruited. Anthropometry measurements, including body height, weight, and waist circumference (WC), were conducted. Body mass index (BMI) was calculated from the body height and weight. Fasting blood glucose and fasting insulin were also measured, from which a homeostasis model assessment of insulin resistance (HOMA-IR) was calculated as a surrogate marker for whole body insulin resistance. Meanwhile, serum lipocalin-2 was measured by ELISA. Urban subjects had higher BMI and WC compared to rural counterparts [mean diff. (95% CI): 1.71 (0.99;2.43) kg/m^2, P<0.001 and 4.4 (2.6;6.2) cm, P<0.001), respectively]. Additionally, HOMA-IR was also higher in urban than rural subjects [0.12 (0.008;0.24), P=0.04, after adjusted for age, sex, and BMI]. Lower serum lipocalin-2 level was observed in urban compared to rural individuals [-74.09 (-96.95-51.23) ng/mL, P<0.001]. However, no significant correlations were observed between serum lipocalin-2 with BMI, WC, or HOMA-IR (r=-0.06, P=0.19; r=-0.08, P=0.10; r=-0.002, P=0.96, respectively). The findings of worse adiposity profiles and insulin resistance in urban than rural subjects were consistent with the results observed in previous studies. Higher intestinal inflammation in rural subjects, as shown by higher serum lipocalin-2, could be caused by presumably a higher rate of chronic and recurrent intestinal infection usually found in people living in rural areas. These could indirectly affect the nutrient uptake and eventually contribute to the lower adiposity and insulin resistance in the rural population, apart from the relatively lower calories and fat intake in their diet. Therefore, further study that incorporate dietary intake analysis and assay for intestinal infection are warranted to confirm this hypothesis.

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Anti-Obesity Medication Prescriptions by Race/ Ethnicity and Use of an Interpreter in a Pediatric Weight Management Clinic

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Background: Healthcare disparities associated with race/ethnicity and low English proficiency are well established in the US. We sought to determine if there are race/ethnic differences in anti-obesity medication prescription rates among youth with severe obesity (body mass index (BMI) ≥1.2 times the 95th percentile and/or BMI ≥35 kg/m^2) treated in a pediatric weight management clinic (PWMC). We secondarily sought to determine if, among youth from families in whom English was not the primary language, there are differences in prescription rates between those using an interpreter during visits and those not.

Methods: We reviewed electronic health records of youth 2–18 years old with severe obesity seen at a PWMC from 2012–2020. Race/ethnicity was self-reported and categorized as Non-Hispanic White (NHW), Hispanic/ Latino, Non-Hispanic Black (NHB), Asian, American Indian/Alaska Native and Mixed. Anti-obesity medicines included stimulants (i.e. phentermine, lisdexamfetamine), topiramate, naltrexone (± bupropion), and glucagon-like peptide-1 agonists. We used Poisson regression models with robust standard errors to compare incidence rates of medicine prescription (incidence rate ratio (IRR), accounting for visit frequency) within the first 1 and 3 years of being followed in a PWMC. We controlled for age, baseline degree of obesity (percent of the 95th BMI percentile (%BMIp95)), number of obesity-related comorbidities (i.e. insulin resistance, hypertension, fatty liver), area-level socioeconomic status (median household income based on ZIP code), and interpreter use. We repeated similar analyses among families in whom English was not the primary language, comparing those using an interpreter with those not.

Results: From 2012–2020, 1258 youth (mean age 11.8 years; %BMIp95 143%) were seen in our PWMC (57% NHW, 19% Hispanic/Latino, 16% NHB) of which 26% were prescribed anti-obesity medication. 86% primarily spoke English and 5.2% used an interpreter. There