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Abstracts

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PO1724

MATERNAL BMI IN MID-PREGNANCY AND INSULIN LEVELS IN OFFSPRING AT AGE 4 Y.

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Background and objectives: Evidence suggests that maternal prepregnancy body mass index (BMI) and gestational weight gain may be associated with cardiometabolic risk factors in offspring later in life. However, little is known about the effects of maternal BMI during pregnancy on metabolic markers in early childhood. We examined the association of maternal overweight in mid-pregnancy with markers of lipid and glucose metabolism in offspring at age 4y.

Methods: Study subjects were the offspring of women who participated in POSGRAD, a double-blind, randomized, and controlled trial in Mexico in which women were supplemented with 400 mg/d DHA or placebo from mid-pregnancy to parturition. We measured maternal weight and height at baseline (18-22 wk gestation), and classified women as overweight if their BMI > 26.0 kg/m2 using a Latin American reference. We obtained non-fasting blood samples from 524 (53.9% of the birth cohort) offspring at age 4 y and analyzed these for glucose, insulin, and lipids.

Results: Prevalence of women overweight at baseline was 46.8%. In offspring, mean+ SD of the biomarkers were: total cholesterol (157.9 +25.3mg/dl), LDL-C (83.0 +21.9mg/dl), HDL-C (51.7 +10.1mg/dl), Apo B (76.9 +15.2mg/dl), triglycerides (122.1 +67.4mg/dl), glucose (93.7 +10.9mg/dl), insulin (9.7 +11.2ìU/ml), and the glucose/insulin ratio (14.8 +14.2). Offspring of women who were overweight in mid-pregnancy had higher insulin levels (2.15 ìU/ml; 95%CI 0.29, 4.01) and reduced glucose/insulin ratio (-2.75; 95% CI: -5.19, -0.31) compared to those born to women who were not overweight, adjusted for prenatal intervention group, fasting hours and offspring BMI. There were no significant differences in lipid and glucose levels.

Conclusions: Maternal overweight during mid-pregnancy is associated with higher insulin levels and hence, reduced glucose/insulin ratio in offspring at age 4.

Key words: pregnancy, overweight, preschool, glucose, insulin, lipid. Funded by NIH (HD043099).

PO1725

INFLUENCE OF OVERALL MEAL SENSORY CHARACTERISTICS ON SCHOOL LUNCH ACCEPTANCE

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Background and objectives: Food intake at school is an important source to nutritional daily intake. School meals sensory characteristics determine meals acceptance, influencing children food consumption. The present study aims to evaluate children's satisfaction with meal sensory characteristics and its influence on school lunch acceptance.

Methods: A stratified clustered sample of 463 fourth-grade children, aged 9 to 10 years old, chosen from 20 public primary schools in the city of Porto were evaluated. Satisfaction with school lunch in relation to overall sensory characteristics: taste; smell; appearance and temperature, was determined using a questionnaire with a 4-point scale, ranging from "dislike" to "like a lot". School lunch acceptance was assessed by plate waste measurement. Weighing of individual meals and leftovers was performed and plate waste (%) was determined based on individual food servings.

Results: Sensory characteristics of soup were less satisfying than the ones of both main dish and dessert. Boys were significantly more dissatisfied with taste, appearance and smell of the main dish than girls. Children receiving free school lunch were more satisfied with sensory characteristics of all meal components than children with partial or no financial support for school lunch. Average plate waste of soup and main dish was 21.6% and 27.5%, respectively. Assuming that served portions are balanced with children's nutritional needs, these were not being achieved. Rejection of school lunch, expressed by higher plate waste values, was negatively correlated with satisfaction towards taste, smell and appearance of soup (r=-0.223; r=-0.197; r=-0.194) and main dish (r=-0.168; r=-0.126; r=-0.110, all significant at a 99% confidence level).

Conclusions: Children dissatisfaction with school meal overall sensory characteristics was associated with lower acceptance of school lunch, pointing to the need of improving taste and appearance of meals.

Key words: children satisfaction; meal acceptance; plate waste; school lunch.

PO2637

OVERALL PLATE WASTE DETERMINATIONS AT PRIMARY SCHOOLS' CANTEENS: A COMPARISON OF TWO METHODS

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Background and objectives: Schools have been concerned about nutritional, economic, environmental and social impact of plate waste. Physical measurements have been used to evaluate plate waste at schools, however the logistic disadvantages of this method leads to indirect alternatives such as the visual method. The present study aims to evaluate accuracy of visual estimation in comparison with weighing on food waste determination considering meals served at school canteens.

Methods: Plate waste at school lunch was collected for 484 individual servings distributed by 10 menus (mixed and non-mixed), using two different methodologies: weighing and visual estimation. Weighing of individual meals and leftovers was performed and plate waste was calculated by the ratio of food discarded to food served. At the same time, a six-point visual estimation scale developed by Comstock (1981) was used to determine plate waste. Scores on the Comstock scale were converted into weights of plate waste for all servings evaluated based on initial weights. Pearson correlations were computed between the plate weighing and visual determinations of meal waste for total food and for each menu.

Results: Mean plate waste was 50.0 g for weighing method and 59.2 g for visual estimation, and global correlation between them showed a strong association ($r=0.86$, $p<0.01$). Furthermore, when comparing those methodologies with different menus, correlation values ranged from 0.54 to 0.95, all significant at a 99% confidence level, being the mixed meals those with higher values. This indicates that visual estimation could be misleading for non-mixed meals since weaker associations between the two methods were found.

Conclusions: Weighing of food waste seems to be a more sensitive instrument for plate waste determinations. However, lower cost and greater convenience of visual estimation is a determinant for using this method, when plate waste evaluation of a greater number of meals is required.

Key words: Plate waste, school lunch, visual estimation, weighing

PO2638

PREDICTING POTENTIAL BENEFIT FROM IRON INTERVENTIONS: RESULTS OF A RANDOMIZED CONTROLLED TRIAL OF DOUBLE-FORTIFIED SALT IN FEMALE INDIAN TEA PLUCKERS

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Background and objectives: Iron deficiency (ID) primarily affects infants, children, and women of reproductive age. ID is the most common micronutrient deficiency in the world, and is especially prevalent in India. A randomized, double-blinded, placebo controlled trial was conducted in female tea pluckers on a tea estate in West Bengal, India to test the efficacy of double-fortified salt (DFS) as a vehicle of iron delivery. The present analyses examine predictors of response to the intervention.

Methods: Mixed models were used to assess the effect of DFS on the change in iron indicators (hemoglobin, serum ferritin, soluble transferrin receptor, total body iron) and other micronutrient indicators (urinary iodine, serum folate, serum vitamin B12). Predictors of ID resolution were identified using logistic regression models.

Results: Changes in ferritin and body iron were significantly ($p<0.05$) higher, whereas changes in transferrin receptor were significantly lower in the DFS group versus controls. Hemoglobin was only marginally increased by DFS, and DFS did not affect urinary iodine, serum folate, or serum vitamin B12. Resolution of ID and/or moderate ID was predicted by age, height, urinary iodine, and vitamin B12 status, in addition to baseline iron status (hemoglobin, transferrin receptor, and body iron) and treatment group.

Conclusions: DFS improves iron status in female Indian tea pluckers and does not affect the status of other micronutrients, including iodine, folate, and vitamin B12. The potential to benefit from an iron intervention with DFS (i.e. ID resolution and prevention) can be predicted by baseline iron status, as well as age and height. These results may help identify populations likely to respond to future efficacy and effectiveness trials of dietary iron interventions.

Key words: Iron deficiency, dietary intervention, India