P1.07: Folic acid fortification models in Germany

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According to the German Nutrition Survey 1998 (GeNuS), the intake of folate is rather low. Since periconceptional folic acid supplementation may prevent neural tube defects, but less than 10% of pregnant women follow this recommendation, a folic acid fortification of flour is currently considered. The impact of different fortification measures on folate intake of adults is analysed.
Dietary data of the 4030 GeNuS participants, ages 18-79 years, were analysed allowing for different flour fortification levels (100, 150, and 200 µg folic acid per 100 g flour) as well as two possible levels of folic acid fortification of milk products, soft drinks and cereals. The folic acid contents and sale proportions of these foods were determined in a market study. The obtained folic acid contents of these foods and virtual flour fortifications were implemented in the German Food Code and Nutrient Data Base and connected with food intake data of GeNuS.
A low fortification level of the three food groups and an additional flour fortification with 100 µg folic acid reduces the population part with an intake below the reference value of 400 µg /d folate equivalents from 72-92% to about 5-27% (depending on age and gender). After doubling the flour fortification to 200 µg folic acid, less than 0,5% of the population exceeds the tolerable upper intake level of 1 mg/day folic acid. A high fortification level of the three food groups, however, increases this proportion to 3-5%.
A folic acid fortification of flour will improve the population's folate intake, without increasing the risk of exceeding the tolerable upper intake level of folic acid for most persons. This measure gives better controllable folic acid intake levels than the uncoordinated fortification of processed foods.

P1.08: Prevalence of Type 2 Diabetes Mellitus and Impaired Glucose Regulation in Caucasian Children and Adolescents with Obesity living in Germany

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Recent studies reported an increased prevalence of type 2 diabetes mellitus in obese children and adolescents, especially in specific ethnic subgroups. The aim of this study was to determine the prevalence of type 2 diabetes mellitus and impaired glucose regulation in a large group of Caucasian children and adolescents with obesity.
Patients and Methods: 520 subjects (237 boys, 283 girls) (mean age: 14.0?2.0 y) with a BMI>97.percentile, BMI-SDS: 2.7?0.5, who were consecutively admitted to an inpatient obesity unit participated in the study. A two-hour oGTT was performed and capillary blood glucose concentrations were measured. Patients were categorized into normal glucose regulation, impaired fasting glucose (IFG), impaired glucose tolerance (IGT), and diabetes. In addition, fasting venous blood was taken to determine circulating insulin, C-peptide and lipids. Insulin resistance was estimated by homeostatic model assessment.
Type 2 diabetes was present in 1.5% (n=8) of the patients, two patients were admitted with already diagnosed type 2 diabetes and 6 patients were identified with yet unknown diabetes. IFG was detected in 3.7% (n=19) and IGT in 2.1% (n=11). All together, in 6.7% (n=35) (95% CI: 4.7-9.2%) of the patients impaired glucose regulation (IFG, IGT) or diabetes was identified. These patients had a higher BMI-SDS, higher levels of fasting insulin and C-peptide and a higher insulin resistance index than the patients with normal glucose regulation.
This is the first report on the prevalence of type 2 diabetes in a large cohort of Caucasian children and adolescents with obesity living in Europe. Impaired glucose regulation and type 2 diabetes was present in a substantial proportion of the patients studied. Screening for diabetes in severely obese children and adolescents (BMI-SDS>2.5) is therefore recommended.