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The use of combined different approaches in assessing the conditions and making prediction models in severely obese BMI ≥ 35 kg m-2 (FFQ, DII, anthropometric, biochemical a nd DNA damage parameters)

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The data on genome stability in the obese/severely obese are scarce, although obesity and its comorbidities are linked with higher cancer risk. This is the first study where parameters from different approaches without correlation were used for the severe obese conditions estimation (n=53). Results were analysed for: 1) daily intake of food groups, nutrient intake and dietary inflammatory index (DII), 2) anthropometric, 3) biochemical and 4) parameters of three DNA damage assessment assays (Fpg-modified-, alkaline comet- and micronucleus (MN)cytome- assay). DNA damage, BMI and basal metabolic rate (BMR) correlated with cell proliferation changes; DII with oxidative DNA damage; and groups with higher DNA damage than expected (tail intensity >9% and >12.4%, MN >13), consumed daily, weekly, and monthly more often some type of food groups. Results demonstrated that some type of damage can start earlier in the obese individual lifespan, such as nuclear buds and nucleoplasmic bridges, then comes decrease in cell proliferation and then elevated MN frequencies; and that obesity can have an impact on changes in blood cell counts and division. Assays were able to demonstrate groups of sensitive individuals that should be further monitored for genomic instability and cancer prevention. DNA damage, biochemical and anthropometric parameters should be combined for further obese monitoring, better insight into biological changes in the severely obese, and a more individual approach in therapy and treatment. Patients should also get proper education about the foodstuff with pro- and anti-inflammatory effects.

Keywords:
DII; FFQ Norfolk food questionnaire; alkaline comet assay; micronucleus cytome assay; obesit.