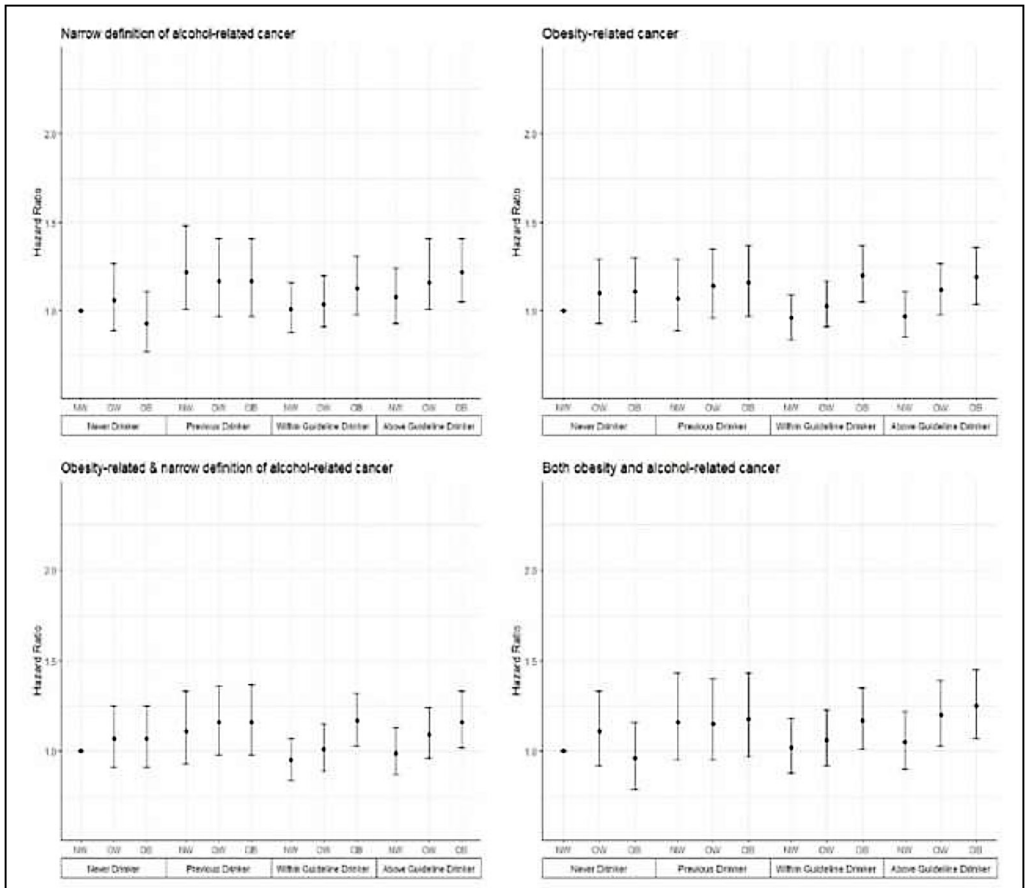

Figure 3. Joint associations between alcohol consumption and body mass index with cancer incidence (n = 399,575)

Cox proportional hazard model. Never drinker I Normal weight is the referent group.

Model is adjusted for baseline age, sex, smoking status, dietary pattern score (determined by higher consumption of fruit, vegetables, and fish and lower consumption of processed meats and red meats (Rutten-Jacobs et al., 2018)), sleep duration (hrs/night), education, Townsend Deprivation Index, physical activity ((MET)-hour/week) and chronic diseases (major cardiovascular disease (ICD-10 codes I00 to I99), Type 2 diabetes (ICD-10 codes E11.0 to E11.9 and E12) and dyslipidaemia (ICD-10 codes E78.0-E78.6) diagnosed by a doctor and hospital admission records and self-reported cardiovascular diseases and Type 2 diabetes). Body mass index = Weight (kg)/height (m^2). WHO classification: normal weight (18.5-24.9 kg/m^2), overweight and obese (≥ 25.0 kg/m^2). NW: normal weight; OW: overweight; OB: obese. Alcohol consumption categories are based on the average weekly intake of standard drinks relative to UK guidelines. In the UK, one standard drink equals to 8 g of pure alcohol. Within guidelines: ≤ 14 units/week; above guidelines:>14 units/week.

Alcohol-related cancer according to the narrow definition included oral cavity, throat, larynx, esophagus, liver, colorectal, stomach, female breast (IARC, 2014).

Obesity related cancer included meningioma, multiple myeloma, adenocarcinoma of the esophagus, and cancers of the thyroid, postmenopausal breast, gallbladder, stomach, liver, pancreas, kidney, ovaries, uterus, colon and rectum (colorectal) (Lauby-Secretan et al., 2016).

Fig. 3.

AD06.05

Mediterranean diet is inversely associated to fatty liver index in patients with obesity and low HDL-cholesterol

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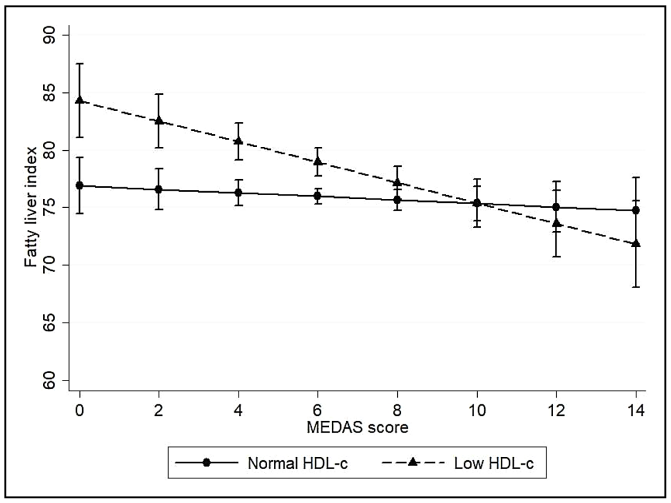
Introduction: Non-alcoholic fatty liver disease (NAFLD) is one of the most common causes of chronic liver disease. Obesity is a major risk factor for NAFLD. Excess weight and excessive accumulation of visceral adipose tissue alter lipid metabolism, promoting triglyceride accumulation in the liver. The diagnosis of NAFLD is made through imaging procedures or liver histology. However, the fatty liver index (FLI) is simple, cheap, non-invasive, and cross-validated algorithm, based on BMI, waist circumference, triglycerides, and γGT, that has been shown to have excellent discriminative ability to identify subjects at higher risk of NAFLD. The Mediterranean diet, rich in polyunsaturated fats, polyphenols, vitamins and carotenoids, has been found to improve lipid metabolism and could mitigate the obesity negative effects and promote liver health, but evidence is still limited. The aim of this study was to investigate the association between Mediterranean diet and FLI in a large sample of patients with obesity.

Methods: We conducted a cross-sectional study on 3246 patients with obesity (63% women, 48 ± 13 yrs, 34.3 ± 4.0 kg/m^2) recruited at the International Center for the Assessment of Nutritional Status (ICANS), University of Milan. Exclusion criteria were age<18yrs, diabetes,

cardiovascular disease, hepatitis C virus infection, hepatitis B virus infection, and alcohol intake > 30 g/day in men and > 20 g/day in women. Anthropometry, fat mass percentage by body skinfolds (FM), visceral (VAT) and subcutaneous (SAT) abdominal fat by ultrasound, laboratory data, and clinical and lifestyle data were evaluated. The 14-item MEDiterranean Diet Adherence Screener (MEDAS, score: 0-14 points) was used to assess Mediterranean diet. FLI was calculated according to Bedogni et al. (BMC Gastroenterol. 2006, 6, 33). Linear regression adjusted for sex, age, FM, VAT:SAT ratio, total cholesterol, HDL, glucose, marital status, education, familiarity for diabetes and CVD, smoking and physical activity was performed to evaluate the association between MEDAS score and FLI.

Results: In our sample, 80% of patients were at high risk for NAFLD (FLI≥60). Interestingly, we found a significant interaction between HDL and MEDAS score in predicting FLI (p=0.015). Therefore, we stratified the analysis for HDL level. Patients with low HDL (<50 mg/dl in women, <40 mg/dl in men, n=920) had higher FLI values than patients with normal HDL (83 ± 15 vs. 74 ± 19, p<0.001). A 1-point increment in the MEDAS score was associated with a 0.80 reduction of FLI (β=-0.80, 95% CI -1.27 to -0.33, p=0.001) in patients with low HDL, whereas no association was found in patients with normal HDL (β=-0.17, 95% CI -0.55 to 0.20, P=0.373) (Figure 1).

Conclusion: Mediterranean diet is inversely associated with FLI in patients with obesity and low HDL-cholesterol. At the highest Mediterranean diet adherence scores, patients with low HDL had a FLI value similar to patients with a better lipid profile. Mediterranean diet is not associated with a further decrement of FLI in patients with obesity and normal HDL. Prospective studies are required to confirm these results.



Association between MEDAS score and fatty liver index in patients with low and normal HDL-cholesterol.

Fig. 1.

AD06.06

Development of a stand-alone diet quality index for elementary school-aged children

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Introduction: Good diet quality from early life onwards is of importance for prevention of obesity and other lifestyle-related conditions. Thus, it is essential to identify children with a poor diet quality to target nutrition counselling for those children most in need to improve their diet. To carry out this task, practical and valid tools are needed. The aim of this study was to develop a stand-alone tool, index for evaluation of dietary quality in elementary school-aged children.

Methods: Healthy elementary school-aged children were recruited in Southwest Finland and Eastern Finland. Children filled in a five-day food diary and a food frequency questionnaire (FFQ) with 29 multiple-item questions on the consumption of foods, portion sizes and eating frequency with the help of their parents. Food diaries were checked thoroughly by researchers in a study visit and nutrient intakes were calculated with a nutrient analysis software. Correlations, logistic regression modelling and receiver-operating characteristics curve analysis were used to identify FFQ questions that best depicts a health-promoting diet as defined in Finnish dietary recommendations. Children's weights and heights were measured in the study visit, and their overweight/obesity status was defined using national growth charts.

Results: A total of 266 children (48% girls) with a mean age of 9.7 ± 1.7 years were enrolled in the study. Of the children, 79% had normal weight and 21% had overweight/obesity. Fifteen questions best reflecting the children's diet quality were identified from the FFQ. The questions were scored and constructed into a stand-alone index (Elementary School-aged Children's Index of Diet Quality, ES-CIDQ) as a continuous score with a range of 0–16.5 points and a two-category score: good and poor diet quality. The cut-off score for a good diet quality was 6 points with a sensitivity of 0.60 and a specificity of 0.78. Children with a good diet quality (50% of the children) had higher intakes of protein, dietary fibre and several vitamins and minerals, such as vitamins C and D, iron, calcium and magnesium, as well as lower intakes of sucrose, total fat, saturated fatty acids and cholesterol compared to children with a poor diet quality. There were no statistically significant differences in the ES-CIDQ scores or categories between children with normal weight and overweight/obesity.

Conclusion: The developed stand-alone diet quality index, ES-CIDQ, represented diet quality as defined in the national dietary recommendations. The index categories reflected the dietary intakes of nutrients, i.e. children with a good diet quality had more favourable nutrient intakes compared to children with a poor quality diet. The ES-CIDQ is especially suitable for identifying those elementary school-aged children most in need of nutrition counselling in clinical practice, but it can also be utilised in school health care and nutrition research.