

participants at baseline was assessed through three validated European questionnaires: EuroQol EQ-5D-3L, EORTC QLQ-C30 and EORTC QLQ-BR23. Statistical analyses were performed using a bivariate analysis (Pearson correlation) and univariate ANOVA.

Result: Significant correlations were observed between adherence to MedD and HRQOL measures: higher physical function (PF2, $r = 0.183$, $p = 0.007$), lower pain symptomatic scale (PA, $r = -0.16$; $p = 0.02$) and higher EQ5D3L score ($r = 0.149$, $p = 0.03$), which together indicate an improvement in the general state of health. Patients with high adherence to MedD (score >7) showed a significant improvement in PF2 ($p < 0.05$) and a reduction in symptomatic PA scale ($p < 0.05$).

Conclusion: A healthy diet and high adherence to the MedD in breast cancer survivors was related to better quality of life.

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DIFFERENT EFFECT OF A PERIOD OF CALORIC RESTRICTION FOLLOWING TREATMENT WITH A NORMAL LIPID OR HYPERLIPIDIC DIET IN THE EXPERIMENTAL ANIMAL MODEL: FOCUS ON MITOCHONDRIAL DYNAMICS PROTEINS IN THE LIVER

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Introduction: An excess of the daily caloric intake facilitates accumulations of fat that leads to the development of obesity. Caloric restriction is the strategy used to restore body composition to optimal levels. Likewise, a period of hypo-nutrition following a balanced diet promotes nutritional deficiencies. Both conditions above described induce changes in the cellular metabolism to which the mitochondria actively participate. These organelles are very dynamic and undergo against continuous fusion and fission processes in correlation with their functionality.

Objectives: In this study were monitored the effects of a caloric restriction period, following treatments with normal or hyperlipidic diet, on mitochondrial dynamics in rat liver. Therefore, 4 experimental groups were constituted: N (control diet); HFD high fat diet); Nr (N + restriction); HFDr (HFD + restriction). Attention was focused on the main mitochondrial dynamics' proteins, monitored by western blot: MFN2 (Mitofusin 2) and OPA1 (Optic atrophy type 1) as fusion markers; DRP1 (Dynamin-related protein 1) as a fission marker.

Results: The data show reduction of MFN2 and increase of DRP1 in the Nr group compared to N with variation of the high and low isoforms of OPA1, suggesting increase of the mitochondrial fission. In contrast, both MFN2 and DRP1 increase in the HFDr group compared to HFD. In this case, the data seem to suggest a beneficial effect of the restriction with a probable induction of the mitochondrial biogenesis. This mechanism, in fact, could make more the utilization of lipids mobilized by deposits in consequence to caloric restriction.

Conclusions: In conclusion, we can assume that a reduced caloric intake generates reorganization of the mitochondrial liver network by acting differently on the basis of the nutritional conditions prior to the hypocaloric regimen.

A40

FOOD WASTE AND CHILDREN'S PREFERENCES TOWARDS VEGETABLES IN PRIMARY SCHOOLS: TWO ITALIAN CASE STUDIES

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Introduction: The food waste analysis in the school canteen context is particularly relevant due to its educational and environmental relevance, the huge number of users and the consequent food amount handled every day. The present study, carried out within the EU H2020-funded Strength2food project, seeks to compare two case studies (Parma vs Lucca), characterised by different primary school food procurement models (local-organic vs organic) in relation to (i) the uneaten edible food served in primary school canteens and (ii) children's refusal towards the vegetable side dish.

Methods: The investigations were performed in 4 primary schools, 2 per case study, during 5 consecutive days in winter and spring, for a total of 40 days of data collection. The aggregate selective plate waste method was applied. Excluding special diets, the uneaten served food was scraped from children's plates according to 7 food categories (bread, starchy-based dish, protein based-dish, fruit, vegetables, dessert, other). Serving size of edible food was calculated as mean of the weight of 3 servings for each food. Finally, a questionnaire reporting a 5-point Likert scale was used to assess vegetable preferences.

Results: With the exception of bread ($p = 0.149$), with values ranged from 14.5% to 35.7%, the local-organic procurement model (Parma) has shown a significantly lower percentage of waste for most of the food categories compared to the organic model (Lucca), whose proportions ranged from 11.8% to 55.5%. The starchy-based dish, the protein-based dish and fruit gave higher wastes per child in Lucca, where a higher fraction of children (38%) compared to Parma (18%) did not appreciate at all the vegetables.

Conclusions: The obtained results suggest that a wider inclusion of products originating in the territory in the school food provision can contribute to a greater acceptability of the school menus and consequently to a lower food waste.

A41

EFFECTS OF A 3-MONTHS' DIETARY INTERVENTION WITH LACTO-OVO-VEGETARIAN DIET ON VITAMIN B12 LEVELS: RESULTS OF THE CARDIVEG STUDY

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Introduction: Previous studies have suggested that following a lacto-ovo-vegetarian diet (VD) may increase the risk of vitamin B12 deficiency. Our aim was to investigate whether VD followed for 3 months by omnivores could lead to decrease of circulating vitamin B12 levels. Methods: Fifty-four omnivores (43 F; 11 M) who performed a 3-month VD as the first intervention were analysed on the frame of the CARDIVEG study, a randomized, open, crossover dietary trial with 2 intervention periods.

Results: After 3 months, VD resulted in a significant reduction ($p < 0.001$) of 48.8% of the vitamin B12 intake, and a consequent significant reduction ($p = 0.005$) of 6.2% of the circulating levels of vitamin B12 (-24.5 pg/mL). Changes in vitamin B12 intake were significantly correlated with changes in circulating levels of vitamin B12 ($R = 0.61$, $p < 0.001$). Subgroup analyses showed that changes in circulating levels of vitamin B12 were more evident in older participants than younger ones, in overweight subjects compared to obese ones, in non-smokers compared to smokers and in subjects with hypercholesterolemia compared to those with normal cholesterol levels. Analyzing the risk of undergoing a reduction in circulating levels of vitamin B12, we carried out a logistic regression analysis that showed that a reduction of vitamin B12 intake equal to the first quartile of population distribution determined an increased risk of obtaining a reduction in circulating levels of vitamin B12 (OR 10.1; 95% CI 1.3–76.1).

Conclusions: Our results confirm that an intervention with VD is able to determine a reduction in circulating levels of vitamin B12.

A42

ASSOCIATION OF TRADITIONAL MEDITERRANEAN DIET AND NON-MEDITERRANEAN DIETARY SCORES WITH ALL-CAUSE AND CAUSE-SPECIFIC MORTALITY: PROSPECTIVE FINDINGS FROM THE MOLI-SANI STUDY

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Introduction: Health benefits associated with Mediterranean diet (MD) are well-established in non-Mediterranean population settings, while less is known on the potential health advantages associated with non-Mediterranean dietary (MD) patterns among Mediterranean populations.

Objectives: To establish the association between the traditional MD and non-MD patterns with mortality in a sample of the Italian general population, through a longitudinal analysis on 22,849 men and women from the Moli-sani study (2005–2010). A traditional MD was assessed by the Mediterranean diet score (MDS); the dietary approach to stop hypertension (DASH), the Palaeolithic diet and the Nordic diet were chosen as non-MD patterns. Hazard ratios (HR) with 95% confidence intervals (95%CI) were calculated by multivariable Cox regression and competing risk models.

Results: During follow-up (median 8.2 y), 1,237 subjects died. Higher MDS was associated with lower risk of all-cause (HR = 0.77; 95%CI 0.66–0.90, highest vs lowest quartile) and CVD (HR = 0.77; 0.59–1.00) death risk and a downward trend was found with cancer death (HR = 0.88; 0.68–1.12). Closer adherence to the DASH diet was associated with reduced all-cause but not with CVD mortality; risk reduction associated with the Palaeolithic diet was limited to non CVD-non cancer death, whereas the Nordic diet was not associated with any death risk modification.

Conclusions: A traditional MD lowers the risk of all-cause and CVD mortality in an adult general Mediterranean population; a DASH diet was associated with improved survival but not with a reduction of CVD mortality, while other non-MD diets were not associated with substantial health benefits.

A43

EFFECT OF A LOW GLYCEMIC INDEX MEDITERRANEAN DIET ON CARDIOVASCULAR RISK FACTORS IN WOMEN DIAGNOSED WITH BREAST CANCER: PRELIMINARY DATA FROM DEDiCa study

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Introduction: Life expectancy in women with breast cancer (BC) is 80% at 5 years. Age, medications, obesity, metabolic syndrome and diabetes increase cardiovascular risk. The Mediterranean diet (MeD) and low glycemic index (GI) diets, nevertheless, are protective. Therefore, we evaluated the effect of low-GI Mediterranean diet on cardiovascular risk factors in women treated for BC.

Methods: Two-hundred-fifty women (30–74 yr) with primary BC, participating in DEDiCa study (NCT02786875), were randomized into one of two treatments that included: recommendations on a traditional MeD with low GI carbohydrates (group A) or recommendations on a traditional MeD with whole grains (group B). At time 0 and 12 months, in a subgroup of 70 participants, we assessed dietary habits by food records and anthropometric and biochemical parameters by standard protocols.

Results: Only 24% of participants showed high adherence to the MeD at baseline. Low adherence was found for fish, legumes, fresh fruit and nuts intakes while adherence to vegetables intake was medium. The differences at 12 months showed in both groups a significant reduction ($p < 0.05$) for calories (approximately 300 Kcal), glycemic load (28% group A, 15% group B), saturated fats (10% in both groups) and an increase for monounsaturated fats (14% group A) and fiber/1000 Kcal (60% in both groups). Significant reductions ($p < 0.05$) for LDL cholesterol were observed in both groups (8%) while in group A we observed reductions for triglycerides (15%), PCR (12%), waist circumference (4 cm) and blood pressure (7%) and an increase for HDL cholesterol (16%).

Conclusions: The effect of a low GI MeD showed improvements in cardiovascular risk factors. This result is important in view of an increased cardiovascular risk in women with BC.

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OBSERVATIONAL STUDY ON ADOLESCENTS' LIFESTYLE OF PARMA: ADHERENCE TO MEDITERRANEAN DIET, PHYSICAL ACTIVITY AND TIME AND QUALITY OF SLEEP

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Introduction: Diet, physical activity and sleep are potential risk factors for overweight and obesity and could influence the proper growth during the developmental age. Therefore, monitoring adolescents' lifestyle is essential to better understand the association between body composition and possible risk behavioural variables and to design preventive programme for educating people towards healthy habits. Thus, the aim of the study was to investigate the relations between BMI and lifestyle factors in a sample of Italian adolescents.

Methods: A total of 409 students (46% females, mean age 12.5 ± 0.6 years) of two secondary schools in Parma (Italy) were enrolled in this observational study. The following data were collected for each participant through a web platform: anthropometric measures, adherence to the Mediterranean diet (KIDMED), physical activity level (PAQ-A), time and quality of sleep (PDSS). Moreover, weight status was evaluated using the IOTF gender- and age-related cut-offs for BMI.

Results: Up to 69% of participants was in a normal weight status and 14% overweight/obese. 12% showed a low adherence to the Mediterranean diet, while 28% had a high adherence. Only 1% reported a light physical activity level, 14% very intense and 85% intense or moderate. Participants' sleep duration (mean time 8h55min) was in line with the international sleep recommendation for adolescents and the 60% had a medium sleep quality.

Conclusions: Contrary to what was expected, no evidence of association was found between BMI and adherence to the Mediterranean diet, BMI and physical activity level and BMI and time/quality of sleep. However, some differences were found between genders, between normal weight status and overweight/obese subjects and between participants with low