Results: In all, 4·6 % of the children were obese (4·9 % for boys and 4·2 % for girls) and 14 % overweight (14·6 % for boys and 13·3 % for girls). Weight status re-evaluation demonstrated that overweight rate was decreased for the IG (−3·7 %), while it was increased (+3·5 %) for the CG. However this difference was not statistically significant. Food consumption frequency evaluation at baseline showed that the rate of unhealthy snacking was high in preschool children in northern Greece and it was higher for overweight and obese children. Overweight children consumed more often milk and yoghurt with sugar ($P = 0·044$), candies ($P = 0·00$) and sugar-sweetened drinks ($P = 0·003$) compared with normal weight children. After the nutrition intervention was completed, the re-evaluation showed that the frequency of consumption of unhealthy snacks such as potato chips ($P = 0·028$), packaged pastries and confectionery ($P = 0·025$) and bottled sweetened juices ($P = 0·00$) decreased in the IG and the decrease was higher for the overweight children, compared with the CG.

Conclusions: The study showed that a nutrition intervention program, even of a short duration, focusing on preschool children can affect food choices and decrease the frequency of unhealthy snack consumption.

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The effects of a community weight loss program for children and young people in nine locations across England

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Introduction: Childhood obesity continues to be a public health challenge. Although a range of intervention studies demonstrate it is possible to achieve short-term lifestyle changes and weight loss, many studies are one off trials. Given the scale of the problem, in addition to positive outcomes, replication of the positive outcomes in a range of groups and locations is necessary. The present study reports the outcomes of twenty-eight programmes delivered in nine locations across the England.

Method: Five hundred and eighty-seven participants, aged 4–17 years, were included from twenty-eight Carnegie Club programmes across nine different locations in England. The 12-week programme included parallel child and parent sessions for 3·5 h each week. All sessions consisted of lifestyle education and physical activity. All participants were assessed weekly for body mass, with pre- and post-measures collected for stature, BMI, BMI SD score, waist circumference, % body fat, blood pressure and global self-worth. All delivery staff undertook a comprehensive training programme and used age appropriate standardized materials for programme delivery.

Results: Over the 12-week period, significant ($P < 0·01$) reductions were observed in body mass, BMI, BMI SD score, waist circumference, % body fat and blood pressure. Global self-worth and height increased significantly ($P < 0·01$). No differences were observed in any variable between the programmes or locations.

Conclusions: The Carnegie clubs demonstrated significant short-term beneficial outcomes in anthropometry, adiposity, blood pressure and psychological well-being among overweight and obese children and adolescents. The lack of variation between outcomes demonstrates the reliability of this treatment model.

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2nd Workshop: Climate Change and Childhood Obesity – Keynote Speaker

Climate and fat metabolism

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All mammals are provided with two distinct adipose cells: white and brown adipocytes. White adipocytes store lipids to provide, in time of need, energy to the organism and release hormones and cytokines involved in energy homeostasis whereas brown adipocytes controls energy expenditure using lipids to produce heat. Previous descriptions implied their localization in distinct sites of the body, but our and other studies demonstrated that they are present together in many fat depots in murine adipose organ. This observation, combined with anatomical data and signs of physiological interaction of the two cell types in specific experimental conditions, gave rise to a new concept: the adipose organ. The cohabitation of white and brown adipocytes could be explained with the hypothesis of reversible physiological trans-differentiation within the adipose organ; they are able to convert one into each other. If needed, the brown component of the organ could increase at the expense of the white component and vice versa. This plasticity is important because the brown phenotype of the organ associates with resistance to obesity and its related disorders. Recently, the presence of metabolically active, uncoupling protein1 immunoreactive, brown adipose tissue (BAT) has been disclosed also in adult humans. The distribution of brown adipocytes into the human adipose organ seems to replicate that of murine adipose organ. The amount of BAT inversely correlates with the BMI of patients suggesting a role in the energy balance of humans. Moreover, cells with features of brown adipocyte precursors were found in pericapillary areas. Future therapeutic strategies for the treatment of obesity and related disorders could include maintenance of brown adipocytes, stimulation of the growth of pre-existing brown precursors or induction of trans-differentiation of white into brown adipocytes.

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Climate change and obesity

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The actual relations between energy, food and health are enormous, raising the need to discuss very important policy options. The double burden of disease associated with malnutrition (undernutrition to obesity) continues to grow. Poor diet, overweight and obesity contribute to a large proportion of non-communicable diseases, including CVD and cancer. Food habits have been changing dramatically in many countries and tendencies have been identified like the excessive salt, sugar and fat intake, low fruit and vegetable intake and an increasing problem of obesity. Recent life cycle assessment and carbon footprint studies of food products have clearly shown that differences in environmental impacts between different food products are tremendous, and that various products affect in different environmental problems. According to environmental accounting in the food sector, the food chain accounts for 7% of CO_2 emissions, 43% of CH_4 emissions and 50% of N_2O emissions produced across the entire economy. It is widely accepted that agriculture, especially livestock production, accounts for about a fifth of total greenhouse gas emissions, therefore contributing to climate change and its adverse health consequences. From the analysis of greenhouse gas emissions and energy consumption during the life cycle of carrots, tomatoes, potatoes, pork, rice, etc. one can find huge differences in terms of the contribution of each food. Also some researchers have been developing comparisons of different meals composed of different food items and its impact. An interesting example is that, for instance a meal with tomatoes, rice and pork has nine times higher emissions than a meal made from potatoes, carrots and dry peas. Another issue is the physical activity. Some argue that if the European population should return to the habit of walking and cycling to work replacing cars. Some argue that this would have a significant impact on obesity and a substantial impact on emissions. Effects of climate change on health and nutrition will affect mostly children and the lower socio-economic layers of the society. There is strong evidence that climate will deepen inequalities. There is also a discussion on the contribution of those who are overweight contributing more to the climate change because allegedly they consume more energy, bigger portion sizes and overall increase food consumption especially from those categories that contribute more to climate change. This perspective is based on individual approach and responsibility only and places the burden and more stigmatization on the overweight and obese individuals. There is also a very interesting argument in favour of breast-feeding in relation to climate change. By enabling more women than currently doing so to exclusively breast-feed their children for the first 6 months of life, some argue that there could be a reduction of the