

ICCN Poster Presentations

Nutrition and cardiovascular disease

Non communicable disease risk factors in Iran

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Introduction: Non-communicable disease, especially cardiovascular disease (CVD), as a public health problem became evident in developed and developing countries in this century. The majority of deaths (59%) is from non-communicable diseases. Six out of ten leading risk factors to all deaths in the world relate to diet and physical activity. Approximately 80% of the NCD burden is found in developing countries. Iran is an example of countries in the eastern Mediterranean region undergoing a nutritional transition.

Methods and materials: This article reviews 3 national surveys: "National health and disease", in 1999, "National Food consumption", in 1995, and "Analytical report on edible oils situation", in 2002.

Results: The results show that 34.8% of deaths were due to CVD in 2000. Hypertension affected 10.2% of the total population. This rate reached to 27% and 41.4% in 45-69 and +70 age groups respectively. In addition Hyperlipidemia prevalence (>200mg/dl) was 25.7%. Diabetes prevalence based on personal given history was 1.5%. The prevalence of over weight and obesity was as high as 50% among men and 66% among women in 40-69 age groups. Fat and carbohydrate consumption were 30% and 40% more than recommended amounts respectively. 80-90% of edible oils were hydrogenated oil. Mean elaidic acid levels (trans fatty acid) in hydrogenated oils were 30%, 23.8% and 27.2% in 1999-2001. This rate was reported 38.3% in 2002. Mean trans fatty acid intake (15.6-30gr/day) was far away from recommended amount (<5gr/day). The population's sedentary life style was also becoming as a public health problem, with 70-80% being physically inactive.

Conclusion: Non-communicable diseases and their related morbidity and mortality are becoming a significant serious public health problem in Iran. Development and implementation of national policies to modify food consumption patterns is highly recommended to decrease the risks of NCDs.

Used oil consumption impairs peripheral vascular physiology

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With the growing number of fast-food outlets, consumption of products cooked in used oils may increase. This study investigated whether lipid parameters and peripheral vascular physiology were affected in individuals after consuming a meal cooked in unused oil compared to a meal prepared in used oil, sourced from fast food outlets after one month of use. Twelve healthy volunteers (6M, 6F: mean age 31 yr \pm 7, range 21-41 yr) were asked to consume an isocaloric meal prepared in either unused or used oil on two different occasions (1030kcal, 61g total fat). Biochemical, endocrine and vascular studies were performed in the fasting state, 3-hours and 6-hours after consuming each meal. Arterial endothelial function was assessed as flow-mediated dilation (FMD) in the brachial artery, using high-resolution ultrasound. Resting and post-hyperaemic forearm blood flow were recorded using venous occlusion strain-gauge plethysmography before and after five minute upper arm ischaemia induced by suprasystolic blood pressure cuff inflation. Repeated measures analysis of variance determined the statistical differences. The physiological, postprandial fluctuations were seen in total cholesterol, LDL and HDL-cholesterol, triglycerides, insulin, glucose and homocysteine, however, there were no statistical differences at corresponding timepoints after the consumption of each oil. The normal decrease in free fatty acids was not sustained as strongly over time after the used oil meal ($p=0.001$). There was no significant change in FMD or vessel size, however, blood flow in the brachial artery was reduced at the 6 hour timepoint postprandially when baseline differences were accounted for ($p=0.009$). Resting forearm blood flow and total hyperaemia did not change significantly over time. The postprandial increase in post-hyperaemic forearm blood flow was reduced after ingestion of the used oil meal ($p=0.002$). Eating a meal prepared in used oil reduces blood flow in the brachial artery and the post-hyperaemic microvascular response. As these are key indicators of vascular health, this data is consistent with adverse effects of ingesting used oils, as regards to normal cardiovascular reactivity to a meal. Further work into the adverse mechanism of used oil consumption on the vasculature is warranted. With the growing awareness of public health issues, promotion of more frequent discarding of oils in the food industry should be supported.