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Plasma n-3 polyunsaturated fatty acids are associated with both overall and abdominal obesity in Iranian adults

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Background: Obesity is a major public health problem which is associated with a number of comorbidities. The worldwide prevalence of obesity is increasing, especially in the Asia Pacific region. Omega-3 fatty acids are polyunsaturated fatty acids of plant and marine origin and have been found to have beneficial effects on several diseases.

Aim: This study compares the plasma levels of n-3 fatty acids in individuals with different categories of body mass index (BMI) and waist circumference (WC).

Study design: Cross-sectional clinical study.

Methods: A total of 151 individuals, were randomly recruited from patients attending the nutrition clinics. Participants were divided into three groups according to BMI (healthy-weight, overweight, and obese) and WC categories (not at risk, increased risk, and substantially increased risk). Blood samples were collected from all participants and plasma levels of n-3 fatty acids were analyzed by gas chromatography (GC). The protocol was approved by the Ethics Committee.

Results: Healthy-weight individuals had significantly higher levels of alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) in comparison to overweight and obese subjects. Also, plasma n-3 polyunsaturated fatty acids were decreasing with increasing WC. ALA, EPA, and DHA were inversely correlated with BMI ($P < 0.001$, $P = 0.007$, $P < 0.001$, respectively) and waist circumference ($P = 0.001$, $P = 0.001$, $P < 0.001$, respectively). Moreover, the differences in ALA and DHA were not statistically significant between groups, but women had significantly higher levels of EPA compared with men ($P = 0.01$).

Conclusion: Plasma n-3 PUFAs were inversely associated with anthropometric measures of obesity. Further studies are needed to clarify the possible mechanism(s) that links plasma omega-3 fatty acids with overall and abdominal obesity.

Biography

Dr. Atieh Mehdizadeh has her expertise in obesity and its relevant issues, especially childhood obesity, as well as health promotion in terms of nutrition and physical activity in different age groups. She is currently working on customizing and implementing a health promotion program to improve healthy eating and physical activity among preschool children.

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