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Dietary Quality Indices and Its Cardiovascular Diseases Risk Factors: A Survey from the Kavar Cohort Study

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Abstract

Background: Atherosclerosis is known to be a significant reason for cardiovascular diseases (CVDs). Hypertension, dyslipidemia, diabetes, obesity, smoking, physical inactivity, and unhealthy diet are the most important causes of atherosclerosis. This study aimed to determine the relationship between DASH Diet Index, Dietary Inflammatory Index (DII), Mediterranean Diet (MEDI-LITE) Index, and CVDs risk factors. **Materials and Methods:** Out of 4997 patients, all eligible patients with CVDs (n=264) were chosen as the patient group, and 264 healthy individuals were included in the healthy group. Dietary intake and anthropometric measures were evaluated, including height, weight, hip and waist circumference, blood pressure, and lipid profile. **Results:** Among the three dietary indices, the DASH diet score was significantly higher in the healthy group than in the patient group (P=0.02). An inverse relationship was found between the DASH Diet Index and waist-to-hip ratio (r=-0.33, P=0.042), Visceral Adiposity Index (VAI; r=-0.16, P=0.044), systolic blood pressure (r=-0.13, P=0.035), triglycerides (r=-0.36, P=0.046), total cholesterol (r=-0.47, P=0.02), and low-density lipoprotein-C (LDL-C) levels (r=-0.09, P=0.03) in the patient group. Additionally, the MEDI-LITE Index was inversely associated with body mass index (BMI; r=-0.12, P=0.04), waist circumference (r=-0.065, P=0.05), triglyceride (r=-0.25, P=0.015), total cholesterol (r=-0.4, P=0.02), LDL-C levels (r=-0.2, P=0.006), and systolic blood pressure (r=-0.122, P=0.005) in the patient group. Also, a significant positive relationship was observed between the DII and BMI in both patients and healthy individuals (r=0.76, P=0.006 vs. r=0.24, P=0.01, respectively) and hip circumference (r=0.638, P=0.035) in the patients group. However, no significant relationship was observed between DII and CVDs risk factors. **Conclusion:** Patients with higher DASH diet scores had lower waist-to-hip ratio, VAI, total cholesterol, LDL-C, triglycerides, and lower blood pressure. In addition, patients with higher MEDI-LITE scores had lower BMI, waist circumference, triglycerides, total cholesterol, LDL-C, and lower blood pressure, but no correlation was found in the healthy group.

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Keywords: Cardiovascular Diseases; DASH; Mediterranean Diet; Visceral Adiposity Index; Dietary Inflammatory Index

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attributed to the use of lipid-lowering drugs. In this study, 239 out of the 264 patients with heart disease were using lipid-lowering medications under the supervision of a physician. Moreover, the results indicated a significantly lower level of HDL-C in the patient group compared to the healthy one, consistent with several other studies findings. These studies suggested that HDL-C, anti-inflammatory, and anti-atherogenic properties had a considerable role in preventing CVD [39, 40].

The current study indicated that systolic blood pressure was significantly higher in the patients compared to the healthy group. A cohort study of 213,000 participants found that hypertension and smoking combined affected the risk of IHD and CVD mortality [41]. However, unlike more extensive studies, our findings indicated no such significant difference among the patient and healthy groups regarding diastolic blood pressure. This might be due to the smaller sample size of the current study.

Conducting this research in the context of a national cohort study reduced the possible biases in the survey, which is one of this study's strengths. In addition, all patients with heart disease in Kavar PERSIAN Cohort were included in this study for better evaluation. The participants' food evaluation was performed using FFQ. Although FFQ may carry measurement errors, trained nutritionists were asked to complete the questionnaire through face-to-face interviews to minimize these errors. Over/underestimation might have also existed, especially in measuring diet, smoking, and alcohol consumption. For instance, patients might have over-reported healthier foods as their dietary pattern. Besides, given that alcohol consumption is not publicly allowed in Islamic countries, this might not have been mentioned in the nutritional reports.

Nevertheless, attempts were made to retrieve accurate information from the participants' medical records and their relatives. To the best of our knowledge, no similar research has been conducted comparing these indices in Iran. However, the inclusion of patients from the Kavar region may limit the generalization of the findings to the whole country due to the similarity of the dietary patterns among the individuals living in a particular area. Thus, inflammatory factors, daily physical activity, and family medical history are suggested to be considered in future studies.

Conclusion

The findings of the current study suggest that compliance with anti-inflammatory diets may be associated with CVD prevention. Patients with higher DASH diet scores had lower WHR, VAI, TC, TG, LDL-C, and lower blood pressure. In addition, patients with higher MEDI-LITE scores had lower BMI, WC, TG, TC, LDL-C, and lower blood pressure. Among the three dietary indices (DII, MEDI-LITE Index, and DASH Diet Index), the DASH diet index seemed more related to cardiac indices by affecting almost all risk factors. However, no statistically significant relationships were detected between DII and CHD risk factors, except for BMI, WC, and hip circumference.

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Conflict of Interest

All the authors notify that there was no competing interest.