



# Dietary Patterns in Relation to Prediabetes: Results from a Kurdish Population-Based Study

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## ABSTRACT

**Introduction:** Pre-diabetes is a warning of Type 2 diabetes in which the blood glucose level is above the normal level but lower than the cut-off for diagnosing diabetes, which increases the risk of developing type 2 diabetes compared to people with normal blood glucose. Dietary modifications can prevent the progression of prediabetes to diabetes. Therefore, this study aimed to investigate the dietary patterns concerning prediabetes.

**Methods and Materials:** This cross-sectional study used data from the Ravansar non-communicable diseases cohort study, which focuses on a Kurdish population aged 35 to 65 years in Ravansar, Kermanshah Province, Western Iran. Body mass index was computed by weight (kg) divided by the square of height (m<sup>2</sup>). A trained nutritionist measured waist circumference (WC) with non-stretched and flexible tape in a standing position at the level of the iliac crest. Prediabetes was diagnosed based on the American Diabetes Association guidelines, fasting blood sugar between 100 and 125 mg/dl. Dietary patterns were extracted by principal component analysis using a validated semi-quantitative food frequency questionnaire. We identified three dietary patterns: a plant-based diet, a high-protein diet, and an energy-dense diet. Binary logistic regression in crude and adjusted (adjusting for age and gender) odds ratios (ORs) and 95% confidence intervals (CI) was used to determine the association using SPSS 20 (IBM Corp, Chicago, IL, USA).

**Results:** A total of 5,954 participants were included in this study with a mean age of  $45.8 \pm 7.82$  years. The prevalence of prediabetes in this population was 13.1% (n = 782). The mean body mass index (BMI) and WC among participants with prediabetes were significantly higher than those of healthy participants ( $p = 0.0001$ ). In contrast, physical activity in these participants was significantly lower than that of healthy participants ( $p = 0.0001$ ). We observed that higher adherence to an energy-dense diet was significantly associated with increased odds of prediabetes in the crude (OR: 1.14; CI 95%: 1.04-1.25) and adjusted (OR: 1.13; CI 95%: 1.02-1.24) model. However, the findings did not show any association between following plant-based and high-protein diets and prediabetes in both models.

**Conclusion and Discussion:** Our findings reflected that pre-diabetes participants had more BMI, WC, and less physical activity than healthy participants. They also followed an energy-dense diet. Therefore, the dietary recommendations for these individuals should include a low-calorie, nutrient-dense diet along with effective weight management strategies.

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