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Associations between diet quality scores and cardiometabolic disease risk markers in healthy adults: A narrative review

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Diet quality is a public health priority as a poor diet is associated with cardiometabolic diseases (CMD) and deaths worldwide[(1)]. Although many diet quality scores/indexes (DQS) have been defined and used for epidemiological purposes, there is uncertainty over how a priori-defined DQS are associated with CMD outcomes[(2,3)]. The aim of this narrative review was to identify the DQS commonly used to assess the relationship between diet quality and CMD risk markers in healthy adults.

Using a systematic approach, all relevant literature was identified using predefined exposure [e.g., diet quality score and 'healthy eating index' (HEI)] and outcome [e.g., 'body mass index' (BMI), 'waist circumference' (WC) and 'blood pressure' (BP)] search terms. 'Title and abstract' [tiab] was included after each of the 'exposure' search terms and searching was carried out using PubMed and ISI Web of Science databases. Peer-reviewed articles published in English until October 2021 were included. The screening process was performed using the web-based software, Rayyan[(4)], which facilitates systematic reviews. The relevance of each publication's title and abstract was assessed by one author (AY), and any queries were discussed with the other authors. Studies with children (aged < 18), animals, or individuals with any diagnosed health conditions (such as diabetes, cancer, kidney disorders, or eating disorders), pregnant women, DQS validation papers, and those focusing on weight loss were excluded. To be considered a common DQS, it had to be used in at least 10 publications and represented a further exclusion criterion.

A total of 15,204 publications were found using the specified search terms. After screening the title and abstract of the publications, a total of 57 relevant research articles were identified. The common DQS included the HEI-2010 (n = 19), the 2010 Alternate HEI (n = 15), the modified Mediterranean Diet Score (mMDS, n = 14), the Alternate Mediterranean Diet score (aMED, n = 11), and the Dietary Approaches to Stop Hypertension (DASH) score (n = 19). In general, inverse associations were evident between the HEI with BMI and WC and aMED with BMI. Although higher adherence to the DASH score was positively associated with high-density lipoprotein cholesterol (HDL-C), inconsistent findings were found between mMDS with low-density lipoprotein cholesterol and HDL-C. No relationship was found between any of the scores and total cholesterol, whereas the AHEI showed very limited evidence with CMD risk markers. Inverse associations were observed between aMED and fasting triacylglycerol concentrations and HEI with markers of insulin resistance and fasting insulin concentration. As expected, a higher DASH score was related to a lower systolic BP but the associations with diastolic BP were inconsistent with both the DASH score and aMED.

In conclusion, our literature review has revealed limited evidence exists on the relationship between common DQS and established and novel CMD risk markers and warrants further investigation.

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