Inflammatory potential of diet and risk of cardiovascular disease or mortality: A meta-analysis

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BACKGROUND

- Chronic inflammation is linked to CVD and certain types of cancers.
- Low-grade inflammation is frequently caused by lifestyle or environmental factors.
- Diets play an important role in regulating chronic inflammation.
- Anti-inflammatory diets have been described on the basis of a Mediterranean dietary pattern.
- Individuals with a high consumption of vegetables, fruits, whole grains, nuts, seeds, healthy oils, and fish may have a low risk of inflammation related diseases.

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BACKGROUND

- The dietary inflammatory index (DII), is a score which was developed to estimate the inflammatory potential of nutrients and foods in the context of a dietary pattern.
- A higher DII score indicates a more pro-inflammatory diet, and a lower DII score represents a more anti-inflammatory diet.

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AIM

The aim of this meta-analysis was to investigate the association between the inflammatory potential of diet as estimated by the dietary inflammatory index (DII) score and CVD or mortality risk in the general population.

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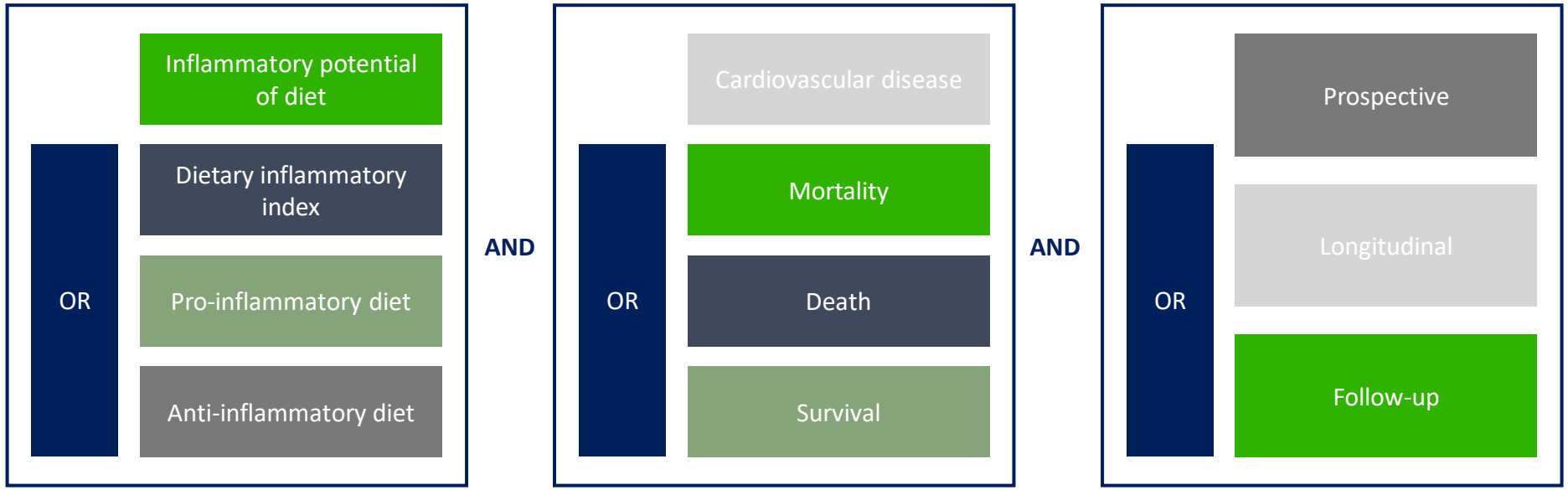
METHODS

- A comprehensive literature search was carried out in PubMed and Embase through February 2017.
- The following search terms in various combinations were used:



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METHODS

Studies were included if:

- Study participants were the general population.
- Study was prospective observational design.
- The exposure of interest was the inflammatory potential of diets as estimated by DII score.
- Reporting multivariable-adjusted risk estimates for the highest DII score (maximal pro-inflammatory diets) versus the lowest DII score (lowest pro-inflammatory diets) with respect to the all-cause, cardiovascular, cancer-related mortality, or CVD.

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RESULTS

- Individuals with the highest category of DII (maximal pro-inflammatory), compared to the lowest DII score (maximal anti-inflammatory) was associated with increased risk of:
  - all-cause mortality
  - cardiovascular mortality
  - cancer-related mortality
  - CVD

The meta-analysis included:

9 prospective studies

134,067 subjects

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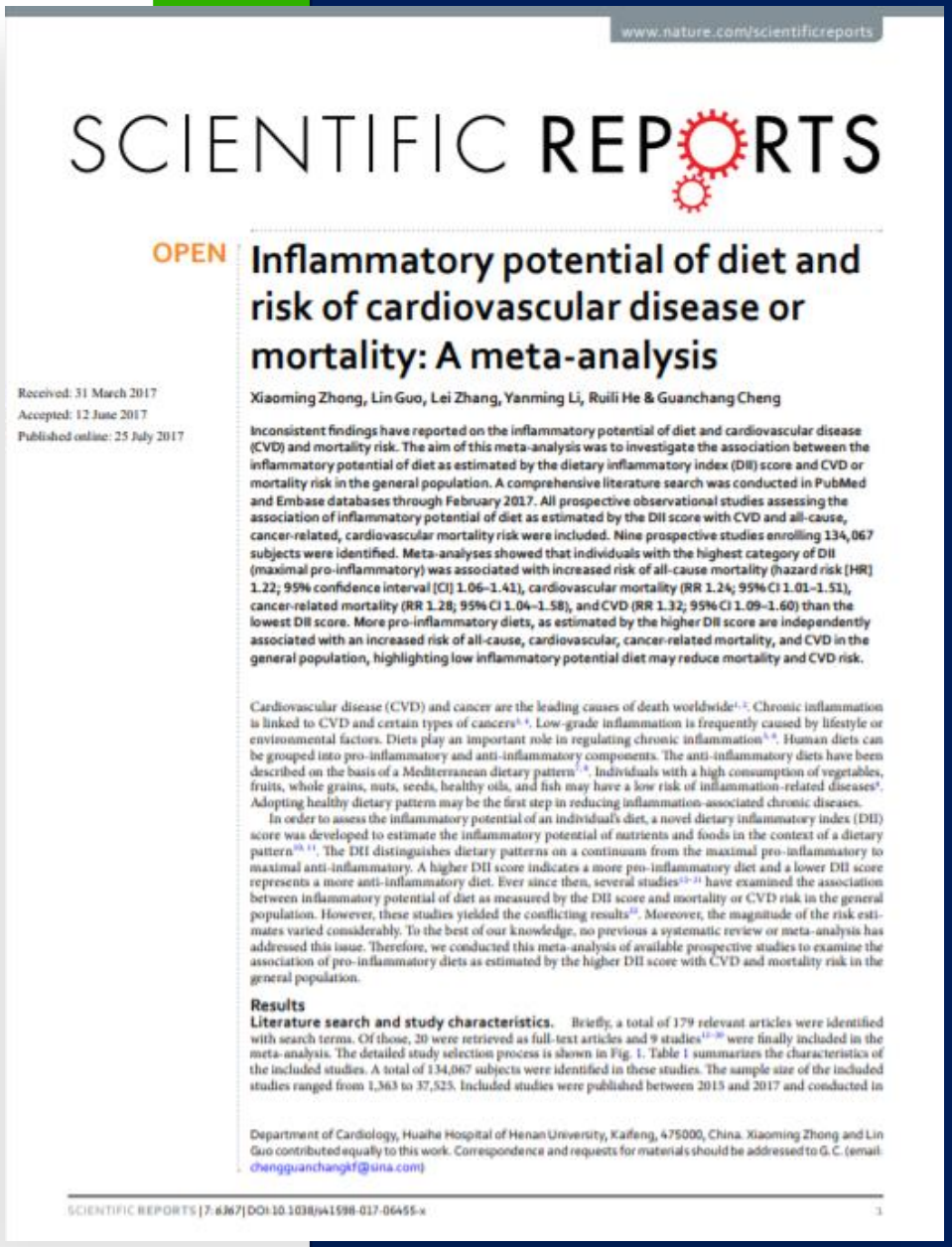
CONCLUSION

"In conclusion, this meta-analysis suggests that more pro-inflammatory diets, as estimated by the DII score are independently associated with the increased risk of CVD and all-cause, cancer-related, cardiovascular mortality in the general population".



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Inflammatory potential of diet and risk of cardiovascular disease or mortality: A meta-analysis

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Inconsistent findings have reported on the inflammatory potential of diet and cardiovascular disease (CVD) and mortality risk. The aim of this meta-analysis was to investigate the association between the inflammatory potential of diet as estimated by the dietary inflammatory index (DII) score and CVD or mortality risk in the general population. A comprehensive literature search was conducted in PubMed and Embase databases through February 2017. All prospective observational studies assessing the association of inflammatory potential of diet as estimated by the DII score with CVD and all-cause, cancer-related, cardiovascular mortality risk were included. Nine prospective studies enrolling 134,067 subjects were identified. Meta-analyses showed that individuals with the highest category of DII (maximal pro-inflammatory) was associated with increased risk of all-cause mortality (hazard risk [HR] 1.22; 95% confidence interval [CI] 1.06–1.41), cardiovascular mortality (RR 1.24; 95% CI 1.01–1.51), cancer-related mortality (RR 1.28; 95% CI 1.04–1.58), and CVD (RR 1.32; 95% CI 1.09–1.60) than the lowest DII score. More pro-inflammatory diets, as estimated by the higher DII score are independently associated with an increased risk of all-cause, cardiovascular, cancer-related mortality, and CVD in the general population, highlighting low inflammatory potential diet may reduce mortality and CVD risk.

Cardiovascular disease (CVD) and cancer are the leading causes of death worldwide[1,2]. Chronic inflammation is linked to CVD and certain types of cancers[3,4]. Low-grade inflammation is frequently caused by lifestyle or environmental factors. Diets play an important role in regulating chronic inflammation[5,6]. Human diets can be grouped into pro-inflammatory and anti-inflammatory components. The anti-inflammatory diets have been described on the basis of a Mediterranean dietary pattern[7,8]. Individuals with a high consumption of vegetables, fruits, whole grains, nuts, seeds, healthy oils, and fish may have a low risk of inflammation-related diseases[9]. Adopting healthy dietary pattern may be the first step in reducing inflammation-associated chronic diseases.

In order to assess the inflammatory potential of an individual's diet, a novel dietary inflammatory index (DII) score was developed to estimate the inflammatory potential of nutrients and foods in the context of a dietary pattern[10,11]. The DII distinguishes dietary patterns on a continuum from the maximal pro-inflammatory to maximal anti-inflammatory. A higher DII score indicates a more pro-inflammatory diet and a lower DII score represents a more anti-inflammatory diet. Ever since then, several studies[12–21] have examined the association between inflammatory potential of diet as measured by the DII score and mortality or CVD risk in the general population. However, these studies yielded the conflicting results[22]. Moreover, the magnitude of the risk estimates varied considerably. To the best of our knowledge, no previous a systematic review or meta-analysis has addressed this issue. Therefore, we conducted this meta-analysis of available prospective studies to examine the association of pro-inflammatory diets as estimated by the higher DII score with CVD and mortality risk in the general population.

Results

Literature search and study characteristics. Briefly, a total of 179 relevant articles were identified with search terms. Of those, 20 were retrieved as full-text articles and 9 studies[13–20] were finally included in the meta-analysis. The detailed study selection process is shown in Fig. 1. Table 1 summarizes the characteristics of the included studies. A total of 134,067 subjects were identified in these studies. The sample size of the included studies ranged from 1,363 to 37,525. Included studies were published between 2015 and 2017 and conducted in

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