Coffee consumption and risk of chronic diseases: changing our views

Esther Lopez-Garcia

The association between coffee consumption and risk of chronic disease is of considerable relevance because coffee is consumed worldwide and any effect on health that it may cause will have public health consequences. These effects, especially on cardiovascular disease (CVD), cancer, and diabetes, have been extensively studied in recent years, and a growing body of evidence suggests that we may need to change our perception of the health effects of this beverage.

Traditionally, research on coffee focused on the acute cardiometabolic effects of caffeine. Ingestion of caffeine stimulates the release of adrenaline, an inhibitor of insulin activity, and acutely increases blood pressure and serum homocysteine (1). These effects are consistent with the increased risk of coronary artery disease and stroke in the hours after coffee consumption that has been observed in some studies (2). However, in a seminal work by van Dam and Feskens (3), habitual coffee consumption was associated with a substantial reduction in the risk of type 2 diabetes in a Dutch population. This observation might reflect the long-term effects of coffee manifested in habitual drinkers who developed tolerance to the acute effects of caffeine.

Coffee has a very complex chemical composition. In addition to caffeine, other substances have been shown to have biological effects. For example, phenolic compounds in coffee (chlorogenic acid, ferulic acid, p-coumaric acid), magnesium, trigonelline, and quinides have been associated with improved insulin sensitivity (4). Phenolic compounds also have antioxidant activity (5). In addition, diterpenes in coffee (cafestol and kahweol) have anticarcinogenic properties (6). Thus, it is plausible that the harmful effects of caffeine could be offset by the beneficial effects of these other components.

In this issue of the Journal, Floegel et al (7) conducted analyses in the 42,659 German participants of the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort to examine the association between coffee consumption and the risk of total chronic disease and of type 2 diabetes, CVD, and cancer. Coffee consumption was assessed at the beginning of the 8.9-y follow-up period. The results showed that neither caffeinated nor decaffeinated coffee consumption was associated with an increased risk of total chronic disease, CVD, or cancer; furthermore, both types of coffee showed an inverse association with the risk of type 2 diabetes.

These results are consistent with systematic reviews of randomized controlled trials assessing the effect of coffee on known risk factors of chronic diseases. For instance, Jee et al (8) concluded that filtered coffee (the main type of coffee in the German EPIC) consumed during ≥20 d does not increase serum cholesterol; in addition, Noordzij et al (9) found that coffee intake for ≥7 d barely increased blood pressure. Moreover, in a recent randomized controlled trial of 8 wk, decaffeinated coffee consumption increased adiponectin and IL-6 in plasma, and decaffeinated coffee decreased fetuin-A concentrations (10). This indicates that coffee improves adipocyte and liver function, which may decrease the risk of type 2 diabetes.

Unlike previous studies that specifically examined the effect of coffee on individual diseases (myocardial infarction, stroke, specific tumors), Floegel et al (7) assessed “overall chronic disease” to balance the positive and negative effects of coffee on separate diseases; in this way they summarized the effect of coffee on overall health. In addition, they conducted a competing risk analysis to ensure that the associations estimated for individual diseases were not biased by the fact that the occurrence of a first disease event may preclude the onset of another disease. Finally, this study evaluated the health effects of coffee in a European population, which is important because much of the evidence available proceeds from American cohorts.

The work by Floegel et al (7) adds to the evidence on the null association between habitual coffee consumption and CVD, cancer, and total mortality, another indicator of the global effect on health (11), and suggests that this beverage may produce health benefits. However, coffee cannot yet be recommended for health purposes. First, most of the evidence has been obtained from persons without apparent health problems. More research is needed among individuals who are already sick or have high blood pressure, hypercholesterolemia, diabetes, cancer, or CVD. The evidence already available is insufficient to provide clinical recommendation to these individuals.

Second, the long-term effects of nonfiltered coffee are not well known. When coffee is made by using a nonfiltered process (boiled, French press, espresso), diterpenes are not removed. In short-term studies, nonfiltered coffee has been shown to increase...
serum concentrations of total and LDL cholesterol, so it is plausible that nonfiltered coffee may have a different effect on CVD risk than does filtered coffee.

Third, it is still a cause of concern that consumers of high amounts of coffee tend to be healthier than nonconsumers. Statistical methods allow us to remove the effect of lifestyle associated with coffee consumption, such as smoking, and to remove the effect of known risk factors when examining the effect of coffee on the risk of disease. However, there might still be uncontrolled factors associated with coffee consumption that could contribute to the beneficial effect seen in many studies. For example, coffee consumption may be a marker of social interaction, especially in Mediterranean countries. Coffee shops are meeting places, so people who report consuming coffee on a regular basis may be more likely to have a good social network and quality of life. Also, coffee intake may be avoided or reduced by those with subjective health problems, which could mask any potential deleterious effect of greater coffee consumption. Thus, the effect of psychosocial factors linked to coffee consumption should be further assessed, because they may confound the associations between coffee and health. Finally, some health conditions may be worsened by coffee (insomnia, anxiety, gastroesophageal reflux, hypertension, cardiac arrhythmias), so that individualized medical advice is mandatory for those suffering from these problems.

In conclusion, although more research on the health effect of coffee is yet needed to formulate sound recommendations on its consumption, current information suggests that coffee is not as bad as we were told.

The author did not declare any conflicts of interest.

REFERENCES