

EDITORIALS

Coffee gets a clean bill of health

Coffee is safe, but hold the cake

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In the linked article, Poole and colleagues report findings from an umbrella review of clinical trials and observational studies of coffee intake and health outcomes (doi:10.1136/bmj.j5024).¹ Umbrella reviews synthesise previous meta-analyses and provide a high level summary of quantitative research on a particular topic.² This review found that coffee intake was either not associated or was inversely associated with most health outcomes considered. In particular, coffee intake was inversely associated with all-cause mortality, incidence of and mortality from cardiovascular disease, and incidence of cancer, non-alcoholic fatty liver disease, cirrhosis, and diabetes.

The authors concluded that coffee consumption seems generally safe within usual patterns of intake and is more likely to benefit health than to harm it. These conclusions are similar to those of a recent comprehensive systematic review of the adverse effects of caffeine consumption³ and to those of an independent umbrella review of coffee intake.⁴

Does coffee prevent chronic disease and reduce mortality? We simply do not know. Coffee drinking is a complex behaviour determined by cultural norms and associated with multiple socioeconomic, lifestyle, dietary, and health behaviours. We do not understand why different people start drinking coffee, or why drinkers stop their habit. Coffee intake is associated with smoking, and adjustment for smoking is needed to identify an inverse association between coffee intake and health endpoints in many studies.^{5,6} Smoking, however, explains a relatively small fraction of the variability in coffee intake, and many other factors (beneficial or harmful) may still confound the relatively weak associations observed. Avoiding or reducing coffee consumption in response to deteriorating health, for instance, may explain an apparent beneficial effect of coffee intake, but this reverse causation can be difficult to examine in observational studies.⁷

Several strategies may help establish whether coffee is beneficial for health. In their review, Poole and colleagues argue that randomised clinical trials are needed, although the complexity of long term trials of behavioural interventions, the large sample size required, and the high cost complicate the feasibility of trials prospectively testing the effect of coffee on clinical endpoints. Mendelian randomisation analyses may also help,⁸⁻¹⁰ but their power is limited if genetic traits explain only a small fraction of coffee intake patterns, and their interpretation is complicated by the pleiotropic effects of the genes involved in metabolising caffeine.¹¹ Furthermore, since caffeinated and

non-caffeinated coffee have similar associations with health endpoints in many studies, Mendelian randomisation based on genes that influence caffeine metabolism may not be useful for estimating the effects of coffee intake. Additional studies are also needed to understand why people start and stop drinking coffee and the factors associated with coffee intake. Similarly, future studies will have to obtain more detailed information on the type of coffee beverages consumed and the circumstances associated with coffee drinking if study findings are going to be widely generalisable to all types of coffee.

Should doctors recommend drinking coffee to prevent disease? Should people start drinking coffee for health reasons? The answer to both questions is “no.” The evidence is so robust and consistent across studies and health outcomes, however, that we can be reassured that drinking coffee is generally safe, although some caveats apply. Firstly, some population subgroups may be at higher risk of adverse effects. Poole and colleagues¹ identify several harmful associations between coffee and pregnancy related outcomes, including higher risks of low birth weight, pregnancy loss, and first and second trimester preterm birth. Coffee was also associated with an increased risk of fracture in women. Pregnant women and women at high risk of fractures should be made aware of these potential adverse effects.

Secondly, the amount consumed is important. For many endpoints, the lowest risk of disease is associated with drinking three to five cups of coffee a day. Higher intake may reduce or reverse the potential benefit, and there is substantial uncertainty, both in individual studies and in meta-analyses, about the effects of higher levels of intake. Conclusions on the safety of coffee should thus be restricted to moderate intake, generally considered as ≤ 400 mg of caffeine a day (about four or five coffee drinks).

Finally, coffee is often consumed with products rich in refined sugars and unhealthy fats, and these may independently contribute to adverse health outcomes. Even with these caveats, moderate coffee consumption seems remarkably safe, and it can be incorporated as part of a healthy diet by most of the adult population.¹²

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