Coffee: advice for our vice?

G. Michael Allan MD CCFP Christina Korownyk MD CCFP Marco Mannarino MD CCFP

Clinical question

Does drinking coffee affect mortality or other health outcomes in the general population?

Evidence

- Largest cohort study: 402 260 people in the United States, aged 50 to 71 years, followed for 14 years.[1]
  -Increased coffee consumption was associated with increased mortality, but results were confounded by smoking, inactivity, alcohol consumption, and poor diet.
  -After adjusting for confounders, coffee drinkers (compared with nondrinkers) had a significant ($P<.001$) decrease in overall mortality: a relative reduction of about 10% for men and 15% for women for ≥2 cups/d.
  -Cardiovascular (CV) events (including stroke) and accidents decreased, but cancer rates were unchanged.
  -Most coffee consumed was caffeinated, ground coffee.
- Multiple cohort studies[2-6] in different populations, ages, and subgroups (eg, diabetes) had similar findings.
  -Some cohort studies[7-9] did not find health benefits with coffee consumption, but the studies were often smaller.[7,8]

Context

- Evidence is from cohort studies and cannot show causation. Unfortunately, a large RCT is unlikely.
- Some studies suggest coffee is associated with reduced rates of some cancers[10,11]; others find no association.[11-14]
- Most studies find coffee is associated with fewer CV events,[1,2,6,15] including stroke[16]; others find no association.[17]
- Coffee intake is also associated with a reduced risk of diabetes[18] and depression.[19]
- Decaffeinated coffee seems to confer similar benefits.[1,2]
- Coffee in pregnancy (particularly ≥4 cups/d) increases risk of fetal loss.[20] Pregnant women should be advised.

Bottom line

Coffee consumption is associated with no change or a small reduction in mortality in cohort studies. The evidence is not strong enough to recommend that nondrinkers start consuming coffee, but coffee drinkers can be reassured that it does not appear to result in excess harm (except in pregnancy).

Implementation

Cohort studies are subject to many biases, but confounders are particularly challenging. For example, coffee consumption is generally associated with higher-risk behaviour such as smoking, inactivity, and poor diet. Researchers might undercompensate or overcompensate when adjusting for confounders and might come to differing conclusions based on which confounders are considered.[21,22] Further, Freedman et al[1] did not look at preparation or additions to coffee, but calories can accumulate based on choice. A 16-oz cup of filtered black coffee has 5 calories. The same-sized latte has about 190 calories (without sugar).

Dr Allan is Associate Professor and **Dr Korownyk** is Assistant Professor, both in the Department of Family Medicine at the University of Alberta in Edmonton. **Dr Mannarino** is a family doctor in Edmonton.

Competing interests
The authors drink and enjoy coffee.

The opinions expressed in this Tools for Practice article are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

References
1. Freedman ND, Park Y, Abnet CC, Hollenbeck AR, Sinha R. Association of coffee drinking with total and cause-specific mortality. *N Engl J Med* 2012;366(20):1891-904.
2. Lopez-Garcia E, van Dam RM, Li TY, Rodriguez-Artalejo F, Hu FB. The relationship of coffee consumption with mortality. *Ann Intern Med* 2008;148(12):904-14.
3. Tamakoshi A, Lin Y, Kawado M, Yagyu K, Kikuchi S, Iso H, et al. Effect of coffee consumption on all-cause and total cancer mortality: findings from the JACC study. *Eur J Epidemiol* 2011;26(4):285-93.
4. Sugiyama K, Kuriyama S, Akhter M, Kakizaki M, Nakaya N, Ohmori-Matsuda K, et al. Coffee consumption and mortality due to all causes, cardiovascular disease, and cancer in Japanese women. *J Nutr* 2010;140(5):1007-13.
5. Happonen P, Läärä E, Hiltunen L, Luukinen H. Coffee consumption and mortality in a 14-year follow-up of an elderly northern Finnish population. *Br J Nutr* 2008;99(6):1354-61.
6. Bidel S, Hu G, Qiao Q, Jousilahti P, Antikainen R, Tuomilehto J. Coffee consumption and risk of total and cardiovascular mortality among patients with type 2 diabetes. *Diabetologia* 2006;49(11):2618-26.
7. Zhang WL, Lopez-Garcia E, Li TY, Hu FB, van Dam RM. Coffee consumption and risk of cardiovascular events and all-cause mortality among women with type 2 diabetes. *Diabetologia* 2009;52(5):810-7.
8. Heyden S, Tyroler HA, Heiss G, Hames CG, Bartel A. Coffee consumption and mortality. Total mortality, stroke mortality, and coronary heart disease mortality. *Arch Intern Med* 1978;138(10):1472-5.
9. Klatsky AL, Armstrong MA, Friedman GD. Coffee, tea, and mortality. *Ann Epidemiol* 1993;3(4):375-81.
10. Yu X, Bao Z, Zou J, Dong J. Coffee consumption and risk of cancers: a meta-analysis of cohort studies. *BMC Cancer* 2011;11:96.
11. Turati F, Galeone C, La Vecchia C, Garavello W, Tavani A. Coffee and cancers of the upper digestive and respiratory tracts: meta-analyses of observational studies. *Ann Oncol* 2011;22(3):536-44.
12. Park CH, Myung SK, Kim TY, Seo HG, Jeon YJ, Kim Y, et al. Coffee consumption and risk of prostate cancer: a meta-analysis of epidemiological studies. *BJU Int* 2010;106(6):762-9.
13. Turati F, Galeone C, Edefonti V, Ferraroni M, Lagiou P, La Vecchia C, et al. A meta-analysis of coffee consumption and pancreatic cancer. *Ann Oncol* 2012;23(2):311-8.
14. Zhang X, Albanes D, Beeson WL, van den Brandt PA, Buring JE, Flood A, et al. Risk of colon cancer and coffee, tea, and sugar-sweetened soft drink intake: pooled analysis of prospective cohort studies. *J Natl Cancer Inst* 2010;102(11):771-83.
15. Mineharu Y, Koizumi A, Wada Y, Iso H, Watanabe Y, Date C, et al. Coffee, green tea, black tea and oolong tea consumption and risk of mortality from cardiovascular disease in Japanese men and women. *J Epidemiol Community Health* 2011;65(3):230-40.
16. Larsson SC, Orsini N. Coffee consumption and risk of stroke: a dose-response meta-analysis of prospective studies. *Am J Epidemiol* 2011;174(9):993-1001.
17. Kleemola P, Jousilahti P, Pietinen P, Vartiainen E, Tuomilehto J. Coffee consumption and the risk of coronary heart disease and death. *Arch Intern Med* 2000;160(22):3393-400.
18. Huxley R, Lee CM, Barzi F, Timmermeister L, Czernichow S, Perkovic V, et al. Coffee, decaffeinated coffee, and tea consumption in relation to incident type 2 diabetes mellitus: a systematic review with meta-analysis. *Arch Intern Med* 2009;169(22):2053-63.
19. Lucas M, Mirzaei F, Pan A, Okereke OI, Willett WC, O'Reilly ÉJ, et al. Coffee, caffeine, and risk of depression among women. *Arch Intern Med* 2011;171(17):1571-8.
20. Wisborg K, Kesmodel U, Bech BH, Hedegaard M, Henriksen TB. Maternal consumption of coffee during pregnancy and stillbirth and infant death in first year of life: prospective study. *BMJ* 2003;326(7386):420.
21. Cohen HW, Hailpern SM, Alderman MH. Sodium intake and mortality follow-up in the Third National Health and Nutrition Examination Survey. *J Gen Intern Med* 2008;23(9):1297-302.
22. Yang Q, Liu T, Kuklina EV, Flanders WD, Hong Y, Gillespie C, et al. Sodium and potassium intake and mortality among US adults: prospective data from the Third National Health and Nutrition Examination Survey. *Arch Intern Med* 2011;171(13):1183-91.

Tools for Practice articles in *Canadian Family Physician (CFP)* are adapted from articles published on the Alberta College of Family Physicians (ACFP) website, summarizing medical evidence with a focus on topical issues and practice-modifying information. The ACFP summaries and the series in *CFP* are coordinated by **Dr G. Michael Allan**, and the summaries are co-authored by at least 1 practising family physician and are peer reviewed. Feedback is welcome and can be sent to **toolsforpractice@cfpc.ca**. Archived articles are available on the ACFP website: **www.acfp.ca**.