

## Another Reason to Drink Your Morning Cup of Coffee

Lopez-Garcia E, van Dam RM, Li TY, et al. The relationship of coffee consumption with mortality. *Ann Intern Med* 2008;148:904–14.

### Study Overview

**Objective.** To examine the relationship between coffee consumption and disease-specific and all-cause mortality.

**Design.** Prospective cohort study.

**Setting and participants.** 41,736 men and 86,214 women with no history of cardiovascular disease or cancer at baseline who were part of the Health Professionals Follow-up Study (HPFS) or Nurses Health Study (NHS). Coffee consumption was assessed by dietary questionnaires at baseline in men in the HPFS (1986) and in women in the NHS (1980) and then once every 2 to 4 years through 2004.

**Main outcome measures.** Association between coffee consumption and all-cause and disease-specific (eg, cardiovascular disease, cancer) mortality as assessed by sex-specific Cox proportional hazard models. Participants were classified according to levels of coffee consumption (< 1 cup/month, 1 cup/month–4 cups/week, 5–7 cups/week, 2–3 cups/day, 4–5 cups/day,  $\geq$  6 cups/day). Person-years of exposure were calculated from the date of the return of the baseline questionnaire to the date of death or 1 June 2004, whichever came first. Mortality was ascertained by next of kin, postal authorities, or through the National Death Index. Information on age, height, weight, family history, comorbid conditions, smoking status, and other pertinent variables were collected as part of the baseline survey.

**Main results.** Coffee consumption was strongly associated with both smoking and limited exercise. After adjusting for smoking history and other confounders, an inverse association was found between coffee consumption and all-cause mortality for men and women drinking coffee on a daily basis. This association was not statistically significant among men (relative risk [RR], 1.02 [95% confidence interval {CI}, 0.95–1.11]). However, compared with noncoffee drinkers, all-cause mortality was 7% lower in women drinking 5 to 7 cups of coffee per week (RR, 0.93 [95% CI, 0.87–0.98]), 18% lower in women drinking 2 to 3 cups per day (RR, 0.82 [95% CI, 0.77–0.87]), 26% lower in women drinking 4 to 5 cups per day (RR, 0.74 [95% CI, 0.68–0.81]), and 17% lower in women drinking  $\geq$  6 cups per day (RR, 0.83 [95% CI, 0.73–0.95]). These reductions in all-cause

mortality were partly due to decreased cardiovascular mortality observed in coffee-drinking women. There was no association between cancer-related death and coffee consumption in either men or women. High consumption of decaffeinated coffee was also associated with a lower risk of all-cause and cardiovascular mortality; women who drank 2 to 3 cups of decaffeinated coffee per day had a 15% reduction in mortality compared with nonconsumers (RR, 0.85 [95% CI, 0.77–0.94]).

**Conclusion.** Coffee consumption does not increase the risk of death in either men or women. Rather, coffee consumption was associated with decreased all-cause mortality among women.

### Commentary

Data on the effects of coffee consumption on mortality have been mixed. These mixed findings are likely related to the observational nature of the studies on coffee and the strong association between coffee consumption and other habits that are known to affect health (eg, smoking, exercise). Lopez-Garcia and colleagues rigorously explored the relationship between coffee consumption and mortality in several detailed analyses and found no evidence of an adverse relationship. Not unexpectedly, the authors found that coffee drinkers smoke more and exercise less. However, after adjusting for these confounders, the authors found that coffee consumption might be beneficial. In both men and women, coffee consumption was related to a reduction in cardiovascular and all-cause mortality. Although this positive association was not statistically significant in men, it was statistically significant and consistent in women. To determine whether the effects on mortality were related to caffeine or coffee, decaffeinated coffee consumption was also examined. The positive effects of coffee in women have been attributed to dietary antioxidants present in coffee, which may inhibit inflammation and thereby reduce the risk of cardiovascular disease [1]. This theory is further supported by reduced cardiovascular and all-cause mortality found in this current study in women who drank decaffeinated coffee, suggesting that compounds other than caffeine are responsible for the findings.

This study is as an observational study with all the limitations therein. Unmeasured confounding or misclassification of coffee exposure may account for the reported findings. However, given that coffee drinkers were more likely to

exercise less or smoke more, it is possible that the positive effects of coffee have been underestimated.

### **Applications for Clinical Practice**

Physicians can drink coffee guilt-free and reassure their patients that the balance of evidence currently suggests that coffee consumption is not associated with mortality. In fact, drinking coffee might be beneficial.

*—Review by Salomeh Keyhani, MD, MPH*

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### **Reference**

1. Andersen LF, Jacobs DR Jr, Carlsen MH, Blomhoff R. Consumption of coffee is associated with reduced risk of death attributed to inflammatory and cardiovascular diseases in the Iowa Women's Health Study. *Am J Clin Nutr* 2006;83:1039–46.