

to report conclusions about its use with utmost accuracy. This is particularly important in light of the multiple studies that have touted the health benefits of coffee consumption. Although we applaud Liu et al for their important study, we are cautious about a potential disconnect between the data and their conclusions. Ultimately, it is evident that future investigations are merited to elucidate the relationship between coffee consumption and mortality.

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Importance of Sleep Disorders in Assessing the Association Between Coffee Consumption and All-Cause Mortality

To the Editor: Liu et al¹ have reported an interesting observational study in which they found a positive relationship between very high coffee consumption and all-cause mortality among men and among both men and women aged less than 55 years.¹ Because the general finding for men appears to be attributable to the increased risk among those younger than 55 years, the authors concluded that “on the

basis of these findings, it seems appropriate to suggest that younger people avoid heavy coffee consumption (ie, averaging >4 cups per day).” However, while this study’s findings are suggestive, it may be premature to make any clinical recommendations based on these results.

This study has a number of strengths, including both a relatively large number of participants and adjustment for a broad array of potential confounders, but one key variable that was not included in the study was sleep disorders. Because one of the traditional uses of coffee is to compensate for feelings of sleepiness, it is reasonable to suppose that this may prove an important confounder, with higher consumption positively related to sleep disorders and the presence of sleep disorders positively related to all-cause mortality.

Daytime sleepiness has been documented to be an independent risk factor for stroke and other vascular disease,² and both insufficient and excessive sleep have been associated with an increased risk of all-cause mortality.^{3,4} Even more striking, the relationship between sleep disorders and all-cause mortality exhibits an age dependency similar to that reported by Liu et al. Lavie et al⁵ found that the excess mortality attributable to sleep apnea among men was limited to those younger than 50 years, and similar trends are also found in the relationship between long or short sleep and all-cause mortality.³

Of course, it is also possible that the causal pathway flows instead from excessive coffee consumption to insomnia and thence to an increased risk of mortality. Determining whether one or both of these scenarios explains the increased risk of mortality will require further research that takes sleep into account. It will also be important to measure sleep, coffee intake, and mortality at multiple time points throughout the study in order to establish the temporal sequence between sleep and coffee consumption and to account for changes in these variables over time.

The study by Liu et al¹ is an important contribution toward a better understanding of the relationship between coffee intake and all-cause mortality, but the state of the science may be too young at this time to enable clinicians or public health authorities to provide specific advice to patients.

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Heavy Coffee Drinking and Age-Dependent All-Cause Mortality

To the Editor: The study by Liu et al¹ reported in the October 2013 issue of *Mayo Clinic Proceedings* associated heavy coffee drinking with increased all-cause mortality in people younger than 55 years. A previous study,² however, associated heavy coffee drinking with a decrease in all-cause mortality. Both studies included large populations with long follow-up and made adjustments for smoking, alcohol consumption, and other potential health effectors. In both studies, a similar effect was attributed to either caffeine or caffeine-free drinks.^{1,2} Thus, the agent searched for was not the caffeine.

Coffee, especially when brewed, contains many antioxidants such as