

Caffeine consumption and mortality in diabetes: an analysis of NHANES 1999-2010

J.S. Neves¹, L. Leitão², R. Magriço³, M. Bigotte Vieira⁴, C. Viegas Dias⁵, A. Oliveira⁶, D. Carvalho⁷; ¹Department of Endocrinology, Diabetes and Metabolism, São João Hospital Center; Department of Surgery and Physiology, Cardiovascular Research Center, Faculty of Medicine of University of Porto (FMUP), Porto, ²Neurology Department, Prof. Doutor Fernando da Fonseca Hospital, Amadora, ³Nephrology Department, Garcia de Orta Hospital, Lisbon, ⁴Nephrology and Renal Transplantation Department, Lisboa Norte Hospital Center, Lisbon, ⁵Family Health Unit of Dafundo, ACES Lisboa Ocidental e Oeiras, Lisbon, ⁶Department of Endocrinology, Diabetes and Metabolism, São João Hospital Center, Porto, ⁷Department of Endocrinology, Diabetes and Metabolism, São João Hospital Center, FMUP; Institute for Research and Innovation in Health (i3S), Porto, Portugal.

Background and aims: An inverse relation between coffee consumption and mortality has been reported in the general population. Coffee consumption has also been associated with a risk reduction for the development of type 2 diabetes. However, the association of caffeine consumption with mortality of patients with diabetes remains unclear.

Materials and methods: We examined the association of caffeine consumption with mortality among 1,568 women and 1,484 men with diabetes in a prospective nationwide cohort, using the continuous National Health and Nutrition Examination Survey (NHANES) 1999-2010. Caffeine consumption was assessed at baseline using 24h dietary recalls. Cox proportional hazard models were fitted to estimate hazard ratios (HR) for all-cause, cardiovascular and cancer-related mortality among women and men according to caffeine consumption and its source (coffee, tea or soft drinks), adjusting for potential confounders (age, race, education level, annual family income, smoking status, body mass index, daily carbohydrate consumption, alcohol consumption, years since diabetes diagnosis, hypertension, diabetic kidney disease, retinopathy, macrovascular complications and insulin treatment).

Results: A dose-dependent inverse association between caffeine consumption and total mortality was observed in women with diabetes ($p=0.002$). Adjusted HR for death among women who consumed caffeine, as compared with women who did not, were: 0.49 (95% confidence interval [CI], 0.33-0.74) for less than 100mg of caffeine per day, 0.43 (95% CI, 0.26-0.70) for 100 to <200mg of caffeine, and 0.34 (95% CI, 0.20-0.57) for 200mg or more of caffeine per day ($p=0.007$). This association was not observed in men with diabetes ($p=0.887$). There was no significant association between total caffeine consumption and deaths from cardiovascular diseases or cancer, both in men and women. Regarding the source of caffeine consumption, women with diabetes who consumed more caffeine from coffee had reduced risk of all-cause ($p=0.007$) and cardiovascular death ($p=0.041$). Women who consumed more caffeine from tea had reduced mortality from cancer ($p=0.009$). No associations between source of caffeine consumption and all-cause, cardiovascular or cancer mortality were observed in men.

Conclusion: Our study showed a dose-dependent protective effect of caffeine consumption on all-cause mortality among women. The effect on mortality appears to depend on the source of caffeine, with a protective effect of coffee consumption on all-cause mortality and cardiovascular mortality, and a protective effect of caffeine from tea on cancer mortality among women with diabetes.

Disclosure: **J.S. Neves:** None.

