



## Coffee Increases Cardiovascular Risk in Young Adults with Mild Hypertension



Coffee drinking is associated with increased risk of cardiovascular events (mainly heart attacks) in young adults (18-45) with mild hypertension, according to research presented at ESC Congress by Dr Lucio Mos, a cardiologist at Hospital of San Daniele del Friuli in Udine, Italy. The 12 year study in more than 1 200 patients found that heavy coffee drinkers had a four-fold increased risk while moderate drinkers tripled their risk. Future prediabetes attenuated the associations suggesting that the effect of coffee on cardiovascular events may be mediated by its long term influence on blood pressure and glucose metabolism.

“There is controversy surrounding the long term cardiovascular and metabolic effects of coffee consumption in patients with hypertension,” said Dr Mos. “Our study was designed to evaluate whether coffee drinking had an effect on the risk of cardiovascular events, and if the association was mediated by effects on blood pressure and glucose metabolism.”

The study included 1 201 non-diabetic patients aged 18 to 45 years from the prospective HARVEST2 study who had untreated stage 1 hypertension (systolic blood pressure between 140 and 159 mmHg and/or diastolic blood pressure between 90 and 99 mmHg). Coffee consumption was categorised by the number of caffeine-containing cups per day: non-drinkers (0), moderate (1–3) and heavy drinkers (4 or more). Among the participants, 26.3% were abstainers, 62.7% were moderate and 10.0% were heavy coffee drinkers. Coffee drinkers were older and had a higher body mass index than abstainers.

There was a linear relationship between coffee use and risk of hypertension needing treatment. The association reached statistical significance for heavy drinkers (figure 1). As type 2 diabetes often develops in hypertensive patients at a later stage, the study examined the long term effect of coffee drinking on the risk of developing prediabetes. A linear relationship was found, with a 100% (30% to 210%) increased risk of prediabetes in the heavy coffee drinkers (figure 2).

However, the risk of prediabetes related to coffee consumption differed according to the CYP1A2 genotype, which determines whether individuals are fast or slow caffeine metabolisers. The risk of prediabetes was increased significantly only in slow caffeine metabolisers, with a hazard ratio (HR) of 2.78 (95% confidence interval 1.32-5.88,  $p=0.0076$ ) for heavy coffee drinkers.

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“Drinking coffee increases the risk of prediabetes in young adults with hypertension who are slow caffeine metabolisers,” said Dr Mos. “Slow caffeine metabolisers have longer exposure to the detrimental effects of caffeine on glucose metabolism. The risk is even greater if they are overweight or obese, and if they are heavy coffee drinkers. Thus, the effect of coffee on prediabetes depends on the amount of daily coffee intake and genetic background.”

During the 12.5 year follow-up there were 60 cardiovascular events. Of these about 80% were heart attacks and

the remainder included strokes, peripheral artery disease and kidney failure. In multivariable analyses including other lifestyle factors, age, sex, parental cardiovascular morbidity, body mass index, total blood cholesterol, 24 hour ambulatory blood pressure, 24 hour ambulatory heart rate and follow-up changes in body weight, both coffee categories were independent predictors of cardiovascular events with HRs of 4.3 (1.3-13.9) for heavy coffee drinkers and 2.9 (1.04-8.2) for moderate drinkers.

Inclusion of hypertension development in the analysis attenuated the strength of the association between coffee and cardiovascular events with HRs of 3.9 (1.2-12.5) for heavy and of 2.8 (0.99-7.8) for moderate drinkers.

When future prediabetes was also incorporated, the relationship was of borderline significance for heavy coffee drinkers (HR, 3.2, 95%CI, 0.94-10.9) and was no longer significant for moderate drinkers (HR, 2.3, 95%CI, 0.8-6.5).

Dr Mos concluded: "Our study shows that coffee use is linearly associated with increased risk of cardiovascular events in young adults with mild hypertension. This relationship seems to be at least partially mediated by the long term effect of coffee on blood pressure and glucose metabolism. These patients should be aware that coffee consumption may increase their risk of developing more severe hypertension and diabetes in later life and should keep consumption to a minimum."

Figure 1: Risk of hypertension development according to coffee drinking

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Figure 2: Risk of prediabetes development according to coffee drinking

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Source: [ESC](#)

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