

Grilling and other high-temperature cooking may raise risk of high blood pressure

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Grilled or well-done beef, chicken or fish may raise the risk of developing high blood pressure among people who regularly eat those foods, according to preliminary research presented at the American Heart Association's Epidemiology and Prevention / Lifestyle and Cardiometabolic Health Scientific Sessions 2018, a premier global exchange of the latest advances in population based cardiovascular science for researchers and clinicians.

Researchers analyzed [cooking methods](#) and the development of [high blood pressure](#) in people who regularly ate beef, poultry or fish: 32,925 women taking part in the Nurses' Health Study; 53,852 women participating in the Nurses' Health Study II; and 17,104 men in the Health Professionals Follow-Up Study. Detailed cooking information was collected in each of these long-term studies. None of the participants had high blood pressure, diabetes, heart disease, or cancer when they enrolled, but 37,123 people developed high blood pressure during an average follow-up of 12-16 years.

Among participants who reported eating at least two servings of red meat, chicken or fish a week, the analysis revealed that the risk of developing high blood pressure was:

- 17 percent higher in those who grilled, broiled, or roasted beef, chicken or and fish more than 15 times/month, compared with less than 4 times a month.
- 15 percent higher in those who prefer their food well done,

compared with those who prefer rarer meats.

- 17 percent higher in those estimated to have consumed the highest levels of heterocyclic aromatic amines (HAAs) - chemicals formed when meat protein is charred or exposed to [high temperatures](#) - compared to those with the lowest intake.

Researchers noted the relationship between cooking temperature, method, doneness and high blood pressure was independent of the amount or type of food consumed.

"The chemicals produced by cooking meats at high temperatures induce [oxidative stress](#), inflammation and [insulin resistance](#) in animal studies, and these pathways may also lead to an elevated risk of developing high blood pressure," said Gang Liu, Ph.D., lead author of the study and a postdoctoral research fellow in the department of nutrition at the Harvard T.H. Chan School of Public Health in Boston.

Oxidative stress, inflammation and insulin resistance affect the inner linings of blood vessels, and are associated with the development of atherosclerosis, the disease process that underlies [heart disease](#) and causes the arteries to become narrowed.

It is important to note that this study identifies a trend but does not prove cause and effect. The findings are limited because data came from questionnaires that did not include certain types of meats (such as pork and lamb) and certain cooking methods (such as stewing and stir-frying). Because the participants were all health professionals and mostly Caucasian, the results may not generalize to other groups.

"Our findings suggest that it may help reduce the risk of high blood pressure if you don't eat these foods cooked well done and avoid the use of open-flame and/or high-temperature cooking methods, including grilling/barbequing and broiling," Liu said.

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Provided by American Heart Association

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