Hypertensive women with physically demanding jobs at three times risk of heart disease

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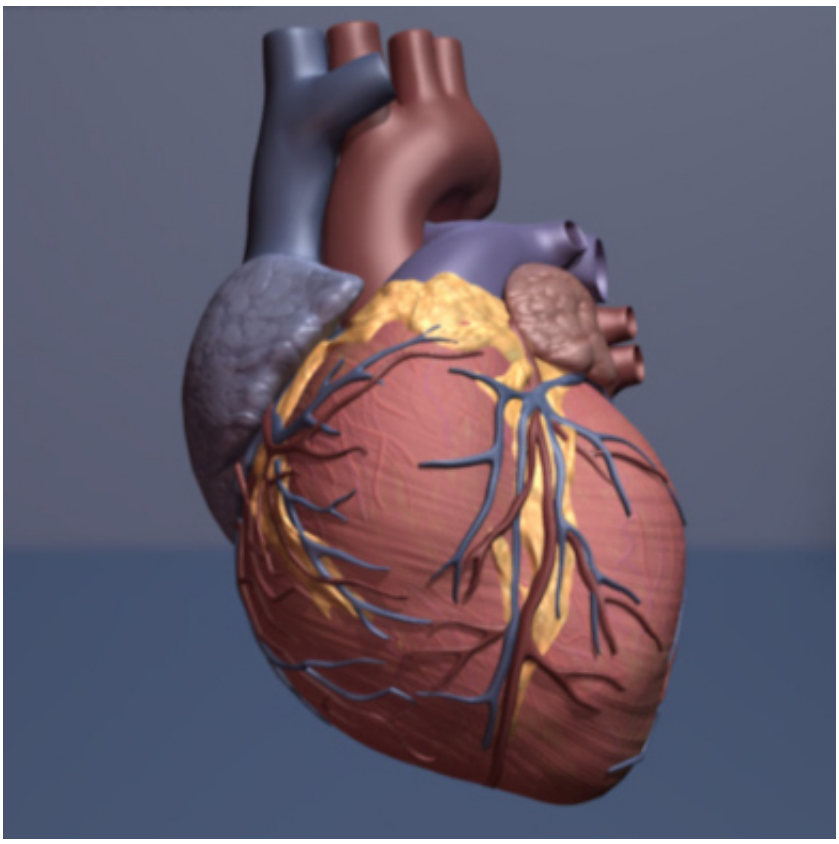

Human heart. Credit: copyright American Heart Association

Hypertensive women with highly active jobs have a nearly three times higher risk of ischaemic heart disease than women with normal blood pressure and moderately active jobs, according to research published

today in the *European Journal of Preventive Cardiology*.

"Previous research has shown that men and women with physically demanding jobs have an increased risk of heart disease," said lead author Karen Allesøe, a PhD student at the University of Southern Denmark. "Lifting and carrying cause a rise in blood pressure and may put people with hypertension at particular risk of a cardiovascular event. We wanted to investigate whether women with hypertension and physically demanding jobs have an especially high risk of heart disease."

The study included 12 093 female nurses from the 1993 Danish Nurse Cohort Study. Data on hypertension and physical activity at work were collected using a questionnaire. Physical activity at work was classified as sedentary, moderate (mainly standing and walking but not physically exerting), and high (standing or walking with some lifting or carrying; and heavy or fast and physically exerting).

Nurses with hypertension and high physical activity at work were compared to nurses with normal blood pressure and moderate physical activity at work. The latter was deemed the most healthy combination as both high physical activity at work and long periods of sitting increase the risk of cardiovascular disease.

During the 15 year follow up period, 580 nurses developed ischaemic heart disease. Nearly 12% reported having hypertension. Physical activity at work was reported as high in 46.3% of the nurses, moderate in 34.4% and sedentary in 19.3%.

The researchers found that hypertensive nurses with high physical activity at work had a nearly three times higher risk of ischaemic heart disease than nurses with normal blood pressure and moderate physical activity at work (hazard ratio 2.87, 95% confidence interval 2.12-3.87).

Nurses with normal blood pressure and high physical activity at work had a small increased risk of heart disease (about 20%) but this was not statistically significant after adjusting for traditional cardiovascular risk factors such as diabetes and smoking.

The combination of hypertension and high physical activity at work increased the risk of ischaemic heart disease more than adding the individual risks together. This was illustrated by the finding of around five additional cases of heart disease (per 10 000 person years) due to high physical activity at work and around 15 extra cases from hypertension. While 20 extra cases would be expected from the combination of hypertension and high physical activity at work, the researchers found more than 60 additional cases.

Ms Allesøe said: "This implies that there is an additive interaction between hypertension and high physical activity at work. The two risk factors appear to work together, resulting in an even greater incidence of heart disease. It means hypertensive women with physically demanding work may be especially at risk of heart disease. To our knowledge, this has not been shown before among women."

One possible explanation is the atherosclerotic pathway leading to heart disease. Physically demanding work causes rises in heart rate and blood pressure. A higher heart rate can lead to plaques in the arteries and atherosclerosis. Hypertension also causes atherosclerosis. In addition, lifting and carrying heavy loads may cause an acute rise in blood pressure that could be harmful in people with hypertension.

"For nurses, physically demanding jobs may involve high force demands during patient handling, or standing and walking all day with no time for breaks," said Ms Allesøe. "Our results may also apply to other occupations that require lifting or carrying heavy loads and standing or walking for many hours, but this needs to be confirmed in other studies."

She concluded: "We need more information on which aspects of physically demanding work are harmful. Until then we cannot make specific recommendations on how much lifting, and for how many hours, is safe for women with hypertension. If our findings are replicated in other studies there would be grounds for occupational health counselling for women with hypertension to ensure that the physical aspects of their jobs do not increase their risk of heart disease."

More information: Allesøe K, Søgaard K, Aadahl M, Boyle E, Holtermann A. Are hypertensive women at additional risk of ischaemic heart disease from physically demanding work? *European Journal of Preventive Cardiology*. DOI: 10.1177/2047487316631681

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