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Cardiovascular risk factors highest in winter and lowest in summer

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Cardiovascular risk factors are highest in winter and lowest in summer, according to research presented at the ESC Congress today by Dr. Pedro Marques-Vidal from Switzerland. The analysis included more than 100,000 subjects in seven countries.

Dr Marques-Vidal said: "Deaths from cardiovascular disease are higher in winter and lower in summer. We decided to conduct a large scale study to see whether cardiovascular risk factors have a seasonal pattern which could explain the seasonality in deaths."

The study used cross-sectional data from 10 population based studies in 7 countries. Information was obtained on cardiovascular risk factors in 107,090 subjects aged 35 to 80 years. The country breakdown was as follows: 21,128 subjects in Belgium, 15,664 in Denmark, 1,626 in France, 18,370 in Italy, 25,532 in Norway, 9,359 in Russia and 15,411 in Switzerland.

Levels of blood pressure, lipids, glucose, body mass index (BMI, kg/m2) and waist circumference were compared according to season. All data were adjusted for age, gender and smoking. Data on blood pressure, lipids and glucose were adjusted for BMI and whether or not the patient was taking medication.

The researchers found that levels of several cardiovascular risk factors (such as blood pressure, waist circumference and total cholesterol) were higher in winter (January to February) and lower in summer (June to

August) compared to the annual average.

Systolic blood pressure levels were on average 3.5 mmHg lower in summer than in winter (see figure). Dr Marques-Vidal said: "Although this difference is almost irrelevant for an individual, it is considerable for a whole population because the whole blood pressure distribution is shifted to higher values, increasing cardiovascular risk. Indeed, the impact of season on blood pressure levels might have as great an impact on cardiovascular risk as genetic markers for blood pressure. This is because the joint effect of genetic markers on blood pressure is modest, between 2 and 3 mmHg."

He added: "We are currently conducting a study involving 50 million deaths in 18 countries to discover whether seasonality of risk factors affects the risk of dying from myocardial infarction or stroke."

Waist circumference was on average 1 cm smaller in summer than in winter, while total cholesterol was on average 0.24 mmol/L lower in summer than in winter. Dr Marques-Vidal said: "We observed a seasonal variation in waist circumference but BMI did not change throughout the year. We have no clear explanation for this finding. Total cholesterol may increase during the winter because of changes in eating habits. There was no seasonal variation in glucose, probably because several cohorts did not collect blood samples in the fasting state. We have begun a study on seasonality of food intake which may help explain these findings."

He added: "Our large scale study shows that some cardiovascular risk factors take holidays over the summer. This may explain why deaths from cardiovascular disease are higher in winter than summer. People need to make an extra effort to exercise and eat healthily in the winter to protect their health."

He concluded: "Our team is currently conducting another study to find out if the seasonal pattern in cardiovascular risk factors reverses in the southern hemisphere, where seasons are inverted relative to the northern hemisphere. Based on preliminary data, it does seem to be the case. The overall study is expected to collect information on almost 200,000 subjects from over 12 countries."

Provided by European Society of Cardiology

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