

Over 50 percent of obese Spanish workers are metabolically healthy

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About half of obese individuals in a working population in Spain are metabolically healthy - they are obese but do not present metabolic abnormalities like disturbed insulin signaling or inflammation, according to a study published in the open access journal *BMC Public Health*.

Researchers at Hospital del Mar (Universitat Autònoma de Barcelona & CIBER Obn), Cuatrecasas and Eli Lilly Spain gathered data on 451,432 Spanish workers to examine, for the first time, the prevalence of metabolically healthy obese individuals in the working population, as well as the differences between them and metabolically unhealthy obese and non-obese individuals.

The researchers found that overweight and obese individuals who were metabolically healthy tended to be younger and were more likely to be women. They were more likely to participate in physical exercise than their metabolically unhealthy counterparts, and were less likely to smoke or to be heavy drinkers.

Factors found to be most strongly associated with being metabolically unhealthy were BMI and age, high cholesterol, being male, a smoker or a heavy drinker, and lack of physical exercise.

Individuals that were normal or underweight but metabolically unhealthy were more likely to have sedentary lifestyles than metabolically healthy individuals. They were also more likely to be older, male, blue collar workers, smokers and heavy drinkers.

The Ibermutuamur Cardiovascular Risk Assessment (ICARIA) study was conducted among workers enrolled in a health insurance scheme that covers 8% of the Spanish working population and includes workers from all activity sectors and geographical areas of Spain. As part of the ICARIA study, the researchers gathered information on age, sex, occupation, tobacco and alcohol

consumption, physical exercise and medical history from 451,432 individuals, 70,053 (15.5%) of whom were obese. Participants also underwent a physical examination that included weight, height, waist circumference and blood pressure recordings.

According to BMI, the researchers categorized participants as underweight, normal weight, overweight or obese. They also categorized them as being either manual (blue collar) or non-manual (white collar) workers, as well as according to their smoking status (former or current), alcohol consumption, and level of exercise. Metabolic health was evaluated according to five criteria for metabolic syndrome: waist circumference, triglyceride and cholesterol levels, blood pressure, and fasting blood sugar. Participants were considered metabolically healthy, if they met two or less out of the five criteria.

Out of the overweight group, 87.1% were found to be metabolically healthy, while 55.1% were found to be metabolically healthy in the obese group. Out of underweight individuals, 99.5% were metabolically healthy, while 97.8% of normal weight individuals were metabolically healthy.

Even though the prevalence of metabolic health was found to be relatively high even in obese individuals in this study, the authors note that results are influenced by which definition of metabolic health is used. For example, the researchers also tested more stringent criteria to assess metabolic health, considering only individuals who met none of the criteria for metabolic syndrome to be metabolically healthy. Under these more stringent criteria, the most obese study subjects previously found to be metabolically healthy were found to be metabolically unhealthy.

As this was a cross-sectional study, no causal relationships could be established. However, obese individuals who are metabolically healthy have distinct characteristics - such as less disturbed

insulin signaling or [inflammation](#) - that may make them more responsive to dietary interventions targeted at modifiable risk factors like relative weight, smoking or heavy drinking.

While metabolically healthy obese individuals could be at a lower risk than metabolically unhealthy individuals of developing associated conditions like type 2 diabetes, hypertension and coronary heart disease, previous studies have found that metabolically healthy [obese individuals](#) show subclinical (pre-symptomatic) signs of cardiovascular disease, and that they may be at an increased long-term risk of diabetes and cardiovascular events. Targeted interventions may prevent metabolically healthy obese and overweight individuals from becoming unhealthy, according to the researchers. They may be particularly effective in the working population, as the prevalence of metabolically healthy obese people in this population was found to be high.

Albert Goday, lead author of the study, said: "The implementation of health promotion programs in this [population](#) could reduce the likelihood of transition to a metabolically unhealthy phenotype and/or the risk of developing hypertension, diabetes and cardiovascular disease."

More information: Albert Goday et al. Prevalence and clinical characteristics of metabolically healthy obese individuals and other obese/non-obese metabolic phenotypes in a working population: results from the Icaria study, *BMC Public Health* (2016). [DOI: 10.1186/s12889-016-2921-4](https://doi.org/10.1186/s12889-016-2921-4)

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