

# The amount of adipose tissue should be taken into account in the fight against obesity

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Obesity is seen as the great pandemic of the XXI century. Recent data point to more than a billion adults in the world suffering from overweight, of which 300 million are clinically obese. What is more, the rates of child obesity show a worrying increase, with more than 155 million children and adolescents being overweight, of which 40 million are clearly obese.

Biologist Aline Jelenkovic analysed to what point corporal morphology was influenced by genetics, on the one hand and, on the other, by the environment. To this end, she studied nuclear families in Greater Bilbao, with children of between 2 and 19 years of age. She corroborated that the environmental factor influenced the amount of adipose tissue (tissue containing fat accumulating cells) very considerably and that this is, in turn, linked to [blood pressure](#). Its control would seem, therefore, key to fighting against obesity. This is the conclusion of the PhD thesis, defended at the University of the Basque Country (UPV/EHU) and entitled *Body morphology, obesity and blood pressure in nuclear families from the Greater Bilbao area: [genetic](#) and environmental influences*.

## Genetics and the environment, both relevant

According to the data in the thesis, it is estimated that the characteristics or [phenotypes](#) defining the height, the shape and the adipose tissue of the human body are hereditary at a rate that goes from moderate to high (0.28-0.69). The environment also plays a relevant role. In fact, human

morphology is partly determined by genetic factors and partly by environmental ones which occur in common in the corresponding phenotypes. The influence of both is notable in the phenotypes related to obesity, but it is also significant that genetics does not affect all of them equally.

In the concrete case of the phenotypes that determine adipose tissue, the hereditary factor is less and the environmental one gains importance. Moreover, the thesis explains that the general increase in [body mass](#) observed amongst this sample can be understood on the basis of the increase in adipose tissue (the phenotypes that determine body mass are closely linked to those determining the amount of fat). The thesis concludes, thus, that controlling the amount of adipose tissue, and not only total body mass, is key in the fight against obesity.

In fact, body fat is not only key because it is related to mass, but also because it is linked to another component that is equally characteristic of obesity: blood pressure. Blood pressure (and the pulse in particular) shows itself to be considerably influenced by the environmental factor, and less determined by [genetic factors](#) (0.14-0.31).

There are no common genetic and environmental factors that prove a proportional relation between blood pressure and obesity. What can be observed, however, is that the quantity of body fat has genetic effects on blood pressure phenotypes, corroborating the relationship between the two.

## **Biodemographic and socioeconomic factors**

Ms Jelenkovic also characterised the link between corporal morphology and the family, the thesis considering it be a significant factor, but not especially influential. The researcher observed that, for example, siblings share more environmental factors that influence their corporal

morphology than parents and children. As regards mothers, the thesis concludes that the children of young mothers tend to have more body mass and fat, and that the age of the mother when she has her first child and parental education are more closely linked to obesity-related phenotypes than other family factors.

Neither is the socioeconomic factor particularly significant, but it does throw up some interesting data. For example, greater economic status also means being taller and having less adipose tissue. Moreover, socioeconomic status has more influence on phenotypes related to [adipose tissue](#) than to body mass.

Provided by Elhuyar Fundazioa

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