

## Do environmental factors lead to obesity?

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Weight gain is one of the problems that many people face and is unfortunately the fifth leading cause of death worldwide. Overweight is caused by many factors, such as the environment, family and genetic history, metabolism, unhealthy eating behavior or habits. Factors like family history are unchanging, but other factors, such as your habits, lifestyle and environmental factors can change (1). In the following article, a number of factors affecting overweight, such as Exposure to environmental toxins, Changes in the Microbiome, Chronic stress and cortisol and... will be discussed.

#### Environmental factors

**Exposure to environmental toxins:** Exposure to environmental toxins is one of the factors contributing to weight gain, including shampoos, food, food packaging, plastics, building supplies and household cleaners. One of the substances that

is associated with obesity and endocrine disruption is bisphenyl A, found especially in plastics and personal care products. Although these chemicals are rampant in the modern world, there are items that are less exposed to them, including the use of glass and steel containers instead of plastic and the use of natural beauty products (2).

**Changes in the Microbiome:** The population of bacteria and other microorganisms that live in and on the body can contribute to the growth of obesity (3).

These changes can be attributed to the growth in the use of artificial sweeteners and processed foods, both of which can have a negative impact on the gut bacteria. In fact, researchers have found a close relationship between the gut Microbiome, obesity, and insulin resistance, and hope that in the future they will be able to prevent the epidemic of obesity using this relationship. Eating probiotic-containing foods and probiotic supplements can help improve the function of the gut bacteria (4).

**Chronic stress and cortisol:** In fact, stress can severely damage health and lead to unhealthy behaviors, such as overeating. Stress is significantly associated with obesity and overweight (5).

The link between stress and obesity is largely related to hormones, especially cortisol.

When hormone levels (include cortisol) rise, appetite increases. When a person experiences stress, anxiety, and depression, he/she eats to heal himself/herself, resulting in weight gain (6).

**Lack of sleep:** The researchers found that the BMI of people who sleep 7 to 9 hours per night is lower than those who sleep 6 hours or less, and those who sleep less often are overweight and

obese. Usually people who have insufficient sleep are overweight and obese. Unfortunately, the number of people sleeping has fallen sharply in recent years and has declined sharply compared to previous years (7).

**Use of antidepressants:** The use of antidepressants in the modern century has grown dramatically by 400%. Nowadays even 12-year-olds are involved in using such drugs. Adding weight and obesity along with other side effects are antidepressants. At least a quarter of people who take antidepressants become overweight (8).

**Low metabolism:** Fighting obesity and overweight for many obese people who are severely restricting their calorie intake may become a vicious cycle. It decreases for a while and then rises again (9). The cycle of weight loss and weight gain may lead to a slowdown in

metabolism. Each time you lose weight and then gain weight; there is a change in the amount of muscle tissue and adipose tissue. The trend of change in adipose tissue is increasing and in muscle tissue is decreasing. Given fat tissue burns fewer calories than muscle tissue, every time you repeat this defective cycle, your metabolic rate also decreases (10).

In general, it is concluded that environmental factors, especially nutrition, stress, life style, toxins and low metabolism, can have positive and negative effects on obesity early in life. Therefore, following a healthy lifestyle since childhood is very important in preventing non-communicable diseases, even in developing countries.

### Authors' contribution

A.M contributed to the research and writing of the manuscript.

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