



Sodium Intake and Long-Term Health Outcomes



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Sodium plays an important role in allowing the human body to function properly, but most people are consuming far more than their bodies really need—and this can cause more harm than good.

The American Heart Association found that an astounding 90% of Americans consume too much sodium, with an average of 3,400 milligrams each day.¹ Only 15% of this sodium is naturally occurring. More than 70% of it comes from processed and restaurant foods, with an additional 10% added during cooking or eating.

These sodium consumption levels are nothing short of a health crisis and can have severe long-term effects on health outcomes. The answer is not eliminating sodium from the diet altogether, but reducing consumption to levels recommended by medical professionals.



The Role of Sodium in the Body

The words 'salt' and 'sodium' are often used interchangeably, but they are not actually the same thing. Salt is a crystal-like compound, while sodium is a mineral and is one of the main components in salt (the other being chloride).

Sodium is essential for the body to function properly. It plays a vital role in fluid balance, muscle contraction, and nerve impulse generation, and normal cell function.² It helps the body maintain a regular heartbeat, prevents muscle cramping, and regulates the balance of electrolytes in the body, ensuring that there are sufficient amounts of vitamins and minerals like potassium and zinc. With that said, it's important to ensure the correct balance of sodium in the blood.

The kidneys work together with aldosterone, a hormone produced by the adrenal glands, to regulate that balance. Changes in water loss or intake can affect concentrations of sodium, and the body responds by either increasing thirst or excreting more sodium in the urine.

This is particularly noteworthy for individuals who engage in heavy exercise or manual labor. Sodium losses through sweating can be substantial; if they aren't replaced, it can lead to a potentially life-threatening condition known as hyponatremia. Over-consuming sodium can be equally as harmful.



Effects of Too Much Sodium

The occasional greater-than-recommended intake of sodium here and there is unlikely to cause serious problems, but excessive intake of sodium on a regular basis can have serious repercussions for long-term health.

High sodium intake has been directly linked to bloating, and puffiness. It can cause the body to retain more water, but it also has strong links linked to higher body fat—particularly around the midsection.

Numerous studies have found correlations between high sodium intake and obesity. In 2015, researchers from Britain and China reported an increase in body fat among both adults and children on high-salt diets. In fact, eating an extra gram of salt each day—the equivalent of about 400 milligrams of sodium—increased the risk of obesity in adults by 26%.³

An Australian study conducted in 2016 tied salt to an 11% increase in food that adults take in.⁴ While more research is needed to determine the exact link between sodium, body fat, increased eating, and obesity, it may simply be that salt encourages people to eat more.

High sodium intake is also a risk factor for other serious chronic and acute conditions.

Hypernatremia

This condition results from dehydration. The body has too little water for the amount of sodium, resulting in unusually high sodium levels. Hypernatremia often has one subtle symptom at first: thirst. If the hypernatremia worsens and becomes severe, it can result in confusion, muscle twitches, seizures, coma, and even death.

Hypernatremia can have many causes, including vomiting or diarrhea, using diuretics, and sweating excessively. However, insufficient water intake, is usually a significant underlying factor in the development of the condition. When treating hypernatremia, it's important to rehydrate slowly; reducing sodium levels too quickly can result in permanent brain damage.





Hypertension

Hypertension affects nearly half of all adults in the U.S. and, in 2018, was a primary or contributing cause of death for almost half a million people.⁵ The condition is a significant risk factor for heart disease and stroke, which are two of the leading causes of death in the country, and costs an estimated \$131 billion each year.

There is a close relationship between sodium intake and hypertension. Excessive sodium consumption—that is, more than 5 grams of sodium per day—has been shown to cause a significant increase in blood pressure and is linked with the development of hypertension and associated cardiovascular complications.⁶

A study within the past five years, found that simply reducing the average population sodium intake by about 1,000 milligrams each day could reduce cases of high blood pressure by 11 million annually and save about \$18 billion in health care costs.⁷

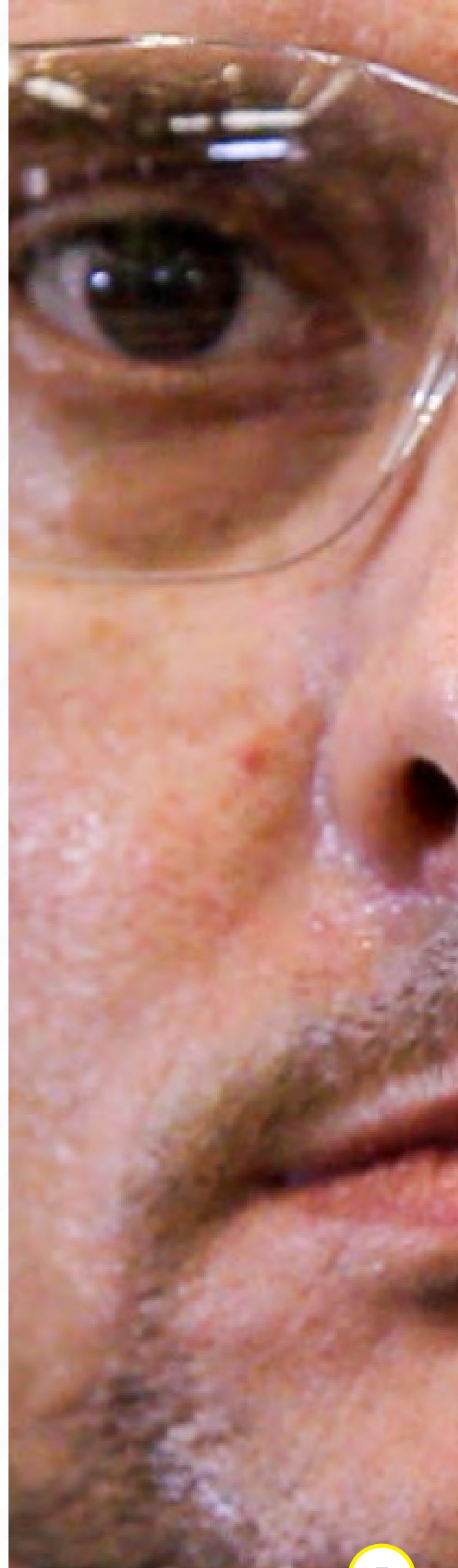
Other Medical Conditions

A number of other conditions have been linked to high sodium consumption, including recurring headaches, kidney disease, kidney stones, heart failure, and stomach cancer. There's evidence to suggest that too much sodium can cause calcium loss, as well.⁸ Some of this may be pulled from the bones, which can lead to the onset of osteoporosis.

Sodium as Part of a Balanced Diet

This all begs the question: what is high sodium intake? The answer, as is so often the case, is that it depends. Sedentary individuals with a history of blood pressure issues typically have different sodium needs than an athlete or a worker doing heavy manual labor.

Generally speaking, the Dietary Guidelines for Americans recommends that adults limit their sodium intake to no more than 2,300 milligrams per day.⁹ This is the equivalent of just under a teaspoon of salt per day.





Reducing salt intake is one of the most cost-effective measures that countries can take to improve the health outcomes of their populations, according to the World Health Organization (WHO). Their research suggests that an estimated 2.5 million deaths could be prevented annually if global salt consumption was reduced to the recommended level.¹⁰

It's important to remember that sodium doesn't just come from salty foods. Bread and breakfast cereals are two major sources of sodium, and diets high in processed foods will easily surpass the recommended daily limit. According to the CDC, about half of all sodium consumed by Americans comes from foods such as breads and rolls, pizza, cold cuts and cured meats, soups, burritos and tacos, processed meats and cheeses, egg dishes, and snack foods.¹¹

Beverages can also be a significant source of sodium, though many people don't realize it. The popularity of electrolyte drink offerings have skyrocketed over the past decade, with some delivering almost half the recommended daily intake of sodium in just one serving. While the higher sodium formulations are marketed to active individuals who may have slightly higher sodium needs than the average person, too much of a 'good' thing can cause problems.

With sodium, moderation is key to finding the correct balance for the body.



Best Practices for Hydration and Sodium Consumption for Workers

Workers who are engaged in heavy manual labor tend to lose a significant amount of sodium through sweat. If this sodium isn't replaced, it can lead to hyponatremia (low sodium in the blood), which was observed in more than half of workers in a study out of the United Arab Emirates.¹² This can severely compromise their health and safety.

An Australian study noted that average sweat sodium losses over a 10-hour work shift were about 4.8–6 grams, which is equivalent to about 10–15 grams of salt.¹³ For workers who spend much of their day on the job, learning about good hydration and proper sodium consumption are a key part of occupational safety. Unfortunately, guidelines for replacing these fluids and electrolytes are often conflicting.

How much sodium do manual laborers need?

The question of how much sodium workers need is complex; there is no simple answer that applies to everyone, since each case is slightly different.

Sodium requirements vary depending on a number of different factors, including body composition, the type of work, the length of the shift, the ambient temperature, and more. The more electrolytes the body loses through sweat, the more need to be replaced. The only way to know the exact amount is to measure it for each individual, which isn't usually practical—especially in a workplace.

Even those doing heavy manual labor should follow the general recommendations set out by health authorities and refrain from consuming products with high sodium content. More is not always better, and the effects of excessive sodium intake on a regular basis are a real concern for workers who consume high-sodium beverages regularly in an effort to rehydrate.

Maintaining Proper Hydration to Keep Sodium Levels in Check

The most effective way for workers to prevent the effects of excessive sodium consumption is to maintain proper hydration levels throughout the day. Poor hydration can lead to higher-than-normal levels of sodium in the blood (hypernatremia).





Research shows that both dehydration and fluid overload are associated with morbidity and mortality, and a growing body of evidence suggests that there may be links between fluid imbalance and disease. ¹⁴ In the workplace, poor hydration can have severe effects. Workers typically experience reduced mental and physical performance, as well as confusion, dizziness, and weakness—and when heavy machinery and tools are involved, the results can be fatal.

In general, workers are advised to drink about 5–7 ounces of fluids every 15–20 minutes to replenish what has been lost through sweating and urination. Employers can help encourage this by making hydration education an ongoing part of employee communications and providing hydration stations, offering healthy fluids like water, coconut water, or electrolyte drinks with a moderate amount of sodium.

It's also important for workers to limit intake of high-sodium foods. While processed foods are easy and convenient, they contain excessive amounts of sodium and can actually dehydrate the body even further. During meal breaks—which are essential for work in strenuous conditions—workers should focus on eating foods that are lower in sodium so as not to further throw off the balance of fluid and sodium in the body. Whole foods are the best options, including beans and grains, fresh fruits and vegetables, fish and poultry, raw nuts, and some dairy.



Sodium Replacement

Even the most well-hydrated worker can experience electrolyte imbalances in the body, usually due to sweat loss. When sodium replacement is necessary, the source matters.

Commercially prepared sports drinks and electrolyte beverages are incredibly popular, but they're not all equal in terms of efficacy. Concentrations of glucose (which maintains blood glucose levels) and sodium can differ drastically. Many of these drinks also contain artificial flavors, artificial coloring, and corn syrup or other added sugars.

One popular electrolyte drink mix advertises packets that have 1,000 milligrams of sodium in each serving. If workers are consuming multiple servings per day, it wouldn't take much before their daily sodium consumption far exceeds the recommended daily intake of 2,300 milligrams.

To replace lost electrolytes, workers are encouraged to opt for rehydration beverages with moderate amounts of sodium and potassium. Both of these minerals work together to achieve energy production and to keep fluid balances in the body in check. Workers should also refrain from consuming caffeinated beverages, which can actually increase fluid output and result in greater dehydration, and sugary beverages.

Conclusion

While the dangers of low sodium in the blood are commonly discussed, there is a clear link between high sodium intake and negative long-term health outcomes that is often forgotten in workplace discussions about hydration and electrolyte replacement. This gap represents a significant opportunity for employee education.

Excessive sodium consumption has been linked to serious acute and chronic health conditions such as obesity, hypertension/high blood pressure, hypernatremia, and more. Maintaining proper hydration and choosing lower-sodium food and drink options are two of the simplest ways to prevent high sodium levels and the ill health effects that can result from them.



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