

**Journal of Pharmaceutical Advanced Research****(An International Multidisciplinary Peer Review Open Access monthly Journal)**Available online at: [www.jpardonline.com](http://www.jpardonline.com)**Salt reduction to maintain normal Blood Pressure****Tapan Kumar Mahato**

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Received: 25.12.2023

Revised: 02.01.2024

Accepted: 12.01.2024

Published: 31.01.2024

**ABSTRACT:** Worldwide, hypertension is responsible for the greatest share of cardiovascular illness and premature deaths. A recent study suggests that this may be due in part to people eating too much salt. National Noncommunicable Diseases Monitoring Survey data shows that the typical Indian consumes 8 g of salt every day, well above the maximum recommended dose of 5 g per day. What does it mean? We set out to discover the solution, and in this article, we'll share what we learned about the current state of hypertension in India and around the world, the makeup of salt, the negative effects of eating too much salt, and practical tips for cutting back. In low and middle-income countries, such as India, the majority of a person's salt intake comes from the salt used in cooking. Studies in high-income countries found that people there consume an average of 9.0 to 12 g of salt per day, most of which comes from processed foods. Diseases like hypertension, coronary artery disease, and stomach cancer have all been linked to high salt intake. The issue can be corrected by reducing salt consumption. If the aim is to maintain a healthy weight and blood pressure, cutting back on salt is a better option than searching for a replacement. In order to maintain a healthy blood pressure level, it is recommended to make adjustments to one's lifestyle and diet, such as reading food labels to identify products with reduced sodium content, preparing meals at home using salt alternatives, avoiding processed foods altogether, snacking on fresh fruits and vegetables, and using condiments like pickles and chutneys sparingly, if at all.

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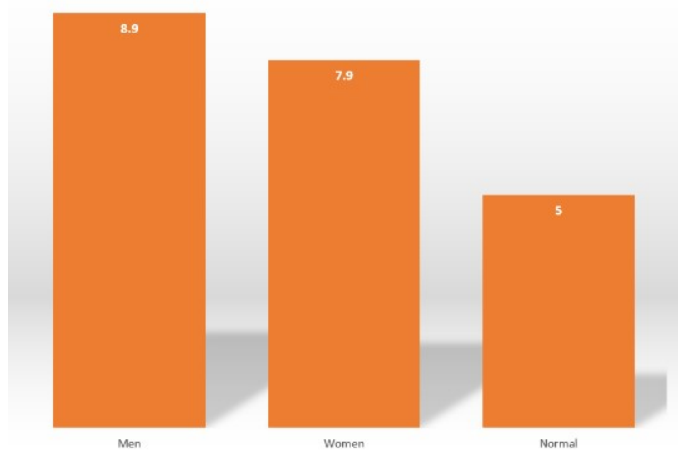
**Keywords:** Blood pressure, hypertension, salt reduction, salt, sodium chloride, excess salt intake.

**INTRODUCTION:**

As part of the National Non-Communicable Diseases Monitoring Survey, a recent study found that the typical Indian eats 8 g of salt on a daily basis, despite the fact that the maximum recommended dose is only 5 g per day. The average amount of salt that males consumed on a daily basis was 8.9 g, whereas the same amount that women consumed on a daily basis was 7.9 g. Fig 1 shows this graphically.

Comparable results indicated that several groups consumed more salt than others who were not smoking, obese, unemployed, or had normal blood pressure. These categories included individuals with high blood pressure (8.5 g), those who were employed (8.6 g), those who

were obese (9.2 g), and those who were presently using tobacco (8.3 g). Table 1 below displays the results.



**Fig 1. The graph shows daily consumption of salt (g) by men and women in a day.**

**Table 1. Daily salt intake by specific groups.**

Sl. No.	Group	Daily intake (g)
1	Employed	8.6
2	Currently using tobacco	8.3
3	Obese	9.2
4	Elevated blood pressure	8.5

The number of deaths associated with hypertension decreased from 0.78 million in 1990 to 1.63 million in 2016. This represents a significant increase from the previous number. An excessive intake of sodium in one's diet is associated with cardiovascular diseases and could potentially be the cause of three million fatalities globally. Excessive use of salt not only has detrimental impacts on the cardiovascular system but may also contribute to the likelihood of developing stomach cancer in the future. The World Health Organisation (WHO) recommends that a daily salt consumption of 5.0 g is adequate for adults in good health [1]. In low and middle-income nations, like India, the main dietary source of salt is the salt added during food preparation. According to research done in nations with high levels of income, the average daily intake of salt ranged from 9.0 to 12.0 g, with processed foods being the predominant source [2].

**Hypertension:**

Hypertension stands as the primary contributor to the occurrence of cardiovascular disease and untimely mortality on a global scale. Because so many

antihypertensive drugs are being used, the normal blood pressure (BP) around the world has been going down steadily or slightly for forty years. On the other hand, hypertension has become much more common, especially in low- and middle-income countries (LMICs). Estimates show that around 31.1 % of adults around the world, or 1.39 billion people, had high blood pressure in 2010. The occurrence of hypertension among adults was shown to be more prevalent in low- and middle-income countries (LMICs), affecting around 31.5 % or 1.04 billion individuals, compared to high-income countries where the prevalence was 28.5 % or 349 million people. Regional differences in the prevalence of hypertension may be attributed to variations in the levels of risk factors associated with the condition. Excessive salt consumption, inadequate potassium intake, obesity, alcohol use, lack of physical activity, and poor dietary habits are all contributors to this risk. Despite hypertension's increasing incidence, few people understand the disease, let alone seek treatment for it or keep it under control. This is particularly true in low- and middle-income nations (LMICs). Furthermore, there is a scarcity of complete evaluations about the economic implications of hypertension [3]. The user's text does not provide any information to rewrite in an academic manner. Based on data from the World Health Organisation (WHO), it has been determined that hypertension has a prevalence rate of 33 % among the global adult population. The prevalence of hypertension, defined as having a blood pressure reading of 140/90 mmHg or above or being under treatment for hypertension, experienced a twofold increase from 650 million individuals in 1990 to 1.3 billion individuals in 2019. Approximately 50 % of individuals worldwide who have hypertension are now uninformed of their medical condition. A significant majority of adults diagnosed with hypertension reside in nations with low to middle-income economies. Advanced age and genetic predisposition have been identified as factors that can elevate the likelihood of developing hypertension. However, it is important to recognise that there are also modifiable risk factors that can contribute to an increased risk of high blood pressure. These include the consumption of a high-sodium diet, a sedentary lifestyle, and excessive alcohol use. Implementing lifestyle modifications such as adopting a more nutritious dietary regimen, ceasing cigarette consumption, and engaging in increased physical activity have the potential to effectively reduce elevated blood pressure levels. There

is a subset of individuals who may require pharmacological interventions to properly manage hypertension and mitigate associated consequences <sup>[4]</sup>.

**Salt:**

NaCl, or table salt, is composed of around 40 % sodium and 60 % chloride. Salt is a flavour enhancer, a binder, a stabiliser, and a preservative because germs can't grow in its presence.

**Salt Varieties:**

Sodium concentration is often higher in finely powdered salts compared to coarser salts due to the high density of the former. Different brands have different amounts of sodium (Table 2).

**Table 2. Salt Varieties.**

Variety	Sodium content of 1 teaspoon
Table salt with iodine, fine	2,300 mg
Sea salt (kosher), coarse	1,920 mg
Fine Kosher salt with a diamond-like shine	1,120 mg
Finely ground sea salt	2,120 mg
Salt from the sea, coarse	1,560 mg
Himalayan salt, also known as Pink salt	2,200 mg
Charcoal-colored salt	1,150-2,200 mg
Salt flower	1,560-2,320 mg
Potassium salt, an alternative to salt	0 mg (potassium levels ranging from 2,760 to 3,180 mg)

**Sodium:**

In order for nerve impulses to be conducted, muscles to contract and relax, and for the right balance of water and minerals to be maintained, the human body requires a little quantity of sodium. It is estimated that the daily need for sodium for these essential processes is approximately 500 mg. However, eating a diet that contains an excessive amount of sodium might increase the risk of developing high blood pressure, cardiovascular disease, and stroke. Additionally, it has the potential to produce calcium losses, some of which may come from the bone.

**What happens to the body when it has too much sodium?**

When it comes to the majority of people, the kidneys have a difficult time eliminating excess sodium from the blood. As sodium levels rise, the human body retains water to dilute the sodium. Because of this, the amount

of fluid surrounding cells and blood in the bloodstream increases. The heart works harder and the blood vessel pressure rises when the blood volume increases. High blood pressure, heart attacks, and strokes can develop when blood vessels become rigid from the constant strain and strain on them. Furthermore, it has the potential to induce heart failure. Excessive salt may have negative effects on bones, kidneys, aorta, and heart health even if it doesn't raise blood pressure. The risks of cardiovascular disease, chronic renal disease, cancer, osteoporosis, and sodium and salt are known to be high (Table 3) <sup>[5]</sup>.

**Table 3. Tell about sodium (normal and results of its increase & decrease): A brief sodium story <sup>[6]</sup>.**

Recommended level	<5 g/day/person for normal functioning of nerve and muscles.
Intake of higher amount of salt	Hypertension and trigger heart attack and stroke
Intake of salt with low level of sodium	Good for healthy persons because of having higher level of potassium. It may cause hyperkalaemia (increased level of potassium on blood) in patients suffering from diabetes, cardiac and renal diseases which can result in weakened pulse, slow heartbeat and muscle weakness.
Salt reduction is the solution of the problem	Instead of looking for any substitute, it will be good to reduce the salt intake to be healthy and to keep blood pressure normal.

**Chloride:**

Sodium chloride is the primary dietary source of chloride; it is sometimes referred to as table salt. Along with sodium and potassium, chloride is categorised as an electrolyte because it has an electric charge. It aids in controlling the sorts of fluids and nutrients that enter and exit the cells. Additionally, it supports healthy pH levels, increases the production of stomach acid—which is necessary for digestion—activates nerve and muscle cells, and promotes the movement of oxygen and carbon dioxide inside of cells. The small intestine absorbs chloride, which stays in the blood and bodily fluids. Urine is used to eliminate any excess <sup>[5]</sup>.

**Consequences of excess salt consumption:*****Three grams aren't negligible:***

The number of people worldwide who need anti-hypertensive treatment may be cut in half if people reduced their daily dietary sodium intake by at least 1.2 g, as stated by the director of ICMR-National Centre for Disease Informatics and Research. Thus, 3 g can't be disregarded.

***Negative consequences of using too much salt:***

There are a lot of deadly diseases that have salt as their foundation, such as high blood pressure, heart disease, and stomach cancer <sup>[1]</sup>.

According to a study, individuals who are overweight or obese and have hypertension tend to consume (excrete) higher amounts of sodium compared to individuals with different BMI and blood pressure-related characteristics. This finding suggests that this particular subgroup could be a potential target for future initiatives aimed at reducing sodium intake <sup>[6]</sup>.

***Reason behind excess salt consumption:***

Our country's history as an agricultural powerhouse means that periods of high water loss from hard labour have historically coincided with spikes in salt consumption, according to dietitians. As a result, there was a rise in the hereditary tendency to seek out salty foods.

***Salt reduction:***

According to dietitians, following things to do:

***Food labels:***

It is advisable to review the nutritional information provided on food labels in order to assess the sodium content prior to making a purchase. Select options that have lower salt levels. Foods that are designated as "low sodium" or "sodium free" are considered to be beneficial.

***Cooking at home:***

Preparing meals in a domestic setting offers individuals the ability to exercise authority over the quantity of items employed. Implementing a restriction on the quantity of salt to be incorporated throughout the culinary process.

***Use salt alternatives:***

Incorporating salt replacements such as rock salt or black salt, as well as incorporating herbs and spices such as garlic, onion, pepper, and lemon, might be considered favourable alternatives.

***Avoid processed foods:***

One potential approach to reducing sodium intake is by restricting the use of processed and packaged foods, such as salted chips and other snacks, which are known to contain elevated sodium levels.

***Eat fresh fruits and vegetables:***

Fresh fruits and vegetables include inherent characteristics that render them inherently deficient in salt content.

***Minimum use of pickles and chutneys:***

It is advisable to refrain from consuming pickles or any form of spicy chutney due to their high salt content <sup>[1]</sup>.

Most people consume too much salt. The global average adult sodium intake is 4310 mg/day (10.78 g/day). This is more than double the WHO recommendation of fewer than 2000 mg/day sodium (equal to <5 g/day salt) for adults. Blood pressure goes up when you eat a lot of salt, which raises the risk of heart disease, stomach cancer, obesity, osteoporosis, Meniere's disease, and kidney disease. Too much sodium kills 1.89 million people annually. One of the cheapest ways to enhance health is to cut salt <sup>[7]</sup>.

**CONCLUSION:**

Several studies have shown that high blood pressure is linked to high sodium intake in the diet. Dietary sodium restriction is associated with reduced morbidity and mortality from cardiovascular illnesses, in addition to lowering blood pressure and the prevalence of hypertension. To accurately quantify the prevalence and financial impact of hypertension worldwide, more research is needed to test implementation techniques for prevention and control, particularly in low-income populations. Knowledge of the risks associated with high salt intake may have a significant impact on the level of motivation to reduce intake. However, raising people's consciousness might not always be enough to prompt positive behaviour adjustments. Limiting salt intake effectively requires a concerted effort from a variety of sectors. The National Multi-Sectoral Action Plan, which incorporates salt reduction as a proactive component, should be used to leverage extensive efforts. Low sodium salt replacements, which use potassium chloride instead of sodium chloride to reduce sodium content, are more expensive. The average salt intake of a population can be lowered by encouraging the development of policies that will increase the accessibility and cost of low sodium salt alternatives.

Mass education, vendor training, and transparent salt content labelling are among more options.

**ACKNOWLEDGEMENT:**

We would like to deliver our sincere thanks to all the authors mentioned in the references below because of whom we were able to write this article.

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**Conflict of Interest:** None

**Source of Funding:** Nil

**Paper Citation:** Mahato TK. Salt reduction to maintain normal Blood Pressure. J Pharm Adv Res, 2023; 7(1): 2045-2049.