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Hypertension & Diabetes, Causes and Prevention (A Study of Experts' Opinion for Public Awareness)

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Prelude

Hypertension:

Elevated blood pressure in the arteries is the hallmark of hypertension, also referred to as high blood pressure. The force that blood exerts as it passes through artery walls is known as blood pressure. It is given as two values, the systolic and diastolic pressures, and is measured in millimeters of mercury (mmHg).

The top number, or systolic pressure, indicates the pressure within the arteries during a heartbeat and blood pumping.

The lowermost number or diastolic pressure indicates the arterial pressure during a heartbeat's rest.

A blood pressure reading of less than 120/80 mmHg is generally regarded as normal. When blood pressure continuously registers at 130/80 mmHg or greater, hypertension is diagnosed.

A number of health problems, including as heart disease, stroke, renal disease, and other cardiovascular problems, are significantly increased by hypertension. It is frequently called a 'silent killer' since symptoms could not become apparent until the disease has progressed to an advanced stage. Regular blood pressure monitoring is therefore essential for early identification and treatment.

Treatment for hypertension may include dietary adjustments, consistent exercise, controlling weight, cutting back on alcohol, and giving up smoking. In certain situations, a prescription for medication may be given in an effort to control blood pressure and lessen the possibility of problems. People with hypertension must collaborate closely with their medical professionals to create a customized treatment plan and to have regular blood pressure checks.

Diabetes:

Diabetes is a chronic metabolic disorder characterized by long-term high blood sugar levels. This is either because the pancreas does not produce enough insulin, or the body's cells do not respond effectively to the insulin produced. Insulin is a hormone produced by the pancreas that regulates blood sugar. There are several types of diabetes.

Type 1 diabetes:

This type of diabetes occurs when the immune system attacks and destroys the insulin-producing beta cells in the pancreas. People with type 1 diabetes need insulin injections to survive.

Type 2 diabetes:

This is the most common form of diabetes. It occurs when the body becomes resistant to insulin or does not produce enough insulin to maintain normal blood sugar levels. It is often related to obesity, sedentary lifestyle and genetics.

Gestational diabetes:

This type develops during pregnancy and usually improves after delivery. However, this increases the risk that both mother and child will develop type 2 diabetes later in life.

Prediabetes:

This condition occurs when blood sugar levels are higher than normal, but not high enough to be diagnosed as type 2 diabetes. But without intervention, prediabetes often progresses to type 2 diabetes.

Common symptoms of diabetes include increased thirst, frequent urination, extreme hunger, unexplained weight loss, fatigue, blurred vision, and slow

wound healing. If left untreated, diabetes can lead to serious complications, such as cardiovascular disease, kidney failure, nerve damage, and blindness.

Diabetes treatment usually involves lifestyle changes, such as a healthy diet, regular exercise, blood sugar monitoring, and some take medications including insulin injections. It is important that people with diabetes work closely with their healthcare providers to develop an individualized treatment plan to effectively manage the disease and reduce the risk of complications.

Methodology

In a ground breaking research initiative, 250 medical experts specializing in hypertension and diabetes were selected randomly from across Andhra Pradesh and Telangana for in-depth interviews.

The interviews delved into a wide range of topics including the latest advancements in treatment methods, challenges faced by patients in managing these conditions, regional variations in healthcare access, as well as personal anecdotes and experiences shared by the experts.

As the interviews progressed, common themes emerged such as the importance of lifestyle modifications, early detection strategies, and the need for targeted community outreach programs to raise awareness about these chronic conditions.

Moreover, the experts highlighted the significance of multidisciplinary approaches to patient care, emphasizing collaboration between different healthcare professionals to provide comprehensive support to individuals dealing with hypertension and diabetes.

Through these interviews, valuable insights were gained into the current landscape of hypertension and diabetes management in Andhra Pradesh and Telangana. The findings are poised to inform future research endeavors, policy decisions, and healthcare interventions aimed at improving outcomes for patients affected by these prevalent health issues.

In this intriguing study, patients suffering from hypertension and diabetes were interviewed to delve into their unique experiences and challenges. The researchers aimed to uncover the complex interplay between these two chronic conditions and the impact they have on individuals' daily lives.

As the interviews progressed, patterns began to emerge. Many patients spoke of the constant juggling act required to manage both conditions effectively, balancing medications, diet restrictions, and lifestyle modifications. They shared their struggles with medication adherence, dietary temptations, and the emotional toll of living with chronic illnesses.

Through these interviews, a deeper understanding of the psychological and social aspects of living with hypertension and diabetes emerged. Patients highlighted the importance of emotional support, access to resources, and personalized care in improving their overall well-being.

As the study concluded, researchers were able to glean valuable insights that would inform future interventions and healthcare strategies for individuals with comorbid hypertension and diabetes. The voices of these patients served as a powerful reminder of the human experience behind medical conditions, shedding light on the holistic approach needed for effective disease management.

Experts' Opinions and Information

As our research team embarked on their ambitious project to gather insights from medical specialists on diabetes and hypertension treatment, they meticulously crafted a comprehensive questionnaire containing 20 thought-provoking items. This questionnaire was aimed at delving into various dimensions of these prevalent health conditions and the strategies employed in their management. With a keen focus on accuracy and diversity, a total of 250 esteemed medical specialists hailing from Telangana and Andhra Pradesh were selected through a random sampling method for interviews. This diverse pool encompassed experts in endocrinology, cardiology, and general medicine, ensuring a holistic perspective on the subject matter.

Throughout the interviews conducted with these reputable professionals, a wealth of knowledge and expertise was unveiled. Insights ranging from cutting-edge treatment modalities to nuanced perspectives on patient care emerged, painting a rich tapestry of opinions and experiences within the medical community.

As the data collection process unfolded, patterns began to emerge, shedding light on emerging trends, challenges faced by practitioners, and potential areas for further research and collaboration. The amalgamation of voices from different specialties provided a nuanced understanding of the complexities surrounding diabetes and hypertension management in contemporary healthcare settings.

Armed with this invaluable feedback from the frontline warriors in healthcare, the research team was poised to synthesize these diverse perspectives into actionable insights that could potentially shape future interventions and advancements in the field of diabetes and hypertension treatment.

The research team member meticulously scheduled appointments, ensuring a comprehensive range of expertise would be covered. The experts were asked thought-provoking questions about their specialized areas, as well as broader topics within the medical field.Throughout the interviews, detailed notes were taken to capture key insights and valuable information. The team members paid close attention to nuances

in the responses, seeking out patterns and unique perspectives that emerged from the discussions.

After concluding the interviews, the team gathered to analyze the wealth of data they had collected. They meticulously sifted through their notes, identifying recurring themes and significant findings. Through collaborative effort and critical thinking, they synthesized the information into a comprehensive report that encapsulated the essence of each expert's insights.

The final report was a testament to their dedication and meticulous approach to research. It provided valuable insights into cutting-edge medical practices, emerging trends, and innovative solutions within the healthcare industry. The research team's efforts had not only culminated in a well-crafted document but also fostered a deeper understanding of the complexities of modern medicine among its members.

As they reviewed the report together, they felt a sense of accomplishment knowing that their collaborative efforts had led to a valuable contribution to the field of medical research. Their journey through interviews and analysis had not only enriched their own knowledge but also paved the way for future explorations in healthcare innovation and advancement.

The Questionnaire

1) How often do you encounter patients with hypertension and/or diabetes in your practice?

2) What are the common risk factors for developing hypertension and diabetes that you have observed?

3) In your experience, what are the most effective lifestyle modifications for managing hypertension and diabetes?

4) Which medications have you found to be most effective in controlling blood pressure in hypertensive patients?

5) What are the key differences in treatment approaches for type 1 and type 2 diabetes?

6) How do you approach medication management in patients with both hypertension and diabetes?

7) What role do diet and nutrition play in the management of hypertension and diabetes?

8) How important is regular physical activity in the management of these conditions?

9) What are some common complications that you have seen in patients with uncontrolled hypertension or diabetes?

10) How do you educate your patients about self-monitoring their blood pressure or blood glucose levels at home?

11) In your opinion, what are the current challenges in diagnosing hypertension and diabetes early on?

12) How do you address medication adherence issues among patients with these conditions?

13) What advancements in treatment or technology have you found beneficial for managing hypertension and diabetes?

14) How do you approach personalized treatment plans for hypertensive or diabetic patients based on individual needs or comorbidities?

15) Are there any emerging trends or research areas that you think will impact the management of these conditions in the near future?

16) What advice do you typically give to hypertensive or diabetic patients to help them better manage their condition on a day-to-day basis?

17) How do you collaborate with other healthcare professionals, such as dietitians or pharmacists, to optimize patient care for those with hypertension and/or diabetes?

18) In your experience, how does mental health impact the management of hypertension and diabetes among your patients?

19) What are some resources or tools that you find helpful for educating both patients and other healthcare providers about best practices for managing hypertension and diabetes?

20) How do you stay updated on the latest research findings, guidelines, and recommendations regarding hypertension and diabetes management?

Findings of the Study

The team members embarked on the project to break down intricate findings into easily digestible topics, each dealing with a specific domain.

In the thorough research report on overcoming the challenges of diabetes and hypertension, the findings are laid out systematically to offer readers a comprehensive understanding of effective strategies for managing these health conditions.

The language utilized in the report is intentionally simplified, ensuring that readers of all backgrounds can easily grasp the information presented. By breaking down complex medical concepts into easily digestible content, the report empowers individuals to apply the knowledge gained in real-life scenarios.

They report used relatable examples, and concise explanations to make the content accessible to a wide audience.

From practical tips on dietary changes and exercise routines to medication management and stress-reduction techniques, the report covers a range of strategies to help individuals proactively manage their diabetes and hypertension.

By presenting research findings in a clear and accessible manner, readers are equipped with valuable insights and actionable steps to take control of their health journey towards overcoming diabetes and hypertension.

Through their innovative approach to presenting research findings, the team sparked a newfound interest in learning and inspired readers to engage with complex subjects in a meaningful way.

The project not only changed the way information was communicated but also had a lasting impact on how people viewed the intersection of research and everyday life.

Topic 1
The connection between hypertension and diabetes

High blood pressure (hypertension) and diabetes are both part of the metabolic syndrome and often occur together. Possible reasons for this could be similar risk factors or high blood sugar, which damages cardiovascular cells.

High blood pressure and diabetes have some common causes and risk factors. A person with one disease has a higher risk of developing another. Similarly, a person with both conditions may find that either condition makes the other worse.

This chapter contains information about the relationship between high blood pressure and diabetes, including how to recognize, prevent, and treat each condition and situation.

Identifying hypertension and diabetes

Some relatively simple tests are available to help a person identify whether they have diabetes or hypertension.

The American Heart Association (AHA) states that most people with high blood pressure have no symptoms. People usually discover they have hypertension after a routine blood pressure test.

The blood pressure screen shows numbers representing two different blood pressures: systolic and diastolic.

Systolic:

This number is displayed above. This shows the maximum pressure the heart makes when beating.

Diastolic:

This number is shown below. It shows the amount of pressure in the arteries between heartbeats.

The AHA classifies blood pressure readings according to the following parameters:

1) **Normal**: systolic is less than 120 and diastolic is less than 80.

2) **Elevated**: systolic is 120-129 and diastolic is less than 80.

3) **Hypertension Stage 1**: Systolic is 130 to 139 or Diastolic is 80 to 89.

4) **Blood Pressure Stage 2**: Systolic is 140 or higher or Diastolic is 90 or higher.

5) **Hypertensive crisis**: systolic over 180 or diastolic over 120.

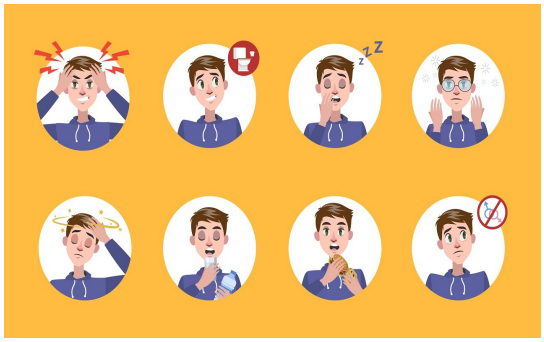
Hypertensive crisis is a medical emergency and the person needs immediate medical attention to avoid serious complications.

Identifying diabetes

According to the American Diabetes Association (ADA), not everyone with diabetes will experience symptoms of the disease.

If symptoms of high blood glucose levels do appear, they may include:

1) Excessive Hunger
2) excessive Thirst
3) Extreme Fatigue
4) Blurred Vision
5) Frequent Urge and Need to Urinate
6) Delay in Healing of Wounds



A person may also find that they become more susceptible to infections, such as:

1) Urinary Tract Infections
2) Upper Respiratory Tract Infections

People can take a fasting glucose test to help identify diabetes. The American Diabetes Association provides the following parameters for blood glucose levels following a fasting period of at least 8 hours:

1) **Normal**: This is less than 100 milligrams per deciliter (mg/dl).
2) **Prediabetes**: This is between 100–125 mg/dl.

3) **Diabetes**: This is a reading of 126 mg/dl or above.

Other tests for diabetes can show blood glucose levels after drinking a sugary drink.

Types of diabetes and their symptoms

There are three kinds of diabetes, all of which have different causes:

Type 1 diabetes

Type 1 diabetes is an autoimmune disorder in which the body mistakenly attacks cells in the pancreas that produce insulin. The disease tends to appear during childhood or adolescence, though it can occur later in life.

Type 2 diabetes

Type 2 diabetes occurs as a result of insulin resistance. This is where body cells lose their ability to respond to insulin. The pancreas tries to compensate by producing more insulin, but the process is not sustainable.

Current guidelines recommend diabetes screening for everyone ages 45 years or above, and anyone younger who has risk factors for the disease. Early diagnosis and treatment can help slow or even reverse the disease, reducing the risk of complications.

Gestational diabetes

Gestational diabetes occurs only during pregnancy, although about 50% of women with this form go on to develop type 2 diabetes.

If a routine test shows high blood sugar during pregnancy, the doctor will monitor the person for several weeks after childbirth. In most cases, blood sugar returns to normal immediately after delivery.

What is the link between diabetes and hypertension?

Diabetes and hypertension often occur together and may share some common causes. These include:

1) Sedentary Lifestyle with Excessive Calorie Intake
2) Obesity

3) Stress
4) Insulin Resistance

Can diabetes cause hypertension?

Diabetics do not have enough insulin to process glucose, or their insulin does not work effectively. Insulin is a hormone that allows the body to process glucose from food and use it as energy.

When a person has problems with insulin, glucose cannot provide energy to their cells, so it accumulates in the bloodstream instead.

High blood sugar levels can cause extensive damage to tissues and organs, including those important for maintaining healthy blood pressure. For example, damage to blood vessels and kidneys can cause an increase in blood pressure.

Do people with diabetes have higher rates of hypertension?

Studies state that around 47% of adults in the United States have hypertension or are taking medication to manage the condition.

By comparison, the American Heart Association states that 2 in 3 people with diabetes either report hypertension or are taking prescription medication to lower their blood pressure.

The above statistics suggest that people with diabetes have higher rates of hypertension compared to the general population.

Can hypertension cause diabetes?

According to the study, people with high blood pressure tend to have insulin resistance and have a higher risk of developing diabetes compared to people with typical blood pressure. It can be caused by processes in the body that link both conditions, such as:

1) Inflammation
2) Stress

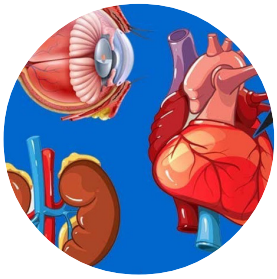
3) Activation of the immune system
4) Thickening of blood vessels
5) Obesity

So although hypertension may not directly cause diabetes, it can increase it the risk of developing diabetes if a person has high blood pressure.

Diabetes and hypertension complications

The combined impact of diabetes and high blood pressure can increase the risk of cardiovascular disease, kidney disease, and other health issues.

Without treatment, diabetes and high blood pressure may lead to serious complications, such as:



1) Eye problems
2) Heart attack
3) Kidney Failure
4) stroke

Managing blood sugar levels and blood pressure can help prevent complications.

Risk factors

Hypertension and type 2 diabetes share similar risk factors. These include:

1) Being overweight or having obesity
2) Having a sedentary lifestyle following an unhealthy diet
3) Experiencing chronic stress
4) Having poor sleep habits
5) Smoking
6) Tobacco
7) Being exposed to air pollution

Other risk factors for hypertension include:

1) high sodium diet
2) low potassium
3) high alcohol consumption

A family history of hypertension increases the risk of hypertension, suggesting a role for both genetic and environmental factors. Having a close relative with diabetes also increases the risk of both type 1 and type 2 diabetes.

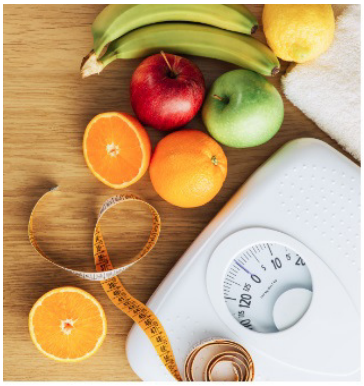
High blood pressure appears to increase the risk of type 2 diabetes, and diabetes increases the risk of hypertension.

Prevention

The following lifestyle factors are critical to controlling both blood sugar and blood pressure.

(I) Maintaining a healthy weight

For overweight people, even a small amount of weight loss can reduce the risk of high blood pressure and diabetes.



The National Heart, Lung, and Blood Institute (NHLBI) states that losing 3 to 5% of body weight can improve blood pressure.

Similarly, the Centre for Disease Control and Prevention (CDC) notes that a 5-7% weight loss can help prevent prediabetes from developing into diabetes. That is equivalent to a loss of 10-14 kg for a person of 200 kg.

(II) Being physically active

Regular physical activity can lower blood pressure and help control blood sugar, among other health benefits.

Current CDC guidelines recommend at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous exercise per week. every week Moderate exercise includes brisk walking and swimming. People should also consider doing muscle-strengthening exercises.

People who have been inactive for a while can talk to their doctor about an appropriate exercise plan.

(III) Following a healthy diet

People with diabetes and hypertension can ask their doctor for information and advice about an appropriate diet plan.

Doctors often recommend the Dietary Approaches to Stop Hypertension (DASH) diet to control blood pressure and overall well-being. This usually includes:

1) Eating lots of fresh fruits and vegetables
2) Focusing on fiber-rich foods including whole grains,
3) Limiting added salt and sugar
4) Avoiding or limiting unhealthy fats such as trans fats and animal fats.

People with diabetes should watch their carbohydrate intake and monitor their blood sugar to make sure their blood sugar is on track.

(IV) Limiting the Alcohol intake

Drinking alcohol can increase your risk of the following:

1) Weight gain
2) Diabetes due to excess calorie consumption
3) Thickening of the artery walls
4) High blood pressure

The AHA recommends that women have no more than one alcoholic drink every day and two alcoholic drinks a day for men.
One drink is equal to one of the following:

1) One 12-ounce beer
2) One 4-ounce glass of wine
3) One 1.5-ounce serving of 80 proof spirits
4) One 1-ounce serving of 100-proof spirits

Mixers can also add carbohydrates and calories. Sparkling water is a healthier option than sweetened soda.

People may want to talk to their doctor about how much alcohol is safe for them to consume.

(V) Avoiding or quitting smoking

Smoking causes blood vessels to narrow, which leads to a temporary increase in blood pressure. It also increases the buildup of plaque in the arteries, which can cause high blood pressure over time.

Smoking can also increase the risk of type 2 diabetes. Smokers with diabetes are at greater risk of serious complications, including:

1) Heart or kidney disease
2) Retinopathy, which is an eye disease that can lead to blindness
3) Poor circulation, which increases the risk of infection and leg or foot amputation
4) Peripheral neuropathy, which can cause nerve pain in the arms and legs

Treatment with medication

In addition to lifestyle measures, a doctor may prescribe medications to help manage diabetes and hypertension.

Treatments for diabetes

The treatment of diabetes depends on the type of person.

In type 1 diabetes, a person must use insulin. They may also need medication to treat complications such as high blood pressure.

Some people with type 2 diabetes need to use insulin. Others may use non-insulin medications, such as metformin, to lower blood pressure. People may also need medication to treat complications such as hypertension.

Current guidelines also recommend one of the following procedures if a person with type 2 diabetes is at high risk of atherosclerotic cardiovascular disease, diabetes-related kidney disease, or both.

1) Sodium-glucose cotransporter 2 (SGLT2)
2) Inhibitors glucagon-like peptide
3) 1 (GLP-1) receptor agonists

These medications protect the heart and kidneys by helping to control blood sugar levels.

Treatments for hypertension

There are many medications available to treat high blood pressure. Doctor may prescribe a combination of medications.

Some examples are:

Angiotensin-converting enzyme (ACE) inhibitors: ACE inhibitors reduce the production of the hormone angiotensin. This allows blood vessels to relax and dilate, which lowers blood pressure.

Angiotensin II receptor blockers: These drugs block the action of angiotensin, a chemical that narrows arteries. Without angiotensin, blood vessels remain open, which lowers blood pressure.

Beta blockers: These drugs cause the following effects on the heart to help lower blood pressure:

1) Lower heart rate
2) Reduce the workload of the heart,
3) Decrease cardiac output.

Calcium channel blockers: Calcium causes the smooth muscles of the heart and arteries to contract. Calcium channel blockers block this effect, resulting in less forceful heart contractions and relaxation of blood vessels. Both lower blood pressure.

Diuretics: These drugs help the body get rid of excess sodium and water, which reduces blood volume and helps control blood pressure.

Vasodilators: These are drugs that relax the muscle walls of blood vessels and expand. This allows blood to flow more easily, which lowers blood pressure.

High blood pressure and diabetes often occur together and have multiple risk factors and causes. Having one disease increases the likelihood of developing another.

Early detection and treatment of high blood pressure and diabetes can help prevent serious complications. Lifestyle changes can help control blood pressure and blood sugar levels. Some people may need medication.

Topic 2
Diabetes and Hypertension

High blood pressure, or hypertension, can cause or worsen many complications of diabetes, including diabetic eye disease and kidney disease. Most people with diabetes eventually develop high blood pressure and other cardiovascular problems.

Diabetes damages arteries and makes them a target for a hardening called atherosclerosis. This can cause hypertension, which if left untreated can lead to problems such as blood vessel damage, heart attack and kidney failure.

People with hypertension are more likely to have:

1) Coronary artery disease
2) Heart disease
3) Strokes Compared to people with normal blood pressure
4) Peripheral vascular disease,
5) Hardening of the arteries in the legs and feet
6) Heart failure

Even higher than normal blood pressure (120)/80 to 129/80), called elevated, affects the health. Studies show that a person has two or three times the chance of developing heart disease within 10 years.

What Should the Blood Pressure Be?

Readings vary, but most people with diabetes should not have blood pressure higher than 130/80.

The first, or highest, number is the "systolic pressure," or the pressure in the arteries when the heart contracts and fills the vessels.

The second or lowest number is "diastolic pressure," or the pressure in the arteries when the heart is resting between beats and filling with blood for the next contraction. When it comes to preventing diabetic complications, normal blood. pressure is just as important as good blood sugar control.

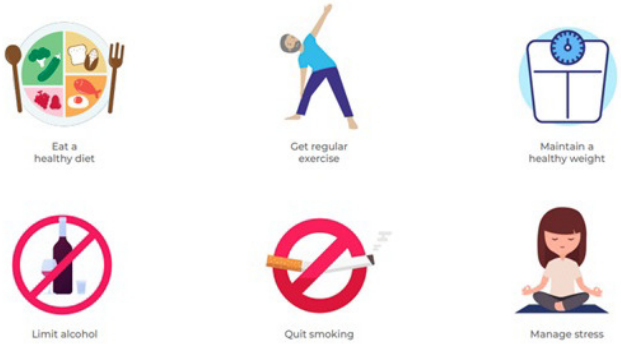
Symptoms of high blood pressure

High blood pressure usually has no symptoms. Therefore, blood pressure should be checked regularly. The doctor will probably measure it at each visit and one may need to monitor it at home.

What can be done?

Many things done to treat diabetes also help with high blood pressure. One should

1) get the blood pressure under control
2) stop smoking
3) eat a healthy diet
4) exercise most days
5) maintain a healthy weight
6) avoid too much alcohol
7) limit salt intake
8) see a doctor regularly



Treatment

Most doctors first prescribe ACE inhibitors (angiotensin-converting enzyme inhibitors) and ARBs (angiotensin II receptor blockers). While other medications treat high blood pressure, they also prevent or slow kidney disease in diabetics.

Some blood pressure medications can worsen blood sugar and lipid levels. Blood pressure medications can also cause erectile dysfunction.

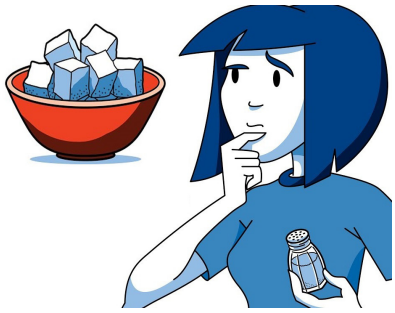
Other medications, commonly called "water pills" or diuretics, help the body get rid of excess fluid.

Topic 3
Will sugar increase hypertension?

Sugar can raise blood pressure and increase the risk of obesity and diabetes. Although sodium salt is known to cause high blood pressure or hypertension, sugar can cause it by affecting the production of nitric oxide in blood vessels.

Any deficiency can cause vasoconstriction. i.e. vasoconstriction and hypertension. People with high blood pressure may be at greater risk for other conditions that affect how the body processes blood sugar, such as changes in insulin sensitivity.

How Added Sugar Affects Blood Pressure?



People usually think that salt is bad for blood pressure. But sugar also causes high blood pressure and is its most common cause.

Fructose, a type of simple sugar, increases uric acid in the blood. It inhibits the production of nitric oxide, which is needed to maintain blood vessel flexibility, so when nitric oxide levels drop, blood pressure can rise.

Sugars in processed foods are considered a major cause of high blood pressure, especially added sugars, not those found naturally in fruit or milk.

In addition, studies show that sugar consumption can actually increase salt sensitivity, increasing the negative effects of sodium on blood pressure. The study actually found a link between sugar consumption and high blood pressure in older women.

Therefore, sugar consumption has specific effects that can contribute to hypertension.

What Are Advanced Glycation End Products?

Advanced glycation end products (AGE) are potentially harmful compounds found in the body and food. They are formed by combining protein or fat with sugar. In food, they are sometimes called diet-enhanced glucose end products (dAGE). They are associated

with higher levels of inflammation and oxidative stress factors, which are themselves linked to both heart disease and diabetes.

Insulin Resistance

Insulin resistance is associated with high blood pressure. In insulin resistance, the body has trouble using glucose for energy because it does not respond to insulin as it should. This causes the pancreas to overproduce insulin.

Insulin resistance is closely related to blood pressure, and together they increase the risk of heart disease and diabetes.

Hyperinsulinemia occurs when the level of insulin in the blood rises above normal. Insulin is a hormone that draws glucose from the food we eat into cells where it is used as energy.

This is one of the diagnostic criteria for type 2 diabetes, a condition that occurs when the body's sensitivity to glucose decreases. insulin and cannot effectively use it to convert sugar into energy. If left untreated, hyperinsulinemia can also lead to high blood pressure.

Studies have shown that about half of patients with hypertension have either hyperinsulinemia or glucose intolerance.

Diabetes can cause hypertension. High blood pressure can also cause diabetes. A risk factor such as obesity can cause both diseases.

Obesity

Sugar increases blood pressure, while its consumption causes other health problems, including obesity. Too much added sugar in the diet is a risk factor for obesity.

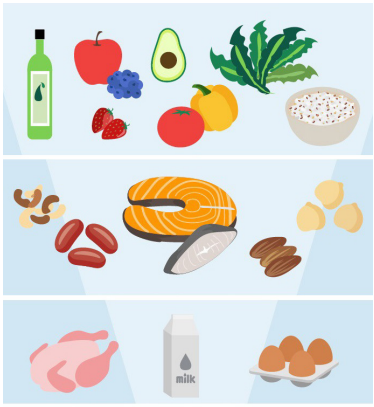
Added sugars include sucrose and high fructose corn syrup in processed foods. They can also contribute to metabolic disorders such as nonalcoholic fatty liver disease, now called metabolic steatosis liver disease, or MASLD. High blood pressure is often seen in people with metabolic disorders or syndromes.

Obesity is a known risk factor for cardiovascular disease, including high blood pressure. Black people diagnosed with obesity are at even greater risk.

Dietary Changes for Low Blood Pressure

Tips like starting the day with a nutrient-dense smoothie, eating fresh fruit and drinking enough water can help control cravings. and avoid eating processed sugar.
It is always better to choose a diet rich in the following foods:

1) Fruits
2) Vegetables
3) Whole grains
4) Low-fat dairy products
5) Skinless poultry and fish
6) Nuts and vegetables
7) Non-tropical vegetable oils



It is always advisable to limit the consumption of saturated and trans fats, sodium, red meat and sweets and sugar-sweetened beverages.

There is evidence suggesting that supplementation of a diet containing L-glutamine may be beneficial. One study found that L-glutamine supplementation had effects on gut microbiota similar to weight loss programs in overweight and obese individuals.

Gist

Sugar consumption can affect blood pressure, as can salt. The effects of sugar can cause high blood pressure in a number of different ways.

When sugar consumption, especially added sugars, affects nitric oxide levels, it changes the function of blood vessels. The resulting vasoconstriction can cause high blood

pressure. Sugars can also contribute to insulin resistance and obesity, which are associated with diabetes and other diseases where high blood pressure is also common.

If you want to reduce your risk of high blood pressure and related diseases, eating less sugar, especially refined sugar, is a great first step. Over time, high blood pressure can damage the coronary arteries and cause other health effects.

Topic 4
Home Health situations and Illness

High blood pressure is twice as likely to affect people with diabetes than people without diabetes. If left untreated, high blood pressure can lead to heart disease and stroke.

In fact, someone with diabetes and high blood pressure is four times more likely to develop heart disease than someone without either condition. About two-thirds of adults with diabetes have blood pressure above 130/80 mmHg or use prescription medications to treat hypertension.

The Brain Connection

Hypertension in middle age can affect thinking ability in late life. Johns Hopkins researchers know the connection and ways to keep blood pressure under control and the brain at its best.

What is high blood pressure?

Blood pressure is the force exerted by the blood on the arterial walls. Every time the heart beats, it pumps blood into these arteries, resulting in the highest blood pressure when the heart contracts and pumps blood. High blood pressure, or hypertension, directly increases the risk of coronary heart disease, or heart attack, and stroke, or stroke. With high blood pressure, the arteries can resist blood flow, causing the heart to pump harder.

Two numbers are used to measure blood pressure. The number at the top, systolic pressure, refers to the pressure in the artery when the heart contracts and pumps blood through the body. The number at the bottom, diastolic pressure, refers to the pressure in the artery when the heart is resting and filling with blood. Both systolic and diastolic pressures are recorded in "mm Hg" or millimeters of mercury. According to the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health, high blood pressure in adults is defined as:

140 mm Hg or greater systolic pressure and
90 mm Hg or greater diastolic pressure

NHLBI guidelines for prehypertension are:

120 mm Hg – 139 mm Hg systolic pressure and
80 mm Hg – 89 mm Hg diastolic pressure

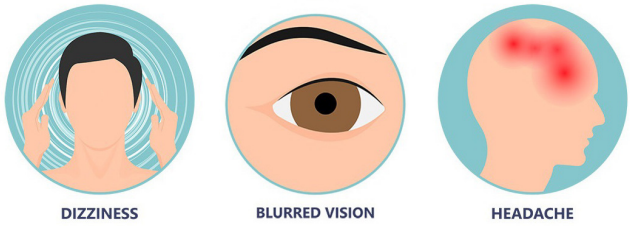
NHLBI guidelines define normal blood pressure as follows:

Less than 120 mm Hg systolic pressure and
Less than 80 mm Hg diastolic pressure

What are the symptoms of high blood pressure?

People with high blood pressure often have no noticeable symptoms. If blood pressure is significantly elevated, a person may experience the following symptoms. However, everyone may experience symptoms differently. Symptoms can be:

1) Headache
2) Dizziness
3) Blurred vision



Symptoms of high blood pressure can be similar to other diseases or problems.

Preventing high blood pressure

The American Diabetes Association recommends the following to prevent high blood pressure:

1) Reduce salt intake
2) Engage in stress-relieving activities
3) Exercise regularly
4) Maintain a healthy weight
5) Avoid excessive alcohol consumption.
6) Quit smoking and avoid passive smoking
7) Monitor blood pressure

Treatment for high blood pressure

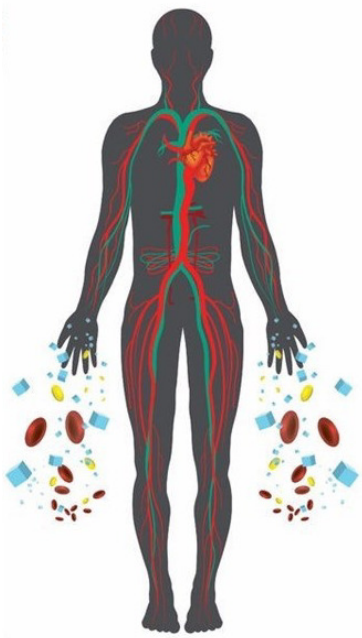
Specific treatment for high blood pressure will be determined by one's doctor based on:

1) One's age, overall health, and medical history
2) Extent of the disease
3) One's tolerance for specific medications, procedures, or therapies
4) Expectations for the course of the disease
5) One's opinion or preference

Treatment may include exercise, a balanced diet, and quitting smoking, as well as medications prescribed by the doctor.

Topic 5

Are blood sugar and hypertension Related?



Body and Glucose

Glucose in the blood acts as the main source of energy for all body cells. There are other molecules that the body can produce as fuel when needed, such as ketones, but for the sake of simplicity we will focus on glucose here.

The body has sensors that let it know if blood sugar is right. level In people without diabetes, this level is usually between 70 and 120 mg/dL, milligrams per deciliter. There are several hormones that are activated or suppressed as needed to protect this glucose. When levels drop too low, the body can release catecholamine hormones, commonly known as adrenaline hormones, to trigger blood glucose. When blood sugar gets too high, the body releases insulin and other hormones that correct the level back into the proper range.

Diabetes do not lose the ability to raise or lower blood sugar. Instead, the hormones that keep blood sugar in the right range don't work properly, and the sensors that measure glucose levels are often damaged.

How the body regulates blood pressure

Similar processes apply to maintaining healthy blood pressure levels. In many ways, keeping your blood pressure in a good range is even more important than keeping your blood sugar in a good range.

The body has countless ways to "take in" blood sugar and alternative energy sources like ketones. But we have no way to "raise" blood pressure. The body can protect blood sugar much better than blood pressure. If the blood volume is low, we cannot add immediately. If we don't have

enough blood, we pass out and that is very dangerous for the brain and body in the long run.

Because the ability to raise blood pressure is limited, the body depends on it. hormones that are activated when blood sugar is low - catecholamine or adrenaline, hormones - to achieve this change.

Catecholamines constrict blood vessels, making it harder for the heart to pump blood through the arteries, which increases blood pressure.

When blood pressure is too high, the body wants to remove blood to reduce the total volume of our blood vessels and make it easier for the heart to pump blood through our arteries. To achieve this, nitric oxide is released, which dilates the blood vessels and reduces the pressure on our heart. When the blood vessels in the kidneys dilate, they release more water to lower blood pressure. This effect is called diuresis or removal of fluid. These are just a few ways we have to control our blood pressure and they are the most common. People with hypertension or high blood pressure do not lack the ability to control their blood pressure. blood pressure But like diabetics, their sensors are damaged and their response to high or low blood pressure is not always accurate.

How Blood Sugar Affects Blood Pressure

How to connect two systems? Insulin, which plays a role in blood sugar control, has an unfortunate association with vascular nitric oxide production. It blocks the body's ability to produce nitric oxide. Nitric oxide is important for blood vessels because it is one of the few ways to expand the size of blood vessels and lower blood pressure. When diabetes uses insulin, it seriously impairs the body's ability to lower blood pressure by producing nitric oxide, which in turn increases the risk of high blood pressure. In conditions where blood pressure is too low, the catecholamine response described. above is not discriminatory, neither is blood sugar. The same is true if blood sugar drops too low; the catecholamine response is the first thing the body uses to compensate, and it then raises blood pressure. So low blood sugar or low blood pressure can cause another spike. It's important to understand that some medications that lower blood pressure or blood sugar bypass all of your natural defenses and trigger these events as well.

Finally, if someone has diabetes, high blood pressure, or both, it matters. simultaneous careful monitoring of both blood sugar and blood pressure will not harm the other during treatment.

Salt and sugar: their effects on blood pressure

Both dietary salt and sugar are related to blood pressure (BP). The evidence for salt is much stronger, and various types of studies have consistently shown that salt is a major cause of raised BP, and a reduction from the current intake of H" 9-12 g/ day in most countries of the world to the recommended level of 5-6 g/day lowers BP in both hypertensive and normotensive individuals, in men and women, in all age groups and in all ethnic groups. Countries such as Finland and the UK that have successfully reduced salt intake have demonstrated a reduction in population BP and cardiovascular mortality, with major cost savings to the health service. The mechanisms whereby salt raises BP are not fully understood. The traditional concepts focus on the tendency for an increase in extracellular fluid volume. Increasing evidence suggests that small increases in plasma sodium may play an important role. There are several other factors that also increase BP, one of which is added sugars. The current high intake of added sugars increases obesity which, in turn, raises BP. Recent studies also suggest that added sugars, particularly those in soft drinks, may have a direct effect on BP. However, the relationship between soft drink consumption and BP could be, at least partially, mediated by the effect of salt intake on increasing soft drink consumption. Actions to reduce salt and sugar intake across the whole population will have major beneficial effects on health along with major cost savings.

Topic 6
The relation between blood sugar and blood pressure

Diabetes and high blood pressure often occur together. In fact, a person with diabetes is twice as likely to develop high blood pressure as a person without diabetes. Also, patients with high blood pressure are more resistant to insulin-stimulated glucose uptake than controls with normal blood pressure.

Blood Sugar Basics

When people eat food, mostly carbohydrates, the digestive system breaks down the food into sugar, which enters the blood. Blood sugar or glucose is the main source of energy for all the cells of the body. Several hormones are responsible for the regular regulation of blood sugar. When blood sugar drops too low or hypoglycemia, the body produces hormones that counter-regulate glucose, including catecholamines.

These hormones, such as epinephrine, cortisol, growth hormone, and glucagon, work through different mechanisms to raise blood. . sugar On the other hand, when blood sugar rises too high, ie. hyperglycemia, the body produces insulin. This hormone drives sugar from the bloodstream into muscle, fat and liver cells, ultimately lowering blood sugar.

Sometimes the complex system that regulates blood sugar stops working effectively. It often leads to chronic hyperglycemia. By definition, hyperglycemia is blood sugar above 125 mg/dL on an empty stomach or blood sugar above 180 mg/dL two hours after a meal. Additionally, fasting glucose levels between 100 and 125 mg/dL are considered low fasting glucose levels and may indicate prediabetes. Early symptoms of hyperglycemia include increased thirst/hunger, blurred vision, fast heart rate, frequent urination, and headache.

Over time, hyperglycemia can cause symptoms such as fatigue, weight loss, increased risk of infection, and slow recovery.

The causes of hyperglycemia can be acute, such as physical stress, mental stress, or certain medications. Hyperglycemia can also be caused by chronic diseases such as endocrine or pancreatic diseases such as Cushing's syndrome or long-term insulin resistance.

Insulin resistance occurs when the ability of insulin to stimulate tissue glucose is impaired. Often, when the body stops responding to insulin, the pancreas must produce more insulin to achieve the same results, which is called hyperinsulinemia. Long-term high blood sugar can damage blood vessels and nerves, cause heart disease, and permanently damage the eyes or kidneys.

Blood Pressure Basics

Blood pressure is the force of blood pushing against your blood vessel walls. Maintaining a healthy blood pressure is important because it allows for adequate amounts of oxygen and nutrients to be pushed around the circulatory system and delivered to the body's organs and tissues. But like blood sugar, blood pressure can fluctuate and is managed through several mechanisms by many of the same hormones that help manage blood sugar. Hormones that can increase blood pressure include adrenal hormones and catecholamines like aldosterone, cortisol, adrenaline, and insulin. Hormones and regulators that can decrease blood pressure include nitric oxide, natriuretic peptides, and vasodilator peptides.

Hypertension, or high blood pressure, is when the heart must use high force to pump blood through the heart and blood vessels. When measuring blood pressure, the first, or top, number is 'systolic pressure,' which is the pressure in your arteries when your heart contracts. The second, or bottom, number is the 'diastolic pressure,' which is the pressure in your arteries when your heart rests.

The American Heart Association (AHA) categorizes normal blood pressure as 120/80 or below. Hypertension usually has no signs or symptoms, which is why it's often

referred to as the 'silent killer.' It's estimated that half of Americans over the age of 20 have high blood pressure, and half of those don't even know it. However, some may experience episodes of headache, dizziness, or blurred vision when blood pressure is significantly elevated.

Reasons for hypertension can vary. Primary hypertension may be caused by diverse reasons, including genetics, excessive salt intake, obesity, lack of exercise, or use of tobacco and alcohol. Secondary hypertension is due to particular medical conditions such as kidney disease, Cushing's syndrome, or prescription medications. If untreated, hypertension can lead to life-threatening complications such as heart attack, heart failure, stroke, or kidney failure.

Can Blood Sugar Affect Blood Pressure?

The answer is yes. It turns out that hyperglycemia can contribute to high blood pressure. High blood sugar can raise blood pressure in two main ways. First, untreated hyperglycemia can cause nerve and blood vessel damage.

Blood vessel damage causes the walls to stiffen, narrow, and build up plaque. Plaque build-up narrows blood vessels, increases pressure and contributes to elevated blood pressure.

Second, chronic hyperglycemia causes chronic hyperinsulinemia. Hyperinsulinemia can increase blood pressure by

(1) increasing renal reabsorption of sodium and water,
(2) by activating the sympathetic nervous system, which increases heart rate and vasoconstriction,
(3) by altering transmembrane ion transport, leading to intracellurlar sodium intracellular sodium accumulation and sensitizing arterial smooth muscle to pressor hormones and
(4) increasing vascular resistance leading to vascular wall hypertrophy and vasoconstriction.

This is why high levels of insulin cause high blood pressure. But the best way to control your insulin levels is to control your blood sugar.

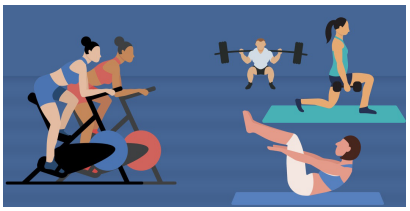
Finally, since the same hormones or catecholamines are used to raise blood sugar and blood pressure, it's important to note that hypoglycemia can also cause hypertension. sugar blood sugar blood pressure When blood sugar drops too low, the body releases hormones like adrenaline to bring blood sugar back to normal. Adrenaline and similar hormones are also responsible for increasing heart rate and constricting blood vessels, which causes blood pressure to rise. If blood sugar drops too far in either direction, it can eventually affect blood pressure.

How to Support Healthy Blood Sugar and Blood Pressure

(1) Maintain a healthy weight

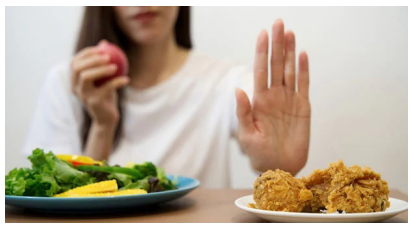
If one are overweight, losing weight can prevent the disease from progressing. The Centers for Disease Control and Prevention (CDC) states that a 5-7 percent weight loss can prevent prediabetes from developing into diabetes. Similarly, the National Heart, Lung, and Blood Institute (NHLBI) shows that a 3-5 percent weight loss can improve blood pressure.

(2) Be active physically



Regular exercise can lower blood pressure and blood sugar. Current CDC guidelines recommend 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity exercise each week.

(3) Adopt a healthy dietary lifestyle



It's important to find a diet that aligns with one's goals and values, works for you financially and feels sustainable. All focus on lots of vegetables and include lean proteins, unsaturated fats, fiber-rich carbohydrates and limited salt intake.

(4) Manage stress

Stress can increase both blood sugar and blood pressure. Managing and coping with stress can improve mental and physical health. Relaxation and meditation apps are available to help with stress. Other great options are mental health counseling, support groups, spending time with loved ones, or doing activities that help regulate stress hormones and find relaxation.

(5) Quit smoking

Smoking increases the risk of type 2 diabetes by 30-40%. Because of nicotine's ability to reduce cellular response to insulin and increase systemic inflammation, smoking increases blood sugar. Similarly, nicotine can increase blood pressure by stimulating the release of epinephrine and norepinephrine. Smoking cessation programs have been shown to improve both systolic and diastolic blood pressure and reduce your risk of developing type 2 diabetes..

Conclusion

Evidence suggests that hyperinsulinemia, mostly due to hyperglycemia and insulin resistance, can lead to hypertension. In addition, the body's response to low blood sugar, the release of catecholamine hormones, can also cause high blood pressure. Therefore, blood sugar instability in either direction can increase blood pressure.

It is important to note that one does not need to have a diagnosis of diabetes to control one's blood sugar and affect these negative health effects. Recent evidence from the University of Alabama at Birmingham shows that nearly 40 percent of young adults without diabetes have unhealthy blood sugar and insulin resistance. Given that fluctuating blood sugar can lead to a number of health problems, including high blood pressure, it is important to monitor and control blood sugar and blood pressure whenever possible.

Topic 7
Diabetes and Blood Pressure: A Dangerous Duo

"There is a strong relationship between diabetes and hypertension," explains Jai Radhakrishnan, MD, chief of clinical services in the Division of Nephrology and director of the Center for Hypertension at Columbia University Medical Center. Two out of three people with type 2 diabetes also have high blood pressure or use prescription drugs to lower their blood pressure. Both are diseases caused by lifestyle and aging and share common risk factors. The good news is that diabetes and hypertension can be modified with behaviors including of healthy eating, physical activity, weight management and, medication. Diabetes is the leading cause of kidney failure in the United States. One-third of diabetics develop kidney disease.

Diabetes causes kidney damage due to scarring, which in turn causes salt and water retention, which in turn increases blood pressure. Over time, diabetes damages the small blood vessels, causing the blood vessels to stiffen and malfunction. These changes contribute to high blood pressure. Both people with diabetes and hypertension have about twice the risk of heart attack and stroke compared to non-diabetic people with hypertension. Hypertensive diabetics also have a higher risk of complications such as retinopathy, i.e., damage to the blood vessels in the back of the eye and kidney disease. The blood vessels in the brain are also prone to damage from high blood pressure. Chronic high blood pressure can lead to early onset of diseases such as dementia and stroke.

Most people with diabetes should not have blood pressure above 130/80. To achieve this, many diabetics need blood pressure medication. Some antihypertensive drugs are more helpful in diabetes, especially diabetes due to kidney disease," explains Dr. Radhakrishnan. These include ACE (angiotensin-converting enzyme) inhibitors, angiotensin II blockers, and ACE 2 inhibitors. A new class of drugs called SGLT2 inhibitors benefit people with diabetes in ways other than controlling sugar, such as slowing kidney and heart damage They also help control blood pressure and weight gain. Lifestyle changes, such as a healthy diet and regular exercise, can reduce the complications of diabetes and high blood pressure.

Living with diabetes requires daily monitoring of blood sugar levels, diligent use of medications, regular exercise, maintaining a healthy weight and watching what one eats every day. To avoid high blood pressure, diabetics must limit their salt intake.For example, the average American diet contains 5 grams of sodium per day and the recommended 2.3 grams per day, which is about a teaspoon of salt. It's important to eat plenty of fruits, vegetables, fish, healthy fats and whole grains.

Another key to managing diabetes and hypertension is self-monitoring of both conditions at home and regular visits with your doctor. "We tell diabetics to self-monitor their blood sugar, but we completely ignore the importance of self-monitoring," says Dr. Radhakrishnan. "In the long term, blood pressure control is as important or even more important in reducing the risk of stroke, heart attack, and kidney failure."

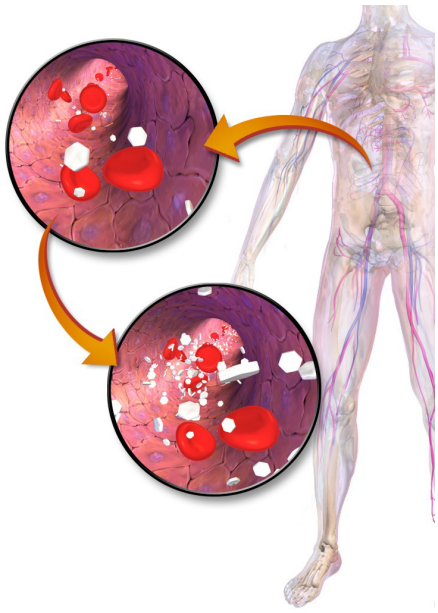
At Columbia University Medical Center's Hypertension Center, a multidisciplinary team of specialists provides personalized and comprehensive care to prevent and trea hypertension, as well as manage the wide-ranging effects of hypertension on the human body. The center offers in-person, telehealth and virtual visits that allow patients to easily connect with their providers and receive immediate feedback on blood pressure monitoring.

"Armed with knowledge, healthy lifestyle changes and a range of telemedicine and outpatient self-monitoring devices, people with diabetes can prevent many of the complications associated with high blood pressure. Self-awareness and self-monitoring of both conditions is the key to overcoming this dangerous duality.

Topic 8

How does high blood sugar (hyperglycemia) feel?

People with high blood sugar or hyperglycemia may feel unusually thirsty and urinate more than usual. However, high blood sugar can cause different symptoms. The liver and muscles make some blood sugar, but most of it comes from foods and drinks that contain carbohydrates. The body needs insulin to keep blood sugar in a normal range. Insulin is a hormone that directs the body's cells to absorb and store glucose. When there is not enough insulin or it does not work properly, blood sugar rises. High blood sugar can cause health problems.



Hyperglycemia

Hyperglycemia, or high blood sugar, is a problem that can affect people with type 1 or type 2 diabetes. There are two main types, including:

Fasting hyperglycemia:

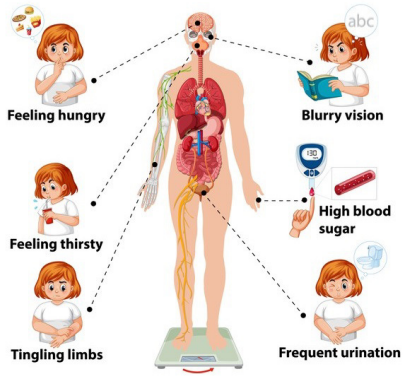
This occurs when a person with diabetes has blood sugar above 130 milligrams per deciliter (mg/dL) after not eating or drinking for 8 hours or more.

Postprandial hyperglycemia:

This occurs when a person with diabetes has a blood sugar level of 180 mg/dL or higher 1-2 hours after eating.

High blood sugar levels often or for a long time can cause some harmful symptoms and increase the risk of serious diseases and other complications over time.

Symptoms



Blood sugar acts as fuel for the body's organs and functions. However, high blood sugar does not increase energy. In fact, the opposite often happens because the body's cells cannot use blood sugar for energy. According to the American Diabetes Association, symptoms of hyperglycemia include:

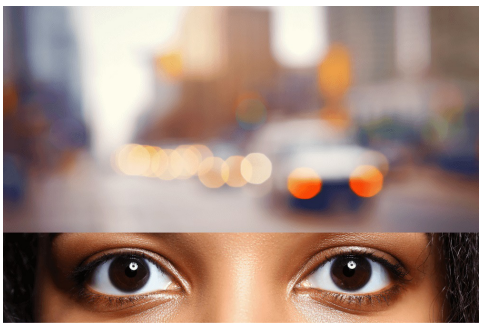
1) high blood sugar
2) high sugar in the urine
3) frequent urination
4) increased thirst

People may experience high blood sugar in the morning, especially if they have diabetes. High blood sugar can cause a number of other symptoms and complications. These include:

Extreme fatigue:

When the body doesn't produce enough insulin, sugar can stay in the blood instead of going into the cells where it can be used for energy. This can cause extreme fatigue. Fatigue can also be caused by dehydration, which can be caused by frequent urination.

Blurred vision:



According to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), high blood sugar can cause swelling in the part of the eye that helps to concentrate This can cause temporary blurred vision.

Excessive thirst:

High blood sugar in the kidneys and urine can also increase thirst, even if someone is drinking fluids.

Slowly healing wounds and ulcers:

High blood sugar can affect circulation, which can slow down. the healing of cuts, bruises, scrapes and other wound healing.

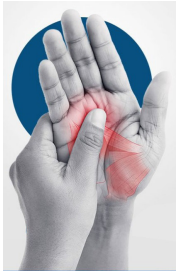
Unexplained weight loss:

High blood sugar can cause sudden or unexplained weight loss. This is because body cells don't get the glucose they need, so the body burns muscle and fat for energy.

Frequent urination:

High blood sugar travels to the kidneys and urine. This attracts more water and causes frequent urination.

Numbness and tingling:



High blood sugar can also cause numbness, burning, or tingling in the hands, feet, and legs. This is caused by diabetic neuropathy, a complication of diabetes that often occurs after years of high blood sugar.

Long-term complications

Over time, high blood sugar can damage the body's organs and systems. Damage to blood vessels can cause complications, including:

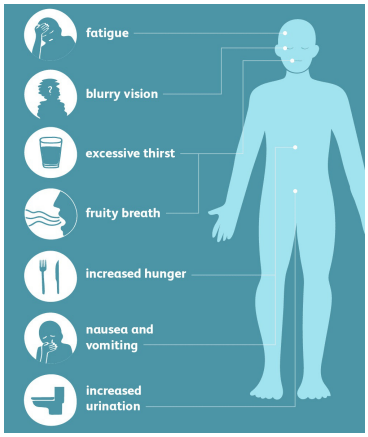
1) heart attack or stroke
2) eye damage and vision loss.
3) kidney or kidney disease

4) skin nerve problems, especially on the legs, causing ulcers. , infections
5) problems of treatment of wounds

People with high blood sugar may

1) have headaches and other pains
2) have trouble concentrating
3) be very thirsty or hungry
4) feel sleepy or tired.
5) have confused vision
6) feel dry mouth
7) feel bloating
8) have to urinate often
9) notice that wounds take a long time to heal

High blood sugar and low insulin levels can lead to elevated ketone levels and possibly diabetic ketoacidosis, a serious complication that requires immediate medical attention. When diabetic ketoacidosis occurs, a person may experience:



1) Shortness of breath
2) Fruity taste or odor on breath
3) Rapid heartbeat
4) Confusion and disorientation
6) Vomiting
7) Dehydration
8) Coma
9) A person's blood sugar can be over 240 mg/ dL.

In type 1 diabetes, the immune system attacks the cells in the pancreas that produce insulin. As a result, there is a lack of insulin in the body and the blood sugar increases. People with type 1 diabetes must take insulin with a needle, pen, or insulin pump to keep their blood sugar within a target range. According to the American Diabetes Association, only about 5% of all diabetics have type 1.

In type 2 diabetes, the body produces insulin but cannot use it properly. The pancreas tries to produce more hormone, but often cannot produce enough to maintain stable blood sugar levels. This is called insulin resistance. People with type 2 diabetes may need insulin, pills, dietary changes, or exercise to control their blood sugar.

Gestational diabetes can occur when insulin resistance and high blood sugar develop during pregnancy. People should watch it during pregnancy because it can cause complications for the pregnant woman and her baby. Gestational diabetes usually disappears after delivery.

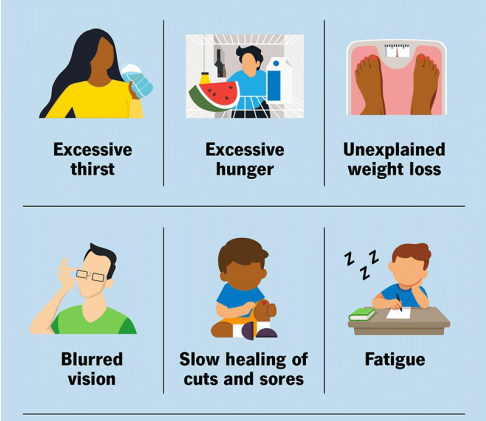
There may also be a link between diabetes and cystic fibrosis, a genetic disease that affects the lungs, pancreas and digestive system. In addition, people using beta blockers and certain steroids can also develop high blood sugar.

Doctors do not know what exactly causes diabetes. However, some factors can increase the risk.

Type 1 Diabetes

Scientists believe that certain genetic or environmental factors may increase the likelihood of developing type 1 diabetes.

The NIDDK notes that some genes play a role and that other factors, such as viruses and infections, can play a role.



The Juvenile Diabetes Research Foundation states that there is nothing a person can do to prevent type 1 diabetes. Diet, exercise or other lifestyle habits will not change the outcome.

Type 1 diabetes usually begins in childhood or early adulthood, but it can occur at any age.

Type 2 diabetes

The following risk factors can increase the risk of developing type 2 diabetes:

1) Certain genes
2) Overweight or obesity
3) Physical inactivity
4) If a parent or sibling has the disease Type 2 diabetes

5) Over 45 years
6) Blood pressure over 130/80 millimeters of mercury
7) High-density lipoprotein cholesterol or high triglycerides

People with high blood sugar may need regular measurements to maintain their blood sugar healthy range Every person is different and levels can vary from person to person. To determine blood sugar, a person must fast for 8 hours, 2 hours after a meal, or both. Some people can also do a glucose tolerance test, where they drink a sugary liquid and then have a blood test. The American Diabetes Association recommends a pre-meal blood sugar level of 80-130 mg/dL. About 1-2 hours after they start eating, their blood sugar should be below 180 mg/dL.

Blood sugar control

Many diabetics need to check their blood sugar with a glucometer every day. This device takes a drop of blood, usually from a finger, and displays the sugar level within seconds. People with type 1 diabetes must take insulin as directed by their doctor, usually several times a day. People with type 2 diabetes or gestational diabetes may need to change their diet and exercise habits. They may also need to take oral medications or insulin.

People should monitor their blood sugar according to their doctor's instructions and take the right amount of insulin if they have type 1 diabetes.

They should talk to a dietitian about what foods they must to eat I want to eat to eat or avoid, how much to eat and how often. They should take precautions to avoid infection by washing their hands regularly, as illnesses such as colds can raise blood sugar levels.

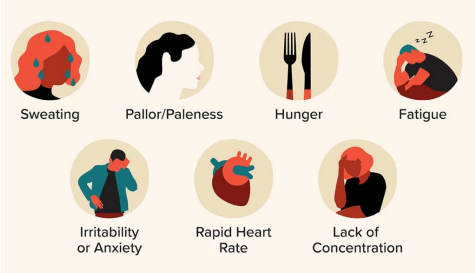
They should plan their diet and exercise to balance blood sugar levels.

They should minimize stress by exercising. , get enough sleep and reduce activities such as meditation or yoga.

Low blood sugar or hypoglycemia can occur when a person has certain diseases, uses certain medications, exercises a lot, skips meals or eats too little. It can also be a side effect of diabetes medications. Taking too much insulin can lead to low blood sugar.

Symptoms of low blood sugar may include:

1) weakness or tremors
2) sudden nervousness, anxiety or irritability
3) sweating or chills
4) extreme hunger
5) confusion
6) rapid pulse or palpitations



The person experiences treat hypoglycemia by quickly drinking fruit juice or eating a glucose tablet, sugar cube or candy.

When to see a doctor

Anyone who experiences fatigue, increased thirst, frequent urination, or weight loss should see a doctor, as these symptoms may indicate diabetes or other health problems. A routine health checkup often includes measuring blood sugar, even if a person has no symptoms. The US Preventive Services Task Force recommends screening for diabetes and prediabetes in adults ages 35 to 70 who are overweight or obese. Those with a family history of diabetes or other risk factors may need earlier or more frequent tests.

Frequently asked questions about high blood sugar

1) How is postprandial hyperglycemia treated?

For diabetics, a doctor may recommend taking certain medications before or after a meal. They may also recommend dietary changes to prevent postprandial blood sugar spikes.

2) What is postprandial hypoglycemia?

Postprandial hypoglycemia is when a person's blood sugar level drops after a meal.

3) What is postprandial blood sugar. diabetes level?

Postprandial (postprandial) blood sugar is less than 180 mg/dL in a person with diabetes.

4) What are the signs and symptoms of hypoglycemia and hyperglycemia?

Hyperglycemia (high blood sugar) can cause frequent urination and increased thirst. Hypoglycemia (low blood sugar) can cause dizziness, tremors, and a fast heartbeat.

Outlook

The health and well-being of diabetics depends on proper blood sugar control. To improve or maintain a good quality of life, a person must:

1) see a doctor regularly
2) take medications prescribed
3) follow dietary and exercise guidelines

These strategies can help a person with diabetes manage blood sugar levels and may also slow the progression of the condition. These individuals should also carry a medical certificate, especially if they use insulin, as this can provide important information in an emergency.

Topic 9

Why India witnesses a rise in hypertension, diabetes cases

India has 315 million people with hypertension and 101 million with diabetes, according to an alarming new study led by the Indian Council of Medical Research (ICMR) and published in The Lancet Diabetes and Endocrinology.

Medical experts say that several factors like sedentary lifestyle, unhealthy diet and stress are significantly and rapidly increasing the incidence of non-communicable diseases like hypertension and diabetes in India. The study also revealed that 136 million Indians are pre-diabetic, 213 million suffer from high cholesterol, 185 million from high LDL cholesterol or bad cholesterol, while 254 million live with general obesity and 351 million have abdominal obesity.

These non-communicable diseases were also behind 65 per cent of deaths in India, and 40 per cent hospitalisation, a study has revealed. The increasing prevalence can be attributed to several factors.

Rapid urbanization and the adoption of a more western lifestyle has led to a decline in physical activity. Sedentary behaviors, such as prolonged sitting and lack of exercise, increase weight and increase the risk of hypertension and high cholesterol. Increased stress levels and lack of sleep can also negatively affect blood pressure and cholesterol levels.

Medical experts attribute this to a number of factors, one of which is the shift in eating habits from the Indian traditional diet, which is rich in whole grains, fruit, vegetables, and legumes to more refined, high-calorie foods. Consumption of high-fat, high-carbohydrate foods has increased, resulting in weight gain, hypertension, and high cholesterol levels, say experts. In addition, Indians, particularly South Asians, have a genetic predisposition to high blood pressure and dyslipidaemia.

Studies have also shown that Indians are more likely to develop insulin resistance. Certain gene variants, combined with poor lifestyle habits, increase the risk of developing insulin resistance, say the experts. Excessive consumption of high-calorie, highly processed foods is one of the main causes of overweight and obesity, which affects nearly 40 per cent of the world's population including millions of children.

It's important to understand the complex relationship between sugar and diabetes. Once thought of as a simple indulgence, sugar can disrupt the balance of our body's glucose levels, making us more likely to develop diabetes.

Even a commonly used low-calorie or calorie-free alternative to sugar, called non-sugar sweeteners (NSS), is harmful to health in the long run, according to experts. NSS are usually marketed as an aid to weight loss or maintaining a healthy weight, and are often recommended to help control blood sugar in people with diabetes. Higher NSS intake is associated with increased risk of type 2 diabetes, CVD and related mortality, and all-cause mortality. It is also related to a higher body mass index and an increased risk of obesity; and bladder cancer risk.

Health experts have emphasized the need to educate people to make informed choices, adopt a balanced approach to nutrition and choose healthier options. This includes regular physical activity, such as walking, jogging or cycling, and reducing sitting.

A balanced diet that includes fruits, vegetables, whole grains, lean proteins and healthy fats should be followed while limiting consumption of processed foods, saturated fats, trans fats and sugary drinks. The doctor also recommends weight and stress management and regular health check-ups to control blood pressure, cholesterol and diabetes.

Topic 10

Why India is diabetes capital of the world

India is called the 'Diabetes Capital of the World' because it accounts for 17 percent of the total number of diabetics in the world. India currently has nearly 80 million diabetics and this number is expected to increase to 135 million by 2045. World Diabetes Day is celebrated worldwide on November 14.

Diabetes mellitus is a disease caused by insufficient production and secretion of insulin by the pancreas in type 1 diabetes and insufficient insulin response in type 2 diabetes. In normal body conditions, blood sugar levels are closely regulated by insulin, a hormone produced by the pancreas. Insulin lowers blood sugar.

When blood sugar rises, for example after a meal, insulin is released from the pancreas to normalize glucose. In patients with diabetes, the absence or insufficient production of insulin causes hyperglycemia.

Prevalence in India

Diabetes, which is primarily a lifestyle disease, has seen an alarming rise across all age groups in India, with incidence among the younger population also increasing by more than 10%..

According to a November 2017 report by the Indian Council of Medical Research, the Institute of Health Metrics and Evaluation and the Public Health Foundation of India, the prevalence of diabetes in India has increased by 64 percent over a quarter century. By 2030, about 98 million Indians may have diabetes, according to projections by the International Diabetes Federation and the Global Burden of Disease project.

Worryingly, many children in India also suffer from diabetes. Children develop obesity and metabolic syndrome early when their diet changes to processed and fast food. While Indians struggle with several health problems, diabetes is one of the most important. This was clearly demonstrated by the Covid-19 pandemic, where the worst

consequences, such as the dreaded mucormycosis or black fungus, suffer from co-morbidities such as diabetes.

In the country with the largest number of diabetics in the world, diabetes is a major health problem in our country today. According to the World Health Organization (WHO) diabetes fact sheet, high blood sugar causes about 3.4 million deaths worldwide.

Why Indians are more prone to diabetes

The current exponential increase in diabetes in India is mainly due to lifestyle changes. Rapid changes in eating habits, physical inactivity and weight gain, especially abdominal fat accumulation, are among the main reasons for the increased prevalence. Native Americans appear to be more prone to diabetes than Caucasians, although the exact mechanisms are not well understood.

The growing epidemic of diabetes in India and various studies on immigrants and Indians clearly show that Indians have an increased tendency to diabetes, which may be due to a higher genetic predisposition to diabetes in Indians. At the same time, increase "westernization" especially in the big cities and towns has caused a drastic change in our lifestyles with changes in our traditional diet and reduced physical activity.

As the number of machines needed to do our work increases, so does the number of daily activities. Migration from the countryside to the cities also has its role. Stress, of course, has an effect, but it is difficult to measure.

India is currently experiencing rapid epidemiological changes and increasing urbanization. Today's rate of urbanization is 35%, compared to 15% in the 1950s, and this may have significant implications for current and future diseases in India, particularly diabetes and coronary heart disease.

Environmental and lifestyle changes due to industrialization and lifestyle migration from rural to urban environments may be largely responsible for this epidemic of type 2 diabetes among Indians. Increased visceral fat due to obesity, particularly central obesity, and physical inactivity, as well as consumption of a high-calorie, high-sugar diet, become important contributing factors.

Another factor beyond our control is that we Indians have a higher insulin resistance, which means our cells do not respond to the insulin hormone. And compared to Europeans, our blood insulin levels tend to rise more and more consistently when we eat carbohydrates.

Managing Diabetes

India undoubtedly faces a challenge. However, medical experts believe that early detection and proper treatment can help patients live a normal life. Although diabetes is a chronic disease, it can be controlled in the early stages with lifestyle changes and then controlled with drugs in the early stages and exogenous insulin in the advanced stages. But it would not be wrong to say that it cannot be completely cured and it lasts for a lifetime.

Anyone diagnosed with diabetes should make lifestyle changes that include maintaining an ideal weight, regular physical activity, quitting smoking and quitting smoking. . . / minimal alcohol consumption. In addition, regular medical visits are important for diabetes control and assessment/prevention of disease-related complications.

Millions of people in India suffer from diabetes, a chronic disease that progresses slowly but causes irreversible damage to the heart, liver and pancreas. Currently, there is no permanent cure for diabetes. It is a lifelong health problem that must be managed through lifestyle and dietary changes. Eating right can keep your blood sugar from spiking. Because diabetes is associated with insulin resistance, a medical condition that prevents blood sugar from being regulated, it is often called 'high blood sugar' in layman's terms.

When The Sweet Tooth Turns Poisonous

With Indians' fondness for all things sweet, the country is said to be the world's largest consumer of sugar with around 29 million tonnes of sugar a year, costing us our entire lives. India has long been touted as the diabetes capital of the world.

Diabetes: Sweet But Deadly

According to a study published in 2023 by the Madras Diabetes Research Foundation and the Indian Council of Medical Research, about 101 million people have diabetes and another 136 million people have been diagnosed with pre-diabetes. According to a report by the World Health Organization (WHO), more than 50 percent of them live blissfully unaware of their health status and often go unnoticed.

The long-term consequences of high blood sugar are - increased risk. of heart disease. attack, pancreatic damage, liver failure, chronic kidney disease, infertility and hearing loss.

Foods That Can Skyrocket Blood Sugar Levels

Currently, there is no permanent cure for diabetes. Eating right can keep your blood sugar from spiking. Here are some foods you should avoid if you have diabetes.

High-Carb Foods

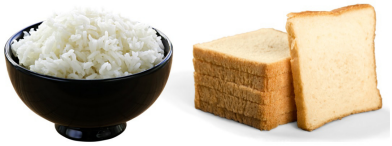
This is absurd. Typically, foods high in saturated fat and carbohydrates are the number one cause of blood sugar spikes. These include burgers, fries, pakoras, pastas, etc.

Starchy Vegetables

This may be bad news for Indians who cannot eat curry without a few slices of potato, but starchy vegetables like potatoes, corn and peas contain more carbohydrates than non-starchy vegetables like broccoli, cabbage, cauliflower etc.

White Bread Foods

Bread products made from white flour and refined grains tend to have a very high glycemic index. These include white rice, bread, etc.



Artificial Sweeteners

Artificial sweeteners have a high glycemic index. Choose healthier options like honey and stevia.

While China recently overtook India as the "Diabetes Capital of the World," there are two startling statistics about India's relationship with diabetes that are alarming: 57% of adults have type 2 -diabetes don't know they have it, and the number of people with type 1 diabetes in India has increased by 150 percent over the past three decades. The combination of diabetes and obesity leads to "diabetes", which is likely to become the largest epidemic in human history. That's because diabetes remains the biggest silent killer and the most underrated public health problem, while most of us worry about COVID 19, cancer, respiratory disease and other diseases.

According to International. According to the Diabetes Association, nearly 134 million Indians will have diabetes by 2045; As a result, these people are more likely to suffer heart attacks, strokes, kidney failure, organ damage and coma. But there are countless ways in which India can no longer be the country with the second highest number of diabetics. Although diabetes is a disease that can be treated individually, community involvement, better laws and increased knowledge are essential to slow the progression of this disease.

Why are Indians more susceptible to diabetes?

We are experiencing a number of environmental and lifestyle changes due to industrialization, migration to urban areas, per capita spending and eating culture. This led to the consumption of high-calorie/high-fat and high-sugar foods. In addition, these lifestyles have led to obesity and an increase in visceral fat due to inactivity. In addition, there is growing evidence that Indians have higher insulin resistance and a greater predisposition to diabetes.

Despite all this, taking steps to promote physical activity and reduce obesity in children and adults has multiple risk factors. diabetes can be modified and reduced.

Insulin resistance, genetic predisposition and rapid epidemiological transition may contribute to the increasing incidence of diabetes in India.

Insulin resistance:

Native Americans have higher levels of insulin resistance than whites, which is a major reason for the increased incidence of type 2 diabetes in this population. Hyperinsulinemia, which refers to higher insulin levels in relation to glucose load, is found more often in Indians than in Europeans, so the study suggests that Indians have higher insulin resistance than Europeans of the same age, gender and BMI.

The three best ways to minimize insulin resistance are to increase physical activity, follow a strict diet to lose weight, and use diabetes medications such as metformin and thiazolidinediones, which sensitize insulin and can lower blood sugar by reducing insulin resistance.

Genetic predisposition:

Genetic susceptibility plays a key role in the development of type 2 diabetes. Indians seem to develop the disease at a younger age, at least a decade or two earlier than Europeans.

The Chennai Urban Population Study (CUPS), conducted in Chennai, found that respondents with a family history of diabetes had a higher risk. of developing the disease (18, 2% against 10.6%) than subjects with no history. In addition, the chance of developing diabetes increased to 55% 3 if both parents had diabetes.

However, not all hereditary factors are under our control. Due to the complex and multifactorial nature of type 2 diabetes, there is an important interaction between genetic and environmental factors, which in turn can influence several intermediate characteristics. As a result, lifestyle changes can better manage this disease with genetic factors such as insulin secretion, insulin action, fat distribution and obesity still significantly under control.

Environmental factors:

Perhaps this is the main factor contributing to the increasing incidence of diabetes in India today. A so-called epidemiological shift is taking place in India. According to it, population distribution patterns in terms of birth rate, death rate, life expectancy and leading causes of death are changing.

India's rate of urbanization has increased from 15% in the 1950s to 35% since 2010. Right now. This will undoubtedly have important implications for current and future disease trends in two major diseases, diabetes and coronary heart disease. As mentioned earlier, socio-economic and technological advances have led to physical inactivity, affluent lifestyles have led to eating diets rich in fat, sugar and calories, and finally, long working hours have caused a lot of mental stress. All of these factors significantly affect insulin sensitivity.

In conclusion, interventions to promote physical activity and reduce obesity in adults and children, as well as programs that promote healthy infant and fetal growth, are needed to reduce the incidence of diabetes. A simple trick would be to continue eating traditional high-fiber foods and fully embrace Indian practices like yoga and meditation to reduce stress. Such an effort would ensure that the diabetes epidemic is addressed and that our disease burden is significantly reduced.

Application is the Powerful Mantra

A ground breaking study on diabetes and hypertension is making waves. A team of dedicated medical experts, passionate about helping others lead healthier lives, have collaborated to provide invaluable insights into managing these prevalent health conditions.

Through comprehensive research and first hand experiences, these experts have compiled a wealth of information that is not only resourceful but also highly dependable for anyone seeking to understand and combat the challenges posed by diabetes and hypertension.

As the study unfolds, the experts share their enthusiasm and expertise, offering practical advice and innovative strategies for prevention and management of these chronic diseases. Their collective wisdom proves to be a valuable resource for individuals looking to adopt a healthier lifestyle and take control of their well-being.

In a world where the threats of diabetes and hypertension loom large, the study serves as a beacon of hope, empowering communities to stay vigilant and proactive in safeguarding their health. By heeding the advice of these dedicated experts and embracing a mindful approach to wellness, individuals can navigate the complexities of these conditions with confidence and resilience.

Through education, awareness, and a shared commitment to healthy living, the study inspires individuals to take charge of their health destiny and embark on a journey towards a life free from the burdens of diabetes and hypertension. It reminds us all that with dedication, knowledge, and support from experts in the field, we can overcome these challenges and strive towards a future filled with vitality and well-being.

A Word of Appreciation

At the Institute of Policy Studies (IPS), a team of dedicated experts and researchers work tirelessly to address critical societal issues and drive positive change through innovative policy solutions. The Institute's commitment to public and social service sets it apart as a beacon of excellence in policy making, research, and policy assessment. Through comprehensive data analysis and in-depth studies, the Institute identifies key areas for intervention and develop evidence-based policies to improve access to healthcare services, reduce disparities, and enhance overall well-being in the community.

The IPS team works closely with educators, parents, and students to assess the current state of education systems and explore innovative approaches to enhance learning outcomes. By conducting surveys, focus groups, and pilot programs in schools, they gather valuable insights that inform policy recommendations aimed at ensuring quality education for all. Furthermore, the institute's efforts in sanitation focus on promoting hygiene awareness and advocating for sustainable sanitation practices. Through collaboration with local authorities and environmental experts, the IPS team designs initiatives to address sanitation challenges in urban and rural areas, ultimately fostering healthier living conditions for communities.

Additionally, initiatives aimed at social security, women empowerment, and child development highlight the IPS's holistic approach to social welfare. By engaging with marginalized groups, conducting gender-specific research studies, and supporting programs that empower women and children, the institute contributes significantly to building a more inclusive and equitable society.

Overall, the Institute of Policy Studies stands as a pillar of knowledge and advocacy in addressing pressing social issues through rigorous research, informed policymaking, and impactful community engagement. Their multifaceted projects across various domains serve as catalysts for positive change that resonate far beyond academic circles.

Amidst an atmosphere of gratitude and appreciation, the Institute publicly acknowledges the invaluable contributions of these medical experts. These unsung heroes have tirelessly worked behind the scenes, giving information, suggesting innovative treatment methods, and providing compassionate care to patients battling diabetes and hypertension.

Through their collective efforts, lives have been saved, suffering has been alleviated, and hope has been restored to countless individuals struggling with these chronic health conditions. Their selfless commitment to advancing medical knowledge and improving patient outcomes deserves not just recognition but also boundless appreciation.

The Institute of Policy Studies realises the contributions of all the participants who had taken part in a ground breaking study. The Institute expresses its gratitude for the support and cooperation extended by all participants in making the research successful.