The Rising Prevalence of Hypertension in Young Adults: Causes, Consequences, and Prevention Strategies

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Abstract- ***High blood pressure, or hypertension, is no longer a health issue for the aged older-generation type. Recent incidence shows a rising trend of hypertension in young adults due to certain life-style factors, environmental factors, and genetic predisposition. Sedentary living, unhealthy eating habits, increased stress, and widespread adoption of unwholesome habits like smoking and drinking have compounded the problem. Symptoms of hypertension onset in early life last much longer than immediate health threats. These long-term effects may include cardiovascular diseases, kidney dysfunction, and impaired cognitive functioning. Likewise, the social and economic impact is indeed obvious, such as increased healthcare costs and low productivity among the active workforce, thus showing the urgency of addressing this public health problem. The article investigates the main reasons causing the increasing rates of hypertension among young adults, exploring its associated effects and prevention through evidence-based strategies. The key approaches include promoting healthy lifestyles, early detection and monitoring, and utilizing e-health innovations for effective management. If awareness is raised and expected actions are taken early, the likelihood of avoiding the negative effects of hypertension on shaping a healthier future for young generations across the globe will be duly mitigated. This review sets up the ground for a complete grasp of the issue and offers practical tips and advice for their use by healthcare workers, decision-makers, and any person that may seek to combat what many refer to as a silent epidemic.***

Indexed Terms- ***Hypertension in young adults, Blood pressure trends, Lifestyle-induced hypertension, Cardiovascular health risks, Stress and hypertension, Early intervention strategies, Sedentary lifestyle risks, Preventive healthcare, Young adults' heart health, Hypertension awareness.***

I. INTRODUCTION

Hypertension is said to be a condition under which there is an increase in the amount of blood pressure in the arteries. This can be termed highly over a long time, causing health problems like heart disease and stroke. Even though many do not show symptoms, they will become known as "silent killers." With the definition in the name, people measure blood pressure in millimeters of mercury, and in turn, they set both numbers: systolic and diastolic. By the American Heart Association criteria, when reading at 130/80 mmHg or greater, the person is said to be hypertensive. Earlier, historically, hypertension was considered a disease of older age, but comparisons made over the years have pointed to increasing trends of this disease in the young adult section. Indeed, most of these are lifestyle changes, namely an increase in sedentary behavior, stressful environments, and unhealthy dietary habits. WHO reports more than 1.28 billion adults worldwide suffering from hypertension, with a considerable number being the ones within young populations. Around one in every four young adults in the world is either hypertensive or in danger of it, according to various studies.

Global trends manifest more dangerously the seriousness of the issue. The increase in consciousness and healthcare access in high-income countries has led to stabilization in hypertension; however, young adults in low- and middle-income countries are at a higher risk because of less financial resources, poor urbanization, and socio-economic inequality. Furthermore, increased intake of processed foods, increasing rates of obesity, and psychological stresses of increased levels found mostly in young people, exacerbates the problem. The transition is likely to prove an expensive burden on healthcare systems and threaten the future well-being and productivity of the young generation.

To understand the increased prevalence of hypertension in young adults, several approaches would help, mainly examining the causes and consequences which would include lifestyle and environmental factors as well as genetic predispositions. Equally, it would involve considering the effects of the condition, which could go beyond health at present to long-term complications, determining the effect on individuals as well as the societies.

The following article is aimed at exploring the possible causes of high blood pressure in young adults and its health and socio-economic outcomes as well as evidence-based prevention strategies. Creating awareness and carrying out targeted interventions by health professionals, policymakers, and the public would go a long way in tackling this important issue. These proactive measures include promoting healthy lifestyles, improving preventive health services, and applying technology to monitoring, which could ultimately prevent this coming epidemic and secure good health of future generations.

This article will unfold in sections describing the multifaceted causes behind hypertension, its ravaging effects, and prevention and management strategies. Addressing this silent epidemic spells a future healthier and more resilient global population.

- Understanding Hypertension

➢ What is Hypertension?

Hypertension is the chronic disease with an increased pressure or high blood pressure in blood vessels, which causes undue strain on the heart and blood vessels. Such high pressure is exerted for a long time, leading to serious eventual damage. Individuals suffering from hypertension are often said to suffer from a "silent killer," which usually manifests without symptoms until significant injury has been done to the vital organs.

Blood pressure is expressed by two numbers: the systolic pressure (top number) and diastolic pressure (bottom number). Systolic pressure is the measure of the blood on artery walls when the heart contracts, while diastolic pressure reflects the pressure in between heartbeats, when the heart rests briefly. Such measurement is expressed in millimeters of mercury (mmHg).

❖ Hypertension is classified according to blood pressure readings:

1) Normal Blood Pressure: Less than 120/80 mmHg.
2) Elevated Blood Pressure: Systolic pressure of 120–129 mmHg and diastolic pressure under 80 mmHg.
3) Hypertension Stage 1: Systolic pressure from 130 to 139 mmHg or diastolic pressure from 80 to 89 mmHg.
4) Hypertension Stage 2: 'Systolic pressure being equal to or above 140 mmHg and/or diastolic pressure being equal to or above 90 mmHg.

Such classifications of hypertension are employed for assessing risk factors and treatment tactics. Prompt diagnosis and intervention are essential for avoiding complications due to chronic high blood pressure.

Genetic Factors That Play a Major Role in the Development of Hypertension

❖ Under Genetic Aspects

Genetics play a critical role in developing predispositions to hypertension. A family history of high blood pressure will make an individual highly susceptible as inherited aspects can affect how the different systems of the body control and regulate blood pressure. Such aspects may comprise salt sensitivity, the renin-angiotensin system (which regulates the constriction of blood vessels), and the efficiency of kidney functions concerning sodium filtration. Genetic predisposition does not by itself lead to hypertension; it usually interacts with environmental and lifestyle factors to increase risk.

❖ Effects of Age and Sex

Age is one of the most important determinants of the risk of hypertension. With age the blood vessels become stiffer and they give increased resistance to blood flow, resulting in a greater risk for high blood pressure as individuals grow older. It is widely believed that the burden of hypertension is among older people; however, indications show that it is fast rising among younger people due to changing lifestyles.

Similarly, sex is known to create variations in the incidence of hypertension; men develop hypertension earlier compared to women and suffer a higher risk after menopause due to sex hormone changes affecting their vascular health. This condition calls for special emphasis on

gender-specific prevention and management of hypertension.

Understanding the nature and factor precursors would form a basis for addressing increasing prevalence among younger populations. Conjoining genetic predisposition to the effects of age and sex will make research into informed strategies for better outcomes possible.

❖ Blood Pressure Categories with Numerical Ranges and Associated Risk Levels

Blood Pressure Category	Systolic (mmHg	Diastolic (mmHg)	Risk Level
Normal	<120	<80	Low risk of developing hypertension.
Elevated	120–129	80–89	Increased risk of developing hypertension.
Hypertension Stage 1	130–139	≥90	Moderate risk of cardiovascular disease.
Hypertension Stage 2	≥140	>120	High risk of heart disease, stroke, and organ damage.
Hypertensive Crisis	>180	<120	Immediate medical intervention required.

- Causes of Hypertension in Young Adults

❖ Lifestyle Factors

1) Sedentary Habits and Lack of Physical Activity

Physical activity plays an important role in maintaining healthy blood pressure levels. However, a good portion of young adults does lead a sedentary lifestyle, characterized mostly by prolonged desk sitting or screen addiction. Such inactivity results in weight gains, stress, and poor vascular health-all associated with hypertension. Regular physical activity is shown to enhance efficiency and reduce resistance-wash, improve cardiovascular health by a unit of blood flows. However, these behaviors lead to the establishment of obesity along with insulin resistance, which turns to hypertension.

2) Unhealthy Diets

An important way through which diet encourages the development of hypertension is that of having diets that are high in sodium, processed foods, and sugar. Salt, when too much is consumed, does raise up sodium levels in the body, which leads to retention of water, causing increased blood volume and, thus, hypertension. Processed foods are usually laden with sodium and unhealthy fats, both of which lead to this other problem. Furthermore, too much sugar can induce insulin resistance, which can increase the chances of hypertension. It is, therefore, necessary for one to obtain a dietary regime rich in fruits and vegetables with low-fat dairy, with a little salt as possible, to be able to thrive with healthy blood pressure levels.

3) Tobacco use and consumption of Alcohol

Both tobacco use and alcohol consumption are important risk factors for developing hypertension. Smoking accelerates the narrowing of arteries (atherosclerosis), which in turn increases blood pressure. The chemicals present in tobacco injure arterial walls, increasing resistance and consequently elevating blood pressure. Alcohol intake at excessive levels can also cause high blood pressure among other consequences. Heavy drinking regularly raises blood pressure due to increased activity of the sympathetic nervous system, which results in vasoconstriction, damage to the heart and blood vessels. The effect of smoking and excessive consumption of alcohol, therefore, causes a very marked increase in young adults' hypertension.

❖ Comparison of Risk Factors and Prevalence Rates

Risk Factor	Description	Prevalence Rate	Impact on Hypertension
Lifestyle	Poor diet, lack of exercise, tobacco,	40% of young adults are sedentary and have	Directly increases risk due to poor blood

	and alcohol use	poor dietary habits	pressure regulation.
Genetic	Family history, genetic predispositions to salt sensitivity	25-30% of young adults with hypertension have a family history	Genetic factors increase susceptibility to hypertension.
Environmental	Urbanization, pollution, lack of access to healthcare	Urban areas: Higher prevalence of stress and pollution exposure	Contributes to increased stress and limited healthcare access, leading to elevated risk.

➢ Psychosocial Stressors

Young adults get a lot of stress these days because of their jobs and education, and these may cause an elevation of blood pressure due to the action of stress hormones such as cortisol. Long-time exposure to stress makes blood vessels narrow, increasing a chance to get a case of hypertension. The new growing digital dependency also comes as a resultant bearing an impact of its own on mental health, resulting in conditions such as anxiety, depression, sleep disturbances, and the direct effects associated with high blood pressure.

➢ Environmental and Socioeconomic Factors

Such environmental and socioeconomic factors as urbanization, pollution, and disparities in health affect hypertension. Stress from living in the city mostly breeds horrible dietary patterns with little or no exercise involved. Inflammatory changes take place in the cardiovascular system, which leads to increase in blood pressure due to airborne pollutants affecting the entire system. Accessibility to health facilities in underdeveloped areas becomes one of the main reasons for undiagnosed hypertension, especially among young adults with lower socioeconomic backgrounds.

➢ Underlying Medical Conditions

Obesity and metabolic diseases are the two major concerns behind hypertension in young adults. Weight increases blood volume and vascular resistance, which in turn elevate blood pressure. Secondary hypertension makes the management of blood pressure worse because of earlier conditions such as chronic kidney disease, which in turn quickens the cardiovascular complications.

- Consequences of Hypertension in Young Adults

➢ Current Effects

The condition reveals itself through subtle signs, commonly in persons as young as teenagers and adults. Fatigues, headaches, and dizziness are some of the few indications they can display. Although considered minor symptoms, they can have a great bearing on daily productivity and life experience. The effects of persistent fatigue and impaired cognition may impair work or academic performance and generate a cycle of strain that aggravates hypertension.

Long-Term Health Risks

1. Cardiovascular Diseases

Prolonged hypertension leads to the development of cardiovascular diseases such as myocardial infarction, stroke, and cardiac failure. This affects the way the heart and blood vessels work, causing significant changes such as left ventricular hypertrophy (the thickening of the heart muscle). With time, it increases the risk for life-threatening events in the cardiac region.

2. Damage to the Kidneys

The kidneys are particularly susceptible to the phenomena of hypertension, which can damage their architectural, delicate filtering structures (glomeruli). This results in chronic kidney disease (CKD), whose effect settles in as time passes by, often failing to be managed, which leads to disease progression to end-stage renal disease, which will require the use of dialysis or kidney transplantation.

3. Decline in Cognition

The diminished blood supply to the brain by hypertension causes the development of either cognitive deficits or dementia at a relatively younger age. In the long run, young adults with uncontrolled blood pressure will find themselves easily falling prey

to vascular dementia, where they forget about their lives and cannot function properly in society.

Economic and Social Consequences

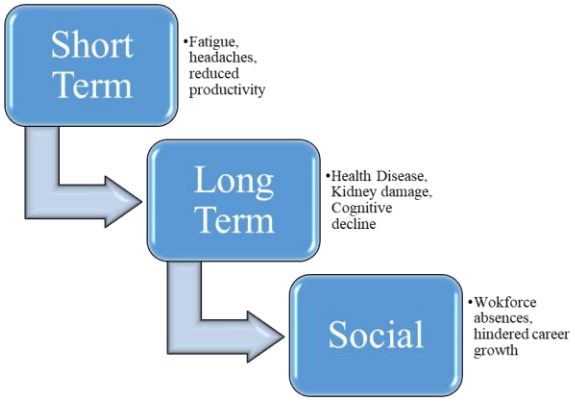
1. Healthcare Costs

Unmoored financial-affordability of hypertension and its complications is a huge burden. It manifests in not only an expensive, frequent visit to doctors but also costly medications and treatment-prescriptions for other conditions related to heart disease or kidney failure. For young adults with such stringing costs, considering the health insurance is inadequate or non-existent, these costs could prove very difficult to cope with over a lifetime.

2. Loss of Workforce Productivity

Hypertension and its resultant symptoms tend to result in loss of productivity in the workforce. Lethargy, frequent medical appointment attendance, and hospital admissions can culminate in absenteeism, affecting job stability and, eventually, overall contributions to the economy. Absenteeism translates into high-cost health care and possible loss in productivity from job loss due to illness in the face of an alarming rise in hypertension among younger workers.

Consequences of Hypertension in Young Adults



- Prevention Strategies

❖ Lifestyle Modifications

1. Regular Physical Activity

Regular physical activity is one of the greatest methods of blood pressure control. Aerobic exercise such as brisk walking, cycling, and swimming supports heart health and reduces blood pressure. Even strength training added to aerobic workouts improves cardiovascular function. Experts recommend at least 150 minutes of moderate-intensity exercise per week for the reduction of the risk of hypertension.

2. Changes in Diet

Nutrition is one of the most important elements for hypertension prevention. The DASH diet theory endorses the intake of fruits and vegetables, whole grains, and low-fat dairy products to supplement cholesterol and saturated fat to a minimum. Reducing sodium intake to less than 2300 mg per day and ideally to 1500 mg per day is important for lowering blood pressure. An addition of potassium-rich foods such as bananas, spinach, etc., and home-cooked meals to replace packaged ones can also do much improvement in the cardiovascular system.

3. Stress Management Techniques

Chronic stress truly contributes greatly to hypertension. Mindfulness is a means of decreasing stress using techniques such as meditation or deep-breathing exercises and progressive muscle relaxation. Yoga and tai chi are also good practices, because they focus on physical activity and mindfulness, producing great benefits for mental and cardiovascular fitness.

❖ Early Detection and Monitoring

1. Routine Ensuring of Blood Pressure Levels

Routine checking of blood pressure is, therefore, an important preventive measure for early detection and prevention of high blood pressure. For example, young adults should undergo annual blood pressure evaluation regardless of gender or should do so more often if they have other risk factors. Certainly, those with a direct but unbroken family history of high blood pressure ought to assess it every year.

2. Wearables and Health Apps

Technology is becoming increasingly involved in high blood pressure prevention. Wearable devices, such as smart wristwatches and fitness bands, can monitor the heart rate and physical activity, enabling real-time feedback on health metrics, such as blood pressure levels. Applications tracking blood pressure levels, dietary intake, and exercise habits encourage keeping up with health promotion.

❖ Community and Public Health Initiatives

1. Awareness Campaigns

Public health campaigns targeting young adults are important in reducing the increasing prevalence of hypertension. These initiatives can include social medical media education, school programs, and community workshops in teaching individuals the risks and prevention strategies for high blood pressure.

2. Policy Changes

Policies directed toward the reduction of sodium levels from government to processed foods will end up affecting public health at a wide level. It encourages food manufacturers to improve their nutritional labeling so that they reformulate their products with less sodium. So, people reduce overall salt consumption easily. Healthy foods could also bear subsidy so that young adults easily afford the health options to be made better.

Hypertension prevention in the young adults calls for a multi-pronged approach, including individual lifestyle changes, early detection measures, and public health interventions. Creating a culture of awareness and empowering healthy management will help minimize the long-term burden of hypertension while maintaining a healthier tick for generation to come.

- The Role of Technology in Hypertension Management

Such advances in technology have disclosed many possible avenues for the successful management of hypertension so that the patient may have tools to monitor, detect, and manage this important condition. Important innovations include mobile health applications, telemedicine services, AI-driven diagnostics, health wearables, etc., that contribute toward active hypertension management.

➢ Mobile Health Applications

Mobile health applications have taken over the complete scenario where people can have their own self-management of blood pressure. It would help users log their daily readings, trends, and suggestions to maintain blood pressure levels.

- Tracking Blood Pressure: The app MyFitnessPal and Omron Connect help record systolic and diastolic readings, which help in administrating real-time blood pressure insights.
- Promoting Health Behavior: Many apps send reminders about their medication, water, or exercising needs.
- Syncable with Wearable Devices : Some apps will sync with wearable devices to store health data in one simple, soon-to-access part.

These types of tools are extremely useful for young adults, which make it easy for them to watch their health in this busy lifestyle.

➢ The Fusion of Telemedicine and Artificial Intelligence

1. Accessible Telemedicine

Telemedicine Access to Health Care involves exposing health to patients who are at risk or currently live with hypertension. Through virtual consultations, patients may liaise with health providers concerning advice without having to visit a clinic.

- Time Value: It removes barriers such as time, travel, and cost. Thus, it enables people to have health care timely even in far or underserved areas.
- Medicine Control: From remote consultations, physicians can continue to assess the progress and modify medications to ensure that patients take effective blood pressure control measures.

2. Management of hypertension by AI

The artificial intelligence analyzes the recurring pattern and risk using the more extensive data state for exceptional hypertension care. The AI tools can estimate the happening of hypertension-bodied lifestyle and heredity, which allow health interventions at an earlier date.

- Personalized Care Plans: Recommendations for diet, activity, and medicine can be tailored according to individual profiles using AI algorithms.
- Risk Detection: Complications that could eventually lead to cardiovascular disease can even be diagnosed before symptoms appear by machine-learning models to improve results.

AI and telemedicine combined offer a powerful framework for early detection and long-term management.

➢ Portable Health Monitors

These devices include smartwatches and fitness trackers. Their roles nowadays have grown more insistent as they help hypertensive patients manage their daily lives. The device would have achieved continuous health measurement and actionable reporting of health metrics, thus allowing the user control over his health.

1. Blood Pressure Measurement

Latest advanced wearables like Samsung Galaxy Watch and Fitbit Sense have blood pressure tracking features that allow users to keep track of readings throughout the day.

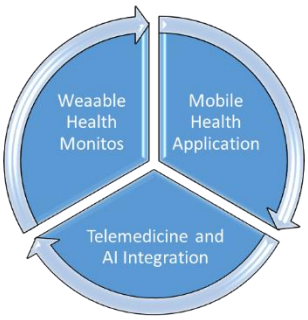
2. Heart Rate and Activity Levels

Heart rate variability and daily activity levels can reveal stressors related to hypertension, leading to the user's acclamation to further healthy practices.

3. Proactive Alerts

The majority give alerts for readings that are more abnormal in terms of amount. These prompts lead to medical attention or lifestyle changes that are immediate.

Role of Technology in Hypertension Management.



Technology in Hypertension Management.

Technology continues to reshape the face of hypertension management by making it accessible, personalised, and proactive. Mobile applications encourage patients to adopt regular healthy habits; telehealth brings services closer; artificial intelligence provides early intervention; wearables include constant monitoring for all these developments. This all combines to provide young adults with the ways to manage their hypertension and avoid its escalation.

- Case Studies and Success Stories

➢ Individual Success Stories

1. Sarah transformed her life

Sarah, at 28 years old, was working as a marketer and had been diagnosed with hypertension simply because of her sedentary lifestyle and eating habits. In due course, she became exercise-active, took to a healthy diet, and practiced mindfulness as stress management. Six months afterward, her blood pressure had normalized. This is instructive testimony on how lifestyle modifications can help manage hypertension.

2. James' Fight with Hypertension

While dealing with patients in his hospital, on most days, James, aged 30, increases high blood pressure with long duty hours and stress. After changing his diet and leading a more active lifestyle with yoga, he found that he could normalize his blood pressure within three months. Clearly, this shows other medical professionals that self-care is not meant just for the patient but also applies to the caregiver.

➢ Community-Based Programs

1. The Healthier Youth Campaign

A campaign in the city meant to increase awareness on hypertension was able to cut the rate of hypertension among the youths by 25%. Because the initiative involved free screenings, workshops on health education, and advocacy for physical activity, it proved meaningful to public health action in terms of reducing hypertension levels.

2. Hypertension-Free Youth Programme

The programme offered health check-ups, nutrition education, and sports events at the community level in a rural town, which together accounted for a 20 percent decline in hypertension. This only shows how community interventions could greatly contribute to improving health outcomes.

As revealed by these success stories, lifestyle changes and community programs have proved to be useful in controlling and preventing hypertension. Much can be achieved both individually and collectively to improve health and bring new hope for dealing with hypertension in young adults.

- Challenges in Combating Hypertension Among Young Adults

➢ Awareness and Education

An awareness barrier that manages young adults with hypertension is the widespread perception that this condition is a juvenile issue among the older population. Symptoms, associated more with temporary stress-the tiredness and headaches-have contributed to the delay in diagnosis and treatment. Educational campaigns that fail to reach the youth audience also contribute to many people being unaware of the risks and long-term effects of increased blood pressure.

- Healthcare Barriers

Access to health insurance limitation affordability is another limit that young many adults face. They lack health insurance or sufficient income to afford regular check-ups and treatment. Absence of preventive care services aggravates the situation because, generally, as he pointed out, hypertension is usually asymptomatic during the early stages. Besides, there is limited access to diagnostic instruments and medicines in lower-income areas, which further impedes effective management.

- Cultural Resistance

Cultural customs and traditions directly stand in the way of healthier lifestyles. Many cultures practice traditions whereby their staple foods contain excessive salt and unhealthy fats, which often leads people into an unhealthy state while trying to acquire a well-balanced diet. Negative opinions toward regular exercises and having dependency on herbal medicines rather than professional medical advice have become hindrances in managing hypertension. Because of societal norms on stigmatizing mental health discourse, individuals have a hard time dealing with stress hypertension.

CONCLUSION

In the latest events, it is necessary to realize that the factors triggering young adults to have higher prevalence rates of hypertension have generally been multifactorial, that is, they have lifestyle factors, psychosocial stressors, environmental and socioeconomic influences, and medical factors. However, these concerns spiraled into short- and long-term challenges such as loss of productivity and increased cases of cardiovascular diseases plus costs that the individuals and the society incur to manage the condition. Comprehensive strategies must be put in place by involving lifestyle changes, early diagnosis, technological advancements, and vigorous public health interventions to manage these issues.

Such proactive measures include a healthy diet, regular exercise, or even stress management, which can go a long way in ensuring that hypertension levels in substantive populations are reduced. Awareness campaigns should focus on communities and create preventative policies such as reducing sodium in processed foods. Furthermore, one must implement various technological advances such as mobile health applications, telemedicine, and wearable devices as the latest and key solutions for monitoring and management against hypertension.

So on the one hand, intelligent people's efforts, through various community interventions and healthy policies and programs, while, on the other, spreading awareness such that making people advocates in curbing disease would foster an ambient situation for abating this severe threat. By moving toward prompt decisions, one can give generations of people a sparking difference in health and future prosperity in society.

REFERENCES

[1] Battistoni, A., Canichella, F., Pignatelli, G., Ferrucci, A., Tocci, G., & Volpe, M. (2015). Hypertension in young people: epidemiology, diagnostic assessment and therapeutic approach. *High Blood Pressure & Cardiovascular Prevention*, *22*, 381-388.

[2] Yahya, T., Jilani, M. H., Khan, S. U., Mszar, R., Hassan, S. Z., Blaha, M. J., ... & Nasir, K. (2020). Stroke in young adults: Current trends, opportunities for prevention and pathways forward. *American journal of preventive cardiology*, *3*, 100085.

[3] Carey, R. M., Muntner, P., Bosworth, H. B., & Whelton, P. K. (2018). Prevention and control of hypertension: JACC health promotion series. *Journal of the American College of Cardiology*, *72*(11), 1278-1293.

[4] Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, *16*(4), 223-237.

[5] Khoo, Y. Y., Farid, N. D. N., Choo, W. Y., & Omar, A. (2022). Prevalence, awareness, treatment and control of young-onset hypertension in Malaysia, 2006–2015. *Journal of human hypertension*, *36*(1), 106-116.

[6] Zhou, B., Perel, P., Mensah, G. A., & Ezzati, M. (2021). Global epidemiology, health burden and effective interventions for elevated blood pressure and hypertension. *Nature Reviews Cardiology*, *18*(11), 785-802.

[7] Pimenta, E., & Oparil, S. (2010). Prehypertension: epidemiology, consequences and treatment. *Nature Reviews Nephrology*, *6*(1), 21-30.

[8] Domengé, O., Fayol, A., Ladouceur, M., Wahbi, K., Amar, L., Carette, C., ... & Hulot, J. S. (2024). Trends in prevalence of major etiologies leading to heart failure in young patients: An integrative review. *Trends in Cardiovascular Medicine*, *34*(2), 80-88.

[9] Oparil, S., Acelajado, M. C., Bakris, G. L., Berlowitz, D. R., Cífková, R., Dominiczak, A. F., ... & Whelton, P. K. (2018). Hypertension. *Nature reviews. Disease primers*, *4*, 18014.

[10] Murtaza, G., Riaz, S., Zafar, M., Ahsan Raza, M., Kaleem, I., Imran, H., ... & Bashir, S. (2024). Examining the growing challenge: Prevalence of diabetes in young adults. *Medicine International*, *5*(1), 2.

[11] Maaijwee, N. A., Rutten-Jacobs, L. C., Schaapsmeerders, P., Van Dijk, E. J., & de Leeuw, F. E. (2014). Ischaemic stroke in young adults: risk factors and long-term consequences. *Nature Reviews Neurology*, *10*(6), 315-325.

[12] Schocken, D. D., Benjamin, E. J., Fonarow, G. C., Krumholz, H. M., Levy, D., Mensah, G. A., ... & Hong, Y. (2008). Prevention of heart failure: a scientific statement from the American Heart Association Councils on epidemiology and prevention, clinical cardiology, cardiovascular nursing, and high blood pressure research; Quality of Care and Outcomes Research Interdisciplinary Working Group; and Functional Genomics and Translational Biology Interdisciplinary Working Group. *Circulation*, *117*(19), 2544-2565.

[13] Antza, C., Gallo, A., Boutari, C., Ershova, A., Gurses, K. M., Lewek, J., ... & Lebedeva, A. (2023). Prevention of cardiovascular disease in young adults: Focus on gender differences. A collaborative review from the EAS Young Fellows. *Atherosclerosis*, 117272.

[14] Antza, C., Gallo, A., Boutari, C., Ershova, A., Gurses, K. M., Lewek, J., ... & Lebedeva, A. (2023). Prevention of cardiovascular disease in young adults: Focus on gender differences. A collaborative review from the EAS Young Fellows. *Atherosclerosis*, 117272.

[15] Story, M., Stevens, J., Himes, J., Stone, E., Rock, B. H., Ethelbah, B., & Davis, S. (2003). Obesity in American-Indian children: prevalence, consequences, and prevention. *Preventive medicine*, *37*, S3-S12.

[16] Boot, E., Ekker, M. S., Putaala, J., Kittner, S., De Leeuw, F. E., & Tuladhar, A. M. (2020). Ischaemic stroke in young adults: a global perspective. *Journal of Neurology, Neurosurgery & Psychiatry*, *91*(4), 411-417.

[17] Sharma, M., & Ganguly, N. K. (2005). Premature coronary artery disease in Indians and its associated risk factors. *Vascular health and risk management*, *1*(3), 217-225.

[18] Bibbins-Domingo, K., Chertow, G. M., Coxson, P. G., Moran, A., Lightwood, J. M., Pletcher, M. J., & Goldman, L. (2010). Projected effect of dietary salt reductions on future cardiovascular disease. *New England Journal of Medicine*, *362*(7), 590-599.

[19] Chan, R. S., & Woo, J. (2010). Prevention of overweight and obesity: how effective is the current public health approach. *International journal of environmental research and public health*, *7*(3), 765-783.

[20] Kovesdy, C. P., Furth, S., Zoccali, C., & World Kidney Day Steering Committee. (2017). Obesity and kidney disease: hidden consequences of the epidemic. *Physiology international*, *104*(1), 1-14.