

Review

Hypertension in Young Adults: Causes, Management and Lifestyle Modification

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Received: 9 July 2023, Accepted: 12 July 2023, Published: 17 July 2023

Abstract

Hypertension, or high blood pressure, is a growing concern among young adults. While traditionally seen as a condition affecting older individuals, recent studies have shown an alarming increase in hypertension prevalence in young adults. This has prompted the need for understanding the causes, consequences, and management of hypertension in this age group. Lifestyle modifications, such as adopting a healthy diet, regular exercise, stress reduction, limiting alcohol and tobacco use, and maintaining a healthy weight, are key to managing hypertension. Medications may be prescribed if necessary, and regular monitoring of blood pressure is important. Collaboration with healthcare providers, patient education, and long-term follow-up are crucial for successful management. Overall, taking a comprehensive approach tailored to young adults' specific needs and circumstances is essential for effective hypertension management and the prevention of complications.

Keywords: *hypertension, blood pressure, young adults, youth, lifestyle modification*

Introduction

Hypertension, commonly known as high blood pressure, is a significant public health concern affecting millions of individuals worldwide. Traditionally considered a condition that primarily affects older adults, there has been a growing concern over the increasing prevalence of hypertension in young adults (1). This demographic shift in the incidence of hypertension has raised alarm bells among healthcare professionals and researchers alike, prompting a need for further investigation into the causes, consequences, and management of hypertension in this age group.

Hypertension is defined as systolic blood pressure (SBP) equal to or above 130 mmHg and/or diastolic blood pressure (DBP) equal to or above 80 mmHg (2). The condition is a silent killer, often remaining undiagnosed until complications arise. While hypertension is known to be more prevalent among older adults due to age-related physiological changes and the cumulative effect of risk factors, it is increasingly evident that young adults are not immune to its effects (1, 3). Recent studies have reported a concerning rise in the prevalence of hypertension among individuals in their 20s and 30s, suggesting an urgent need for early detection, prevention, and management strategies targeted specifically towards this population (4). Data collected by the Saudi General Authority for Statistics (GAS) on Saudi citizens as well as non-Saudis via the 2018 National Population Health Survey (NPHS) found the prevalence of hypertension in the age groups 15–19 years, 20–24 years and 25–29 years, to be 0.70%, 0.72%, and 0.85% respectively (5).

Understanding the underlying causes of hypertension in young adults is essential for effective prevention and management. Several risk factors have been identified, including obesity, sedentary lifestyle, unhealthy dietary habits, stress, family history of hypertension, and certain medical conditions such as chronic kidney disease and diabetes (6-13). Furthermore, lifestyle factors such as excessive alcohol consumption and tobacco use have also been implicated in the development of

hypertension (14, 15). However, the precise interplay between these factors and the mechanisms leading to hypertension in young adults remains an area of ongoing research.

The consequences of untreated or poorly managed hypertension in young adults can be far-reaching. Hypertension is a major risk factor for cardiovascular diseases such as heart attack, stroke, and heart failure (16). Additionally, it can lead to complications affecting other vital organs, including the kidneys and eyes (17, 18). The impact of hypertension on the younger population is not limited to physical health; it can also have psychological and socioeconomic implications, affecting quality of life, productivity, and healthcare costs (19).

Methodology

This study is based on a comprehensive literature search conducted on May 18, 2023, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed the causes, management, and lifestyle modification of hypertension in young adults. There were no restrictions on date, language, participant age, or type of publication.

Discussion

Hypertension is a complex condition influenced by a variety of factors. While it is commonly associated with older adults, there has been a concerning increase in the prevalence of hypertension among young adults. Understanding the causes of hypertension in this age group is crucial for effective prevention and management. Some key factors that contribute to hypertension in young adults are discussed below.

Unhealthy lifestyle habits

Sedentary lifestyles, poor dietary choices, and excessive salt intake are major contributors to hypertension in young adults (20). Lack of physical activity and a diet high in processed foods, saturated fats, and sodium can lead to weight gain, obesity, and increased blood pressure (21). In the Middle East, hookah-smoking is a common habit that causes ill effects similar to cigarette smoking (22). In young adults who smoke hookah, a single session of smoking leads to a temporary increase in arterial stiffness that is like the effect observed with cigarette smoking (23). Additionally, even a short duration of waterpipe smoking, such as 15 minutes, was found to have notable effects on the cardiovascular system, including an increase in systolic blood pressure and heart rate (24). Urbanization has also been implicated in the promotion of a sedentary lifestyle (25). The impact of urbanization on hypertension in the Middle East appears to have contradictory findings. In certain countries, hypertension appears to be more prevalent in urban areas, while in others, it is more common in rural regions. For example, in the UAE, cities have shown a higher prevalence of hypertension compared to rural areas (26). Conversely, in Palestine, individuals residing in rural settings were found to be 23% less likely to have hypertension compared to those living in urban areas (27).

Stress and mental health

Young adulthood is often characterized by high levels of stress due to academic pressures, career challenges, and personal relationships. Chronic stress triggers the release of stress hormones that can constrict blood vessels and raise blood pressure (28). Moreover, certain mental health conditions like anxiety and depression have been linked to hypertension in young adults.

Obesity and metabolic syndrome

The rising prevalence of obesity in young adults has been strongly associated with hypertension. Excess body weight puts additional strain on the cardiovascular system and increases the risk of developing metabolic syndrome—a cluster of

conditions including high blood pressure, high blood sugar, abnormal cholesterol levels, and excess abdominal fat (29).

Genetics and family history

Hypertension can run in families, suggesting a genetic predisposition to the condition. Young adults with a family history of hypertension are at higher risk of developing the condition themselves. Genetic variations can influence blood pressure regulation and the body's response to dietary salt, ultimately affecting blood pressure levels (30).

Hormonal imbalances

Certain hormonal imbalances can contribute to the development of hypertension in young adults. For example, conditions such as polycystic ovary syndrome (PCOS) in women and primary aldosteronism (a hormonal disorder affecting the adrenal glands) can lead to increased blood pressure (31, 32).

Chronic kidney disease

Young adults with underlying kidney problems, such as chronic kidney disease (CKD), are at higher risk of developing hypertension. The kidneys play a crucial role in regulating blood pressure, and any impairment in their function can disrupt the balance of fluid and electrolytes in the body, leading to increased blood pressure (33).

Substance abuse

Excessive consumption of alcohol and illicit drug use can contribute to hypertension in young adults. Alcohol raises blood pressure temporarily, and chronic alcohol abuse can lead to long-term hypertension (34). Illicit drugs like cocaine and amphetamines can also cause a sudden increase in blood pressure (35).

Sleep apnea

Obstructive sleep apnea, a sleep disorder characterized by repetitive pauses in breathing during sleep, has been linked to hypertension (36). The repeated interruptions in breathing lead to oxygen deprivation and increased sympathetic

nervous system activity, resulting in elevated blood pressure.

It's important to note that the causes of hypertension in young adults are often multifactorial, with several factors interacting and influencing each other. Identifying and addressing these underlying causes is essential for the effective management and prevention of hypertension. Adopting a healthy lifestyle, including regular exercise, a balanced diet, stress reduction techniques, and limiting alcohol and drug use, can significantly reduce the risk of hypertension in young adults.

Being a chronic condition, hypertension requires ongoing management to prevent complications and maintain cardiovascular health. While it is commonly associated with older adults, the increasing prevalence of hypertension in young adults necessitates effective treatment strategies tailored to this specific age group. Some key aspects of the treatment and management of hypertension in young adults are discussed below.

Lifestyle modifications

Adopting a healthy lifestyle is the cornerstone of hypertension management in young adults. This includes regular physical activity, such as aerobic exercises, which can help lower blood pressure and improve overall cardiovascular fitness. Young adults should aim for at least 150 minutes of moderate-intensity aerobic activity or 75 minutes of vigorous-intensity aerobic activity per week (37). Examples of aerobic activities include brisk walking, jogging, cycling, swimming, and dancing. Additionally, incorporating strength training exercises two or more days per week can help improve overall fitness and further contribute to blood pressure management. Additionally, dietary modifications including the adoption of a healthy diet, are essential for managing hypertension. Emphasize a diet rich in fruits, vegetables, whole grains, lean proteins, and low-fat dairy products. This approach, known as the Dietary Approaches to Stop Hypertension (DASH) diet, has been shown to lower blood pressure (38). Limit the intake of sodium (salt), saturated fats, trans fats, and cholesterol. Encourage young adults to read food

labels and make informed choices regarding processed and packaged foods that may contain high levels of sodium. Weight management is also crucial, as losing excess weight can help lower blood pressure in overweight or obese individuals. Maintaining a healthy weight or achieving weight loss if overweight or obese is an important lifestyle modification for hypertension (39). Excess body weight puts additional strain on the cardiovascular system and increases blood pressure. Encourage young adults to engage in regular physical activity and adopt a balanced diet to achieve and maintain a healthy weight. Further, intake of alcohol and tobacco are modifiable risk factors for the onset and progression of hypertension. Young adults should be advised to drink alcohol in moderation or, ideally, limit its consumption. Moderate alcohol consumption is defined as up to one drink per day for women and up to two drinks per day for men (40). Similarly, smoking is a significant risk factor for hypertension and cardiovascular diseases. Young adults who smoke should be counselled to quit smoking and should be provided resources and support to aid in smoking cessation. Quitting smoking not only benefits blood pressure control but also improves overall health and reduces the risk of various diseases (41). Additionally, getting enough quality sleep is important for blood pressure regulation. Encourage young adults to establish a regular sleep schedule and aim for 7-9 hours of sleep per night. Addressing sleep disorders, such as obstructive sleep apnea, if present, is crucial for optimal blood pressure management (36). Lifestyle modifications are most effective when adopted as long-term habits rather than short-term changes. Encouraging young adults to take ownership of their health and providing them with education and support are key to successfully implementing and sustaining these lifestyle modifications.

Collaboration between healthcare providers and young adults is crucial to tailoring lifestyle modifications to their specific needs and circumstances. Regular follow-up appointments should be scheduled to assess progress, address challenges, and make any necessary adjustments to the treatment plan. By focusing on lifestyle

modifications, young adults can take control of their hypertension and improve their long-term cardiovascular health.

Medications

In some cases, lifestyle modifications alone may not be sufficient to control blood pressure in young adults with hypertension. Medications may be prescribed to help lower blood pressure and reduce the risk of complications. Commonly prescribed medications for hypertension include angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), calcium channel blockers, diuretics, and beta-blockers (42). The choice of medication depends on various factors, including the individual's overall health, presence of coexisting medical conditions, and potential side effects (43). Young adults with hypertension should work closely with their healthcare providers to determine the most appropriate medication and dosage.

Regular monitoring

Monitoring blood pressure regularly is essential for managing hypertension in young adults. This can be done at home using a home blood pressure monitor or through regular check-ups with healthcare providers. Regular monitoring helps to assess the effectiveness of lifestyle modifications and medications, as well as detect any potential fluctuations in blood pressure (44). Young adults should be encouraged to keep a record of their blood pressure readings and share them with their healthcare providers during appointments.

Stress management

Chronic stress has been linked to hypertension in young adults. Therefore, stress reduction techniques can play a vital role in blood pressure control. Engaging in stress management practices, through maintaining a healthy work-life balance and promoting self-care practices such as relaxation exercises, meditation, yoga, or engaging in hobbies and activities that aid in relaxation, can help lower stress levels and contribute to overall well-being (45).

Coordinated care

Young adults with hypertension benefit from a coordinated approach to care (46). This involves collaboration between healthcare providers, including primary care physicians, cardiologists, and other specialists as needed (47). Coordinated care ensures that young adults receive appropriate and timely interventions, comprehensive risk assessments, and necessary follow-up care to manage hypertension effectively.

Patient education and support

Providing young adults with education and support is crucial for their active participation in managing hypertension. Patient education should focus on explaining the importance of blood pressure control, the impact of lifestyle choices, and the proper use of medications. Young adults should be empowered to make informed decisions about their health and encouraged to ask questions, seek clarification, and actively engage in their treatment plan (48).

Long-term follow-up

Hypertension is a chronic condition that requires ongoing monitoring and management throughout a person's life. Young adults should understand the importance of long-term follow-up care and commit to regular check-ups with their healthcare providers. This enables the adjustment of treatment plans as needed, ensures appropriate blood pressure control, and reduces the risk of long-term complications.

It is worth noting that hypertension management for young adults should consider their unique circumstances, including family planning, pregnancy, and potential interactions with other medical conditions. Young adults with hypertension should also be encouraged to maintain a healthy lifestyle, even if their blood pressure is well-controlled, as long-term adherence to healthy habits is crucial for preventing hypertension-related complications and maintaining overall cardiovascular health.

Conclusion

Etiology of hypertension in young adults is often multifactorial, with several factors interacting and

influencing each other. Identifying and addressing these underlying causes is essential for effective management and prevention of hypertension. Adopting a healthy lifestyle, including regular exercise, a balanced diet, stress reduction techniques, and limiting alcohol and drug use, can significantly reduce the risk of hypertension in young adults. Further, early detection and regular blood pressure screenings are crucial. Young adults should be encouraged to have their blood pressure checked regularly, especially if they have risk factors such as obesity, a family history of hypertension, or underlying medical conditions. Timely intervention, including lifestyle modifications and, in some cases, medication, can help prevent or manage hypertension effectively, reducing the risk of associated complications and promoting long-term cardiovascular health in young adults.

Disclosure

Conflict of interest

There is no conflict of interest

Funding

No funding

Ethical consideration

Non applicable

Data availability

Data that support the findings of this study are embedded within the manuscript.

Author contribution

All authors contributed to conceptualizing, data drafting, collection and final writing of the manuscript.

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