



Early-onset heart attacks are rampant! How to curb?

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Abstract

In India, cardiovascular diseases account for one in four deaths [1]. Alarmingly, young Indians are losing their lives to heart attack and cardiac arrest, age-wise a decade earlier compared to the western population. To quantify this statement, nearly 12 lakh youngsters have lost their lives to fatal heart events in 2022, says Dr. Manjinder Sandhu, cardiologist and angioplasty heart Surgeon at Gurgaon's Artemis Hospital [2,3]. We loved to watch them on screen, but it was disheartening to bid adieu to such fitness freaks as Siddharth Shukla, Puneeth Rajkumar and Taraka Ratna when their heart beats' silenced due to heart attack. Heart attack is striking younger and younger; be it the 23-year-old MTech student of IIT Kanpur, a 16-year old boy who collapsed while playing cricket, or a class 8 student of Rajkot, fatal heart events are mercilessly attacking the younger population. Considering the rising rates of cardiac events that are early-onset, sudden and fatal in our country, an immediate focus on timely diagnosis and appropriate management is of prime importance.

Keywords: Cardiovascular Diseases; Heart Attack

A heart attack can occur at any moment! Find out why...

- The World Heart Federation identifies family history of heart disease in a first degree relative as a crucial cause for heart-related ailments in the younger population.
- Our genetic make-up is very important as certain unfavourable changes in our genes can predispose us to diseases, including the heart disease. For instance, 1 in 25 Indians carry a genetic change (in the MYBPC3 gene that codes for cardiac myosin binding protein C) that has been found to be associated with cardiomyopathies (a condition wherein heart muscle weakens struggling to pump blood) and increased risk of heart failure [4].
- Heart disease contributors like obesity, hypertension/high blood pressure, dyslipidemia/abnormal cholesterol levels and diabetes have an origin in faulty genes, while they can also be triggered by an unhealthy lifestyle.
- A 20% increase in body weight above the normal doubles the risk for high blood pressure [5], and the risk for heart attack is 8% higher in people with high blood pressure [6]. Additionally, 60 to 70% of obese individuals have dyslipidemia or blood cholesterol abnormalities [7].
- A 10 mg/dl increase in LDL (Low Density Lipoprotein) cholesterol increases heart disease risk by 12% [8].
- Diabetes increases heart disease risk by 2 to 4 time [9].

Do you know how much of your heart attack risk comes from family history and genetics?

Heart attack risk is five-fold higher in individuals who carry a family history; especially a family history of early heart disease in a first degree relative (defined as father/brother was diagnosed before age 55 or if mother/sister was diagnosed before age 65) increases the risk in younger population. And this family history is dangerous as you are at a 40 to 60% higher risk of inheriting heart disease compared to those with none. Moreover, individuals with heart disease (especially coronary artery disease) and higher genetic risks had a 77% increased risk for sudden cardiac death [10-13]. Thus an understanding of the genetic predisposition will pave way to predict, treat, and prevent cardiovascular diseases.

An unhealthy lifestyle accelerates heart attack deaths in India

Heart disease numbers are mounting high, particularly in younger population owing to the changes in lifestyle. An innate tendency or any habit/feature that predicts an individual’s probability of developing a disease is called a ‘risk factor’. Heart disease risk factors including unhealthy lifestyle, obesity, hypertension and dyslipidemia rapidly escalate by the age of 30 to 39 years in Indians. And it is said that, a combination of unhealthy lifestyle habits like smoking, alcohol consumption, faulty diet and inadequate physical activity can triple the risk of heart disease. While, it is surprisingly true that, ‘no smoking along with maintenance of optimal body weight, regular exercise, and a healthy diet can reduce the risk of heart disease by 90-95% [14-16].

How to ensure heart safety?

Understanding our heart’s topmost position in the priority list of instant attention and care, here are some actionable tips for heart safety-

- Awareness of heart disease family history - We should be aware of our family history for heart disease, as the age of onset for this disease in our first degree relative will root us towards heart health evaluation at a younger age. A painless, genetic assessment should definitely be a part of such evaluation as it can tell us our predisposition for heart disease and fatal heart events. This in turn would help us in tracking a healthy beat right from earlier years.

- Knowing our heart through periodic health checks- Identification of disturbances in heart health at an early stage through periodic check-ups would help in preventing heart diseases. Given here is a list of recommended health assessments you need to take up to make sure you are well protected from any heart health disturbance. Their regularity is based on your risk profile [17].

Recom- mended Health Screen/As- sessments	How Often?				Start- ing when?
	Normal	Mild risk	Moder- ate risk	High risk	
Blood pressure	Once in a year	Month-ly once	Monthly twice	Weekly once	Age 20
Blood Cholesterol (Serum lipid profile, fasting state)	Once in 4 years	Once a year	Once in 6 months	Once in 3 months	Age 20
Blood glu- cose (Fasting, Postprandial, HbA1C)	Once in 3 years	Once in 6 months	Once in 3 months	Month-ly once	Age 20
Weight/Body Mass Index (BMI)	Every time during your regular health-care visit	Every time during your regular health-care visit	Once in 3 months	Month-ly once	Age 20
Waist circumfer- ence					
Discuss life- style aspects like dietary habits, physical activity, smoking, alcohol intake, stress	Every time during your regular health-care visit	Every time during your regular healthcare visit			Age 20

Table 1

Just a pinch is enough to track a healthy beat! [18-21].

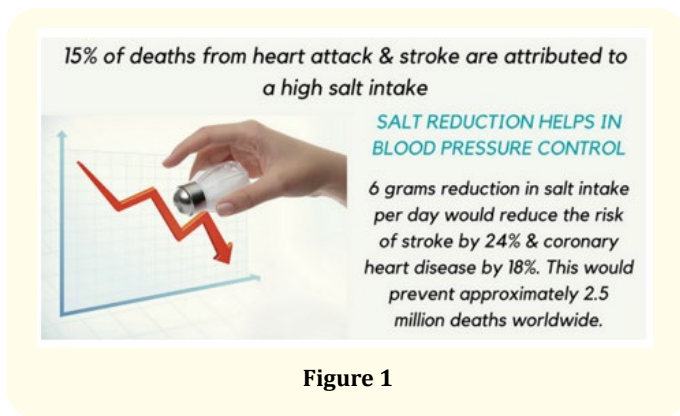


Figure 1

According to the American Heart Association (AHA), sodium consumption should not exceed 1.5g per day (3.75g of salt), and this holds good even for people without high blood pressure, diabetes or cardiovascular diseases.

Also remember, your genes decide how much sodium is good for you! So start personalizing now!

Fast food is a slow poison to our heart [22]! Hence be very stringent about their consumption.

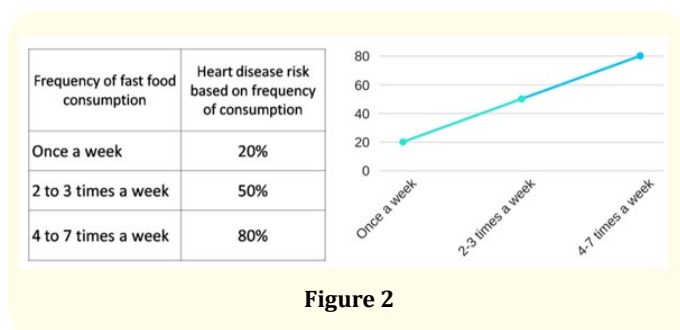


Figure 2

Daily consumption of 3 portions of whole-grain foods (brown rice, red rice, millets, oats, barley, quinoa) can significantly reduce cardiovascular disease risk [23,24].

- Refined grain (maida, white rice, refined corn flour) intake causes a 5-6% increase in total and LDL –cholesterol levels, which in turn hikes heart disease risk.
- 75 grams of oats contain 3 grams of beta-glucan, a soluble fiber which lowers LDL or bad cholesterol levels

- Half a cup of quinoa can surprise you with 2.6 grams of heart-healthy soluble fiber which guarantees bad cholesterol reduction

Make way for heart healthy fats (monounsaturated and polyunsaturated fats) in your diet

- Olive oil (1-1.5 tablespoons in a day) can increase HDL (good) cholesterol [25].
- Almonds reduce LDL by up to 19% [26].
- Walnuts (preferably, 3-4 kernels in a day) are shown to reduce LDL cholesterol by 10% [27].
- Flaxseed (preferably, 1 teaspoon/day along with buttermilk) lowers total and LDL cholesterol by approximately 4 mg/dl and 3 mg/dl [28].
- Consumption of one to two servings of fatty fish per week (providing approximately 250 mg/d of EPA plus DHA) resulted in a 50 % lower risk of fatal heart events [29].

Include at least five cloves of garlic in a day! Garlic is shown to reduce total cholesterol by 7%, LDL-cholesterol by 10% and triglyceride levels by 6.5%. The sulphur-containing compounds in garlic expand the blood vessels thus reducing your blood pressure [30,31].

Fruits and veggies are your pumping organ's pals [32-34]

Eating at least 5 servings of fruits and vegetables in a day can bring down our risk of dying from heart attack and stroke by nearly 35%. Each count of fruit or vegetable you eat makes your heart healthily beat! And that's why for every additional serving of fruit/vegetable, our risk for heart disease gets lowered by 4%. As little as a gram of soluble fiber from fruits like apple, blackberries and guava is enough to lower total cholesterol and LDL-cholesterol concentrations by approximately 1.55 mg/dL.

Caffeine can cause palpitation in some! Are you amongst those? Find out

Coffee, the caffeine-containing, briskness-rendering beverage is almost everybody's day beginner. As much as 400 mg of caffeine, say an equivalent of 3 to 4 cups is acceptable for general population. Still, there are a few of us who could suffer palpitation and irregular heart beat because of a slow caffeine metabolism in us. This has a genetic link, and ought to be known in order to restrict caffeine accordingly [35].

Exercise is heart-friendly [36-39]!

Exercise for at least 30 minutes in a day, and within 2 months you can bring down your heart disease risk by 40%! And this happens because, your blood pressure drops by 5-10 mmHg, your good cholesterol (HDL) rises by 5% and your belly fat will go down by about 9 cm. Moreover, if you prolong your exercise duration, then each additional 10 minutes will ensure a 1.4-mg/dL rise in your heart-protective HDL cholesterol.

Sleep well to keep your heart healthy

Six to eight hours of night sleep is heart-healthy. Getting too much sleep, too little sleep or poor quality sleep is associated with raised levels of calcium in the coronary arteries and arterial stiffness. Arterial stiffness or hardening of the arterial wall (probably due to calcium deposition) renders lack of flexibility in the vessel wall causing high blood pressure and making the heart work harder [40-43].

Smoking affects your heart as well as those of your near and dear ones!

Smoking increases your risk for heart disease and stroke by nearly 2 to 4 times. Your smoke can cause heart disease in people around you as, second-hand smoke causes approximately 33,950 deaths from heart disease each year, and is a definitive cause of stroke [44-46].

Conclusion

Heart attacks amongst the young are rising and an unhealthy lifestyle is a major reason. An awareness on risk factors, early diagnosis and accessibility to treatment occupy prime importance in heart health. As heart health is an outcome of nature (genetic make-up) and nurture (lifestyle), preventive lifestyle approaches can be based on genetic insights to ensure better results. The preventive healthcare industry is now in a milieu wherein predictive, non-invasive (painless) genetic assessments and heart age ascertaining questions on aspects like lifestyle, family history and current health status are adapted as new milestones for a hale and heart-healthy life.

Future Perspectives for Addressing the Issue

Biomarkers- let's shift the pendulum from conventional to up-to-date research.

There are scenarios wherein despite achieving the recommended levels of cholesterol (especially LDL-C), individuals still retain a degree of cardiovascular risk. This can be addressed by evaluating the ratio of apoA to apoB. The apolipoprotein ratio is a better indicator of atherogenicity and is in the forefront as a potential biomarker of cardiovascular risk, especially amongst Asian Indians [47].

Health score can be a pro-health perspective for risk reduction

A health score is a pro-health perspective which can help an individual in capturing an illness even before its manifestation. Additionally it would also prompt towards timely management of risk elements and ultimately reduce illness. Health score is a quantitative way of telling a person how his health changes over time due to his lifestyle. Lifestyle includes diet, exercise, sleep pattern, stress vulnerability, substance abuse like smoking, chewing tobacco or alcohol consumption. Currently, assessment of Heart Age and its comparison with biological age, and risk prediction of cardiovascular events or acute coronary events in the next 10 years, using validated risk factors are emerging. Research findings on such heart health scoring models are published from large prospective epidemiological studies including the 'Framingham Heart Study' in Boston and the 'Prospective Cardiovascular Münster (PROCAM)' study in Europe. Additionally the World Heart Federation's heart age calculator and ACC/AHA ASCVD risk estimator have also been perused for scoring purpose [48,49]. Healthcare platforms can assist individuals in knowing their heart health score through relevant questions on modifiable (lifestyle, BMI, BP, cholesterol levels) and non-modifiable (age, gender, family medical history) risk factors. Such quantification modes of health assessment might create interest in an individual to know more about their health. A high risk score, might inculcate awareness on early diagnosis and amplify the need for lifestyle modifications. It is a way of creating self-awareness on what is healthy in their lifestyle and what can be modified to make their health better.

Innate tendencies should be explored in risk categorization as well as medication profile

Future research should also explore innate tendencies (genetic variations) of an individual with relevance to their heart health. For instance, Categorization of cardiovascular risk in an individual can combine the outcome of scoring models along with genetic

results to effectively plan out prevention/management strategies. Precision medicine is the way-forward, as it outlines on treatment efficacy through genetic insights on drug resistance and adverse effects. For instance, resistance to an antiplatelet drug due to genetic polymorphisms require prompt alternates or dosage modifications to avoid fatal cardiac events.

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