HEART NEWS

...NHI Dialogue

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Health Magazine of All India Heart Foundation & National Heart Institute
अखिल भारतीय हृदय प्रतिष्ठान एवं राष्ट्रीय हृदय संस्थान की स्वास्थ्य प्रत्रिका

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TABLE OF CONTENTS

हृदय स्वास्थ्य पत्रिका

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All India Heart Foundation
&
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AIR POLLUTION & CARDIAC HEALTH

Introduction: Air pollution has emerged as one of the most significant global health threats of the 21st century. The World Health Organization (WHO) estimates that exposure to polluted air contributes to over seven million premature deaths annually, a substantial proportion of which are attributable to cardiovascular diseases (WHO-2023). Although respiratory complications are the most immediately recognized outcomes of air pollution, an expanding body of research demonstrates that the cardiovascular system—particularly the heart and vascular endothelium—is highly susceptible to pollutant exposure.

Historically, the effects of air pollution on human health were first noted during major smog events, such as the 1952 Great London Smog, which caused thousands of deaths largely due to heart and lung complications. Since then, technological advancements and large-scale epidemiological studies have reinforced the understanding that the heart bears a significant burden from polluted air. The mechanisms involved extend beyond mere inhalation injury, encompassing complex biological processes that influence inflammation, oxidative stress, and vascular tone.

Causes of Air Pollution: Air pollution arises from a combination of anthropogenic and natural sources. Major anthropogenic contributors include industrial emissions, vehicular exhaust, fossil fuel combustion, and biomass burning. Urbanization and economic growth have intensified these sources, especially in developing countries. A country like India, where in many rural areas, traditional cooking methods (using wood and cow dung still exist) further contribute to pollution. Additionally, crop stubble burning in states like Punjab and Haryana significantly worsens air quality during certain seasons, along with that industrial emissions, construction dust, and poorly regulated factories add to the problem. Rapid industrialization without adequate emission control technologies leads to the accumulation of harmful particulates in the atmosphere. In densely populated cities such as Delhi, Beijing, and Mexico City, PM2.5 concentrations frequently exceed WHO-recommended limits by several folds, posing severe risks to cardiac and respiratory health.

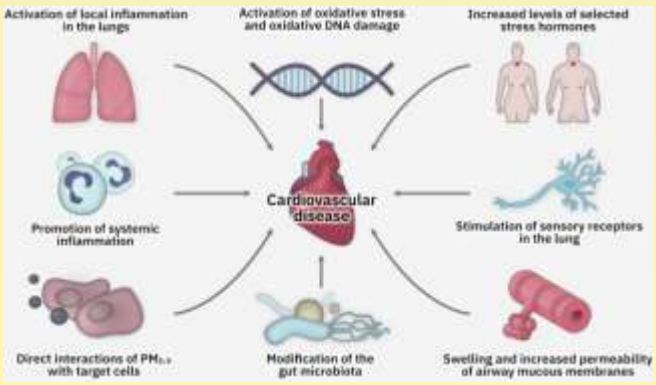
Natural contributors, such as volcanic activity, wildfires, and dust storms, also play a role but are less controllable. However, the frequency and intensity of some natural events—particularly wildfires—are increasing due to climate change, further blurring the boundary between "natural" and "human-induced" pollution

Assessment of Severity: Air pollutants are commonly classified into particulate matter (PM) and gaseous pollutants. PM2.5 and PM10 (particles less than 2.5 and 10 micrometres in diameter, respectively) are particularly harmful because they can penetrate deep into lung alveoli and enter systemic circulation. Gaseous pollutants include ozone (O_3), nitrogen oxides (NO_x), carbon monoxide (CO), and sulphur dioxide (SO_2), each with distinct toxicological effects and sources. For instance, ozone is produced through photochemical reactions between sunlight and vehicle emissions, while NO_x arises largely from combustion engines.

To assess air pollution severity, scientists and policymakers rely on the Air Quality Index (AQI)—a composite measure reflecting concentrations of PM, ozone, NO_2, SO_2, and CO. An AQI exceeding 100 generally indicates unhealthy conditions for sensitive populations. In addition to ground-based monitoring, satellite remote sensing and model-based estimations have become critical tools for regional and global assessment of pollution levels, particularly in regions lacking extensive monitoring infrastructure. Public dissemination of AQI data through mobile applications and community bulletins has also become a cornerstone of modern environmental health awareness.

The effects of air pollution are severe — it leads to respiratory illnesses such as asthma and bronchitis, increases the risk of heart disease, reduces visibility, and also affects the mental health. Prolonged exposure affects children and the elderly most, causing long-term health issues. Air pollution also has economic consequences by lowering productivity and increasing healthcare costs, making it one of the most critical environmental challenges India faces today.

Mechanism: How Air Pollution Affects the Heart:



The cardiovascular consequences of air pollution arise from a combination of inflammatory, oxidative, and autonomic mechanisms. Once inhaled, fine particulate matter trans-locates across the alveolar-capillary barrier,

triggering systemic inflammation and endothelial dysfunction. This process begins at the pulmonary level but rapidly spreads to systemic circulation, affecting blood vessels, the myocardium, and the autonomic nervous system.

Inflammation and Oxidative Stress – Pollutants stimulate the release of pro-inflammatory cytokines such as interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNF-α). These molecules induce oxidative stress through excessive generation of reactive oxygen species (ROS), which damages vascular endothelium, promotes lipid oxidation, and accelerates atherogenesis. Chronic exposure amplifies this effect, leading to vascular remodelling and stiffness—key precursors of hypertension and coronary artery disease.

Autonomic Nervous System Imbalance – Exposure to airborne particulates alters heart rate variability (HRV) by disrupting autonomic control, predisposing individuals to arrhythmias. Studies have shown that even short-term increases in PM2.5 levels can result in measurable reductions in HRV, suggesting an acute stress response that may trigger cardiac events in vulnerable populations.

Coagulation and Thrombosis – Pollutants increase blood viscosity and platelet aggregation, heightening the risk of thrombotic events such as myocardial infarction). This prothrombotic state is partly mediated by endothelial injury and systemic inflammation, which enhance coagulation factor expression.

Direct Cardiotoxicity – Ultrafine particles (<0.1μm) may penetrate myocardial tissue, impairing contractility and mitochondrial function. Experimental animal models have demonstrated that nanoparticle exposure can disrupt calcium homeostasis in cardiac cells, leading to mechanical dysfunction and arrhythmias.

Clinical Manifestations: The cardiovascular manifestations of air pollution exposure are diverse and depend on both the duration and intensity of exposure. *Short-term (acute)* exposure may cause angina, arrhythmias, or exacerbations of heart failure, particularly in vulnerable populations such as the elderly or those with pre-existing cardiovascular disease. Hospital admissions for heart attacks often spike on days with elevated AQI, indicating a strong temporal association. *Long-term (chronic)* exposure, however, has even more profound consequences. It is associated with an increased incidence of hypertension, atherosclerosis, ischemic heart disease, stroke, and heart failure. Chronic exposure contributes to the gradual narrowing of coronary arteries through sustained inflammation and oxidative stress, eventually leading to myocardial ischemia and infarction.

Several large-scale epidemiological studies, including the Global Burden of Disease (GBD) project, have confirmed strong correlations between ambient PM2.5 levels and cardiovascular mortality. A 10 μg/m³ increase in PM2.5 concentration has been associated with a 6–8% increase in the risk of cardiac mortality. These effects are particularly pronounced in urban centres with high traffic density, limited green spaces, and populations exposed to high pollution for decades.

Emerging research also indicates that early-life exposure to air pollution may predispose individuals to cardiovascular diseases later in life by influencing developmental programming and vascular function. Furthermore, socioeconomic disparities exacerbate these health outcomes, as low-income communities often live closer to industrial sites and congested roadways.

Prevention: Mitigation of air pollution–induced cardiac disease requires a dual-level strategy: individual-level protection and societal-level intervention.

At the individual level:

Reducing exposure: Using high-efficiency particulate air (HEPA) filters indoors, wearing N95 masks on high-AQI days, and avoiding outdoor exercise during peak pollution hours can significantly reduce personal risk.

Lifestyle modification: Diets rich in antioxidants (e.g., fruits, vegetables, and omega-3 fatty acids) may help mitigate oxidative stress caused by pollutant exposure. Regular physical activity, when performed in low-pollution environments, strengthens cardiovascular resilience.

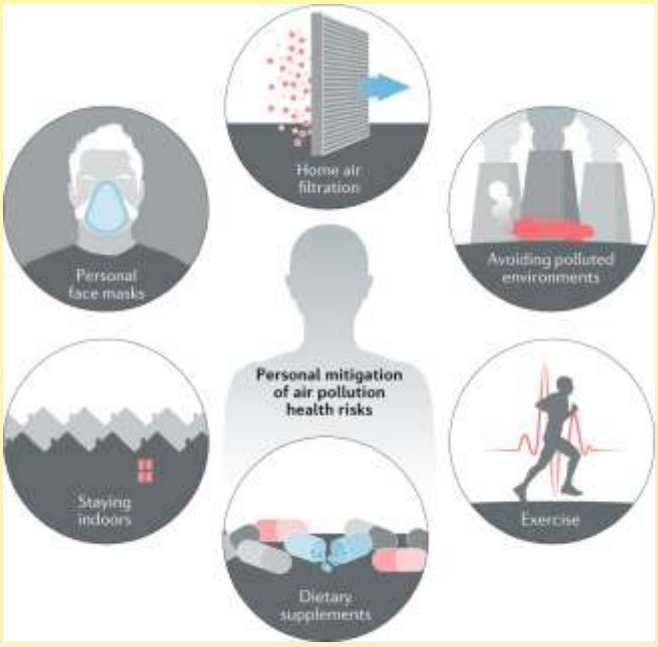
Medical surveillance: Regular cardiac check-ups for at-risk individuals in polluted regions improve early detection and intervention. Physicians should consider environmental factors when evaluating cardiovascular risk profiles.

At the societal level:

Policy and Regulation: Governments must enforce stricter emissions standards for vehicles and industries, promote the transition to renewable energy sources, and expand urban green infrastructure to naturally filter air pollutants.

Public Health Initiatives: Urban planning should prioritize public transportation systems, pedestrian zones, and cycling paths to reduce traffic congestion and vehicular emissions. Educational campaigns can enhance public awareness of pollution-related health risks.

Research and Surveillance: Continuous epidemiological monitoring and community-level air quality reporting foster transparency and accountability. Investment in cleaner technologies, such as electric vehicles and renewable energy grids, represents a long-term commitment to cardiovascular health.



Conclusion: Air pollution is not only an environmental issue but also a profound cardiovascular health concern. The mechanisms linking pollutant exposure to cardiac injury—spanning inflammation, oxidative stress, autonomic imbalance, and endothelial dysfunction—are well-established in both experimental and clinical studies. The evidence underscores the urgency of integrating environmental health considerations into national cardiovascular prevention programs.

Comprehensive prevention demands a combined approach: individuals must adopt exposure-reducing behaviours, while policymakers implement systemic environmental reforms. Addressing air pollution's cardiac consequences also aligns with broader sustainable development goals, such as reducing inequality and promoting clean energy. As the global population continues to urbanize and industrialize, coordinated global action is necessary to ensure cleaner air and healthier hearts for future generations.

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पते की बात

मुंह में दांत,
पेट में आंत,
घुटनों में शक्ति,
मन में शांति,
चारों दुरुस्त,
आप तंदरूस्त ।

व्याख्या : बचपन में हम बड़े बूढ़ों से सुना करते थे कि जिसके मुंह में दांत न हो या जर्जर हो गए हों और जिसके आँतें खाना पचा न पा रहीं हों , मल का निष्कासन ठीक से न हो पा रहा हो तो समझ लीजिए वह व्यक्ति या तो बूढ़ा हो चुका है या बूढ़े होने के कगार पर है । कारण स्पष्ट है । दांत किसके खराब होंगें ? तंबाकू , सुरती , गुटखा , खैनी , बीड़ी , सिगरेट , हुक्का , शराब या हर समय जंक भोजन करने वाले व्यक्ति के । या ऐसा आदमी जो दांतों की उचित देखभाल और सफाई न करता हो उसके । ऐसे व्यक्ति के दांत और मसूड़े सड़ गए होंगें या सड़ने के करीब होंगें और उनसे निकलता मवाद उसके शरीर को विषाक्त कर रहा होगा । इसी प्रकार पेट की तमाम बीमारियों की जड़ में हमारा समय-असमय पर भोजन , जंक भोजन और अनुचित जीवन शैली मुख्य रूप से जिम्मेदार होती हैं । पेट की खराबी से उस व्यक्ति को अपच , गैस , अति अम्लता , कब्ज और जिगर की बीमारियाँ सताएंगी । आजकल पेट के अंदर उपस्थित अति सूक्ष्म जीवाणुओं के समूह (माइक्रोबायोम) के हानिकारक और लाभकारी प्रभावों पर गहन चर्चा हो रही है। सूक्ष्मता से विचार करें तो पता चलेगा कि आजकल की अनेक बीमारियों जैसे कम उम्र में मोटापा, ब्लड प्रेशर, डायबिटीज, हार्ट अटैक या लकवा के पीछे भी यही आदतें मुख्य कारण मानी जाती हैं । खराब दांत और पेट में आंतों की गड़बड़ी तो मात्र एक बाहरी लक्षण हैं ।

अब इन पंक्तियों में दो बाते और जोड़ देना चाहिए । दांतों और आंतों के साथ साथ घुटनों से अशक्त होना और मन में हमेशा अशान्ति मची रहना , खलबली रहना । जिस आदमी में ये चारों लक्षण आपको दिख जाए तो समझ लीजिए वह व्यक्ति बूढ़ा हो चुका है, थक चुका है, या अनजाने में जल्दी बूढ़े होने की तैय्यारी कर रहा है । इसके विपरीति यदि किसी व्यक्ति के दांत मोती के समान चमक रहें हों , पेट रोज साफ हो रहा हो , खाना सरलता से पच जाता हो, घुटनों में २-३ किलोमीटर चलने की ताकत बनी हुई हो और उसका चित्त शांत हो तो वह व्यक्ति निश्चित ही स्वस्थ और अंदर से सबल हृदय वाला प्राणी है। यह अच्छे स्वास्थ्य का एक व्यावहारिक सिद्धांत है ।

– डा0 श्रीधर द्विवेदी,
वरिष्ठ हृदय रोग विशेषज्ञ,
नेशनल हार्ट इंस्टिट्यूट, नई दिल्ली

Dual Tobacco Use: A Silent Pathway to Dual Cancers

Tobacco consumption cancer

Tobacco consumption has always been one of the most preventable causes of cancer across the world. While cigarette smoking once overshadowed talks of tobacco-linked cancers especially after the pivotal Surgeon General's reports in the 1950s, the picture has evolved considerably. However, in Indian subcontinent dual use of tobacco that is smokeless tobacco of different kinds (Surti, Khaini, Gudkha, Pan Masala, Gul) along with smoking (Bidi, Cigarette, Hookah) is fairly common unlike to that of western countries. This pattern represents a dangerous shift pursuing individuals to cancer risk at two different places.

Such a dual use of these products creates various carcinogenic pathways that impact different organ systems at the same time. The crucial truth says: no single tobacco product is safe, and combining them to consume increase the chances of dual cancers, particularly in the lungs and oral cavity. This article examines the underlying biology, key epidemiological patterns, and broader public health ramifications of dual tobacco use, it also highlights the serious demand for strong quitting programs.

Dual tobacco use simultaneously involves using of two or more tobacco products, such as cigarettes paired with chewing tobacco or smoking alongside e-cigarettes. Each type of tobacco carries different types of toxins. Combustible tobacco smoke harbours over 7,000 chemicals, carcinogens like polycyclic aromatic hydrocarbons, benzene, and nitrosamines, which harm lung tissue and cause DNA to alter.

Meanwhile smokeless products, target oral and upper digestive linings in relation to tobacco-specific nitrosamines (TSNAs), playing key role in cancers of the mouth, throat, and the food pipe as well. Using both products together unlock the unimaginable cancer promotion that could affect the body aggressively. Research on the biomarkers shows that dual users have elevated metabolic levels, such as urinary NNAL, which tells the toxins affecting heavily more on dual user compare to the single user. In South Asian countries, the use of areca nut along with the betel is one of the common scenarios which escalate the risk of precancerous conditions like leukokeratosis, which can potentially lead to squamous cell carcinoma.

Clinical Vignette

A - 50-year- old male patient presented with complaints of difficulty and pain in swallowing food both solid as well as liquid with central chest pain for four months. Chest pain radiating to the back. Of late he developed fever and shortness of breath for last 3 days. On intensive questioning he admitted being smoker as well as tobacco chewer for last 20 years. Upper Gl endoscopy fungating growth in mid esophagus. Biopsy taken from this spot demonstrated evidence of poorly differentiated squamous cell carcinoma. Ultrasound chest showed bilateral pleural effusion. HRCT chest demonstrated elongated lesion in right wall of upper thoracic esophagus and evidence of pyelonephritis. PET-CT showed metabolically active circumferential wall thickening in relation to the mid esophagus. In view of tissue diagnosis of poorly differentiated squamous cell carcinoma of esophagus he was started on chemotherapy. The patient was followed by three cycles of radiation therapy. He subsequently showed severe pallor and signs of hypoproteinemia. The patient's 24-hour urinary volume was 3400 ml and protein was 31422.80 mg/day. Possibility of nephrotic syndrome secondary to malignancy was considered. His dysphagia deteriorated and fever became more often. Repeat upper GI endoscopy revealed tracheo esophageal fistula and esophageal candidiasis. Esophago-pleural fistula leading to right sided pneumothorax and esophago -pulmonary fistula. Chest -Xray showed right sided pleural effusion with likely collapse of underlying lung parenchyma. In view of tracheo esophageal fistula and esophageal candidiasis feeding jejunostomy under spinal anesthesia was made to maintain nutrition. However, he succumbed to severe pulmonary and urinary sepsis. This case amply demonstrate that dual tobacco users are at risk to malignancy at an early age and have rapid downhill course because of the involvement of Gl as well as respiratory system.

Biological Mechanisms Underlying Dual Cancers

At a molecular level, dual tobacco users display the disturbance occurring in natural repairing process of the body. In case of Smoke-borne carcinogens, it can activate changes in abnormal tissue growth suppressing genes like TP53 in lung cells, which opens the way for adenocarcinomas and similar lung cancer. At the same time, TSNAs consumed through the mouth can cause cancer in head and neck regions, promoting epidermoid and squamous cell carcinomas.

This dual use of tobacco harms the body which results in increase oxidative stress, with free radicals from cigarette smoke and e-cigarettes irritants interaction, causing DNA damage and continuous inflammation. It is captured in studies, the vast difference of elevated hazard ratios for cancer deaths compare to those using both smoked and smokeless products with smokers alone. Poly-tobacco users consuming three or more items altogether faces more dangerous threats, which include pancreatic and bladder cancers as well.

Prolonged inflammation acceleration lesion growth further. Smoke-related chronic obstructive pulmonary disease grows a cancer-friendly lung milieu, while ongoing oral damage from chewing tobacco also results in additional primary lesions. Notably, evidence refuses claims that adding or switching to e-cigarettes lowers cancer odds; dual patterns use often match or exceeds the toxin loads of sole smoking.

Global and Regional Epidemiological Trends

Worldwide, tobacco is roughly around one-fifth to one-quarter of cancer deaths, raising about eight million casualty each year. Recent data talks about increase in dual use, especially among the youth. In the United States alone, long-term studies confirm that adults combine cigarettes with e-cigarettes experience high carcinogen levels, which weakens the harm-reduction system from the body.

India demonstrates the crisis of lower and middle-income nations, it is home to over 260 million tobacco users where dual habits exist in vast number, leading to a major occurrence in high amount of oral and lung cancer. Oncology research confirms the higher malignancy risks in multi-product users over non-users. Gender patterns emerge too: women's oral cancer is also in raise which ties to growing smokeless and dual use, compare to men's rising pancreatic cases. Analyses show dual users having dead earlier from cancers in multiple sites, resulting in harmful health systems.

Comparative Cancer Risk by Tobacco Use Pattern

Table 1. Tobacco Use Patterns and Associated Cancer Risk

Tobacco Use Pattern	Relative Cancer Mortality Risk	Common Cancer Sites	Key Notes
Exclusive cigarette smoking	Elevated	Lung, bladder	Baseline comparator group
Dual smoking + e-cigarette use	Comparable or higher than smoking alone	Lung, respiratory tract	Increasing among youth
Dual smoking + smokeless tobacco	Significantly elevated	Oral cavity, lung, food pipe	Common in South Asia
Poly-tobacco use (≥3 products)	Highest risk	Multi-site incl. pancreas	Strong cumulative exposure

Lessons Learnt: Prevention and Policy Implications

The data strongly rejects dual tobacco use as a safer path, indicating its role in major risk of cancer. Quitting all products entirely offers the strongest safeguard. Social interactions like cognitive behaviour therapy helps in increase success rates with accompanying treatments such as nicotine patches or varenicline helps ease cravings without adding further carcinogens risk.

Vital public health measures encompass:

- **Early screening:** Routine oral check-up for smokeless users and low-dose CT for users at risk dual smoking.
- **Policy enforcement:** Bans on smokeless products, e-cigarettes, and tax policies to decrease the use of multiple products.
- **Community education:** Introducing the false belief of "safer" options through school and local initiatives.
- **Clinical vigilance:** Regular evaluation of all tobacco forms in check-ups, along with specialize care to stop it.

Innovations like biomarker risk profiling and app-based quitting tools promise further prevention gains.

Future Outlook and Call to Action

With tobacco companies expanding portfolios and pushing the market aggressively, dual and poly-use face increased number of absent countermeasures. Genomic advances and predictable tools help measures personal risk evaluations, yet they cannot replace advance prevention. Dual tobacco use does not indicate advancement, but a clear route to home for cancers.

A unified worldwide effort which blends policy, care, and awareness is very essential for today's world. Complete eradication of all tobacco forms could be the most effective method to prevent the dual cancers and reduce the global oncology burden.

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Diabetes Mellitus and Heart Health: The Double Burden

Introduction

Non-communicable diseases (NCDs) primarily cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes mellitus have emerged as the leading cause of mortality worldwide. According to the World Health Organization (WHO), NCDs are responsible for nearly 74% of global deaths, equating to 41 million lives lost annually. Among these, cardiovascular diseases remain the largest contributor, accounting for approximately 17.9 million deaths each year, followed by cancers (9.3 million), chronic respiratory diseases (4.1 million), and diabetes mellitus (2.0 million including diabetic kidney disease) [1]. A critical concern is the increasing number of premature deaths, where over 17 million people die before the age of 70 due to NCDs, with 86% of these occurring in low- and middle-income countries. This highlights major inequities in access to early detection, affordable treatment, and preventive health services. The rapid rise in NCDs is strongly associated with modifiable risk factors such as tobacco use, physical inactivity, harmful alcohol consumption, unhealthy diet, and obesity. Environmental and social determinants—including air pollution, urbanization, and socioeconomic disadvantage—further intensify vulnerability to these diseases. Mental health disorders also frequently coexist with chronic illnesses, compounding the clinical and economic burden. NCDs impose a significant strain not only on health systems but also on national productivity and economic growth. A large proportion of affected individuals are in their most productive years, leading to long-term disability, loss of workforce, and escalating healthcare expenditure. The WHO emphasizes the need for integrated strategies that prioritize prevention, early diagnosis, and continuous care. Policies aimed at tobacco control, healthy food environments, physical activity promotion, and universal health coverage are recognized as essential to reversing current trends. Strengthening primary healthcare systems and community-based interventions is crucial to achieving global NCD prevention targets.

Diabetes significantly accelerates the development and progression of cardiovascular disease (CVD) through multiple interrelated mechanisms. Chronic hyperglycemia causes endothelial dysfunction, promotes oxidative stress, and triggers low-grade inflammation, resulting in vascular injury and accelerated atherosclerosis. In addition to high blood glucose, diabetes is commonly associated with dyslipidemia characterized by elevated triglycerides, increased small dense LDL particles, and reduced HDL cholesterol, further contributing to plaque formation and instability. Insulin resistance alters normal cardiac metabolism, leading to increased fatty acid utilization, mitochondrial dysfunction, and the development of diabetic cardiomyopathy, which can progress to heart failure even in the absence of overt coronary artery disease. Furthermore, diabetes increases coagulability and impairs fibrinolysis, elevating the risk of thrombosis and acute cardiovascular events. The interplay of metabolic disturbances, vascular damage, and altered myocardial structure places individuals with diabetes at substantially higher risk of coronary artery disease, stroke, and heart failure, making CVD the leading cause of morbidity and mortality in this population [2], [3]. The convergence of diabetes and cardiovascular disease has become a critical public health challenge worldwide due to its rapidly increasing prevalence, premature mortality, and substantial economic burden.

The Link Between Diabetes Mellitus and Heart Disease

The connection between diabetes mellitus and cardiovascular disease represents one of the most clinically significant comorbidities in modern medicine. Type 2 diabetes markedly accelerates the development and progression of atherosclerosis through multiple overlapping pathophysiological pathways. Central to this relationship is insulin resistance, often embedded within the metabolic syndrome, which precedes overt hyperglycemia by years and drives visceral obesity, dyslipidemia, hypertension, and a chronic low-grade inflammatory state. Chronic hyperglycemia itself exerts direct vascular toxicity by promoting the formation of advanced glycation end-products (AGEs) and activation of the AGE–RAGE axis, leading to endothelial dysfunction, increased oxidative stress, vascular stiffness, and upregulation of adhesion molecules that facilitate monocyte recruitment into the arterial wall. Concurrently, the characteristic diabetic dyslipidemia—elevated triglycerides, triglyceride-rich remnants, small dense LDL particles, and reduced HDL—enhances the uptake of modified lipoproteins by macrophages, accelerating foam-cell formation and plaque growth. Hypertension, present in the majority of patients with type 2 diabetes, further amplifies vascular injury through renin–angiotensin–aldosterone system activation, oxidative stress, and arterial remodeling. A critical unifying mechanism is persistent systemic and intraplaque inflammation, in which the NLRP3 inflammasome plays a pivotal role: hyperglycemia, oxidized LDL, cholesterol crystals, and mitochondrial reactive oxygen species trigger NLRP3 assembly, caspase-1 activation, and maturation of IL-1β and IL-18, thereby sustaining macrophage activation, smooth muscle cell phenotypic switching, matrix degradation, and plaque instability. Consequently,

atherosclerotic lesions in diabetic individuals are more extensive, inflammatory, and prone to rupture, resulting in a two- to four-fold increase in myocardial infarction, stroke, and peripheral artery disease, with worse post-event outcomes. Thus, diabetes does not merely coexist with atherosclerosis but actively accelerates every stage of the atherogenic process—from endothelial injury and fatty-streak formation to advanced plaque destabilization—making intensive glycemic control, lipid management, blood pressure reduction, and emerging anti-inflammatory strategies essential components of cardiovascular risk mitigation in the high-risk population [4], [5], [6].

Table 1: The interconnection between diabetes mellitus and heart disease

Mechanism	Role in Diabetes	Role in Atherosclerosis
Insulin resistance	Core defect of T2D	Promotes dyslipidemia & inflammation
Hyperglycemia	Direct vascular toxicity	AGE–RAGE, oxidative stress, endothelial damage
Oxidative stress	Mitochondrial & NADPH oxidase excess	Oxidizes LDL, activates NLRP3
Chronic inflammation	Adipose & systemic cytokines	NLRP3 IL-1 /IL-18, macrophage activation
Dyslipidemia	High TG, small dense LDL, low HDL	Foam-cell formation
RAAS activation	Sodium retention, vascular remodeling	Hypertension & fibrosis
Endothelial dysfunction	Reduced NO, increased a dhesion molecules	Initiates monocyte recruitment

Epidemiological Facts

Adults with diabetes have about twice the risk of developing heart disease compared to those without diabetes, and national survey data consistently show a much higher prevalence of coronary heart disease among individuals with diabetes. Together, these data indicate that rising diabetes prevalence is a key driver of sustained heart disease burden, underscoring the need for stronger preventive and metabolic risk-reduction strategies [7]. India is witnessing a disturbing rise in heart attacks among younger age groups, as highlighted in recent national data. According to National Crime Records Bureau (NCRB) reports, heart-attack-related deaths increased by 12.5% in 2022, accounting for 32,457 deaths, with a significant proportion occurring in individuals under 40. The Indian Heart Association notes that half of all heart attacks in Indian men occur below 50 years of age, and one-quarter occur below 40. Alarmingly, states such as Gujarat reported a 55% rise in heart-related emergency calls in 2023, with several deaths documented in adolescents and young adults as young as 11–25 years. This rise is due to a combination of post-COVID vulnerability, lifestyle changes, undetected congenital or hereditary conditions, substance use, and increasing stress levels [8], [9].

Warning Signs & Red Flags

People with diabetes mellitus should be especially alert to signs of cardiovascular trouble, because risk of heart disease is much higher. Some of the key symptoms are:

- **Chest pain or discomfort** — pressure, tightness, squeezing, burning, fullness or heaviness in the chest. This may be irregular also.
- **Pain or discomfort elsewhere** — pain may radiate to the jaw, neck, back, shoulders, arms, or upper abdomen instead of the chest.
- **Shortness of breath** — difficulty in breathing or breathlessness, even with light activity or at rest, may indicate underlying heart problems.
- **Unusual fatigue or weakness** — extreme tiredness, exhaustion, or weakness disproportionate to activity level; may persist even at rest.
- **Nausea, indigestion, or "heartburn-like" sensations** — some heart-related problems in diabetics may present as gastrointestinal discomfort rather than classic chest pain.
- **Palpitations or irregular heartbeat** — skipped beats, fluttering, racing heart, or other rhythm disturbances.
- **Swelling of legs, ankles or feet** (edema), or fluid retention, which may signal heart failure rather than isolated arterial disease.
- **Dizziness, light-headedness, or fainting / faint spells** — may occur when blood flow is compromised due to poor heart function.

Because people with diabetes often have multiple overlapping risk factors — such as high blood sugar, hypertension, high cholesterol — even subtle symptoms should prompt careful evaluation.

Recent Advancements & Diagnostic Approaches

Routine Biochemical Tests for CVD Risk (Clinical Standard)

Test Category	Specific Tests	Purpose / Clinical Use
Lipid Profile	Total Cholesterol, LDL-C, HDL-C, Triglycerides, Non-HDL-C	Detect dyslipidemia & estimate ASCVD risk
ApoB	ApoB	More accurate than LDL for atherogenic particle burden (metabolic syndrome, diabetes)
Glycemic Control	Fasting Glucose, HbA1c, OGTT (selected cases)	Detect diabetes & insulin resistance
Renal Function	Creatinine, Urine ACR	CKD significantly increases CVD mortality risk
Inflammation Marker	hs-CRP	Detect chronic vascular inflammation; predicts future events
Thyroid Function	TSH, Free T4	Thyroid dysfunction alters lipids & arrhythmia risk
Homocysteine	Homocysteine	Elevated levels endothelial damage (useful in young stroke/MI)
Lipoprotein(a) Genetics	Lipoprotein(a) levels	Strongest inherited risk for premature MI

LDL-C – Low-Density Lipoprotein Cholesterol; HDL-C – High-Density Lipoprotein Cholesterol; ASCVD – Atherosclerotic Cardiovascular Disease; ApoB – Apolipoprotein B; HbA1c – Hemoglobin A1c; OGTT – Oral Glucose Tolerance Test; ACR – Albumin-to-Creatinine Ratio; CKD – chronic kidney disease; hs-CRP – High-Sensitivity C-Reactive Protein; TSH – Thyroid-Stimulating Hormone; Free T4 – Free Thyroxine; MI – Myocardial Infarction

2. Advanced / Optional Biochemical Tests

Test	Use Case
sd-LDL (Small Dense LDL)	High-risk metabolic profile
Oxidized LDL	Atherosclerosis risk assessment
ApoA1	HDL dysfunction assessment
Myeloperoxidase (MPO)	Advanced inflammatory risk marker
BNP/NT-proBNP	Heart failure screening, not for primary prevention

3. Genetic Tests for CVD Risk Stratification

Genetic Test / Panel	Genes	Indications
Familial Hypercholesterolemia (FH) Panel	LDLR, APOB, PCSK9	LDL >190 mg/dL, early MI in family
Thrombophilia Panel	F5 (Factor V Leiden), F2 (Prothrombin), MTHFR	Young MI, unexplained thrombosis
Polygenic Risk Score (PRS)	Multi-SNP risk score	Predicts lifelong CAD risk; precision prevention
Cardiomyopathy/Arrhythmia Panel	MYH7, MYBPC3, LMNA, KCNQ1, KCNH2	For families with SCD, arrhythmias, HCM/DCM

Prevention — The Cornerstone

Prevention is multifactorial. Based on guidelines and reviews, these are the main elements that should be addressed systematically [10], [11], [12],):

1. **Lifestyle modification**

- **Healthy diet** — heart-friendly, balanced, focusing on whole foods, fruits/vegetables, healthy fats, limited saturated fat and processed foods.
- **Regular physical activity** — moderate aerobic exercise (e.g. brisk walking), resistance/muscle-strengthening exercises. For diabetics, at least ~150 minutes/week of moderate activity is recommended.
- **Smoking cessation** (including not using tobacco or e-cigarettes).
- **Maintaining healthy weight**; in overweight persons, modest weight loss (e.g. 5-10% of body weight) helps.
- Adequate sleep and overall wellness (as part of a healthy lifestyle).

2. **Control of cardiovascular risk factors**

Because diabetes often coexists with other risk factors (hypertension, dyslipidaemia, obesity), and these must be managed:

- **Blood Pressure (BP) control**: Hypertension in diabetics should be treated.
- **Lipid management**: Even if LDL-cholesterol or lipid levels are "normal," many guidelines recommend lipid-lowering therapy (usually Statins) in diabetic patients — because of their elevated baseline risk.
- **Glycemic control**: Important for microvascular complications, and contributes to macrovascular (heart) risk.
- **Regular screening and follow-up for risk factors** — lipids, BP, kidney function, etc.

Because of the unique pathophysiology of diabetes, cardiovascular prevention requires special consideration.

Public Awareness & Policy Needs

Due to the high burden of heart disease in individuals with diabetes mellitus, there is an urgent need for comprehensive public awareness and policy-driven interventions. Strengthening screening programs for blood glucose, blood pressure, and lipid profiles is essential for early detection of cardiovascular risk in diabetic and prediabetic populations. Community education initiatives must emphasize the strong link between diabetes and heart disease, promoting awareness of shared risk factors such as poor diet, physical inactivity, obesity, and tobacco use. Furthermore, integrating lifestyle interventions within workplaces and schools—such as promoting regular physical activity, healthier food environments, and stress management—can help reduce the long-term risk of cardiometabolic diseases. These coordinated efforts are critical to addressing the dual challenge of diabetes and heart disease, ultimately reducing morbidity, mortality, and healthcare costs at the population level.

Conclusion

The intertwined epidemics of diabetes and cardiovascular disease (CVD) represent one of the most urgent global public health challenges, contributing significantly to the 74% of worldwide deaths caused by non-communicable diseases. Diabetes mellitus accelerates atherosclerosis through insulin resistance, chronic hyperglycemia, oxidative stress, dyslipidemia, endothelial dysfunction, and heightened inflammation, resulting in a two- to four-fold increased risk of myocardial infarction, stroke, and heart failure—making CVD the leading cause of death in people with diabetes. In India, the situation is particularly alarming, with rapidly rising diabetes prevalence and an epidemic of premature heart attacks, many occurring in individuals under 50 and even younger adults, driven by lifestyle factors, post-COVID effects, stress, and undetected risks. Despite this double burden, effective prevention is achievable through intensive lifestyle modifications (healthy diet, regular physical activity, smoking cessation, and weight management), control of blood pressure, lipids, and glycemia, and the use of cardioprotective therapies such as statins and newer agents like SGLT2 inhibitors and GLP-1 receptor agonists. Advancements in diagnostics, including high-sensitivity biomarkers and genetic risk stratification, enable earlier identification of at-risk individuals. Addressing this dual threat demands integrated strategies: strengthening primary healthcare, community screening, public awareness, and policy interventions to promote healthier environments and equitable access to care. With sustained commitment, the rising tide of premature deaths and economic strain from diabetes and CVD can be reversed, improving quality of life for millions worldwide.

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Weight-loss drug (GLP-I) Side Effects

- Glucagon-like peptide-1 (GLP-1) is a natural gut hormone your body releases after eating. There are medications that mimic its effects, such as semaglutide (Ozempic, Wegovy, Rybelsus) and tirzepatide (Mounjaro, Zepbound).
- GLP-1 medications can cause similar side effects. Examples include nausea and vomiting, bloating, and bowel changes like diarrhea and constipation. While rare, pancreatitis and gallbladder problems have been linked to GLP-1s.
- Many GLP-1 side effects are temporary. They're often worse when starting treatment and after your dose is increased. Dietary and lifestyle changes can play a crucial role in managing them to help you stick with treatment.

You may have heard about how effective medications like Ozempic (semaglutide) and Zepbound (tirzepatide) can be. But you may have also come across stories about their side effects. From nausea to potential long-term risks, starting a new treatment can feel overwhelming if you don't know what to expect.

GLP-1 side effects list

GLP-1 medications have potent effects on the gastrointestinal (GI) tract and appetite center of the brain. This can contribute to their common side effects, especially nausea. For many people, these side effects improve over time. But in rare cases, serious side effects have also been reported.

Common or mild GLP-1 side effects include:

- Nausea and vomiting
- Diarrhea
- Constipation
- Stomach pain
- Bloating
- Injection site reactions
- Increased heart rate
- Appetite changes
- Weight loss
- Indigestion
- Heartburn

Headache

-

- Dizziness
- Fatigue
- Hair loss
- Low blood glucose (hypoglycemiaWhile rare, potentially serious side effects have been linked to GLP-1s, including:
- Gallbladder problems, such as gallstones and inflammation
- Pancreatitis (inflammation of the pancreas)
- Acute (sudden) kidney damage
- Gastroparesis
- Bowel obstruction (blockage)
- Intestinal paralysis (ileus)

Worsening

- of diabetes-related eye problems

GLP-1 medications also have a boxed warning about a potential risk of thyroid C-cell tumors. A boxed warning is the FDA's strongest warning for a medication.

Side effects are a common reason why some people stop taking GLP-1 medications. But these practical tips can help you stick with treatment. Below are 10 GLP-1 side effects and how to manage them.

1. Gastrointestinal side effects: Nausea and vomiting, bloating, and bowel changes

GI side effects are the most commonly reported GLP-1 side effects, especially when first starting or increasing your dose. Examples include:

- Nausea and vomiting
- Bowel changes such as diarrhea, constipation, or both

Heartburn

- Bloating
- Stomach pain **EXPERT PICKS:**

Most of these side effects are mild and get better over time. In the meantime, here are some tips for managing them:

- **Eat smaller meals.** GLP-1s can make you feel full faster than usual. Avoid filling up too quickly by eating smaller portions throughout the day. It also helps to stop eating once you feel like you're starting to get full.
- **Choose gentle foods.** Stick to bland, low-fat, and easily digestible foods during the times you're having nausea, diarrhea, or an upset stomach. Some examples include crackers, bananas, and rice.
- **Keep hydrated.** Drink plenty of water throughout the day to avoid dehydration, especially if you're vomiting or have diarrhea. Keeping hydrated can also help with constipation.
- **Avoid triggers.** Limit greasy, spicy, or fatty foods, which can worsen symptoms. It's also a good idea to avoid or limit alcohol and carbonated drinks.

- **Stay upright after eating.** Remain seated or standing for at least 30 minutes after meals to help lessen nausea and heartburn.
- **Try home remedies.** Home remedies, such as ginger, may be helpful for nausea. Anti-gas remedies, such as simethicone (Gas-X) and alpha galactosidase (Beano), may help prevent or relieve bloating.

While rare, GLP-1 medications have been linked to more serious complications that can cause similar side effects. Examples include gastroparesis (stomach paralysis), bowel obstruction, and intestinal paralysis. It's not clear if GLP-1s directly cause these issues. Tell your healthcare team if your symptoms are severe, getting worse, or not going away.

2. Appetite changes and weight loss

GLP-1 medications are known to reduce appetite, which can result in weight loss. For this reason, several are FDA approved for weight loss, including Wegovy (semaglutide), Zepbound, and Saxenda (liraglutide). While this is an intended effect, some people may not get adequate nutrition because they're eating less.

Your healthcare team can work with you to come up with a meal plan that meets your specific needs. But here are a few tips to help manage appetite and weight changes during treatment:

- **Prioritize balanced meals.** Be sure to include protein, whole grains, and healthy fats to maintain proper nutrition.
- **Don't skip meals.** Aim to eat regularly to ensure that your body gets essential nutrients. Try eating smaller meals throughout the day to avoid potential discomfort. If you have diabetes, it's especially important not to skip meals. Otherwise, your blood glucose could drop too low.
- **Monitor your weight.** Keep track of weight loss and discuss any concerns with your healthcare team.
- **Listen to your body.** Stop eating when you're full but ensure you consume enough calories to meet your nutritional needs.

3. Injection site reactions

After injecting a GLP-1 medication, you may notice mild reactions at the injection site. This can include redness, swelling, or pain. These reactions are usually temporary and not serious.

While rare, severe allergic reactions (such as anaphylaxis) are possible with GLP-1 medications. If you develop other symptoms, such as swelling of the face, lips, or tongue, difficulty breathing, or hives, seek emergency medical care.

4. Low blood glucose (hypoglycemia)

GLP-1 medications are unlikely to cause low blood glucose (hypoglycemia) on their own. But this risk goes up when they're combined with other diabetes medications, such as insulin or sulfonylureas. Watch for symptoms such as dizziness, shakiness, and sweating.

If you have severe hypoglycemia (glucose below 55 mg/dl), someone may need to administer glucagon and call 911. Glucagon is a medication that helps bring up blood glucose levels quickly.

5. Cosmetic changes, such as 'Ozempic face' and hair loss

Some people report noticeable cosmetic changes after starting GLP-1 medications. These effects, often linked to rapid or significant weight loss, include less fullness in the face and hair loss.

Ozempic face

The term "Ozempic face" describes changes in facial appearance, such as sagging or wrinkles, that some people experience after significant weight loss. This isn't from the medication itself, but reduced fat stored under the skin of the face.:

Hair loss

Hair loss or thinning has also been reported by some people taking GLP-1 medications. This is also likely linked to rapid weight loss, which can temporarily disrupt the hair growth cycle. Not getting enough vitamins and minerals can also contribute to this side effect. If you notice hair loss or thinning, here are a few things you can do:

- **Eat a balanced diet.** Ensure you're getting enough protein and other essential nutrients to support healthy hair.
- **Give it time.** Hair loss associated with GLP-1 medications is usually temporary. You may notice some improvement within a few months after your weight stabilizes.
- **Be gentle with your hair.** Give your hair a break from chemical treatments, such as coloring, and avoid heat styling or tight hairstyles. This can help reduce stress on your hair follicles. Opt for gentle shampoos and hair products to minimize damage.
- **Talk to your healthcare team.** They can assess whether underlying conditions or other medications may be contributing to hair loss.

6. Increased heart rate

GLP-1 medications may cause a slight increase in resting heart rate for some people. This isn't usually

harmful. In fact, several GLP-1s have heart-related benefits. This includes people with atrial fibrillation (a type of irregular heartbeat). But if you have a heart condition, it's a good idea to monitor for symptoms such as palpitations or chest discomfort.

7. Gallbladder issues: Gallstones and inflammation

GLP-1 medications have been linked to an increased risk of gallbladder issues, such as gallstones and an inflamed gallbladder. It's not fully understood why this happens. But it may be due to rapid weight loss or indirect effects on the gallbladder. While uncommon, gallbladder problems may be more likely with higher doses and longer durations of use.

Gallbladder issues can become life-threatening if they're left untreated. Go to the ER if you experience symptoms such as persistent upper-right abdominal pain, nausea and vomiting, and jaundice (yellowing of the skin or eyes).

8. Pancreatitis

While rare, GLP-1 medications have been linked to pancreatitis, a serious inflammation of the pancreas. But it's not known if these medications directly cause this side effect, or if it's due to something else.

Even so, it's a good idea to familiarize yourself with the symptoms of pancreatitis in case it develops. These include severe, persistent abdominal pain that may radiate to the back, nausea and vomiting, and jaundice. If left untreated, pancreatitis can be life-threatening. So it's best to go to the ER if these symptoms occur.

If you have a history of pancreatitis, make sure your healthcare team is aware. They may prescribe a different medication for you.

9. Acute kidney damage

GLP-1 medications have been shown to have beneficial effects on the kidneys. While uncommon, acute kidney damage has also been reported. Most cases have been in people with severe side effects that lead to dehydration. Watch for symptoms of kidney damage such as decreased urination or swelling in the legs.

Here are a few tips to help lower your risk of kidney damage:

- **Stay hydrated.** Drink plenty of fluids, especially if you have nausea, vomiting, and diarrhea. This helps replace fluids you've lost to prevent dehydration.
- **Maintain regular checkups.** Your healthcare team may want to monitor your kidney health during treatment. Be sure to tell them if you've been experiencing persistent or severe side effects.
- **Limit medications that cause kidney damage.** Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Motrin, Advil), can be hard on the kidneys. It may be a good idea to avoid **or limit NSAID use, especially if you're dehydrated.**

10. Thyroid C-cell tumors

All GLP-1 medications carry a boxed warning for the potential risk of thyroid C-cell tumors, based on animal studies. This risk hasn't been confirmed in people. But those with a personal or family history of medullary thyroid cancer should avoid these medications. This is also the case if you have an inherited condition called multiple endocrine neoplasia type 2.

11. Ozempic vulva

Making its turn around the social media frequently now, Ozempic vulva isn't a medical diagnosis; rather, it's a label coined by women noticing unexpected changes in their vulva or similar GLP-1 weight-loss drugs.

Ozempic is a widely used weight-loss and diabetes medication, but some women taking it are reporting surprising and sensitive side effects. These changes include sagging skin, dryness, muscle weakness, loss of fullness, altered discharge, and even pelvic weakness. While it may sound surprising, experts say these shifts are often tied to rapid weight loss, hormone shifts, and hydration changes..

'Ozempic Penis': Males Are Reporting a Surprising New GLP-1 Side Effect

A growing number of males on Reddit are claiming that GLP-1 drugs have increased their penis size. Kupicoo/Getty Images

- **Male Reddit users are reporting what they call "Ozempic penis," with some claiming penile growth of up to 1.5 inches.**
- **Experts say, however, that Ozempic penis is not a true side effect of GLP-1 drugs.**
- **Instead, fat loss above the penis allows more of the organ to be visible, and improved blood flow due to improved metabolic health could also play a role.**

Dr. Adarsh Kumar
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The Japanese Interval Walking Technique (IWT): A Simple Yet Powerful Way to Boost Heart and Overall Health

The Japanese Walking Technique, scientifically known as Interval Walking Training (IWT), was developed by researchers at Shinshu University in Japan as an effective way to improve cardiovascular fitness, strengthen metabolism, and promote long-term health. Unlike ordinary walking, IWT alternates between brisk walking and slow recovery walking, making it more dynamic, engaging, and impactful.

Why Choose IWT Over Regular Walking?

Research has shown that Interval Walking Training is up to twice as effective as continuous walking in improving aerobic fitness, muscle strength, and blood sugar regulation. By adding bursts of brisk walking, the body works harder, adapts better, and gains greater health benefits in less time.

Benefits of Japanese Interval Walking

Improves Blood Pressure & Heart Health

- Helps regulate blood pressure and reduces the risk of hypertension.
- Strengthens heart muscles by alternating effort and recovery phases.

Boosts Cardiovascular Fitness

- Interval training challenges both the heart and lungs, improving endurance and oxygen utilization more effectively than steady walking.

Supports Weight Loss & Metabolism

- Burns more calories compared to continuous walking.
- Improves fat metabolism and helps manage weight.

Enhances Blood Sugar Control

- Particularly beneficial for people with prediabetes or type 2 diabetes, as it improves insulin sensitivity.

Reduces Risk of Stroke & Lifestyle Diseases

- Improves circulation, lowers cholesterol, and reduces the risk of heart attack and stroke.

Strengthens Muscles & Bones

- Brisk walking builds lower limb strength and bone density, reducing the risk of falls and osteoporosis.

Improves Mental Well-being

- Releases endorphins, reduces stress, and improves mood. Regular practice has also been linked to better cognitive health in older adults.

How to Do Japanese Interval Walking

1. Warm-up (5 minutes): Start with a slow, comfortable pace to gently prepare your muscles, joints, and heart.
2. Brisk Walking (3 minutes): Increase your pace as if you are late for an important meeting. You should feel your heart beating faster and your breathing deepen, but still be able to talk in short sentences.
3. Recovery Walking (3 minutes): Slow down to an easy pace, allowing your heart rate and breathing to come down.
4. Repeat: Alternate between brisk and recovery walking for a total of about 30 minutes.
5. Cool-down (5 minutes): End with gentle walking or light stretching to relax your muscles and bring your heart rate back to normal.

INTERVAL WALKING TRAINING

6. **Tips for Success**

- Consistency is Key: Aim for 4–5 days a week. Studies show that people who stick with IWT for 4 months see significant improvements in aerobic capacity and blood sugar control.
- Posture & Technique: Walk tall with relaxed shoulders, swing your arms naturally, and engage your core muscles for balance and efficiency.
- Use a Timer or App: Setting 3-minute intervals ensures accuracy and helps maintain rhythm.
- Listen to Your Body: Begin at a manageable pace, gradually increasing intensity to avoid injury or fatigue.
- Footwear Matters: Wear supportive walking shoes to protect your joints, especially if you walk on hard surfaces.

Takeaway:

- The Japanese Interval Walking Technique is a simple, free, and powerful exercise that anyone can incorporate into their daily life. Just 30 minutes a day of alternating brisk and recovery walking can significantly boost your heart health, fitness, metabolism, and overall well-being

Dr. Zarleen Chongtham

मरीजों के हृदय से निकली दुआयें

आज जब चिकित्सा पेशे और चिकित्सकों के अर्थोपार्जन दृष्टि को लेकर सबकी निगाहें बहुत पैनी और आलोचनात्मक है। वर्तमान चिकित्सा परिदृश्य को लेकर विश्वभर में चिंता और उद्विग्नता है । इन सबके बावजूद चिकित्सा वृत्ति की निर्मलता और पवित्रता अक्षुण्ण रहे इसका प्रयत्न भी जारी है। एक किशोर बालक ने अपनी आपबीती इस प्रकार व्यक्त की – मुझे पेट में दर्द था । वजन कम हो रहा था। एक चिकित्सक ने यह सुनते ही पेट का सी ई सी टी कराया। सी टी देखने के बाद तुरंत कहा की एपेनडिक्स में सूजन है । पेट का आपरेशन करना पड़ेगा। आपरेशन के अतिरिक्त और बात सुनने करने के लिए तैय्यार न थे । हार कर दूसरे सर्जन चिकित्सक के पास गया। उन्होंने पेट छुआ भी नहीं। सी टी की रिपोर्ट देखी और बोले आपरेशन जरूरी है। अगर रोगग्रस्त एपेनडिक्स काट कर निकाला नहीं गया तो भविष्य में यह कैंसर में बदल जाएगा। तब मैं भग कर दूसरे की शरण में गया।

आज जब चारों ओर चिकित्सा के व्यवसायिक स्वरूप को लेकर गरमागरम चर्चाएं हो रही हैं तब मुझे बरबस अपने आचार्यों और गुरुजनों का स्मरण होना स्वाभाविक हो जाता है जिनका मानना था की मर्ज जैसे ही रोगी कक्ष में प्रवेश करता है उसी समय से सुधी चिकित्सक उसके हाव भाव , मुख -मुद्रा , वेश -परिधान , चलने के ढंग से , भाषा , बोलने के तरीके , शरीर के गठन से , अंग प्रत्यंग से यह अंदाज लगाना शुरू कर देता है की उसे क्या कष्ट हो सकता है । उसके कष्ट को सुनकर , उसकी सामाजिक परिस्थिति को जान कर , इतिहास , भूगोल को समझने के बाद उसका आपाद -मस्तक (सर से लेकर पैर तक) निरीक्षण -परीक्षण करता है फिर एक अंतरिम निदान के निर्णय पर पहुंचता है । उस निदान के अनुसार उचित परीक्षण (मूत्र , रक्त , कुछ जैव रासायनिक परीक्षण जैसे - रक्त शर्करा , यूरिया , कोलेस्टेरॉल , यकृत , गुर्दे के टेस्ट , एक्स-रे , ई सी जी , अल्ट्रासाउन्ड की जांच कराता है । इन जाँचों से भी बात न बनने पर वह अन्य सूक्ष्म जाँचों जैसे सी टी , एम आर आई , पेट सी टी , सी टी एंजियों , की तरफ आगे बढ़ता है। दुर्भाग्य से अब मरीज भी तुरंत और सटीक निदान के चक्कर में पहले से ही अल्ट्रासाउन्ड , जैसे सी टी , एम आर आई की जांच लेकर चिकित्सक के समक्ष आता है और चिकित्सक उससे भी ज्यादा जल्दी में होता है और तुरंत निदान के फेर में अपने आँख , कान और हाथों पर या हृदय से उठ रहे उद्गारों पर ध्यान न देकर इन तकनीकी और प्रविधि की अधुनातन जाँचों पर ज्यादा जोर देने लगा है। चिकित्सक और मरीज के बीच में मशीन खड़ी हो गई है। अब शीघ्र ही जब रोबोट और कृत्रिम बुद्धि का उपयोग चिकित्सा के क्षेत्र में बढ़ जाएगा तो संभवतः यह दूरी और बढ़ जाए। इन सबके बावजूद चिकित्सक के नेत्र , कान , सहज बुद्धि , हाथ और मानवीय गुण रोगी को अधिक प्रियकर और हितकर परिणाम देंगें ,ऐसा मेरा मानना है । सुभिषक वही होगा जो अपने रोगी को मनसा ,वाचा ,कर्मणा सुख पहुँचा सके । महंगी से महंगी मशीने और आलीशान होटल जैसे चिकिसालय यह सुख कभी नहीं दे सकते।

उस समय रोगियों से संवाद के बीच कभी कभी हृदय से निकले कुछ आशा-आशीर्वाद के शब्द, कुछ नैसर्गिक अभिव्यक्तियाँ चिकित्सक के मन में स्थायी प्रसन्नता और सकारात्मकता के भाव उत्पन्न करती है। ऐसे कुछ प्रसंगों का एक संक्षिप्त विवरण :

१. दिल्ली विश्वविद्यालय के एक युवा सुहृद जिन्हें कुछ दिनों से छाती के बाईं तरफ अक्सर दर्द होता था और हार्ट अटैक का डर सताता रहता था उनका अंततः 'कोरोनरी एजियोग्राफी (दिल की रक्त वाहिकाओं का चित्रण प्रक्रिया) करना पड़ा। एजियोग्राफी में उनके हृदय की नसें बिल्कुल ठीक और निर्मल निकली। इस प्रक्रिया के बाद उनका करने वाले विशेषज्ञ के विषय में सहज उद्गार था – डाक्टर शर्मा के हाथ में जादू है। क्या शिफ़ा है। हाथ पारस है। बताइए इससे बढ़ कर और क्या संतोष और उपलब्धि की बात होगी।

२. राजधानी के एक प्रतिष्ठित अस्पताल की लिफ्ट में एक बुजुर्ग पुरुष , उनकी धर्मपत्नी तथा युवा पुत्री ऊपर की मंजिल की तरफ बड़े चिंतित मन से रवाना हुए ही थे कि उनकी नजर अपने चिकित्सक पर पड़ गई। उन सबके चेहरे पर प्रसन्नता की लहर दौड़ गई । नमस्ते के आदान -प्रदान हुआ। ववह बोले आपके पास ही जा रहा था। चिकित्सक महोदय उनकी समस्या को समझटे हुए बोले -यंत्र बदलना है। बुजुर्ग बोले जी हाँ पेसमेकर (हृदयगति प्रेरक यंत्र) बदलना है । आप कब बदलेंगें ? चिकित्सक महोदय ने कहा आप आराम से खा पी लीजिए। थोड़ा विश्राम कर लीजिए। फिर दोपहर में करते हैं। मुस्किल से पंद्रह मिनट का काम है। यह सुनते ही उन सबके आँखों में जो खुशी , संतोष और कृतज्ञता के भाव थे उसका वर्णन शब्दों में कठिन है।

३. पहले ब्लड प्रेशर और अब स्तन कैंसर से पीड़ित सततत्तर वर्षीय महिला के ये शब्द कितने सुकून देने वाले हैं – 'भगवान आपको लंबी उम्र दे । पेंशन मिलती है दाल – रोटी खा लेती हूँ ।'

४ . अस्सी के निकट पति -पत्नी वर्षों से आत्मीय मित्र की भांति अपने डायबिटीज और ब्लड प्रेशर को लेकर बहुधा आते रहते हैं । इस बार अयोध्या -ध्वजारोहण के पूर्व अपने शुभकामना संदेश में लिखते है – आप जैसी पारस मणि के सानिध्य से हम दोनों प्रफुल्लित व प्रकाशवान प्रतीत हो रहें हैं ।

५ . सरकारी सेवा से सेवा -निवृत्त एक बुजुर्ग जिन्हे उच्चरक्तचाप और दोनों कानों से कुछ ऊंचा सुनाई देने का कष्ट था जाते जाते ये कहते हुय गए कि – 'डाक्टर जीवन बचाते हैं और गुरु जीवन बनाते हैं । कितनी बड़ी बात कह गए ये सज्जन । गिरह में बांध लेने वाली बात ।

६ . अस्सी वर्ष की एक प्रगाढ़ आस्तिक सिख महिला जो आजीवन अध्यापिका रहीं ,अभी हाल में अपने पति को भयंकर पक्षाघात में खो चुकी थी स्वयं स्तन कैंसर और ब्लड प्रेशर से जूझ रही थी ,बोली – धरती पुकारती है कि वहाँ आप जैसे लोग यहाँ आयें ।

७. सत्तानबें (९७) वर्षीय एक सज्जन जिन्हें वर्षों पूर्व दाहिने फेफड़े में तपेदिक हुई थी अब पुनः उसी तरफ दर्द और बलगम से बुरी तरह पीड़ित थे । वह दाहिने तरफ उसी जगह हाथ रख कर अपनी वेदना बखान कर रहे थे और कह रहे थे की डाक्टर साहिब आप किसी तरह यहाँ से बलगम निकाल दीजिए मैं फिर चंगा हो जाऊंगा । छाती का एक्स -रे और सी टी हुआ ठीक उसी जगह पुरानी टी बी के लक्षण और पूर्व अन्तःपूयता (इम्पाइमा) के अवशेष चिन्ह मिले । बलगम में टी बी के कोई प्रमाण नहीं मिले । इलाज हुआ ठीक होने लगे । चलते समय उनके हाव भाव में प्रसन्नता , आशीर्वाद के भाव और यह कथन – आप जैसा सुंदर कोई फरिश्ता नहीं ( ) किसके हृदय को मोह नहीं लेगा ।

८. विश्वविद्यालय की सेवा से अवकाश प्राप्त चौहत्तर वर्षीया एक हिन्दी की विदुषी अपने रुग्ण पति के लिए और स्वयं अपने लिए बहुधा आती रहती हैं इस बार अपने पतिदेव की रीढ़ की हड्डी के ऑपरेशन के बाद बोली–आपके लिए दिल से बहुत दुआ है । आप सौ वर्ष तक जियें । सौ वर्ष तक जीना या न जीना अपनी जगह है पर किसी ने सच्चे हृदय से यह कामना तो की यह भी संतोष की बात है ।

९. स्कूल की मुख्य अध्यापिका रह चुकी ६९ वर्ष की अत्यंत भद्र और अपने तथा पति के स्वास्थ्य को लेकर बड़ी सजग महिला, जिनके ७२ वर्षीय पति को प्रबल डायबिटीज तथा उच्च ब्लड प्रेशर है , पूरे परीक्षण और वार्तालाप के बाद कहने लगी-हकीकत यह है की यहाँ आकर मेरा आधा रोग निकल गया ।

१०. बान्नबे (९२) वर्षीय गणित के अध्यापक रहे श्री मोहन को पूर्व में लकवा पड़ चुका है, हाइपरटेंशन और थायरायड अक्षमता की शिकायत है । मेरे पास विगत चार वर्षों से आते हैं । सम्यक परीक्षण और जाँचे के बाद चले जाते हैं । इस बार कुशल क्षेम के बाद बोले – बचे हैं तो आ रहें हैं । हम भी ठीक हैं , आप भी ठीक हैं । इन शब्दों में कितना संतोष और सकूँ छिपा हुआ है ।

११ . एक और अध्यापक दम्पति हैं । देवभूमि हिमाचल से हैं । आयु ८६ के आसपास है । पत्नी उच्च ब्लड प्रेशर , स्ट्रोक तथा थायरायड अक्षमता से ग्रस्त थी । छह महीने पूर्व पत्नी की डिंब ग्रन्थि (ओवेरियन) के कैंसर के कारण मृत्यु हो गई । अब वह अकेले हैं । दो पुत्र हैं विदेश में हैं । उनके पास कुछ दिन व्यतीत कर फिर दिल्ली आ गए हैं । इस बार जब ओ पी डी में पधारे तो बोले -रास्ते में प्रार्थना करता हुआ आया हूँ । भगवान विष्णु आपको स्वस्थ रक्खे। अब बतलाइए इस आशीर्वाद से बढ़ कर और भी कुछ हो सकता है ।

१२ . भारतीय प्रशासनिक सेवा से अवकाश प्राप्त एक सज्जन जो अपनी धर्मपत्नी के साथ नियमित आते रहते है । दोनों को डायबिटीज है । पति महोदयं ने अपने संतुलित खानपान, नियमित सैर व्यायाम और योग से डायबिटीज पर नियंत्रण पा लिया है पर उनकी अर्धांगिनी घूमने जाती नहीं खाने-पीने की शौकीन है इसलिए वजन भारी है और डायबिटीज नियंत्रण के बाहर हैं । अब तो उनके एकमात्र पुत्र को भी मोटापा , पूर्व डायबिटीज, कोलेस्ट्रॉल-दोष तथा उच्चरक्तचाप सताने लगा है । अक्सर कहते हैं-डाक्टर साहिब आप ऐसे ही बने रहिए जिससे हम लोगो की सेहत ठीक बनी रहे ।

१३ . बयासी वर्षीय एक बुजुर्ग जिन्हें कई बीमारियों ने हृदयाघात, पक्षाघात, डायबिटीज, उच्च ब्लड प्रेशर , सांस-खांसी, प्रोस्टेट अभिवृद्धि, पेशाब में आए दिन संक्रमण, भयंकर कमजोरी, चलते समय चक्कर आना, अकेले का जीवन आदि कई मुसीबतों ने ग्रस्त कर रक्खा है । विगत १० वर्षों से मुख्यतया एक ही चिकित्सक की देख रेख में रहते हैं उनका कहना है

'God gives life. We make it sick, knowingly or un knowingly. When our disease do not heal with all our own efforts we become desperate & go to a doctor who is our second line of defense next to God. But some doctors are extraordinary, kind, assuring & not greedy. my doctor is one of them, knowledgeable & soft spoken. I wish him & others like him, good health & long life.

१४. एक ६७ वर्षीया वृद्ध को विगत पाँच दिनों से भीनकर खांसी और सांस लेने में कष्ट था । आज उसके पति जब अंदर रोगि कक्ष में ले आए तो उनका पहला वाक्य था कि मेरा पूरा परिवार पहले छोटा भाई, फिर ९७ वर्षीय पिता, फिर मैं और आज मेरी पत्नी आपकी मरीज और मुरीद दोनों हैं । ये शब्द सीधे हृदय से निकले हैं और आपके हृदय को छूते हैं । अभिव्यक्ति की सहजता, सरलता और आत्मविश्वास की ऊष्मा चिकित्सक को समर्पित भाव से सेवा करने के लिए प्रेरित करती है ।

१५. नई दिल्ली स्थित सुजान सिंह पार्क के पास एक व्यवसायी के सीने में दर्द हुआ और उनकी दिल की गति बंद हो गई । सांस रुक गई । आनन फानन में एम्बुलेंस मगांई गई । उपस्थित डाक्टर ने एम्बुलेंस के अंदर ही सी पी आर शुरू कर दिया गया । उनकी हृदय गति वापस नहीं रही । पर चिकित्सकों ने पुनर्जीवन प्रयत्न जारी रक्खा । करीब आधे घंटे बाद हृदयगति आना शुरू हुई । ब्लड प्रेशर भी सुस्थिर होने लगा । एंजियोग्रैफी में दिल की तीनों धमनियाँ अवरुद्ध थी । उनकी सफाई की गई । छल्ले डाले गए । थोड़े दिनों बाद वह पूर्णतः चलते फिरते अपने घर चले गये । उनके पूरे परिवार ने चिकित्सक समुदाय और अस्पताल के लिए सच्चे दिल से जो आशीर्वाद दिए वे शब्द मेरे कान में अभी भी गूँजते रहते है ।

ये कुछ प्रकरण ऐसे हैं जो हम चिकित्सकों को आज के त्रासद क्षणों में बहुत ढाड़स प्रदान करते हैं । वह भी ऐसे समय में जब कुछ अवांछनीय घटनाओं के कारण पूरी दुनियां में चिकित्सा समुदाय की ओर उँगलियाँ उठायी जाने लगी हैं । उस समय ऐसे आशीर्वादात्मक वचन स्वयं को तो संबल प्रदान करते ही हैं उसके अलावा भविष्य की पीढ़ी को भी पथ प्रर्दशन प्रदान करते हैं । यह तभी संभव है जब चिकित्सक का दिल-दिमाग और पांचों इंद्रिया रोगी को देखते-सुनते समय सहानुभूति और करुणा से भरी हुई हों और उसके मन में केवल बकेवल येन केन प्रकारेण मरीज का हित ही सर्वोपरि हो : हों नेत्र देखते करूण व्यथा, दो कर्ण सुन रहे सकल कथा, औ हाथ सदय स्पर्श यथा, सुभिषक लिखते उपचार गथा ।

डाक्टर श्रीधर द्विवेदी,
वरिष्ठ हृदय रोग चिकित्सक एवं प्रमुख अकादमिक,
नेशनल हार्ट इंस्टिट्यूट, नई दिल्ली

उचित खानपान,
सैर व्यायाम,
योग और ध्यान,
न तम्बाकू न धूम्रपान।
जल्दी सोना, जल्दी जगना, [१]
न जंक न क्रोध [२],
न मोबाइल का अतिशय प्रयोग,
ये हैं सेहत के सात योग

(श्रीमद्भगवद् गीता के अध्याय ६/१७ और अध्याय २/६३ श्लोक, दि अमेरिकन हार्ट एसोसिएशन की संस्तुति तथा लेखक के अनुभवों पर आधारित)

ध्यान दीजिये

1. शराब और रफ़्तार,
मौत करती इंतज़ार

2. ज़्यादा मिठाई (डायबिटीज) में कीड़े (इन्फेक्शन)

3. ख़ैर, खून, खाँसी,
खुशी, और वैर, प्रीति, मदपान,
लाख छिपावे न छिपे जाने सकल जहान।

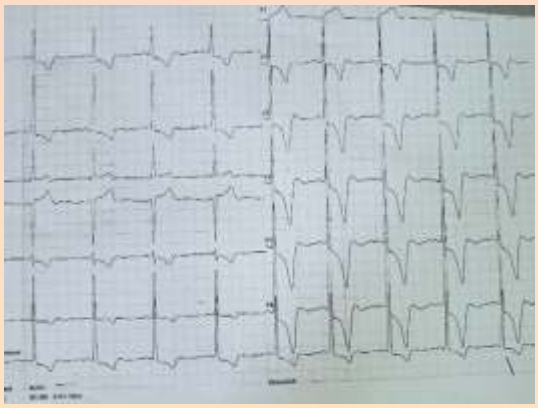
4. खराब दाँत मुँह में
साँप पालने के बराबर होता है।

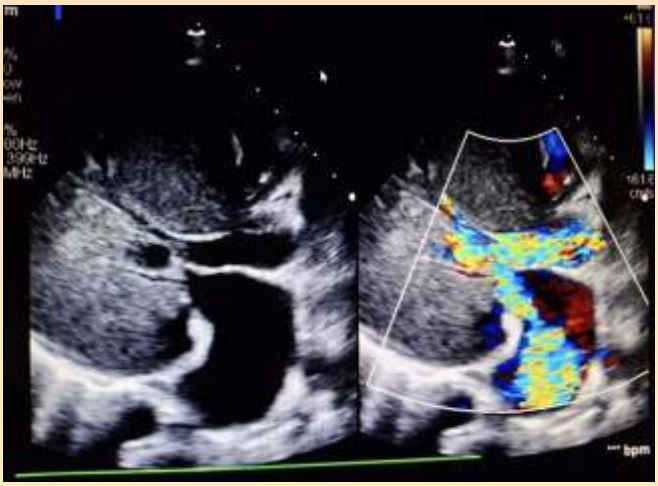
Pictures Speak For Themselves

HOCM with MR and SAM - Post Operative Outcome

A 12 year boy attended OPD with symptoms of shortness of breath and occasional palpitations on walking fast .his ECG showed deep T inversion in chest leads with sinus rhythm. His BP was normal and no cyanosis or clubbing or pallor .there was short ejection systolic murmur heard without radiation to carotid .Echocardiogram done in OPD showed typical HCM with severe LVH with peak gradient at LVOT 65 mmhg with severe MR due to systolic anterior motion of AML with normal LVFunction.

He was operated [septal myomectomy] in CTVS OT . And MR decrease to Mild with LVOT gradient 14 mmhg at heart rate of 60 per min. ECG and ECHO can diagnose disease at early stage hence valuable investigation in OPD..





PREOP ECHO PLAX VIEW SEVERE MR , SAM EFFECT

POST OP ECHO PLAX VIEW, MILD MR

Dr Balram Airan, Cardiac Surgeon, Dr Uday, Dr V Sharma, Ms Afreen. Technician

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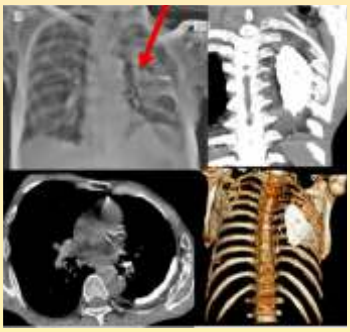

A 36-year-old chronic beedi and ganja smoker and alcohol presented with dystonia and cachexia. He was also suspected to be dehydrated. Chest Radiograph (AP) shows a geographic shaped radio-opaque lesion projecting over left lung field with pencil sharps borders. NCCT chest images confirm the opacity to be a sheet-like coarse calcified pleural plaque likely due to old healed empyema with thick rind of pleural thickening involving both visceral and parietal layers of left costal pleura causing volume loss in left hemithorax with crowding of overlying ribs. Reactive hypertrophy of extrapleural fat is seen. Maximum intensity projection and 3-D volume rendered images have been provided for better delineation of pleural plaque. It turned out to be old healed empyema.

Dr. Anshika Gulati, HOD Radiology, Prof. Shridhar Dwivedi, Senior Consultant Cardiologist and HOD Academics, National Heart Institute

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In a patient with aorto-iliac endograft, CT Angiography shows inadequate seal at distal attachment site with significant leak of contrast material leading to aneurysmal dilatation of bilateral common iliac arteries. The findings are consistent with type 1B endoleak. Maximum intensity projection and 3-D volume rendered images have been provided for better delineation.

Dr. Anshika Gulati, HOD Radiology, National Heart Institute Dr. GN Lone, Senior Consultant, Cardiovascular and Thoracic Surgery

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