Addressing Global Cardiac Challenges: Insights

Cardiovascular diseases (CVDs) represent the leading cause of death worldwide, accounting for approximately 17.9 million deaths annually, or about 31% of all global deaths. CVDs encompass a broad range of heart and blood vessel disorders, including coronary artery disease (CAD), heart failure, arrhythmias, valvular heart disease, congenital heart defects, and stroke.

1. Epidemiology

The global burden of cardiovascular disease is immense, but it varies by region due to factors such as lifestyle, genetics, and healthcare infrastructure. While high-income countries have seen some declines in CVD-related deaths due to advanced healthcare interventions, many low- and middle-income countries are experiencing increases due to rising risk factors like unhealthy diets, physical inactivity, tobacco use, and increased life expectancy.

2. Risk Factors

CVDs are largely preventable, with key modifiable risk factors being:

- **High blood pressure (hypertension)**
- **High cholesterol levels**
- **Diabetes**
- **Tobacco use**
- **Obesity**
- **Physical inactivity**
- **Unhealthy diet**
- **Non-modifiable risk factors** include age, gender, and family history.

3. Economic Impact

Cardiovascular diseases place a significant economic burden on countries, both in terms of healthcare costs and lost productivity. In high-income

nations, the cost of managing chronic conditions like heart disease is substantial, while in lower-income countries, the economic burden is compounded by a lack of resources and healthcare infrastructure.

4. Global Initiatives

Efforts to combat CVDs on a global scale are ongoing, with initiatives from the World Health Organization (WHO), the World Heart Federation, and other organizations focusing on promoting awareness, improving access to healthcare, and advocating for policies to reduce risk factors (e.g., tobacco control, promoting healthy diets).

5. Future Outlook

As global populations age and lifestyle factors evolve, the burden of cardiovascular disease is expected to rise, particularly in developing nations. However, advances in medical technology, public health policies, and preventive strategies offer hope for reducing the global impact of heart disease.

In short, cardiovascular diseases present a serious and growing global challenge that requires coordinated international efforts in prevention, treatment, and research to address.

But the most important challenge is to diagnose an issue before it becomes a major problem. And most important of all we have to remember that this aspect of health is an aging process, and we cannot put the clock back. We have to make the future better, that is all. We cannot stop the aging process, but we can learn to make the most of it.

Thus, monitoring plays a very vital role in this context. Monitoring cardiovascular health on a global scale involves multiple strategies that span individual-level interventions to broader public health initiatives. Effective monitoring can help in early detection, prevention, and management of

cardiovascular diseases (CVDs). Here are key approaches that can be taken to monitor cardiac health:

1. Surveillance Systems and Data Collection
- **National and Global Registries**
- **Population Health Surveys**
- **Electronic Health Records (EHRs)**

2. Routine Clinical Monitoring – most important
- **Screening Programs**: Early detection of risk factors such as high blood pressure, high cholesterol, diabetes, and obesity through routine health check-ups is crucial for preventing CVDs. Screening should be accessible and affordable, especially in high-risk populations.
- **Telemedicine and Remote Monitoring**: Wearable devices and telemedicine platforms allow for continuous monitoring of heart rate, blood pressure, and ECG (electrocardiogram) data. These tools can help detect early signs of heart disease and enable timely medical intervention, especially in rural or underserved areas.
- **Home-based Monitoring**: Portable devices for monitoring blood pressure, glucose levels, and heart rhythms (e.g., smartwatches with ECG capabilities) empower individuals to track their health and alert healthcare providers to any abnormalities.

3. Risk Factor Tracking
- **Hypertension Monitoring**
- **Cholesterol and Glucose Monitoring**
- **Lifestyle Monitoring**

4. Public Health Campaigns and Education
- **Awareness Campaigns**
- **Policy Advocacy**

5. Health Systems Strengthening
- **Access to Healthcare**

- **Training for Healthcare Professionals**

6. Use of Technology: -
- **Artificial Intelligence (AI) and Big Data**: AI algorithms can analyze large datasets from EHRs and wearable devices to identify patterns and predict heart disease risk, aiding in personalized medicine and population-level monitoring.
- **Mobile Health Applications**: Apps that track heart rate, blood pressure, and physical activity are increasingly being integrated into healthcare systems to provide individuals and clinicians with real-time health data.

7. Collaborative Global Efforts
- **International Cooperation**
- **Global Goals and Targets**

In conclusion, monitoring cardiovascular health requires a combination of individual-level tools (e.g., home-based monitoring and wearable devices), healthcare system integration (e.g., EHRs, screenings), and public health initiatives that focus on data collection, awareness, and policy implementation. The more extensive the monitoring the more the chances of picking up issues that can be sorted out and better health in the future.

Long work hours may raise risk of heart disease

Seoul: Are you a workaholic? Your habits may raise your risk of heart disease, a new study has warned.

Working for more than 40 hours a week may increase one's risk of developing coronary heart disease, or narrowing of the blood vessels that supply blood and oxygen to the heart, it says.

"The longer hours employees worked, the higher their chances of developing coronary heart disease within 10 years, with those working 61 to 70 hours having a 42% increased likelihood of developing the disease, those working 71 to 80 hours having a 63% increased likelihood, and those working more than 80 hours having a 94% increased likelihood," said Dr Yun-Chul Hong, senior author of the study, from the Department of Preventive Medicine, College of Medicine, Seoul National University.

Researchers evaluated the association between long working hours and risk of coronary heart disease (CHD) estimated by Framingham risk score (FRS) on 8,350 Korean adults.

The subjects were asked about working hours and health status. Participants al-

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so completed physical examinations and biochemical measurements necessary for estimation of FRS.

Multiple logistic regression was conducted to investigate the association between working hours and the 10-year risk for CHD estimated by FRS.

Compared to those who work 31-40 hours, significantly higher 10-year risk was estimated among subjects working longer hours.

As working hours increased, the odds ratio (OR) for the upper 10% of estimated 10-year risk for CHD increased up to 1.94.

The study was published in the American Journal of Industrial Medicine. PTI

'Number of cardiac patients below 40 years on the rise'

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STRESS, DIABETES LEADING CAUSES

Blockages in cardiac arteries are now developing earlier in a growing number of people, according to a recent study

▸ Cardiologists confirm the findings and point out that many start developing tiny blockages from their late teenage or early twenties that grow into a full-blown blockage in 10 to 12 years

▸ Of them, nearly 10% don't survive the first heart attack, said senior cardiologists

▸ A significant number of city residents aged between

35 and 40 die before they can be taken to a hospital following a heart attack, revealed data collected by some private hospitals

▸ While diabetes and stress are the leading causes for the early onset of cardiac ailments, smoking, unhealthy diet and sedentary lifestyle follow closely

❝ Young cardiac patients are likely to suffer a more lethal heart attack due to their hectic lifestyle. The average age of onset has changed from 55 to 60 years two decades ago to around 45 to 48 years now
Kunal Sarkar | VP, MEDICA SUPERSPECIALTY HOSPITAL

Kolkata: The death of 30-year-old Hirakjyoti Adhikari, son of former state minister Paresh Adhikari, on Friday has yet again turned the focus on rising instances of youngsters suffering cardiac arrests. A doctor by profession, Hirakjyoti, suffered a heart attack while conversing with his father and was declared brought dead at a sub-divisional hospital in Mekhliganj. Even though he was suffering from a kidney ailment, Hirakjyoti had no apparent cardiac condition.

A recent study of a cross-section of cardiac patients in Kolkata shows that students of premier institutes and those with high-pressure private sector jobs often suffered heart attacks before they turned 40. According to Anjan Siotia, interventional cardiologist at BM Birla Heart Research Centre, there were very few cardiac patients in their thirties till five years back. "Now, I get multiple such patients every month. A significant number of cardiac patients don't show suffering a heart attack would always be in their forties but the number has shot up sharply. In fact, I have come across more heart patients in their thirties and forties in the last year than ever before," Siotia said.

Blockages in cardiac arteries were now occurring earlier in a growing number of people, according to a recent study conducted by a medical devices' company.

Cardiologists have confirmed the findings of the study. By the time they are in their late teenage or early twenties, many start developing tiny blockages that grow into a full-blown block in 10 to 12 years, say experts. "Undetected heart ailments or lung conditions often trigger an unexpected and sudden cardiac arrest. As stress increases and lifestyle turns fast and unhealthy, cardiac ailments will set in early. We have seen that happening over the last decade," said Fortis Hospital cardio-thoracic surgeon, KM Mandana. He added that exposure to pollution has also been indirectly affecting the heart, leading to heart attacks at a younger age. "Since the young are more exposed to

pollution which affects their lungs, eventually affecting the heart. Underlying COPD is often a trigger for young patients," added Mandana.

Siotia said that a significant number of the young patients have had a stressful career since the age of 18. "They were either competing to get into a top-notch institute or doing a very stressful job which didn't allow them to have a regulated life. Stress makes you prone to blocks and the earlier you develop them, the faster you will be struck by a heart attack," he said.

Stress hormones damage the lining of blood vessels, making them more prone to cholesterol deposits that narrow down arteries. Over a period of time, these deposits may turn into blocks, affecting the blood flow in cardiac arteries, leading to a heart attack. Last month, Siotia treated a 24-year-old, who had suffered a heart attack. "He is a non-smoker and goes to the

gym regularly. Every alternate month we come across patients in their twenties or early thirties. Most of them are invariably young executives, who have been working hard under stressful conditions," he said. Young cardiac patients are likely to suffer a more lethal heart attack due to their hectic lifestyle, said Medica Superspecialty Hospital vice-president and cardiac surgeon, Kunal Sarkar.

"The average age of onset has changed from 55 to 60 years two decades ago to around 45 to 48 years now. While lack of physical activity and food habits are responsible for triggering diabetes, stress is also a factor. These can lead to a heart attack or a chronic cardiac disease. But there is little option for young people to escape stress. They are forced to adapt to stressful conditions and longer working hours which is bound to have an impact on the heart," Sarkar added.

Docs blame air pollution for heart attacks, other cardiac ailments

Fine Pollutants Choke Arteries, Affect Blood Flow

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HEALTH AT RISK

▸ Suspended particulate matter, which remained high over the last two months, have been infiltrating lungs along with gases like carbon monoxide, sulfur dioxide, methane and nitrogen oxide, eventually getting into cardiac arteries

▸ It causes endothelial dysfunction, which narrows them down and chokes blood flow, sparking off a myocardial infarction or a heart attack

▸ The conclusion has been reinforced by findings at several hospitals — angiogram of a section of patients who suffered heart attacks. They revealed either no arterial blockages or very minor ones

▸ PM2.5 and PM10 — the two most

There have been multiple cases of healthy individuals succumbing to a sudden cardiac arrest while walking or jogging in the morning

common form of pollutants — can create spasms inside cardiac arteries and narrow down their diameters, affecting blood flow

Kolkata: Air pollution has been directly responsible for triggering cardiac ailments — including heart attacks — among a significant section of patients since last winter, suspect city cardiologists.

Suspended particulate matter (PM), which has remained consistently high over the last two months, has been infiltrating lungs, along with gases like carbon monoxide, sulphur dioxide, methane and nitrogen oxide, and eventually getting into cardiac arteries and causing 'endothelial dysfunction', a condition that narrows the arteries and chokes blood flow, sparking off myocardial infarctions or heart attacks, the doctors have pointed out.

The conclusion has been reinforced by an unusual finding reported from several hospitals, angiograms of a section of heart attack patients revealed either no arterial blockages or very minor ones.

PM2.5 and PM10 — the two most common forms of pollutants — can create spasms inside cardiac arteries and narrow down their diameters, affecting blood flow, according to Sabyasachi Pal, an interventional cardiologist at BM Birla Heart Research Centre. "Polluting particles infiltrate deep into the bloodstream and enter the heart through the lungs," Pal said. "This can trigger endothelial dysfunction, which disturbs the swelling and contraction of cardiac arteries. It could lead to 'coronary vasospasm', a complete or near occlusion of a vessel, leading to a fatal heart attack," Pal added.

Sudden deaths while jogging or walking in the morning could also be a result of coronary vasospasm, cardiologists said. "Concentration of PM2.5 and PM10 is the highest during early mornings in winter, when they keep circulating close to the ground level. Inhaling them could lead to a sudden contraction of cardiac arteries, leading to a fatal heart attack," Pal added.

There has always been a suspicion about pollution having an impact on the heart, but there's not enough data to definitively say that, according to cardiac surgeon Kunal Sarkar. "But pollution is indeed directly responsible for lung exacerbations,

which affects the heart. We have seen a swell in these cases over the years," Sarkar said.

There have been multiple cases of apparently healthy individuals succumbing to a sudden cardiac arrest while walking or jogging in the morning, said doctors at city private hospitals. "This typically happens in winter months, when the ambient air quality is poor. Sudden cardiac arrest leading to death during an early morning walk is common. Often, they have no comorbidities or cardiac ailment history, which points at pollution being the trigger," said Sauren Panja, an intensivist at RN Tagore International Institute of Cardiac Sciences (RTIICS).

Pollutants can indeed infiltrate and settle down inside cardiac arteries, leading to plaque formation and blockages, said Raja Dhar, pulmonology director at CMRI Hospital. "This can trigger a heart attack and is now certainly among the top five reasons for cardiovascular diseases," said Dhar.

Air pollution is responsible for one in nine cardiovascular deaths globally, with attributable mortality expected to double by 2050, according to The American Heart Association. In India, one in five cardiovascular deaths is attributed to pollution, as per the association. WHO now lists air pollution among the top 10 reasons for mortality. It contributes to the risk of a heart attack, as much as smoking, lack of exercise, diabetes and alcohol do, Pal said.

Health alert: 20.7% of Bengaluru children overweight or obese, says study

13.3% are at the risk of developing lifestyle diseases in adulthood

▸ The cut off waist-to-height ratio of 0.5 is universally used for children and adults, and helps to convey the message of 'keep your waistline to half your height'
Rebecca Kuriyan, assistant professor, St John's Research Institute

CHETNA ANAND

BENGALURU: Hours spent cooped up in classrooms and in front of electronic gadgets was bound to have an effect: A cross-sectional screening of nearly one lakh children across Bengaluru schools has shown that 20.7% were either overweight or obese, and 13.3% at risk of developing lifestyle diseases in adulthood.

The screening, conducted by healthcare startup, Addresshealth, between January and December 2016,

is based on the results of a 2015 study conducted by researchers from St John's Research Institute (SJRI).

According to the SJRI study led by Rebecca Kuriyan, associate professor in clinical nutrition and lifestyle management, SJRI, which sampled 1,913 school-children in Bengaluru, high obesity indicators were associated with an increased risk of high blood pressure.

"More than obesity, the levels of overweight children had increased in the last few years in both re-

search and clinical practice" said Dr. Kuriyan, who has been studying childhood obesity for several years.

"A waist-to-height ratio greater than 0.5 puts them at risk of hypertension and other lifestyle diseases in adulthood. Measuring this ratio is an inexpensive initial screening tool that everyone can use," Dr. Kuriyan said. She added that armed with this information, parents could make positive lifestyle changes like increasing physical activity

and inculcating healthy eating habits.

The Addresshealth survey included a equal number of children from private schools ranging from affordable (where fees are less than ₹50,000 a year) to expensive schools (where fees were more than ₹65,000 a year).

"The aim is to bring preventive healthcare to parents, so that they understand the need to instil healthy habits in children," said Anand Lakshman, founder of AddressHealth.

A similar trend across the country

STAFF REPORTER

BENGALURU: Obesity and overweight levels have increased sharply in India in the last 10 years.

A WHO-supported study collated data from 53 different studies across the country to show that combined prevalence of childhood overweight and

obesity recorded between 2010 and 2010 was 19.3%, a significant increase from the earlier prevalence of 16.3% reported in 2001-2005. The study was published in the Indian Journal of Medical Research in February 2016 titled 'Epidemiology of childhood overweight & obesity in India: A systematic review'.

One of the researchers behind the study, Krishnan Anand, professor at All India Institute of Medical Sciences, New Delhi, said childhood stunting owing to poor nutrition in early childhood was also contributed to the high levels of obesity among Indian adults.

"Since Body Mass Index is inversely proportional to square of height and early nutrition plays a major role in determining height, a person who was stunted owing

to poor economic conditions is likely to have increased BMI when their economic situation improves later on," Dr. Anand said.

Terming obesity as a neglected health issue in the country, he blamed the reduced importance given to physical activity in schools and homes for the current crisis.

NEED FOR ATTENTION			
96,392 Number of children examined (4-17 age group)	20.7% Children overweight or obese	11.3% Children whose waist/height ratio puts them at risk of cardiac ailments/diabetes in adulthood	13.6% Children with vision problems
	12.9% Overweight		
	8.2% Obese		29.9% Children with dental caries

How Obesity May Fuel A Health Crisis In India Soon

Both Policymakers, Masses Need To Act To Tackle It: Experts

Global Cardiovascular Disease Diagnostic Equipment Market

US$ 92.51 Billion

US$ 52.90 Billion

US$ Billion

2.5
2.0
1.5
1.0
0.5
0

2021   2030
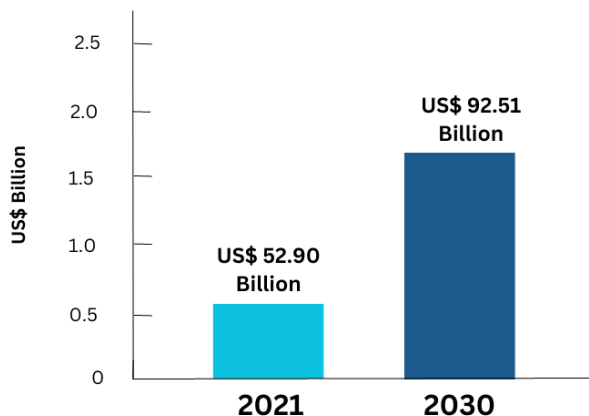
Grow at CAGR of 6.4% from 2021 to 2030

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Pie chart labels:
- Congenital Heart Disease 8%
- IHD 6%
- HTN 2%
- CMP 1%
- Pulmonary HTN 2%
- Valvular heart disease 81%
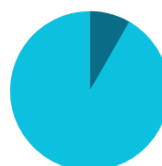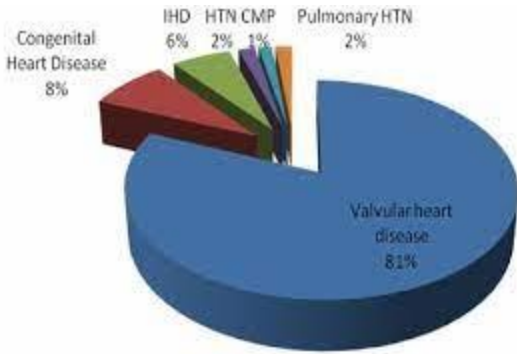
Cardiovascular disease & heart health VC deal activity

Deal value ($B) — Deal count

2020, 2021, 2022, 2023*

First heart failure registry released

ICMR Study Calls For Nationwide Audit, Quality Improvement Initiatives

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Thiruvananthapuram:
Ischemic heart disease is the leading cause of heart failure in India. The 90-day mortality rate in heart failure patients is 17% which is high when compared to that of cancer. The disease burden is more on the younger generation (less than 65 years) when compared to that of other countries, says the first National Heart Failure Registry (NHFR) which was released on Monday.

The study says the 7-day mortality among the heart failure patients was 6.4%, 30-day mortality was 12.2% and 90-day mortality was 17.1%.

The study conducted as part of the registry found that less than half of the eligible patients receive guideline directed therapy and among those who have received, it has reduced the mortality. "The higher 90-day mortality in heart failure (HF) patients calls for a nationwide audit and quality improvement initiatives," says the NHFR.

The NHFR is a multicentric, hospital-based registry of HF patients, which was funded by the Indian Council of Medical Research (ICMR). In January 2019, Sree Chitra Tirunal Institute of Medical Sciences was designated as one of the nodal agencies to create a national heart failure registry by the ICMR.

"The NHFR recruited consecutive HF patients from 50 centres (200 patients from each center) across 24 states in India from January 2019. Consecutive patients admitted with the diagnosis of acute decompensated HF satisfying the European Society of Cardiology (ESC) 2016 criteria were enrolled into the registry. We collected demographics, clinical, laboratory, imaging, and other diagnostic data at baseline from all registered patients in the registry by using a structured document," said coordinator of NHFR Dr S Harikrishnan, who is also the national principal investigator.

As part of this, the team analyzed the data of first consecutive 6,437 patients who have completed the 90-day follow-up in the NHFR. The mean age of the study population was 60.5 years and men comprised of more than two-third of the population (68.8%).

Heart failure with reduced ejection fraction was the most common form of presentation (65.6%), followed by HF with mid-range ejection fraction and HF with preserved ejection fraction.

If the heart muscle is too weak, the condition is known as heart failure with a reduced ejection fraction (HFrEF). Ejection fraction is used to assess the pump function of the heart; it represents the percentage of blood pumped from the left ventricle per beat.

Ischemic heart disease was the predominant etiology for HF (73%), followed by dilated cardiomyopathy in 17.2% of the population. Rheumatic valvular heart disease was prevalent in 5.9% of the study population, said Dr Harikrishnan.

Hypertension and diabetes were the most frequent co-morbid conditions for heart failure (48.5% and 44.4%, respectively). Tobacco use is 33.2%, atrial arrhythmia was prevalent in 10.5%, while chronic kidney disease frequency was 9% in the study population.

SREE CHITRA INSTITUTE ONE OF THE NODAL AGENCIES

- 7-day mortality among the heart failure patients was 6.4%
- 30-day mortality was 12.2%
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- Less than half of the eligible patients receive guideline directed therapy
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- Men comprised 68.8% of the study population