HOLISTIC APPROCHES TO CARDIAC ARREST RECOVERY: THE ROLE OF YOGA ASANAS, PRANAYAMA AND MUDRAS

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ABSTARCT:
The benefits of yoga asanas, pranayama, and mudras for individuals recuperating from cardiac arrest or with cardiovascular illness are examined in this study. Over the course of 12 weeks, a group of cardiac patients performed particular yoga asanas, pranayamas, and mudras under the guidance of a trained instructor. Cardiovascular function and stress levels were assessed both before and after the intervention. Along with notable reductions in stress and anxiety, the patients' blood pressure, heart rate variability, and general cardiovascular function also improved. As a supplementary therapy, yoga asanas, pranayama, and mudras can help cardiac patients' emotional and cardiovascular well-being. People recovering from cardiac events and myocardial infarctions can greatly enhance their quality of life and heart health by including yoga into cardiac rehabilitation programs.

Key words: *Yoga asanas, Pranayama, Mudras, cardiac arrest, Cardiovascular diseases, Stress, Anxiety, Myocardial infraction.*

INTRODUCTION:

The word "cardiac" describes the heart, and "arrest" denotes stopping. when the heart stops pumping blood or beating. Most victims of cardiac arrest pass out and become unconscious. Symptoms come on suddenly. It is sometimes referred to as a "cardiac arrest" sudden because of this. Brain damage could result from the heart stopping its beating for longer than five minutes. If treatment for this potentially fatal ailment is delayed, it may not recover. Because your organs and body as a whole depend on oxygen to function, you could lose them all in a matter of minutes. Oxygen is carried by your blood. Defibrillation and CPR are emergency procedures. In an attempt to "squeeze" the patient's heart and start blood flow, the first person to observe the cardiac arrest starts applying pressure to the patient's chest. We refer to this as "chest compressions". Until your heartbeat returns to normal with an electric shock, CPR maintains enough oxygen in your lungs and gets it to your brain. Defibrillators and CPR may save your life. Outside of a hospital, almost 356,000 people experience cardiac arrest annually. Any cardiac condition, including a heart attack, may significantly increase your risk.

TYPES OF CARDIAC ARREST:

There are several types of cardiac arrest, including:

- Sudden cardiac arrest: Sudden cardiac arrest occurs unexpectedly.
- Sudden cardiac death: Sudden cardiac death refers to a cardiac arrest that causes death.
- Aborted sudden cardiac death: CPR and medical intervention can successfully avert sudden cardiac death.

WHAT CAUSES CARDIAC ARREST:

Cardiac arrest can result from a cardiac disease or occur suddenly. However, there are three primary causes of cardiac arrest:

- **Arrhythmia and Ventricular fibrillation:** Electrical signals in the heart can cause an irregular heartbeat. The most frequent life-threatening arrhythmia is ventricular fibrillation (commonly known as v-fib). This is an unpredictable, disorganised firing of impulses from your heart's ventricles (bottom chambers). When this happens, your heart cannot pump blood. When your heart stops beating, there is no way to provide oxygen-rich blood to the rest of your body. This is the leading cause of cardiac arrest.
- Cardiomyopathy: Cardiomyopathy is characterised by dilation or thickening of the heart muscle, resulting in aberrant cardiac contractions.
- Coronary Artery Disease (CAD): CAD is characterised by narrowing and thickening of the coronary arteries due to plaque blockages, restricting blood flow to the heart. If left untreated, coronary artery disease can progress to heart failure or arrhythmias, both of which can result in cardiac arrest. Without treatment, you might die in minutes.

The conditions and settings that might produce these irregular heart rhythms are the root causes of sudden cardiac arrest. This includes:

- Medications for various medical disorders.
- Heart attack/failure.
- Recreational drugs, including cocaine.
- Brugada syndrome.
- Long-QT syndrome (LQTS).
- Severe illness or injury resulting in significant blood loss.

Other cardiac arrest causes include:

- Congenital cardiac problems present from birth.
- Excessive physical exercise or blood loss.
- Disease or illness can induce structural changes to the heart.
- Infectious illnesses.
- Respiratory conditions.
- Severe damage (trauma).
- Toxins: ingesting or drinking toxic things.

Some of these disorders cause reduced oxygen levels or blood volume. This hinders your heart from functioning.

WHAT ARE THE SYMPTOMS:

Sudden cardiac arrest happens without warning symptoms, such as loss of consciousness or fainting.

- Heart palpitations.
- Feeling dizzy.
- Light headedness.
- Weakness.

WHAT HAPPENS RIGHT BEFORE CARDIAC ARREST:

Other indications of cardiac arrest may precede fainting, such as:

- Chestache.
- Nausea and vomiting.
- Shortness of breath.

WHAT'S THE DIFFERENCE BETWEEN CARDIAC ARREST AND A HEART ATTACK

Although the terms "heart attack" and "cardiac arrest" are sometimes used synonymously, they refer to two distinct cardiac diseases.

When there is an artery blockage that prevents blood flow to the heart, a heart attack happens. The heart's muscular tissue will deteriorate as a result of the heart's lack of blood and oxygen. Because heart attacks can change the electrical signals in the

heart, they can raise the risk of cardiac arrest. A heart attack is more likely to be the cause of sudden cardiac arrest in the absence of any other heart problems.

HOW IS CARDIAC ARREST TREATED:

Sudden Cardiac Arrest can be treated and reversed. However, wherever you are, cardiac arrest treatment needs to begin right away. If medical attention is received in the first few minutes following abrupt cardiac arrest, survival rates may reach 90%. As each minute goes on, the rate decreases by roughly 10%. If CPR is not administered, sudden cardiac arrest that lasts longer than eight minutes can be fatal. Five minutes can be enough to cause brain damage.

1. Take these actions if you witness someone going into sudden cardiac arrest:
2. Give 109 a call right now. Even if it's only hands-only CPR, get started. Through the use of chest compressions in place of the heart's pumping motion, CPR can save a life. It maintains oxygen and blood flow until assistance comes.
3. If an automated external defibrillator (AED) is available, use it. A person can be saved from abrupt cardiac arrest using CPR and defibrillation together. The best chance of saving a life is to use an AED. The likelihood of survival increases with the amount of time till defibrillation.

If the person has not yet received an AED shock, defibrillation can restart their heart once emergency workers arrive.

WHAT ARE THE COMPLICATIONS OF CARDIAC ARREST:

Cardiopulmonary arrest survivors frequently experience ongoing medical problems months or years after the event. They could handle:

- Problems with mental health.
- Exhaustion.
- Brain damage.

HOW TO PREVENT CARDIAC ARREST:

Among the therapies that help avoid cardiac arrest or reduce the chance of having another episode are:

- Drugs such as beta-blockers.
- A cardiac implantable defibrillator, or ICD.
- Treatments for arrhythmia in individuals who are predisposed.
- Resolving obstructions in the cardiac arteries with angioplasty or coronary artery bypass surgery (CABG).

By addressing your cardiac arrest risk factors, you can contribute to its prevention. This include maintaining a healthy lifestyle and controlling risk factors like diabetes, high blood pressure, and high cholesterol. This encompasses:

- Steer clear of tobacco goods.
- Consuming foods high in heart health.
- Maintaining a healthy weight for yourself.
- Getting physically active on most days of the week by performing Pranayama, Mudras, and yoga asanas.

YOGASANAS IN CARDIAC ARREST:

The management and prevention of cardiac arrest are greatly impacted by yoga poses. These days, cardiac arrest is a regular occurrence that can affect anyone at any age. You may hear about numerous deaths from the same cause. It is abundantly evident from recent studies that the majority of heart attack victims are under

40. The greatest way to lessen anxiety, tension, and despair is to do yoga. Additionally, studies demonstrate that yoga practice resolves a number of problems, including blood pressure and heart obstruction.

Consequently, yoga is crucial for building stronger cardiac muscles.

The yoga poses Tadasana, Utkatasana, Uttanasana, Vrishasana, Padangusthasana, Chakrasana, Sarvangasna, Adho Mukha Svanasana, Halasana, Paschimottanasana, and "Bhujangasana" are crucial for cardiac arrest.

PRANAYAMAS AND MUDRAS IN CARDIAC ARREST:

If an aged person is unable to execute yoga asanas, they can try pranayama, which is breathing exercises, or mudras, which are hand gestures. A key element of yoga is pranayama, which is the intentional practice of breath control. Your heart will benefit much from it. A mudra is a physical seal made with the body that helps to expand and connect our prana. It aids in the relief of overwhelm, grief, sadness, anxiety, and heartache.

Dirga Pranayama, Nadi Shodhana Pranayama, "Kapalbhati Pranayama", Bhramari Pranayama, and Bhastrika Pranayama are some of the pranayama that are crucial in cardiac arrest.

Apana Vayu Mudra (Or) Hridya Mudra - The Heart Mudra: This mudra supports cardiac health and stability for the best possible functioning of our heart and vascular system. It also manages the heart's essential activities, such as heartbeat and blood circulation. Apana Vayu Mudra, also known as "Mritya Sanjeevani Mudra" , is thought to be so powerful that it can stop a heart attack if it is performed during the attack.

RESULTS:

RESEARCH STUDIES ON BENEFICIAL EFFECTS OF YOGA ON THE PATIENTS OF CARDIAC ARREST:

- Because heart attacks can change the electrical signals in the heart, they can raise the risk of cardiac arrest. A heart attack is more likely to be the cause of sudden cardiac arrest in the absence of any other heart problems. Yoga is a mind-body exercise that originated in India and has become popular all over the world. It naturally addresses the main goals of cardiac rehabilitation by fusing breathing and meditation with modest physical activity (physical functioning) and encouraging healthy lives.
- Researchers (year) found that a 24-week comprehensive yoga program significantly lowered the case rate of heart attacks in a recent randomised controlled experiment. by doing pranayama for ten minutes, shavasana for fifteen, and daily meditation for fifteen minutes. (A. Prasad et al..,, 2023)
- By practicing yoga poses, patients in 12-week cardiac rehabilitation programs are getting better every day and avoiding long-term effects including diabetes, arthritis, anxiety, and despair. (Prabhakaran, D., and others, 2020) & (Pullen PR, Krishna, et al., 2018)

DISCUSSION: After acute myocardial infarction and cardiac arrest, a yoga-based cardiac rehabilitation program was found to be safe and beneficial in enhancing quality of life and allowing patients to resume their pre-infarct daily activities. This was the

result of a randomised controlled trial. Patients participating in the Yoga-CARE program had a decreased incidence of serious adverse cardiovascular events.

BEFORE COVID-19, HEART DISEASE WAS THE LEADING KILLER.

Even before the COVID-19 pandemic, heart disease, which includes heart attacks and cardiac arrests, was India's leading cause of death. However, the pandemic had a substantial global influence on cardiovascular health, including in India.

In India, lifestyle factors such as high smoking rates, poor food, physical inactivity, and rising diabetes and hypertension rates have contributed to heart disease becoming the leading cause of death. Stress, urbanisation, and changes in lifestyle patterns have all had a growing impact on young adults.

The medical community in India was already observing high incidence of heart attacks and cardiac arrests across all age groups, with urban populations especially vulnerable. Efforts to combat this included lifestyle change awareness programs, regular screenings, and government initiatives to promote healthy habits. Despite these efforts, access to adequate healthcare, particularly in rural regions, remained an impediment to lowering these deaths. Effects of COVID-19 on Heart HealthCOVID-19 increased the risk of heart disease via numerous ways.

1. Direct Cardiac Effects of Covid-19:

COVID-19 significantly impacted heart health by inflaming blood arteries, thickening blood, and raising the risk of clotting. According to studies, even minor COVID-19 infections may raise the risk of heart issues such as heart attacks and myocarditis (inflammation of the heart muscle).

2. Delayed Medical Care:

At the height of the pandemic, healthcare services were swamped, making it difficult for cardiac patients to receive timely care. Many people avoided hospitals out of fear of infection, delaying the identification and treatment of cardiac issues. As a result, persons with heart disease symptoms were frequently seen only after their diseases had worsened, contributing to an increase in heart-related deaths.

3. Long-term COVID and cardiovascular effects:

Long COVID, a condition in which symptoms persist long after the initial infection, has been linked to an increase in heart related issues such as palpitations, chest pain, and an increased risk of heart failure. This residual effect has made COVID survivors more cognisant of their heart health.

4. Increased Sedentary Lifestyle and Mental Health Stress:

Lockdowns promoted sedentary lifestyles, weight gain, and stress, all of which are documented risk factors for heart disease. The pandemic's psychological impact, including increased rates of anxiety, despair, and stress, aggravated heart health issues.

5. Vaccine-related concerns:

While COVID-19 vaccines are generally safe and have been critical in containing the pandemic, a limited number of individuals have experienced mild, short-lived heart problems following vaccination, particularly in younger males. However, scientists concur that the danger of heart problems from COVID-19 infection substantially outweighs the hazards associated with immunisation.

POST-COVID REAL-WORLD EXPERIENCES:

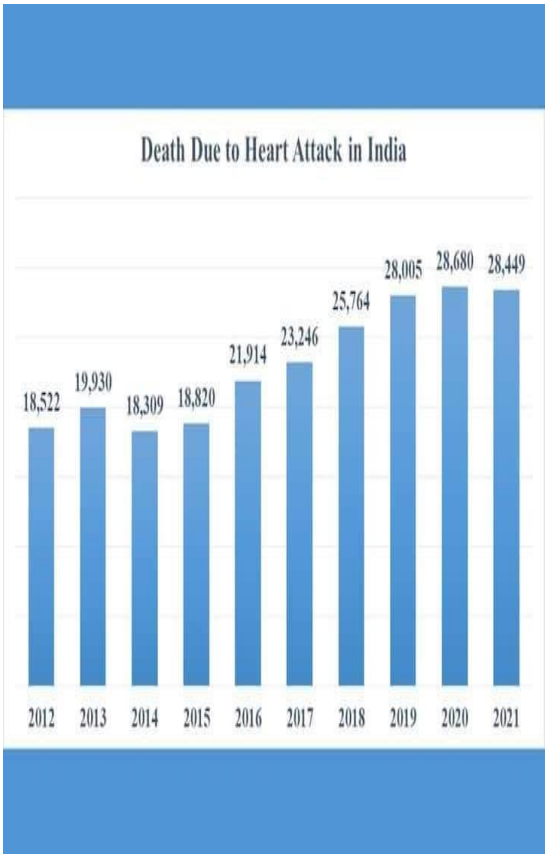
Since the pandemic, there has been a renewed emphasis on heart health, with more individuals having regular checkups and living heart-healthy lifestyles. Healthcare experts report seeing more young patients with heart problems, possibly as a result of COVID-19's long-term impacts. Awareness of the symptoms of a heart attack and cardiac arrest has increased, prompting more people to seek immediate care, particularly since COVID exposed the unpredictability of health crises.

Increased Screening: Many hospitals and clinics are now conducting more complete post-COVID health check-ups to look for persistent heart problems.

Mental Health and Heart Health Awareness: Mental health resources are being integrated into cardiac treatment, acknowledging the link between psychological well-being and heart disease.

Policy Changes: Governments and health organisations are emphasising the need of preventative heart care through initiatives such as heart drug subsidies, health infrastructure investments, and healthy lifestyle promotion programs. In the end, COVID-19 has highlighted the importance of cardiac health and shown flaws in the Indian healthcare system regarding heart disease.

The following are some proposed visualisations that could improve clarity on heart attack trends in India before and after **COVID**: **HEART ATTACK DEATHS IN INDIA LAST YEAR OCCURRED IN THOSE AGED 30 TO 60, ACCORDING TO WORLD HEART DAY 2022.**



Between 2020 and 2021, the number of heart attack deaths decreased slightly from 28,680 to 28,449. The prevalence of cardiovascular disease (CVD) is among the highest in the world in India. In India, it is anticipated that the number of fatalities from CVD will increase from 2.26 million in 1990 to 4.77 million in 2020. According to estimates throughout the past few decades, the prevalence of coronary heart disease in India has varied between 1.6% and 7.4% in rural areas and between 1% and 13.2% in urban areas.

Every year on September 29, we commemorate World Heart Day. According to data on "Accidental Deaths & Suicides in India" (ADSI) compiled by the National Crime Records Bureau (NCRB), the number of heart attack-related deaths in India has continuously stayed over 25,000 over the past four years and over 28,000 over the last three. However, from 28,680 in 2020 to 28,449 in 2021, the number

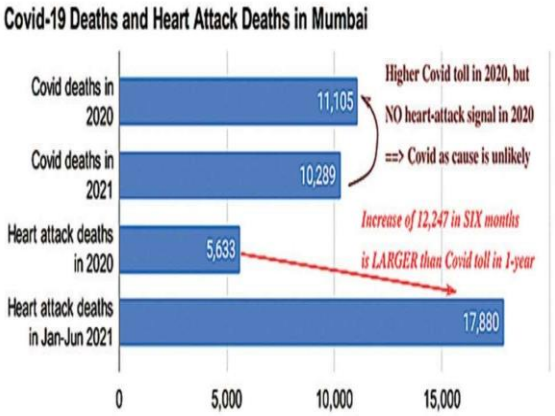
decreased somewhat. On January 16, 2021, India started vaccinating against COVID-19.

DEATHS FROM HEART ATTACKS THROUGHOUT TIME

Deaths from heart attacks did not significantly rise in 2021 compared to 2019. In comparison to 2019, there were 1.6% more heart attacks in 2021. Additionally, fewer people died from heart attacks in 2021 than in 2020. The number of deaths from heart attacks increased by 22% between 2017 and 2021. According to the NCRB, heart attack mortality have increased by 54% over the past ten years, from 2012 to 2021. In India, 19,238 persons between the ages of 30 and 60 died from heart attacks in 2020. Between 2020 and 2021, the number of heart attack deaths in this age range increased by more than 6%. In India, heart attacks claimed the lives of 2,541 persons between the ages of 18 and 30 in 2021 and 2,695 in 2020. This indicates that from 2020 and 2021, the number of heart attack deaths in this age group dropped by 0.057%.

HEART ATTACK AND COVID-19 DEATHS IN MUMBAI: A COMPARATIVE OVERVIEW

In Mumbai, both heart attacks and COVID-19 have been leading causes of death. Heart disease has long been a serious health concern in the city, with many deaths attributed to lifestyle choices, urban stress, and environmental causes. The emergence of COVID-19 introduced new complexity, resulting in both direct COVID-19 mortality and an increase in deaths caused by the virus indirectly through comorbidities, such as cardiac arrest.



An IIT professor notes that while COVID has been blamed for the six-fold increase in heart attack cases in Mumbai in 2021, there is no explanation for the one-sixth increase in heart attack cases in 2020. According to an article published last month in The Indian Express, Mumbai experienced six times as many heart attacks in 2021 as it did in prior years. The Brihanmumbai Municipal Corporation's RTI response served as the basis for the report.

In 2020 (the entire year), there were 5,633 heart attacks, while in the first half of 2021 alone, there were 17,880. Therefore, there were at least 12,000 more heart attack-related fatalities in 2021. In 2020, 11,105 people died from COVID-19, according to the same table.

To put it another way, the number of heart attack deaths in the first half of 2021 exceeded the number of deaths brought on by COVID-19 in 2020. One would think that a rise in heart attacks would garner as much attention as COVID-19 fatalities, but this hasn't happened. This suggests two clear features. First, the media, administrators, physicians, and scientists are giving non-Covid health concerns disproportionately little attention. The second connected factor is the excessive

amount of attention that COVID has been receiving in the same circles.

YEARLY STATISTICS OF HEART FAILURE DEATHS BY AGE GROUPS

The graph below depicts the death rates per 100,000 individuals due to heart failure, broken down by age group and exhibited over many years. This thorough picture allows us to see patterns within each age group and watch how heart failure mortality has changed over time. On X-axis (Years): The horizontal axis depicts the dataset's years, which range from 1999 to 2023. This allows us to monitor changes in heart failure death rates over time. On Y-axis (Deaths per 100,000): The vertical axis represents the number of deaths per 100,000 people owing to heart failure. Higher values on this axis indicate higher mortality rates in the population for a given age group. 3. On the graph, each age group (25-34, 35-44, 45-54, etc.) is represented by a separate line or colour. This distinction makes it simpler to compare trends across different age groups:

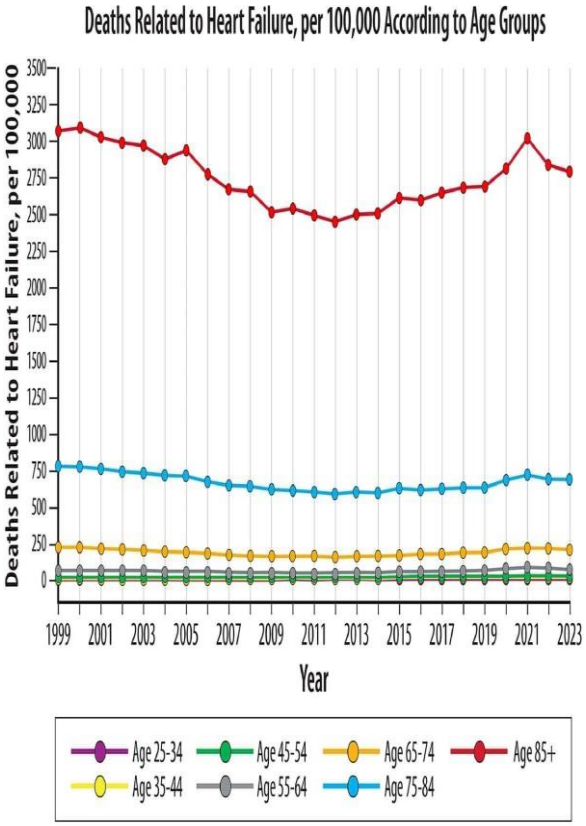
25-34 Years: This younger age group typically has reduced heart failure death rates, with few variations over time. 35-44 Years: This age group may have a modest rise in mortality as they age, with occasional spikes or troughs reflecting environmental or lifestyle changes.

45-54 and 55-64 Years: These age groups experience a more marked increase in heart failure deaths as risk factors compound with age.

65-74 and 75-84 Years: These older age groups frequently have the highest heart failure death rates, which usually rise significantly with age.

85+ Years: This group usually exhibits the steepest curve, indicating a high risk of heart failure due to age-related health decline.

COMPARATIVE ANALYSIS BY AGE GROUP



Observing and interpreting trends:

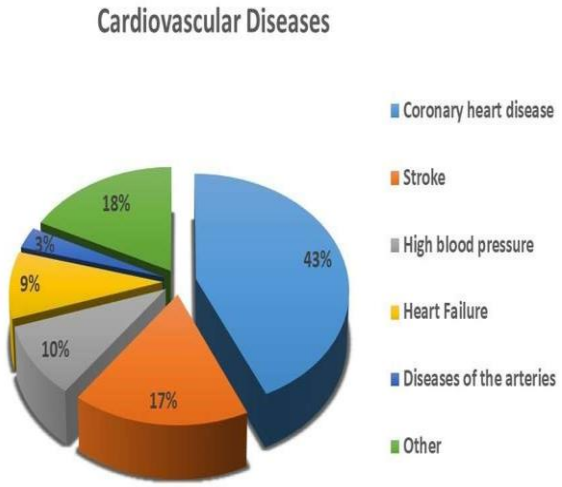
Upward or Downward Trends: The graph may suggest an overall increase in heart failure mortality across all age categories, possibly due to increased lifestyle risk factors. Alternatively, if particular age groups experience a decline, it could be attributed to advances in medical treatments or more lifestyle awareness. Year-specific peaks: Some years may see a considerable increase in heart failure deaths. This could be due to external influences including environmental conditions, public health emergencies, or economic upheavals that affect lifestyle and healthcare access.

DISCUSSION:

After acute myocardial infarction and cardiac arrest, a yoga-based cardiac

rehabilitation program was found to be safe and beneficial in enhancing quality of life and allowing patients to resume their pre-infarct daily activities. This was the result of a randomised controlled trial. Patients participating in the Yoga-CARE program had a decreased incidence of serious adverse cardiovascular events. Additionally, research indicates that yoga can improve blood pressure, body weight, glucose and lipid homeostasis, and functional ability via a variety of hormonal and neuroendocrine routes. In order to arrive at a consensus on this intricate intervention, we employed a methodical approach that not only integrated evidence from a variety of sources (including alternative kinds of literature for yoga asanas, pranayama, meditation, and mudras). Cardiovascular disease risk is lowered by regular practice. Yoga can help the body's systems work in harmony and improve heart health. It can also lower stress levels by increasing blood flow and enhancing general wellbeing.

DEATHS BROUGHT ON BY VARIOUS HEART CONDITIONS



This pie chart depicts the leading causes of cardiovascular mortality. Coronary heart disease is the major cause, accounting for 43% of occurrences, followed by stroke (17%). High blood pressure causes 10% of deaths, while heart failure accounts for 9%. Artery diseases account for 3% of cases, with an additional 18% caused by various cardiovascular problems. This breakdown emphasises the prominent role of coronary heart disease and stroke, highlighting the importance of targeted preventative actions for these high-risk illnesses.

CONCLUSION:

Systematic inflammation, stress, the cardiac autonomic nervous system, obesity, anxiety, depression, and traditional and emerging cardiovascular risk factor events, as well as morbidity and mortality, have all been found to benefit from yoga. However, the evidence for these benefits is somewhat limited, which highlights the need for large-scale, carefully planned randomised trials that minimise bias and methodological flaws. Yoga can aid in the management and prevention of cardiac arrest as well as minimise the effects of myocardial infarction situations. Yoga is an ancient practice that uses a sequence of physical postures, breath control techniques, and meditation to harmonise the body, mind, and spirit. The current study offers information on how yoga can aid in cardiac arrest patients' recuperation and assist them reap its benefits.

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