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Prevalance of Coronary Artery Disease and Its Risk Factors Among Young Patients Attending a Tertiarycare Hospital

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ABSTRACT:

Coronary artery disease (CAD) is a significant and growing health concern, particularly among young adults, leading to an increased burden on cardiology departments. CAD refers to the narrowing or blockage of coronary arteries due to atherosclerosis, which can result in angina, myocardial infarction, or other cardiovascular complications. The etiology of CAD is multifactorial, influenced by modifiable and non-modifiable risk factors such as lifestyle habits, genetic predisposition, and comorbidities. This study provides a comprehensive analysis of the diagnosis, symptoms, investigations, risk factors, and management strategies for CAD in young individuals. Common diagnostic tools include electrocardiography (ECG) and coronary angiography, with findings varying based on disease severity. The management of CAD involves lifestyle modifications, pharmacological interventions, and surgical procedures such as percutaneous transluminal coronary angioplasty (PTCA) or coronary artery bypass grafting (CABG). The purpose of this review is to highlight the importance of early detection, prevention, and tailored treatment strategies to reduce cardiovascular risks and improve patient outcomes. The study is supported by evaluated literature from various sources, emphasizing the need for public health awareness and targeted interventions.

Objective: To study the prevalence of coronary artery disease and its risk factors among the young patients in Malla Reddy Technical Tertiary Care Hospital.

Methods: It is an observational study conducted in the cardiology department of CCU, Malla Reddy Technical Tertiary Care Hospital from August 2023 to January 2024. There were 50 cases in the study including both men and women. Details of each patientwere collected and analyzed with the respected age, risk factors, symptoms, treatment, laboratory test, diagnosis.

Results: The study included 50 patients of various age-groups. Two (4%) patients were under the age-group 20-25.Nine (18%)patients were under the age-group 26-30.Six(12%) were under the age-group 31-35.Thirty three (66%) were under the age-group 36-40.We observed that males (84%) are more prone to CAD, when compared to females (16%). The most evident risk factor which may cause CAD in young patients is lack of physical activity or no exercise.Theremaining risk factors are alcohol consumption(68%),smoking(36%), unhealthydiet(50%), Obesity(16%), Diabetes(26%), Hypertension(30%), Less sleep(22%) and Family history (32%). We observed that sixteen(32%) patients were under <50% EF, twenty-three(46%) patients were under normal EF. In ECG findings Two(4%) patients were normal, thirty-five(70%) were abnormal, five(10%) were acute MI, One(2%) NSTEMI. According to angiogram CAD categorized as SVD - Eighteen (36%),DVD – Twelve (24%),TVD –

Six(12%) and Mild disease – Four(8%). LAD(46%) is the most affected vessel. Plan suggested was PTCA (66%), CABG (8%) and medical management (26%).
Conclusion: Coronary artery disease (CAD) remains a major health concern, especially among young adults. Early diagnosis, lifestyle changes, and appropriate medical interventions are crucial for effective management. A multidisciplinary approach can help reduce its impact and improve patient outcomes.

Keywords: Coronary artery disease, atherosclerosis, myocardial infarction, risk factors, young adults, electrocardiography, coronary angiography, lifestyle modifications, pharmacological therapy, percutaneous transluminal coronary angioplasty (PTCA), coronary artery bypass grafting (CABG), cardiovascular health.

INTRODUCTION:

The narrowing or blockage of the coronary arteries is known as coronary artery disease. Over time, this affects blood flow to heart muscles restricted or blocked. This can manifest as chest pain (angina),heart attack (due to sudden complete blockage of a coronary artery), slow progression of heart failure or even sudden death due to life-threatening arrhythmia.
The heart muscle receives blood from the coronary arteries.The heart muscle needs oxygenated blood to operate, muchsimilar to every other bodily tissue, and deoxygenated blood needs to be eliminated. Small branches of the heart arteries, which travel externally to the cardium, carry blood to the heart muscle.
Fatty deposits and inflammation along the inside surface of the arteries are hallmarks of CAD. Childhood is a common time for fat deposits to form, which can solidify and enlarge with time. Atherosclerosis, a hardening of the arteries, can be limited or completely stop the heart's blood flow.[1]

PREVALENCE OF CAD:

Cardiovascular diseases represent the primary cause of mortalityworldwide. In 2019, around 17.9million fatalities worldwide were connected to cardiovascular disease (CVD), making up 32% of all fatalities. 85% of these deaths were due to heart attacks and strokes. Over 75% of CVD-related deaths take place in low- and middle-income countries. In 2019, 17 million premature deaths were caused by non-communicable disorders, cardiovascular illnesses being responsible for 38% of these deaths. For at least 30 years prior to the corona virus epidemic, heart disease was the world's top cause of mortality. The most prevalent cardiovascular condition is heart disease. In 2019, CAD was the main reason of fatality worldwide.110 million men and 80 million of women over the world endure CHD.2019 had 9 million deaths worldwide from CHD, making it the top cause of death worldwide.CAD is the major prevalent kind of heart disease, accounting for 375,476 deaths by 2021.5 percent of adults who are 20 years of age or older have CAD [2,3]
Some studies indicates that India has an age-standardized cardiovascular disease death rate of 272 per 100,000 people, which is more elevated than the global average of 235 per 100,000 people. Given the insensitivity of the estimation methods' underlying instruments, is likely that these prevalence estimates underestimate the burden. The underestimate of prevalence may also arise from the greater case fatality rate among Indians after acute coronary syndrome.In the age-standardized estimates of the worldwide illness burden research from 2010, CVD accounts for over a quarter (24.8%) of all deaths in India; in contrast, only 23% of fatalities in western countries transpire before to the age of 70.A percentage of

death (32%–42%) and an age-standardized CVD mortality are suggested by recent reports of three sizable prospective studies from India.[2,3]

PREMATURE CAD:

The occurrence of cardiac events before the ages of 50 for men and 60 for women is designated as "premature coronary artery disease."However, the severe version manifests among those younger than 40. Compared to similar populations of other ethnicities, Indians experience greater rates of hospital stays, death, and illness as well as coronary artery disease around 4–10 years earlier. Because of the rapid changes in society and the predominance of conventional risk elements for CAD, premature atherosclerosis is an emerging problem that even affects young people in their 30s and 40s.

TYPES:[4]

The different forms of CAD are

1. **Obstructive CAD:**

- This is the highly prevalent kind of cardiac disease that develops when plaque accumulation causes the heart arteries to progressively constrict. The supply of blood fluid to the heart may eventually get blocked when the artery contracts.

2. **Non-obstructive CAD:**

This is caused by other coronary problems such as

- Constriction at inappropriate times
- Malfunctioning in smaller artery branches
- Damage to the artery lining.

3. Coronary artery dissection:

- It occurs when a tear in the coronary wall partially or completely blocks blood flow. This form can suddenly appear as a heart attack
- More common in women than men.
-

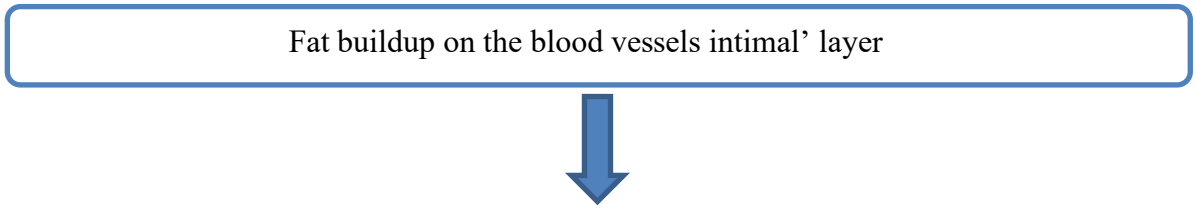
CAUSES OF CAD:[5,6]

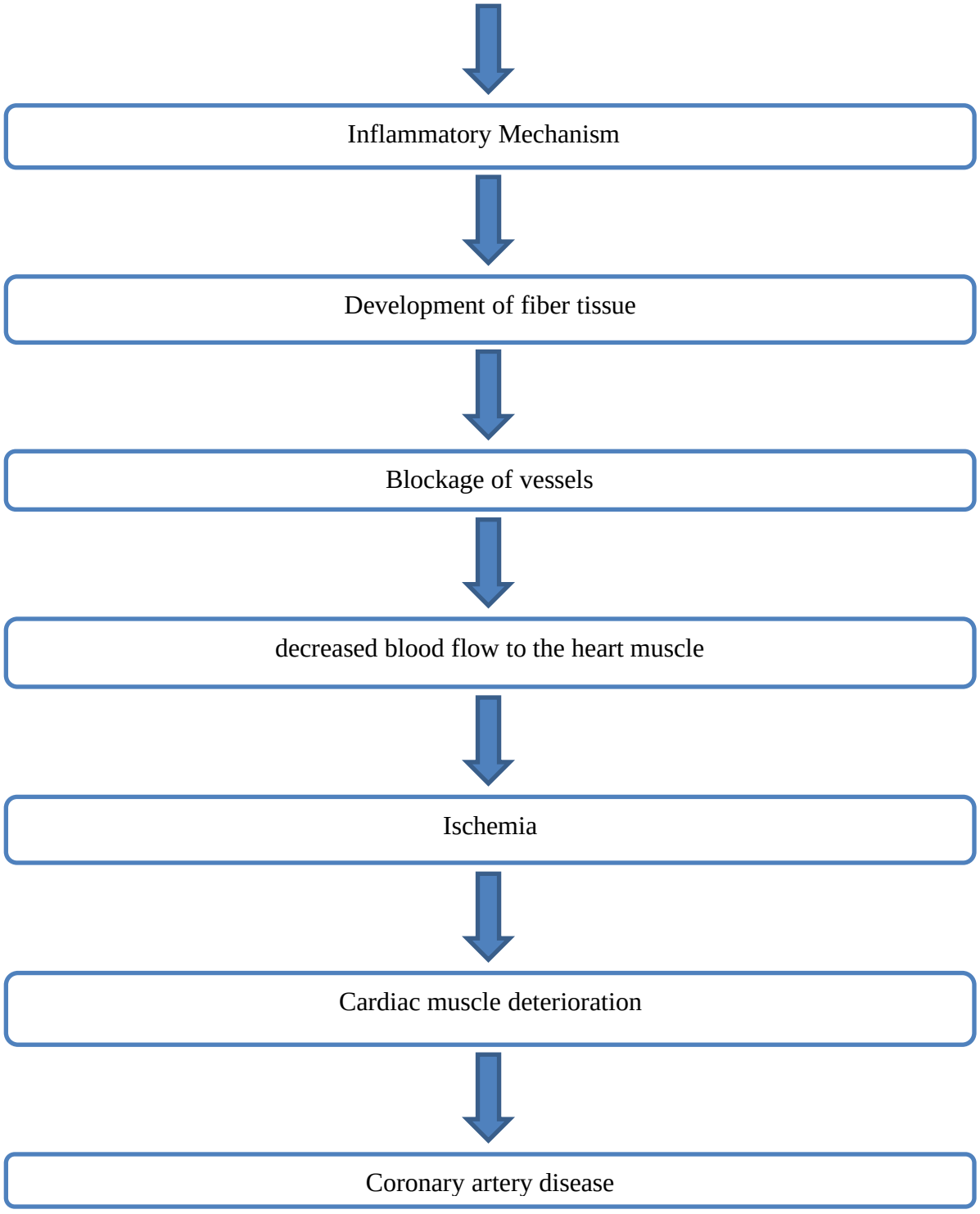
CHD is brought on by atherosclerosis, a slow accumulation of plaque deposits in the coronary arteries, the body's primary blood channels that transport blood to the heart.

Over time, this plaque is made up of cholesterol, waste products, calcium and fibrin which help blood clot) narrow or blocks coronary arteries. This affects their ability to deliver enough blood, oxygen and nutrients to the heart. This causes chest pain and leads to heart attack.

CAD begins destroying to the inner surface of the coronary artery. Atherosclerosis occurs when plaque forms in a damaged area of an artery. Can also develop a clot where the plaque collects, plaque and blood clots can block an artery, causing a heart attack.

PATHOPHYSIOLOGY:[7,8]





RISK FACTORS:[9,10]

HYPERTENSION: Elevated BP is the main factors contributing to heart disease. Which is a condition brought on by abnormally elevated blood pressure in arteries and other blood vessels.

To lessen the possibility of heart disease and heart attacks by changing your lifestyle or using medication.[11]

DIABETES: Heart disease is more likely to occur in people with diabetes, a disease that raises blood glucose levels.Elevated blood sugar levels can harm the artery wall and raise the chance that fatty

deposits will build up. These fatty deposits may cause CHD and heart attack if they develop in the coronary arteries.

Compared to those without the condition, adult individuals who are diabetes are more likely to pass away from heart disease.[12]

SMOKING: Smoking increases the occurrence of CVD significantly. Vaping damages and narrows the arteries, raising the possibility of chest pain and heart attacks. Angina pectoris a condition where there is improper blood flow to the myocardium, causing a burning sensation in the mid region of the chest. Nicotine also causes an increase in heart rate and bp, which means the heart has to function harder to pump blood around the body.[13]

FAMILY HISTORY: A family history of cardiac disease is considered a risk factor because the condition has a genetic basis. This is usually the case if the person's first-degree relative has cardiovascular disease when they were young. This applies to those whose father, brother, or mother all experienced cardiovascular disease prior to the age of 65, or if their father or sister did so before the age of 55.[14]

PHYSICAL INACTIVITY: Regarding heart disease One significant risk factor is inactivity. People who do not exercise regularly may likely to develop elevated Bp, become overweight, and have other disorders that raise their risk of cardiovascular illness.[15]

OBESITY: Eating inadequate food and not being active leads to being overweight, which is typically characterized as having a body mass index (BMI) outside the normal range.[16]

UNHEALTHY DIET: A poor diet may cause CVD risk. To reduce the risk, the ideal diet should be nutritious and consist mostly of complex carbs, protein-rich foods, and fruits and veggies. It is best to stay away from heavy sugar, salt, and fat.

ALCOHOL CONSUMPTION: Higher intake of alcohol a can raise the chance of cardiovascular disease and B.P. It also causes an increase in blood triglycerides, a fatty acid that increases the problem of heart disease.[17]

SLEEP: Approximately 70% of patients with CAD had bad sleep overall (PSQI > 5), while individuals who also had co-occurring anxiety and depression had noticeably worse sleep.[18]

SYMPTOMS:[19]

ANGINA PECTORIS: Chest can feel discomfort or under strain. Usually, the left or middle side of the chest feels pain. Angina can be brought on by activity or intense emotions. Once the trigger event has ended, the discomfort vanishes gradually. Some women complained that the pain would be sudden and intense in the back and neck region.

SOB: Difficulty of breathing.

FATIGUE: Feeling tiredness.

HEART ATTACK: Heart attacks are due to clogged coronary arteries. A heart attack's typical warning indicators include perspiration, SOB, pain in shoulder, and chest discomfort.

DIAGNOSIS:[20]

EKG: This quick and painless test measures the electrical activity exhibited by heart. It can show how fast or slowly the heart beats. A healthcare provider can analyze a heart based on signal patterns.

ECHOCARDIOGRAM: In this test, sound waves are used to replicate the heartbeat. On an echocardiogram, the blood supply via the heart and heart valves can be observed. A heart attack or a lack

of oxygen may cause weak cardiac contractions. This may point to other disorders or coronary artery disease.

HEART (CARDIAC) CT SCAN: A cardiac CT scan might reveal blockages and calcium deposits in the cardiac arteries. Cathode deposits narrow the arteries. Dye is occasionally given via an IV during the test. The dye helps to create detailed pictures of the heart arteries. If there is dye used, the test is called CT coronary angiography.

CARDIAC CATHETERIZATION AND ANGIOGRM: During a cardiac catheterization procedure, a heart physician (cardiologist) carefully inserts a flexible tube (catheter) into a blood vessel, usually in the wrist or groin. The catheter is gradually guided to the heart. X-rays aid in its guidance. The dye is pumped through the catheter. The dye makes any obstructions stand out and makes blood vessels more visible in the images.

TREATMENT:[20,21]

NON-PHARMACOLOGICAL (LIFESTYLE CHANGES):

Treatment for CAD involves significant lifestyle modifications. Among these modifications are:

- Avoid smoking.
- Exercise: Five days a week, try to get in 30 minutes of walking (or other exercises).
- Limit your alcohol intake.
- Maintain a healthy weight and diet.

Additionally, physician can give individualized advice on lifestyle modifications. They might suggest meeting with a dietician to go over healthy food plans or suggesting alternatives for quitting smoking.

PHARMACOLOGICAL TREATMENT (MEDICATION):

CHOLESTEROL DRUGS: Medications which help to reduce unnecessary cholesterol and the buildup of plaque buildup in the arteries. The drugs include statins, niacin, fibrates, and bile acid sequestrants.

ASPIRIN: It aids in blood thinning and thrombus prevention. The primary prevention of a heart attack or stroke may involve daily low-dose aspirin medication in some individuals.

BETA BLOCKERS: The heart rate is lowered by these medications. Moreover, they lower bp. After a myocardial infraction, beta blockers may reduce your risk of having another one**.**

CALCIUM CHANNEL BLOCKERS: Calcium channel blockers are used to treat people who are intolerant to beta blockers.

ACE inhibitors and ARBs reduce blood pressure. They help in the prevention of further complications.

NITROGLYCERIN: It helps in managing chest pain by enlarging arteries of the heart.

SURGICAL INTERVENTIONS: To treat coronary artery disease, some people require a procedure or surgery, such as:

PERCUTANEOUS CORONARY INTERVENTION (PCI): It helps in maintaining the opening of artery & improves blood flow, by insertion of a stent.

CORONARY ARTERY BYPASS GRAF: A surgeon creates a new blood artery in the heart by excising a healthy blood vessel from another section of the body. The blood so avoids restricted or clogged coronary artery. CABG is the name for open cardiac surgery. This treatment is given for patients with several restricted cardiac arteries.

COMPLICATIONS: Coronary artery disease can lead to:

CHEST PAIN: Angina occurs when the heart's blood supply is reduced, such as during physical exertion. Shortness of breath or angina (chest pain) may result from this.
HEART ATTACK: A blood clot that forms from a broken cholesterol plaque can stop blood flow, which damages the myocardium.
HEART FAILURE: Elevated blood pressure or narrowed cardiac arteries can gradually weaken or stiffen the heart, making it more difficult for it to pump blood. The dysfunction of the heart results in heart failure.
IRREGULAR HEART RHYTHMS: Abnormal heartbeats can be caused by the heart's normal cardiac signaling being disrupted by inadequate blood supply.
PREVENTION: These steps to lessen your chance of growing coronary artery disease and stop it from growing worse.

1. Resolve to give up all tobacco usage, including smoking.
2. Consume heart-healthy meals.
3. Make time to sleep.
4. Maintain a weight that is appropriate for you.
5. Find out what your heart disease risk is.
6. Restrict your alcohol intake.
7. Increase your movement.

MATERIAL AND METHODS: The study is observational study done in cardiology department of CCU, Malla Reddy Teaching Tertiary Care Hospital from August 2023 to January 2024 for the period of six months.
Inclusion Criteria:
Age 20-40yrs
Patients suffering from CAD which includes CAD-AWMI, CAD-IWMI, CAD(SVD, DVD, TVD), CAD-NSTEMI, STEMI, CAD-VSA.
Both male and female are included.
Exclusion criteria:
Age>40yrs, age <20years will be excluded from the study.
Exclude patients who are suffering from CRHD, thoracic aortic aneurysm.
Pregnancy & lactation.
Incomplete clinical data.
For the prevalence of coronary artery disease and risk factors among young patient's cases among the total number of patients attending to cardiology department of CCU. Considering age, risk factors, symptoms, treatment, laboratory test, diagnosis during the study period of 6 months, 50 total cases were collected.
Statistical analysis:[22]

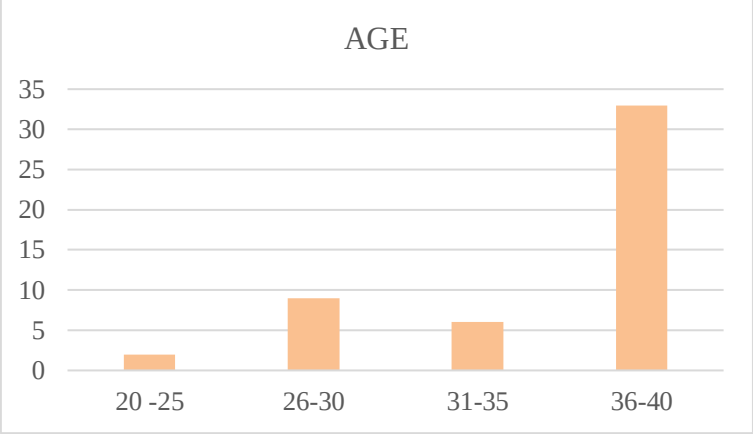
RESULTS:[23]
In our observational study 50 patients' young patients were selected both males and females form the age group from 20 – 40 years. During the study who attended the cardiology department of CCU.
Out of 50 patients the highest incidence is found in the age group of 30-40 years 33 (66%) followed 26-30 years aged 9 patients (18%), then 31-35 years 6 patients (12%) least incidence found in 20-25 years

(4%).

Table 1: Distribution of participants according to age group.

AGE	FREQUENCY	PERCENT
20 – 25	2	4%
26 – 30	9	18%
31 – 35	6	12%
36 – 40	33	66%

Figure 1: Age distribution among the patients



During the study proportion of males 42 (84%) were higher than that of females 8 (16%).

Table 2: Gender wise distribution among patients

GENDER	FREQUENCY	PERCENT
FEMALE	8	16%
MALE	42	84%

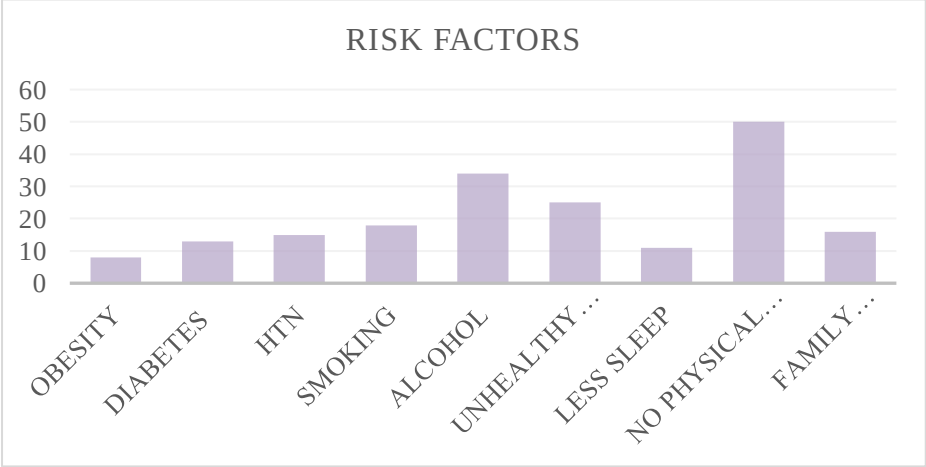
In our study the risk factors, most commonly No physical activity 50 patients (100%), then out of 50 patients 34 patients were Alcoholic (68%).25(50%) of were in unhealthy diet. 18(36%) were smoking. 16(32%) of had family history of CAD. 15(30%) of patients were hypertension.13(26%) of the patients were diabetic and least were obesity 8(16%) patients.

Table 3: Determination of risk factors of CAD in young patients.

RISK FACTORS	FREQUENCY	PERCENT
OBESITY	8	16%
DIABETES	13	26%
HTN	15	30%
SMOKING	18	36%

ALCOHOL	34	68%
UNHEALTHY DIET	25	50%
LESS SLEEP	11	22%
NO PHYSICAL ACTIVITY	50	100%
FAMILY HISTORY	16	32%

Figure 3: distribution of the risk factors in CAD in young people during the study period.

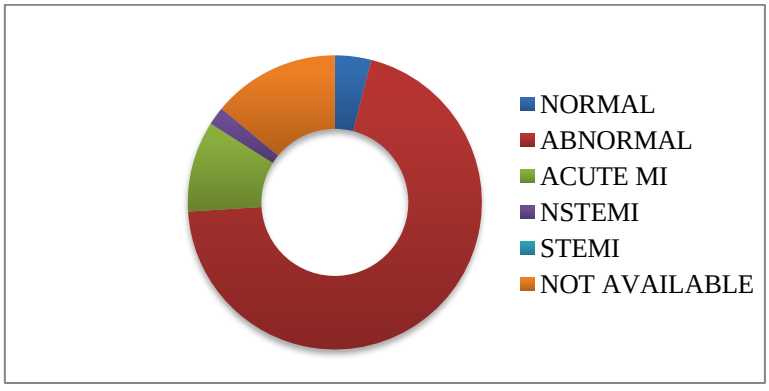


Among the 50 patients, the common presentations were Abnormal 35 patients (70%).

Table 4: Distribution the ECG's diagnosis.

ECG FINDS	FREQUENCY	PERCENT
NORMAL	2	4%
ABNORMAL	35	70%
ACUTE MI	5	10%
NSTEMI	1	2%
STEMI	0	0%
NOT AVAILABLE	7	14%

Figure 4: Distribution ECG of patients during the study period



The ejection fraction is the amount of blood the heart pumps each time in beat. In our study duration we observed the 16 patients (32%) were under <50% EF, 23 patients (46%) were under normal EF, whereas 11 patients (22%) data were not available.

Table 5: Determination of the EF factor

EF FACTOR	FREQUENCY	PERCENT
<50%	16	32%
NOT AVAILABLE	11	22%
NORMAL	23	46%

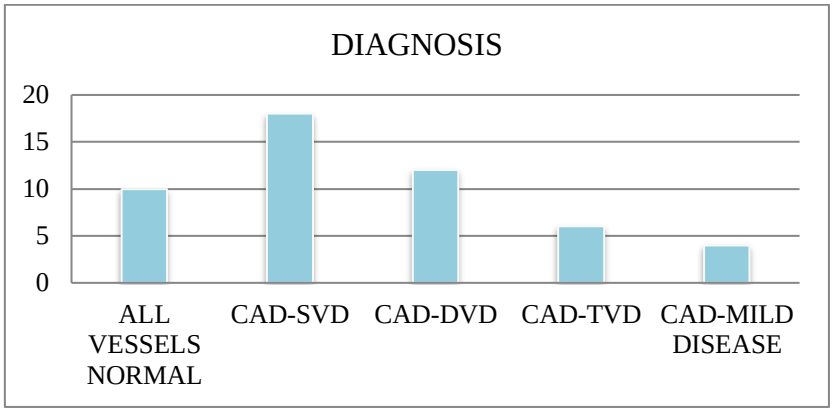
Figure 5: distribution of the Ejection fraction

During the study period, the patients were categorized by Angiogram report, distribution of patients based on number of vessels involved in coronary angiography (CAG), single vessel disease (SVD) was highest incidence of 18 patients (36%), followed by double vessel disease (DVD) 12 patients (24%), all vessels normal were in 10 patients (20%), triple vessel disease (TVD) 6 patients (20%), CAD mild disease 4 patients (8%).

Table 6: Represents number of blood vessels affected in the patient's heart.

DIAGNOSIS	FREQUENCY	PERCENT
ALL VESSELS NORMAL	10	20%
CAD-SVD	18	36%
CAD-DVD	12	24%
CAD-TVD	6	12%
CAD-MILD DISEASE	4	8%

Figure 6: Diagnosis represents the number of blood vessels affected in the patient during the study period.

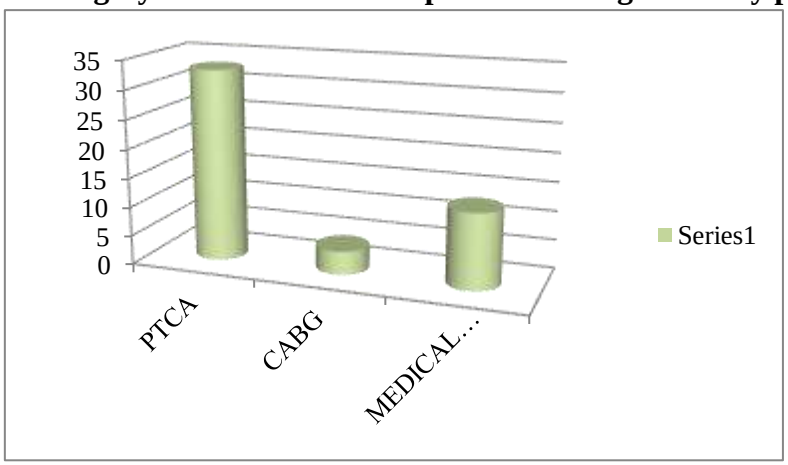


According to the patient's condition, the surgery and treatment were recommended, PTCA was the surgery plan recommended to 33 patients (66%), followed by medical management to the 13 patients (26%), and CABG were planned for 4 patients (8%).

Table 7: Shows the treatment plan of the patients

PLAN	FREQUENCY	PERCENT
PTCA	33	66%
CABG	4	8%
MEDICAL MANAGEMENT	13	26%

Figure 7: surgery & treatment of the patients during the study period.



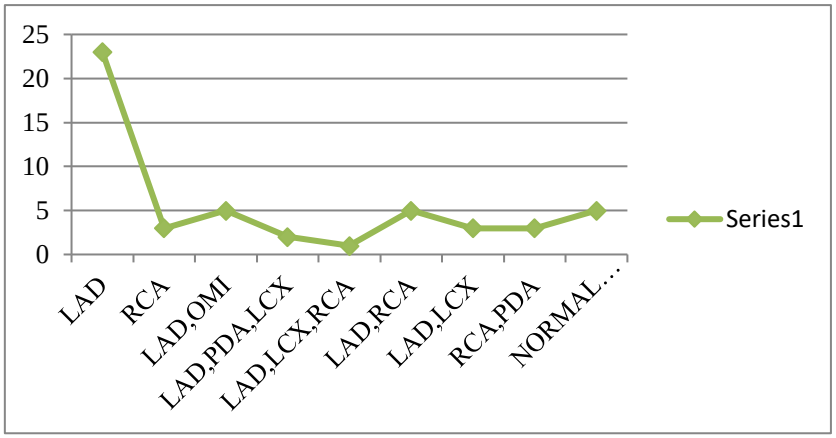
LAD was the most commonly involved arteries in the patients 23 (46%), normal coronaries were observed in 5 patients (10%).

Table 8: Determination of the angiogram report of the patient's during the study period.

AFFECTED VESSEL	FREQUENCY	PERCENT
LAD	23	46%

RCA	3	6%
LAD,OMI	5	10%
LAD,PDA,LCX	2	4%
LAD,LCX,RCA	1	2%
LAD,RCA	5	10%
LAD,LCX	3	6%
RCA,PDA	3	6%
NORMAL CORONARIES	5	10%

Figure 8: Angiogram Repot of the patients during the study period.



DISCUSSION:

In our study, the age group of 36–40 represents 66% of the CAD-affected patients, whereas 60% of the patients, according to Mishra V. A. et al**.** 84% of men in our study have CAD, compared to 86.2% in a study by Ewa M. MaroszynskaDmoch et al. 16% of the obese population is affected by CAD in the above study, which turns to 21% in Jomini et al. The occurrence of CAD is significantly impacted by the strong relationship between diabetes and CAD. As to Mishra VA et al., 18% of the study population has diabetes, whereas the above study gave it as 26%. High blood pressure is another risk factor that is responsible for causing CAD.These case study shows that 30% of hypertensive patients are prone to CAD, but the Mishra VA et al. study gave a result of minimal difference, which is around 34%. Cigarette smoking, a deadly risk factor responsible for affecting coronary arteries, has a great impact on cardiac health, the Collet et al. study gave a whopping percent of 77.3%, whereas it was reduced to 36% in the following study. Theproportion of risk factors that lead to coronary artery disease of alcohol consumption(68%), unhealthy diet(50%), Less sleep(22%), No physical activity(100%). CAD is a hereditary disease that can be genetically transmitted and passed down through successive generations. Remarkably, the findings of Pletcher et al.'s study and ours were similar, with 32% of the study population acquiring CAD as a result of family history.When a patient is admitted to the cardiac department hospital, their ECG records are retrieved in order to aid in an appropriate diagnosis. 70% of the participants in our study had abnormal ECGs because of CAD. This is different in the study of Mishra VA et. al., where it is 78%.In 23 cases(46%), the ejection fraction was determined to be normal,where as in 16(32%) cases it was found to be low.

Studies by Mishra VA et. al. gave angiographic patterns of CAD in which normal vessels (18%), SVD (54%), DVD (8%), and TVD (8%) were found, whereas our study gave normal vessels (20%), single vessel disease (36%), double vessel disease (24%), and triple vessel disease (12%). Individuals are more affected by single-vessel disease in both studies, with triple-vessel disease being the least. Various surgical methods are available for the treatment of CAD. PTCA, CABG are the two methods that are familiar in surgery. Along with the above procedures, medical management is also considered for effective therapy.Mishra VA et. Al, studies have shown the percentage of procedures acquired for treatment,the results are as follows:PTCA (62%), CABG (30%), Medical management (8%), whereas this study results show that PTCA(66%),CABG(8%),medical management(26%).

CONCLUSION:

This study comes to the conclusion that a major risk factor for the onset of CAD is lack of physical activity.

The main risk elements for patients that might be modifiable were physical inactivity, alcohol consumption, Unhealthy diet, Smoking,Hypertension, diabetes, less sleep and obesity. Most risk elements are modifiable, making lifestyle adjustments can help you avoid developing CAD at an early age.

Nevertheless, a non-modifiable risk factor for CAD is a positive family history.

Absence of physical activity is due to hectic schedules, heavy working hours, and lack of awareness. By educating patients about the importance of physical activity, we can avoid the incidence of coronary artery disease at a young age.

The most common age group affected here was 36 – 40.

Males had a larger chance of acquiring CAD than females.

The majority of patients had SVD, according to the findings from the angiography.

REFERENCES:

1. Shahjehan RD, Bhutta BS. Coronary Artery Disease.[Updated 2023 Aug 17]. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. 2024.
2. Global report on cardio vascular disease (internet). World Health Organization; 2021 (cited 1 June 2021) Available from; https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases(cvds)#:~:text=Cardiovascular%20diseases%20(CVDs)%20are%20the,%2D%20and%20middle%2Dincome%20countries.
3. By circulation cardio vascular disease in India Current Epidemiology and Future Directions Dorairaj Prabhakaran, PanniyammakalJeemon andAmbujRoy;Originallypublished19Apr2016https://doi.org/10.1161/CIRCULATIONAHA.114.008729Circulation.2016;133:1605–1620.
4. 1mg (14 Dec 2023) . https://www.1mg.com/diseases/coronary-artery-disease-76?wpsrc=Google+Organic+Search.
5. By UVA Health. https://uvahealth.com/services/coronary-artery-disease
6. By H. Australia. (2022) https://www.healthdirect.gov.au/coronary-heart-disease-and-atherosclerosis
7. https://www.ahajournals.org/doi/10.1161/circulationaha.105.537878?utm_source
8. https://www.mdpi.com/2227-9059/10/8/1938?utm_source=

9. British Heart Foundation. Global Heart & Circulatory Diseases Factsheet; (2020) Available from; file:///C:/Users/4231/Downloads/bhf-cvd-statistics-global-factsheet.pdf.
10. Ganguly K, De S, Basu A, Ghoshal P, Saha S. Acute Myocardial Infarction in the Young: Indian Perspective.
11. Ge J, Li J, Yu H, Hou B. Hypertension is an independent predictor of multivessel coronary artery disease in young adults with acute coronary syndrome. International journal of hypertension. 2018 Dec;2018.
12. Arvind K, Pradeepa R, Deepa R, Mohan V. Diabetes and coronary artery disease. IJMR. 2002;116:121-32.
13. Centers for Disease Control and Prevention (.gov) Available from;https://www.cdc.gov/tobacco/sgr/50thanniversary/pdfs/fs_smoking_cvd_508.pdf.
14. Shea S, Ottman R, Gabrieli C, Stein Z, Nichols A. Family history as an independent risk factor for coronary artery disease. Journal of the American College of Cardiology. 1984 Oct 1;4(4):793-801.
15. Vasankari V, Halonen J, Vasankari T, Anttila V, Airaksinen J, Sievänen H, Hartikainen J. Physical activity and sedentary behaviour in secondary prevention of coronary artery disease: A review. American Journal of Preventive Cardiology. 2021 Mar 1;5:100146.
16. BA R. Obesity and its relation to cardiovascular disease risk factors in Canadian adults. Can. Heart Health Surveys Res. Group. CMAJ. 1992;146:2009-19.
17. Pletcher MJ, Varosy P, Kiefe CI, Lewis CE, Sidney S, Hulley SB. Alcohol consumption, binge drinking, and early coronary calcification: findings from the Coronary Artery Risk Development in Young Adults (CARDIA) Study. American journal of epidemiology. 2005 Mar 1;161(5):423-33.
18. Kim JH, Hayek SS, Ko YA, Liu C, Tahhan AS, Ali S, Alkhoder A, Gafeer MM, Choudhary F, Bhimani R, Delawalla S. Sleep duration and mortality in patients with coronary artery disease. The American journal of cardiology. 2019 Mar 15;123(6):874-81.
19. Coronary artery disease - Symptoms and causes Mayo Clinic 25 may 2022 Available from; https://www.mayoclinic.org › ... › Diseases & Conditions.
20. Coronary artery disease – diagnosis 25 may 2022 Available from; https://www.mayoclinic.org/diseases-conditions/coronary-artery-disease/diagnosis-treatment/drc-20350619.
21. Coronary artery disease - Cleveland clinic 13 October 2023 Available from; https://www.mayoclinic.org/diseases-conditions/coronary-artery-disease/diagnosis-treatment/drc-20350619.
22. Jomini V, Oppliger-Pasquali SÉ, Wietlisbach V, Rodondi N, Jotterand V, Paccaud F, Darioli R, Nicod P, Mooser V. Contribution of major cardiovascular risk factors to familial premature coronary artery disease: the GENECARD project. Journal of the American College of Cardiology. 2002 Aug 21;40(4):676-84.
23. Mishra VA, Kinare AB, Pal J, Tripathi VD, Sharma RS, Jain PK. Study of coronary artery disease in young population of Central India. J Res Med Sci. 2021 Jan;9(1):73.