Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

Clinical profile and risk factors of acute coronary syndrome in young adults: A hospital-based cross-sectional observational study.

Dr. Ramakrishna Kunti [1*], Dr. Ch. Sara Smitha[1], Dr. Kannekanti Murali Krishna [2]
[1]Associate Professor, Department of General Medicine, Government Medical College, Qutubullapur, Medchal-Malkajgiri, Telangana, India.
[2]Associate Professor, Department of General Medicine, Government Medical College, Siddipet, Telangana, India.

Abstract

Background

Acute Coronary Syndrome (ACS) in young adults is being recognized more frequently, particularly in low- and middle-income countries. Understanding clinical presentation and modifiable risk factors in younger individuals is essential for timely prevention and targeted intervention.

Objectives: To assess the clinical profile and identify predominant risk factors among young adults presenting with ACS in an internal medicine department.

Methods

This observational study included 100 consecutive patients aged 20–45 years admitted with ACS. Diagnosis and classification into STEMI, NSTEMI, or Unstable Angina were based on clinical assessment, ECG changes, and cardiac biomarkers. Relevant history, risk factors, lipid profiles, and coronary angiography findings were recorded using a structured proforma. Descriptive statistics were applied for analysis.

Results

The mean age of the cohort was 34.8 ± 4.2 years; males comprised 78%. Chest pain was the most frequent presenting symptom (89%), followed by sweating (63%) and dyspnea (41%) (Table 1). Smoking or tobacco use emerged as the predominant risk factor (54%), followed by family history of coronary artery disease (37%), dyslipidemia (35%), and hypertension (31%) (Table 2). STEMI was the most common presentation (48%), with NSTEMI and Unstable Angina accounting for 32% and 20%, respectively (Table 3). Coronary angiography revealed single-vessel disease in 52% of cases, while 11% had normal or minimal disease (Table 4).

Conclusion

ACS in young adults is strongly associated with modifiable lifestyle factors, especially smoking and dyslipidemia. The predominance of single-vessel involvement suggests a potentially reversible early disease process if timely intervention and long-term risk reduction strategies are adopted.

Recommendations

Smoking cessation counseling, routine lipid screening in individuals with a family history of CAD, community-based lifestyle modification programs, and early cardiac evaluation for atypical symptoms in young adults should be prioritized. Longitudinal follow-up studies are needed to evaluate long-term outcomes.

Keywords: *Acute coronary syndrome; Young adults; ST-elevation myocardial infarction (STEMI); Risk factors; Clinical profile*
Submitted: *September 12, 2025* ***Accepted:*** *November 19, 2025* ***Published:*** *December 05, 2025*

Corresponding author: *Dr. Ramakrishna Kunti[*]*
Email id: ***Krishna.rama609@gmail.com***
Associate Professor, Department of General Medicine, Government Medical College, Qutubullapur, Medchal-Malkajgiri, Telangana, India.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

Introduction

Acute coronary syndrome (ACS) in young adults is increasingly recognized as a clinically and socially significant problem. While coronary artery disease (CAD) has been traditionally associated with older age groups, recent reports show a rising trend of ACS among individuals aged below 45 years, particularly in South Asian populations [1]. This early onset contributes to substantial loss of productive years, increased healthcare burden, and long-term morbidity [2]. The risk factor profile in younger patients often differs from that of older individuals. Cigarette smoking and tobacco exposure remain the most prominent modifiable contributors, while dyslipidemia, central obesity, physical inactivity, and alcohol use further accelerate atherogenesis [3,4]. Psychosocial stress and adverse lifestyle adaptation associated with urbanization also play an important role [5]. Additionally, a strong family history of premature CAD and inherited lipid disorders can predispose susceptible individuals to earlier vascular injury and plaque rupture [2,5].

Clinically, many young patients present with classic ischemic chest pain; however, atypical patterns may occur, leading to under-recognition and delayed intervention [1,4]. Angiographic findings in this age group frequently demonstrate single-vessel involvement, though presentations can range widely, including multivessel disease or even angiographically normal coronaries, reflecting varied underlying mechanisms such as atherosclerosis, vasospasm, thrombophilia, or plaque erosion [3,6]. Thus, ACS in young adults represents a distinct clinical subset requiring focused preventive strategies, timely recognition, and tailored management to improve long-term outcomes.

Understanding the clinical presentation and risk factor distribution in young adults with ACS is essential for refining preventive strategies, improving early diagnosis, and guiding tailored management. The present observational study was conducted to describe the symptom profile, major cardiovascular risk factors, distribution of ACS subtypes, and coronary angiographic patterns among young adults presenting with ACS in an internal medicine department, to inform targeted interventions for this vulnerable group.

Methodology

Study design and setting

This study was a hospital-based cross-sectional observational study conducted in the Department of General Medicine, Government Medical College (GMC), Qutubullapur, Medchal–Malkajgiri, Telangana, India. The study was carried out over a period of one year, from July 2024 to June 2025. Consecutive young adult patients diagnosed with acute coronary syndrome and fulfilling the eligibility criteria were enrolled during the study period.

Study population

One hundred consecutive young adult patients fulfilling the eligibility criteria and presenting with ACS during the study period were included.

Definition of "young."

Young adults were defined as patients aged 18–45 years at the time of presentation with ACS.

Sample size determination

The sample size was determined based on the expected prevalence of major cardiovascular risk factors among young adults with acute coronary syndrome reported in previous Indian studies. Assuming a prevalence (p) of 50%, which provides the maximum sample size, a 95% confidence level (Z = 1.96), and an absolute precision (d) of 10%, the sample size was calculated using the formula:

$n = Z^2 \times p \times q / d^2$

where $q = 1 - p$.

Substituting the values:

$n = (1.96)^2 \times 0.5 \times 0.5 / (0.10)^2$

$n = 96$.

Considering feasibility, patient availability during the study period, and to account for potential incomplete data, the sample size was rounded off to 100 participants.

Inclusion criteria

- Age 18–45 years.
- Clinical suspicion of ACS with at least one of the following:
- Ischemic chest pain or equivalent symptoms.
- Electrocardiographic changes suggestive of ischemia/infarction.
- Elevated cardiac biomarkers (e.g., high-sensitivity troponin) consistent with myocardial injury.
- Final diagnosis of STEMI, NSTEMI, or unstable angina established as per standard guidelines.

Exclusion criteria

- Age >45 years.

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

- Prior documented CAD (previous MI, prior PCI/CABG).
- Myocarditis, Takotsubo cardiomyopathy, pulmonary embolism, or other non-ischemic causes mimicking ACS.
- Patients unwilling to provide consent or with incomplete essential data.

Data collection

After informed written consent, each participant underwent a detailed evaluation using a pre-designed proforma that captured:
Demographics and clinical history, including symptom onset, character, and duration of chest pain, associated symptoms, and time to hospital presentation.
History of conventional risk factors:
Smoking/tobacco use (current or former).
Alcohol consumption.
Hypertension and diabetes (self-reported or on treatment).
Family history of premature CAD (first-degree relative with CAD <55 years in men, <65 years in women).
Obesity, assessed by body mass index (BMI ≥30 kg/m²).
Physical examination, including vital signs and cardiovascular, respiratory, and systemic evaluation.

Investigations and definitions

ECG: 12-lead electrocardiogram at presentation and serially to classify ACS:
STEMI: new ST-elevation with biomarker rise.
NSTEMI: non-ST-elevation with biomarker rise.
Unstable angina: ischemic symptoms with dynamic ECG changes without biomarker elevation.
Cardiac biomarkers: measured as per institutional protocol.
Routine laboratory tests: complete blood count, renal function, fasting lipid profile, and fasting glucose. Dyslipidemia was defined according to standard guideline thresholds (e.g., elevated LDL-C, reduced HDL-C, raised triglycerides).
Echocardiography: to assess regional wall motion abnormalities and left ventricular function, wherever feasible.
Coronary angiography: performed based on clinical indication and patient consent. Angiographic patterns were categorized as:
Single-vessel disease (SVD): ≥70% stenosis in one major epicardial artery.
Double-vessel disease (DVD): significant stenosis in two vessels.
Triple-vessel disease (TVD): involvement of all three major vessels.
Normal/minimal disease: no significant obstructive lesion.

Bias and its control

Several measures were undertaken to minimize potential sources of bias. Selection bias was reduced by enrolling consecutive eligible patients presenting during the study period. Information bias was minimized by using a standardized data collection proforma and uniform diagnostic criteria for acute coronary syndrome. Clinical, laboratory, and electrocardiographic data were obtained from hospital records and verified by treating physicians. Observer bias was limited by cross-checking key variables by two investigators. Known confounding factors such as smoking status, diabetes mellitus, hypertension, and dyslipidemia were documented and considered during statistical analysis

Ethical considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of Government Medical College, Qutubullapur. Written informed consent was obtained from all participants before inclusion. Patient confidentiality was maintained throughout.

Statistical analysis

Data were entered into a secure database and analyzed using standard statistical software (e.g., SPSS). Categorical variables were summarized as frequencies and percentages, and continuous variables were expressed as mean ± standard deviation. Associations between selected risk factors and acute coronary syndrome (ACS) subtypes, or angiographic patterns, were assessed using the chi-square test, with $p < 0.05$ considered statistically significant.

RESULTS

Participant flow and study inclusion

During the study period, a total of 138 young adult patients presenting with symptoms suggestive of acute coronary syndrome (ACS) were screened. Of these, 22 patients were excluded after initial assessment due to age >45 years (n = 9), refusal to provide informed consent (n = 7), incomplete clinical or investigation records (n =

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

4), and alternative non-ACS diagnoses after evaluation (n = 2).

The remaining 116 patients fulfilled the preliminary eligibility criteria and were assessed in detail. Among them, 16 patients were further excluded due to incomplete angiographic data (n = 6), prior documented coronary artery disease (n = 5), and loss of key laboratory data (n = 5).

Finally, 100 young adult patients met all inclusion criteria and were included in the final analysis. Complete clinical, biochemical, electrocardiographic, and angiographic data were available for all included participants, and no cases were excluded during statistical analysis.

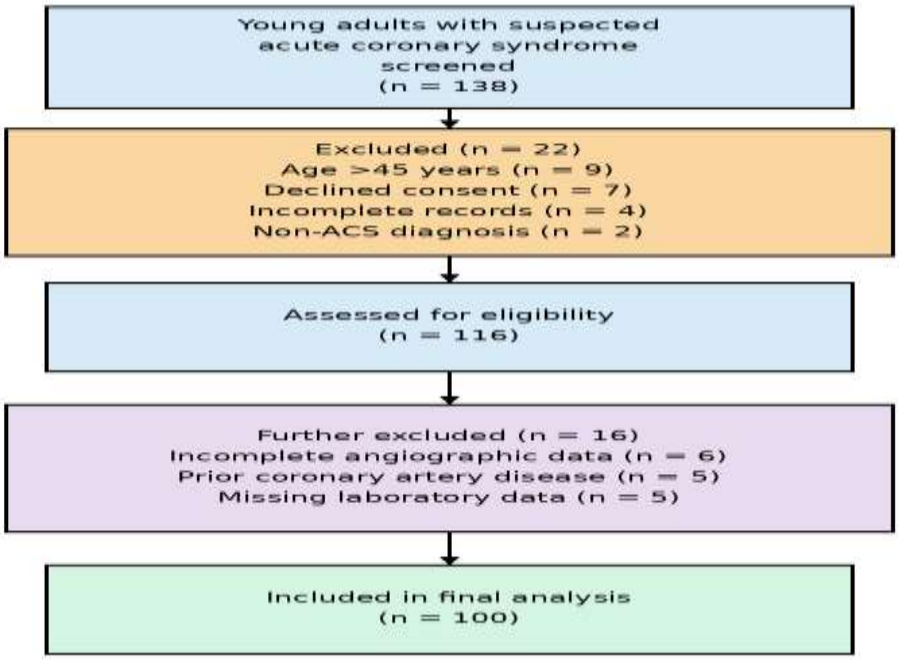

Figure 1: Participant flow diagram

A total of 100 patients aged between 20 and 45 years were enrolled in the study. The mean age was 34.8 ± 4.2 years, and males predominated (78%). The majority of patients presented with an acute onset of chest discomfort.

The pattern of clinical presentation is summarized in Table 1. Chest pain was reported by most participants (89%), followed by sweating (63%) and dyspnea (41%). Palpitations were noted among 18% of the cohort, whereas syncope was relatively less common, occurring in 6% of patients.

Table 1: Clinical presentation of study participants (n = 100)

Clinical Feature	Frequency (n)	Percentage (%)
Chest pain	89	89
Sweating	63	63
Dyspnea	41	41
Palpitations	18	18
Syncope	6	6

The distribution of major cardiovascular risk factors is detailed in Table 2. Smoking or tobacco use was identified as the leading modifiable risk factor (54%). A family history of coronary artery disease was present in 37% of patients, while dyslipidemia and hypertension were observed in 35% and 31% of the study population,

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

respectively. Type 2 diabetes mellitus was present in 22% of the cases, and obesity (BMI ≥ 30 kg/m²) was documented in 28%.

Table 2: Distribution of major risk factors (n = 100)

Risk Factor	Frequency (n)	Percentage (%)
Smoking / Tobacco use	54	54
Family history of CAD	37	37
Dyslipidemia	35	35
Hypertension	31	31
Diabetes Mellitus (Type 2)	22	22
Obesity (BMI ≥ 30 kg/m²)	28	28
Alcohol use	26	26

The spectrum of acute coronary syndrome (ACS) subtypes is shown in Table 3. ST-Elevation Myocardial Infarction (STEMI) was the most frequent presentation (48%), followed by Non-ST-Elevation Myocardial Infarction (NSTEMI) (32%), and Unstable Angina (20%).

Table 3: Distribution of acute coronary syndrome types (n = 100)

ACS Category	Frequency (n)	Percentage (%)
ST-Elevation Myocardial Infarction (STEMI)	48	48
Non-ST-Elevation Myocardial Infarction (NSTEMI)	32	32
Unstable Angina	20	20

Coronary angiographic findings are presented in Table 4. Single-vessel disease was the most prevalent pattern (52%), while double-vessel disease and triple-vessel disease were noted in 28% and 9% of patients, respectively. Normal or minimal coronary artery involvement was observed in 11% of cases.

Table 4: Coronary angiography findings (n = 100)

Angiographic Finding	Frequency (n)	Percentage (%)
Single-vessel disease	52	52
Double-vessel disease	28	28
Triple-vessel disease	9	9
Normal / Minimal disease	11	11

Discussion

This study highlights that acute coronary syndrome in young adults presents most commonly with typical ischemic chest pain accompanied by autonomic symptoms such as sweating and dyspnea. This pattern reinforces that classical symptom recognition remains clinically relevant even in younger age groups, despite a frequent assumption among both patients and clinicians that ACS is unlikely at a young age. Such misinterpretation can contribute to delays in presentation and treatment, affecting outcomes. Similar clinical trends have been noted in previous studies examining ACS among younger populations, where chest pain predominated but atypical symptoms also occurred, influencing diagnostic timing and intervention success [7,8].

The risk factor distribution in this cohort demonstrates that modifiable lifestyle influences play a central role in premature coronary disease. High rates of smoking and tobacco use, combined with dyslipidemia, obesity, hypertension, diabetes, alcohol intake, and a notable family history of premature coronary artery disease, emphasize a cumulative exposure model. These findings align with broader systematic reviews that have identified smoking and atherogenic lipid patterns as key contributors to early myocardial infarction, particularly in socioeconomically active adults [9]. Smoking cessation

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

has been shown to markedly improve survival outcomes in young ACS patients, highlighting the importance of early behavioral intervention and structured cessation support [10]. Furthermore, the presence of familial hypercholesterolemia in a proportion of young myocardial infarction patients underscores the need for earlier lipid screening and cascade testing when a genetic predisposition is suspected [11].

The predominance of ST-elevation myocardial infarction in this cohort suggests that acute plaque rupture and thrombotic occlusion, rather than longstanding diffuse atherosclerosis, drive many of these events. Prior studies similarly report that younger ACS patients often exhibit focal obstructive lesions with preserved myocardial viability, offering a window for better recovery if timely reperfusion is achieved [7,8]. The angiographic pattern of primarily single-vessel involvement seen here mirrors observations from multicentric cohorts and suggests a potentially modifiable disease stage [12].

A smaller subset of patients demonstrated normal or near-normal coronary arteries, a finding consistent with altered mechanisms such as coronary vasospasm, hypercoagulability, or spontaneous coronary artery dissection. Recent registry data indicate that early-onset ACS may involve heterogeneous etiologies, and comprehensive workup should consider these alternative pathways when conventional risk factors are less prominent [13,14].

Generalizability

The study's findings reflect patterns observed in a tertiary-care government setting and may not fully apply to rural or private healthcare populations. Results should be interpreted with caution, as referral patterns and demographic differences may influence case profiles. Larger multicentric studies are needed to enhance broader generalizability.

Conclusion

This study highlights that acute coronary syndrome in young adults is strongly linked to preventable and lifestyle-associated risk factors, with smoking, dyslipidemia, obesity, and a positive family history being particularly prominent. Most patients presented with typical ischemic chest pain, and STEMI was the predominant clinical pattern, often associated with single-vessel disease on angiography. These findings suggest that premature coronary artery disease is not a sporadic event but the result of cumulative risk exposure beginning early in life. Early identification of high-risk individuals, proactive lifestyle intervention, community education, and routine screening in primary care settings are essential steps to reduce the growing burden of ACS in younger populations.

Limitations

Several limitations should be acknowledged. The study was conducted at a single center with a modest sample size, which limits external validity and precludes detailed subgroup analyses. Long-term follow-up outcomes, including mortality, recurrent ischemic events, left ventricular function, and adherence to secondary prevention, were not systematically captured. Non-atherosclerotic causes and detailed plaque or lesion characteristics were beyond the scope of the present design. Despite these constraints, the study adds context-specific evidence on premature ACS in young adults and emphasizes the urgent need for early preventive strategies targeting high-risk behaviors and families of affected individuals.

Recommendations

Strengthening preventive strategies is essential to reduce the burden of ACS in young adults. Routine cardiovascular risk assessment should be initiated early, particularly in individuals with a family history of premature CAD. Smoking and tobacco cessation programs must be prioritized and reinforced at the community and workplace levels. Regular screening for dyslipidemia, hypertension, diabetes, and obesity should be integrated into primary healthcare services. Lifestyle modification through balanced diet, weight management, stress reduction, and structured physical activity should be encouraged and supported. Early recognition of chest pain symptoms and timely access to emergency cardiac care can significantly improve outcomes. Long-term follow-up and adherence to secondary prevention therapy are critical.

Acknowledgements

The authors express sincere gratitude to the Department of General Medicine, Government Medical College, Qutubullapur, Medchal-Malkajgiri, for permitting and supporting this study throughout its duration. We thank the medical officers, nursing staff, and laboratory teams for their cooperation in patient assessment and data collection. We are especially grateful to the study participants, whose willingness to contribute made this work possible. Their trust and participation are deeply

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

appreciated, and we acknowledge their role in advancing clinical understanding in this important area.

Abbreviations

ACS – Acute Coronary Syndrome
CAD – Coronary Artery Disease
STEMI – ST-Elevation Myocardial Infarction
NSTEMI – Non-ST-Elevation Myocardial Infarction
SVD – Single-Vessel Disease
DVD – Double-Vessel Disease
TVD – Triple-Vessel Disease
ECG – Electrocardiography
BMI – Body Mass Index
LAD – Left Anterior Descending Artery
LV – Left Ventricle
PCI – Percutaneous Coronary Intervention
CABG – Coronary Artery Bypass Grafting
HDL – High-Density Lipoprotein
LDL – Low-Density Lipoprotein

Source of funding

The study had no funding.

Conflict of interest

The authors declare no conflict of interest.

Author contributions

RK-Concept and design of the study, results interpretation, review of literature, and preparing the first draft of the manuscript. Statistical analysis and interpretation, revision of manuscript. KMK-design of the study, collected the results, review of literature, and prepared the first draft of the manuscript. Statistical analysis and interpretation, revision of manuscript.

Data availability

Data available on request

Author biography

Dr. Ramakrishna Kunti completed his MBBS from Deccan College of Medical Sciences, Hyderabad (1998–2004). He later pursued an MD in General Medicine from Osmania Medical College, Hyderabad (2013–2016). With a strong clinical and academic background, he has been actively involved in teaching, patient care, and mentoring of undergraduate and postgraduate medical trainees. His areas of interest include internal medicine, cardiovascular diseases, metabolic disorders, and evidence-based clinical practice. He is currently working as an Associate Professor in the Department of General Medicine at Government Medical College, Qutubullapur, Medchal-Malkajgiri.ORCID iD: https://orcid.org/0000-0003-1985-0606

Dr. **Ch. Sara Smitha** completed her MBBS from Guntur Medical College, Guntur (1995–2001) and later pursued MD in General Medicine at the same institution (2012–2015). She is currently serving as an Associate Professor in the Department of General Medicine at Government Medical College, Quthbullapur. She is actively involved in teaching, clinical care, and mentoring of undergraduate and postgraduate medical students. Her areas of interest include internal medicine practice, chronic disease management, and evidence-based patient care.

Dr. Kannekanti Murali Krishna completed his MBBS from Kakatiya Medical College, Warangal (1990–1996). He later pursued an MD in General Medicine at Prathima Institute of Medical Sciences, Karimnagar (2015–2018). He has been actively engaged in clinical practice and medical education, with experience in managing a wide spectrum of internal medicine conditions. His academic interests include chronic disease management, cardiovascular medicine, and training of medical students and residents. He is currently serving as an Associate Professor in the Department of General Medicine at Government Medical College, Siddipet.ORCID iD:https://orcid.org/0000-0002-3057-8271

References

1. Arora S, Stouffer GA, Kucharska-Newton AM, Qamar A, Vaduganathan M, Pandey A, Porterfield D, Blankstein R, Rosamond WD, Bhatt DL, Caughey MC. Twenty-Year Trends and Sex Differences in Young Adults Hospitalized With Acute Myocardial Infarction. Circulation. 2019 Feb 19;139(8):1047-1056. https://doi.org/10.1161/CIRCULATIONAHA.118.037137 PMid:30586725 PMCid:PMC6380926

2. Yang J, Biery DW, Singh A, Divakaran S, DeFilippis EM, Wu WY, et al. Risk Factors and Outcomes of Very Young Adults Who Experience Myocardial Infarction: The Partners YOUNG-MI Registry. Am J Med. 2020 May;133(5):605-612.e1. https://doi.org/10.1016/j.amjmed.2019.10.020 PMid:31715169 PMCid:PMC7210047

3.Liang MT, Pang Y, Gao LL, Han LJ, Yao HC. Clinical risk factors and outcomes of young patients with acute ST-segment elevation myocardial infarction: a

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

retrospective study. BMC Cardiovasc Disord. 2023;23:353. https://doi.org/10.1186/s12872-023-03392-8 PMid:37460997 PMCid:PMC10353156

4. American College of Cardiology. What We Have Learned from Young Patients with ASCVD [Internet]. 2021 Jul 12 [cited 2025 Nov 9]. Available from: https://www.acc.org/Latest-in-Cardiology/Articles/2021/07/12/12/31/What-We-Have-Learned-from-Young-Patients-with-ASCVD

5. Zaheen M, Pender P, Dang QM, Sinha E, Chong JJH, Chow CK, et al. Myocardial infarction in the young: aetiology, emerging risk factors, and the role of novel biomarkers. J Cardiovasc Dev Dis. 2025;12(4):148. https://doi.org/10.3390/jcdd12040148 PMid:40278206 PMCid:PMC12028068

6. Cai G, Liu W, Lv S, Wang X, Guo Y, Yan Z, et al. Gender-specific associations between atherogenic index of plasma and the presence and severity of acute coronary syndrome in very young adults: a hospital-based observational study. Lipids Health Dis. 2019;18:99. https://doi.org/10.1186/s12944-019-1043-2 PMid:30987629 PMCid:PMC6466804

7. Lv J, Ni L, Liu K, Gao X, Yang J, Zhang X, et al. Clinical characteristics, prognosis, and gender disparities in young patients with acute myocardial infarction. Front Cardiovasc Med. 2021;8:720378. https://doi.org/10.3389/fcvm.2021.720378 PMid:34458344 PMCid:PMC8387867

8. Kelly C, Lan NSR, Phan J, et al. Characteristics and outcomes of young patients with ST-elevation myocardial infarction without standard modifiable risk factors. Am J Cardiol. 2023;196:145-152. https://doi.org/10.1016/j.amjcard.2023.08.008 PMid:37666015

9. Dugani SB, Hydoub YM, Ayala AP, Reka R, Nayfeh T, Ding JF, et al. Risk factors for premature myocardial infarction: a systematic review and meta-analysis of 77 studies. EClinicalMedicine. 2021;35:100859. https://doi.org/10.1016/j.eclinm.2021.100859 PMid:33937732 PMCid:PMC8072185

10. Biery DW, Berman AN, Singh A, Divakaran S, DeFilippis EM, Collins BL, et al. Association of Smoking Cessation and Survival Among Young Adults With Myocardial Infarction in the Partners YOUNG-MI Registry. JAMA Netw Open. 2020 Jul 1;3(7):e209649. https://doi.org/10.1001/jamanetworkopen.2020.9649 PMid:32639567 PMCid:PMC7344383

11. Singh A, Gupta A, Collins BL, Qamar A, Monda KL, Biery D, et al. Familial Hypercholesterolemia Among Young Adults With Myocardial Infarction. J Am Coll Cardiol. 2019 May 21;73(19):2439-2450. https://doi.org/10.1016/j.jacc.2019.02.059 PMid:31097165

12. Yandrapalli S, Nabors C, Goyal A, Aronow WS, Frishman WH. Modifiable Risk Factors in Young Adults With First Myocardial Infarction. J Am Coll Cardiol. 2019 Feb 12;73(5):573-584. https://doi.org/10.1016/j.jacc.2018.10.084 PMid:30732711

13. Menezes Fernandes R, Mota T, Costa H, Bispo J, Azevedo P, Bento D, et al; Portuguese Registry of Acute Coronary Syndromes (ProACS) investigators. Premature acute coronary syndrome: understanding the early onset. Coron Artery Dis. 2022 Sep 1;33(6):456-464. https://doi.org/10.1097/MCA.0000000000001141 PMid:35190516

14.Bugiardini R, Cenko E, Yoon J, Bergami M, Vasiljevic Z, Mendieta G, et al. Traditional risk factors and premature acute coronary syndromes in South Eastern Europe: a multinational cohort study. Lancet Reg Health Eur. 2024 Jan 2;38:100824. https://doi.org/10.1016/j.lanepe.2023.100824 PMid:38476741 PMCid:PMC10928297

Student's Journal of Health Research Africa
e-ISSN: 2709-9997, p-ISSN: 3006-1059
Vol.6 No. 12 (2025): December 2025 Issue
https://doi.org/10.51168/sjhrafrica.v6i12.2234
Original Article

PUBLISHER DETAILS

Student's Journal of Health Research (SJHR)
(ISSN 2709-9997) Online
(ISSN 3006-1059) Print
Category: Non-Governmental & Non-profit Organization
Email: studentsjournal2020@gmail.com
WhatsApp: +256 775 434 261
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa