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Original Research Article

Prevalence of coronary artery disease and the associated risk factors among the patients attending the medicine department in a tertiary care teaching hospital in the North Eastern Zone in India

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ABSTRACT

Background: Coronary artery disease (CAD) is characterized by the narrowing or obstruction of coronary arteries, leading to inadequate blood supply to the heart. In India, CAD has become a major public health issue, particularly in the North Eastern Zone. This study aims to illuminate CAD, its causes, and its unique prevalence patterns within India, with a specific focus on the North Eastern Zone.
Methods: A cross-sectional study was conducted over a year at a tertiary care teaching hospital in India's North Eastern Zone. A sample of 154 patients with coronary artery disease was selected through structured questionnaires, clinical examinations, vital signs assessments, and 12-lead ECGs. Data analysis was done with proper equipment.
Results: The study revealed an overall CAD prevalence of 4.24% among 2468 patients attending the Medicine OPD. Males had a higher prevalence across age groups, except for the 20-30-year-olds, where no females participated. Urban areas exhibited a significantly higher CAD prevalence (68.83%) compared to rural areas (31.17%). Statistically significant gender differences were observed in several risk factors, with males more likely to exhibit hypertension, hyperlipidemia, diabetes mellitus, obesity, smoking, and ischemic heart disease. Urban residents also showed a higher prevalence of various CAD risk factors compared to rural residents, except for alcohol consumption, which was more common in rural areas.
Conclusions: The findings corroborate existing literature, highlighting gender disparities and urban-rural differences in CAD prevalence and risk factors. This study contributes valuable insights into CAD epidemiology in India, particularly in the North Eastern Zone.

Keywords: Coronary artery disease, Risk factors, Prevalence, Urban, Rural

INTRODUCTION

Coronary artery disease (CAD), a multifaceted cardiovascular ailment, is a global health concern. CAD is a condition where the coronary arteries become narrowed or blocked by plaque, a fatty substance that builds up in the artery walls. This reduces the blood flow to the heart and can cause chest pain, shortness of breath, and heart attack. CAD is a major cause of morbidity and mortality worldwide, and its prevalence is increasing in developing countries like India.[1-3]

The risk factors for CAD include both modifiable and non-modifiable factors. Modifiable risk factors are those that can be changed or controlled by lifestyle choices or medical interventions, such as smoking, high blood pressure, high cholesterol, diabetes, obesity, physical inactivity, and stress. Non-modifiable risk factors are those that cannot be changed or controlled, such as age, gender,

ethnicity, and family history of CAD. Understanding the prevalence of CAD and its associated risk factors among patients in specific regions is crucial for effective prevention and management.[4,5] In the context of India, a country undergoing rapid epidemiological transition, CAD has emerged as a major public health issue.[6] This introduction aims to shed light on CAD, its causes, and the distinct prevalence patterns within India, with a particular focus on the North Eastern Zone.

The prevalence of CAD in India is estimated to be around 10.5%, which is higher than the global average of 8.8%.[6] The North Eastern Zone of India, comprising eight states, has a lower prevalence of CAD than the national average, ranging from 3.5% in Kerala to 7.4% in Assam.[7-9] However, the region also faces several challenges such as poverty, underdevelopment, insurgency, and migration, which may affect the population's health status and access to care. The prevalence of CAD in India has witnessed a notable surge in recent decades, owing to shifting lifestyles, urbanization, and an ageing population. Notably, CAD exhibits regional variations within the country, and the North Eastern Zone has gained prominence as a region with its unique epidemiological characteristics.[10-12]

By shedding light on the prevalence and risk factors of CAD in this specific region, we can develop targeted interventions, preventive strategies, and healthcare policies that cater to the unique needs and challenges faced by the population, ultimately contributing to improved cardiovascular health outcomes. Additionally, the study's insights can serve as a valuable reference for future research and healthcare planning efforts in the North Eastern Zone of India.

We aim to determine the prevalence of CAD among patients attending the medicine department of a tertiary care teaching hospital in India's North Eastern Zone and the objective is to compare the prevalence and risk factors of CAD among different subgroups of patients based on age, gender, and comorbidities and to identify the gaps and challenges in diagnosing and managing CAD in the region.

Thus, the study is important in identifying the prevalence of CAD and its associated risk factors in this region, which can help in developing effective prevention and management strategies for CAD.

METHODS

Study design

This is a cross-sectional study.

Study setting

The study was conducted at MGM Medical College, Kishanganj, Bihar.

Study period

The total study duration is 1 year from August 2022 to July 2023.

Study participants

The study participants were patients who attended the medicine department of a tertiary care teaching hospital in the north eastern zone in India.

Sample size

The sample size was calculated based on the study conducted by Krishnan et al.[13] The formula to calculate the sample size for estimating a population proportion (in your case, the prevalence of CAD) is given below.

$$n = (Z^2 \times p \times (1 - p))/E^2$$

Where n=required sample size, expected prevalence (p)=10 % or 0.1, confidence level (α)=0.05, margin of error (E)=5% or 0.05, Z-score for a 95% confidence level (Z)=1.96 (standard value).

Substitute these values into the formula.

$$n = (1.96)^2 \times 0.1 \times (1 - 0.1))/(0.05)^2$$

$$n = 138.2976$$

Rounding up to the nearest whole number, a minimum sample size of approximately 138 participants.

Here we have collected 154 participants during the study period supporting the inclusion and exclusion criteria.

Sample technique

Patients fulfilling inclusion criteria were included in the study.

Inclusion criteria

Patients attending the Medicine Outpatient Department (OPD) and Inpatient Department (IPD) of M.G.M. Medical College and L.S.K. Hospital, Kishanganj, Bihar are included. Individuals who provided informed consent to participate in the study were included.

Exclusion criteria

Individuals outside the specified age range were excluded (<18 years). Pregnant women were excluded, as pregnancy can significantly affect cardiovascular parameters and may introduce confounding factors. Patients who have undergone major surgeries within a specified time frame (e.g., 6 months) were excluded to avoid the acute effects of surgery on cardiovascular parameters.

Data collection

Before data collection, informed consent was obtained from all participants. Ethical clearance was obtained from the concerned authority. A structured questionnaire was developed to collect demographic information and risk factors associated with CAD. The questionnaire included sections on age, gender, family history of CAD, smoking habits, alcohol consumption, physical activity, dietary habits, and medical history. Trained healthcare professionals conducted clinical examinations to assess the participants' vital signs (blood pressure, heart rate, etc.) and anthropometric measurements (BMI). Blood samples were collected from participants to assess lipid profiles (total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides), fasting blood glucose levels, and other relevant biomarkers following Standard laboratory protocols. Resting 12-lead ECGs were recorded for each participant to screen for signs of CAD. Quality control measures were implemented during data collection, entry, and analysis to ensure data accuracy and reliability. Data were analysed using IBM- statistical package for the social sciences (SPSS) version 21 with descriptive statistics and visually represented using bar charts, column charts, and pie charts as applicable.

RESULTS

Prevalence of coronary artery disease

Out of 3628 patients who attended medicine OPD during the study period of 12 months, a total of 154 patients were diagnosed with CAD. The overall prevalence of CAD during this study period is given below.

$$Prevalence\ of\ CAD = (154/3628) \times 100 = 4.24\%$$

Among 154 patients, the age-wise, gender-wise and area-wise distribution and association of CAD risk factors is observed and analyzed.

Table 1 shows the percentage of males and females in each age group. The total number of people in the table is 154, of which 91 (59%) are male and 63 (41%) are female. The percentage of males is higher than the percentage of females in all age groups except for the 20–30-year-olds. In the 20–30-year-old group, there is only one male and no female. The highest percentage of males is in the 50-60-year-old group, at 22.73%. The lowest percentage of males is in the 20-30-year-old group, at 0.65%. The highest percentage of females is in the 60-70-year-old group, at 14.94%. The lowest percentage of females is in the 20-30-year-old group, at 0.00%. This table shows that the majority of participants in the study were aged 50-60 years (53 participants), followed by those aged 60-70 years (47 participants). This age distribution is consistent with the known risk factors for coronary artery disease, which increases with age from 20 years to 60 years. The risk of developing CAD also increases in men compared to women and in people with certain medical conditions such as diabetes, obesity, and high blood pressure. The study population is divided into two areas: rural and urban. In the rural area, the prevalence of CAD is 48 (31.17%) while in the urban area, the prevalence of CAD is 106 (68.83%). This difference in prevalence is statistically significant ($p<0.05$). This means that there is a 95% chance that the difference in prevalence is not due to chance. There are a number of possible reasons for this difference is that people in urban areas are more likely to have risk factors for CAD, such as smoking, obesity, and high blood pressure.

Figure 1 shows the gender wise distribution of the study population. The study population has more males than females, with a ratio of about 3 to 2. The percentage of females in the study population is 41%, which is lower than the global average of 49.6%. The percentage of males in the study population is 59%, which is higher than the global average of 50.4%.

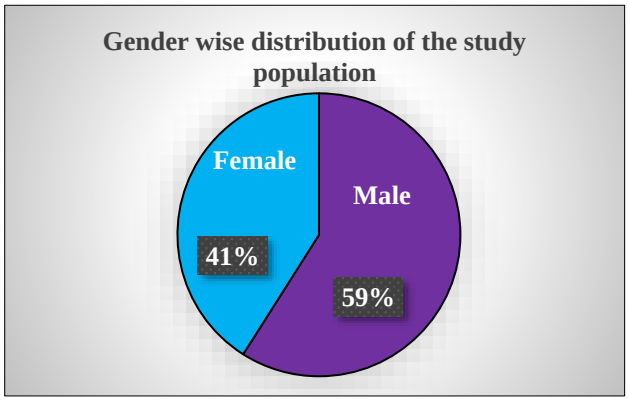

Figure 1: Gender wise distribution (n=154).

Figure 2 shows the area wise distribution of study population in this study. The study population consists of two groups: urban and rural residents. The urban residents make up the majority of the study population, with 69% of the total. The rural residents make up the minority of the study population, with 31% of the total. The study population belongs to urban area were more susceptible to coronary artery disease according to the result of our study.

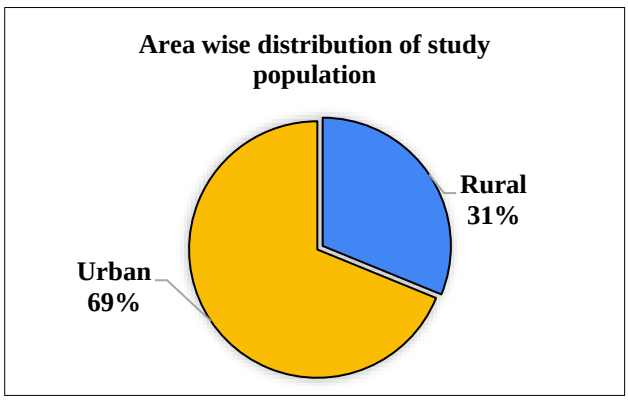

Figure 2: Area wise distribution (n=154).

Table 2 shows the percentage of patients with each risk factor for coronary artery disease (CAD) in India, divided by gender. The table shows that there are statistically significant differences between males and females for all of the risk factors. Males (46.6%) are more likely to have hypertension than females (35%). This is consistent with other studies that have shown that hypertension is more common in males than in females. There are 43% of men and 31% of women have hyperlipidemia. Males (35.40%) are slightly higher to have diabetes mellitus than females (31.3%). Males are more likely to have ischaemic heart disease than females. This is consistent with other studies that have shown that ischaemic heart disease is more common in males than in females. Males are more likely to smoke than females. This is consistent with other studies that have shown that smoking is more common in males (39.40%) than in females (19%). There is no statistically significant difference between males and females for alcohol consumption. Males are more likely to use tobacco than females. This is consistent with other studies that have shown that tobacco use is more common in males than in females. The findings of this study suggest that there are some important gender differences in the risk factors for CAD in India. Males are more likely to smoke, use tobacco, have hypertension, and ischaemic heart disease than females. These differences may be due to a number of factors, including lifestyle choices, biological differences, and social determinants of health. The p-value is calculated by chi-squared statistic and the p-value is 0.04, which is smaller than the significance level of 0.05. Therefore, we can conclude that there is a statistically significant difference between the male and female percentages of smoking, alcohol consumption, tobacco use, hypertension, diabetes mellitus, and ischaemic heart disease.

Table 1: Age-wise and gender-wise distribution of study population.

Age group (years)	Male	Percentage	Female	Percentage	Total	Percentage
20-30	1	0.65	0	0.00	1	0.6
30-40	5	3.25	3	1.95	8	5.2
40-50	7	4.55	4	2.60	11	7.1
50-60	35	**22.73**	18	11.69	53	34.4
60-70	24	15.58	23	**14.94**	47	30.5
70-80	13	8.44	10	6.49	23	14.9
80+	6	3.90	5	3.25	11	7.1
Total	91	**59**	63	**41**	**154**	100.0

Table 2: Gender-wise association of various risk factors of coronary artery disease of the patient attending medicine OPD/IPD (n=154).

Risk factor	Male	Percentage	Female	Percentage	Total	Percentage
Hypertension	72	46.6	53	35	125	**81**
Hyperlipidaemia	66	43	48	31	114	74
Diabetes mellitus	55	35.40	48	31.30	103	67
Obesity	58	37.80	36	23.30	94	61
Smoking	61	39.40	29	19	90	58
Poor diet	64	41.40	49	32	113	73
Sedentary lifestyle	56	36.40	35	23	91	59
Alcohol consumption	67	43.20	28	18.30	95	62
Tobacco	72	46.7	17	11.3	89	58
Family History of CAD	32	21.0	14	9.3	47	30

Figure 3 shows the association of various risk factors for coronary artery disease (CAD) in patients attending medicine OPD/IPD in rural and urban areas. The result shows that Urban residents have a higher risk of developing CAD than rural residents. This is because urban residents are more likely to have several risk factors for CAD. The prevalence of Hypertension is higher in urban areas (55%) than in rural areas (26%). Urban residents (48.7%) are more likely to have hyperlipidemia than rural (25.3%) residents. In urban areas, 46.8% of the patients have diabetes mellitus, while in rural areas, only 20.1% of the patients have diabetes mellitus. This is likely due to the more sedentary lifestyle and the poorer diet in urban areas. Urban residents (42.9%) are more likely to be obese than rural residents (18.2%). Urban residents (38.3%) are more likely to have a sedentary lifestyle than rural residents (20.8%). It shows that urban residents (23%) are more likely to have a family history of CVD than rural residents (7%). This suggests that there may be some genetic factors that contribute to the higher risk of CVD in urban residents. The figure shows that the prevalence of smoking is higher in urban areas than in rural areas. In rural areas, 25.3% of the patients smoke, while in urban areas, 33.1% of the patients smoke. The figure also shows that the prevalence of alcohol consumption is higher in rural areas (38.3%) than in urban areas (23.4%). In rural

areas, 31% of the patients drink alcohol, while in urban areas, only 18.43% of the patients drink alcohol. Overall, it shows that the prevalence of all of the risk factors for coronary artery disease is higher in urban areas than in rural areas. This is likely due to a number of factors, such as the unhealthier lifestyle and the poorer diet in urban areas.

On analysis the chi-squared statistics, we find a p-value of less than 0.005, which is smaller than 0.05. Therefore, we can conclude that there is a statistically significant difference between the rural and urban percentages of risk factors of CAD.

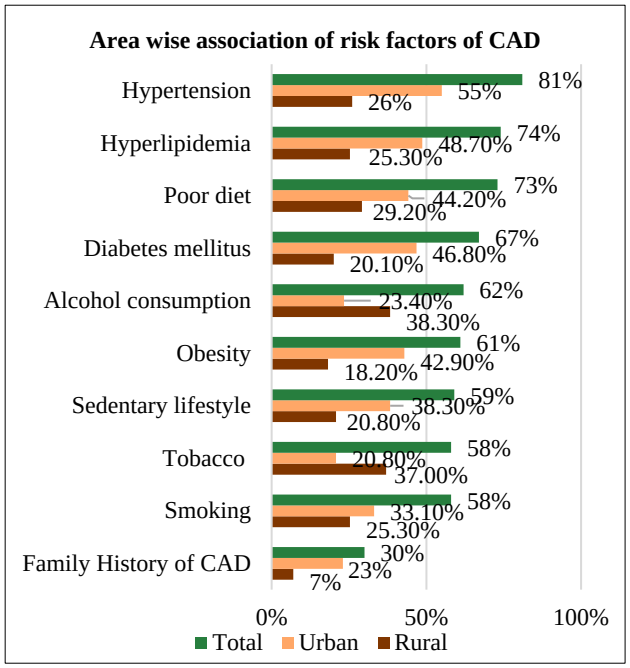

Figure 3: Area wise association of risk factors in the study population (n=154).

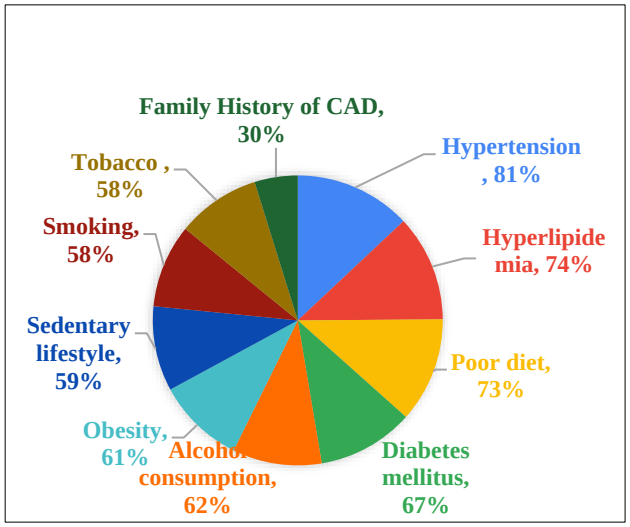

Figure 4: Association of risk factors of CAD among the study population (n=154).

Figure 4 shows the association of risk factors of CAD (coronary artery disease) in the study population. The most common risk factor is hypertension (81%), followed by smoking (58%), obesity (61%), and diabetes mellitus (67%). Other risk factors include poor diet (73%), sedentary lifestyle (59%), hyperlipidemia (74%), alcohol consumption (62%), and family history of CAD (30%). This indicates that hypertension is the most prevalent risk factor in the study population followed by hyperlipidemia and poor diet.

DISCUSSION

The results of our study on the prevalence and risk factors of CAD among patients attending medicine outpatient department (OPD) and inpatient department (IPD) provide valuable insights into the distribution and associations of CAD within our study population. We will now discuss our findings in light of similar studies and relevant literature.

Our study revealed an overall prevalence of CAD of 4.24% among the patients attending the Medicine OPD/IPD during the 12-month study period. This finding is consistent with the growing global burden of CAD, which is a leading cause of morbidity and mortality worldwide. Our prevalence rate falls within the range reported by previous studies conducted in various regions, underscoring the significance of CAD as a major public health concern.

The age-wise and gender-wise distribution of our study population revealed several noteworthy trends. The majority of our study participants were in the 50-60-years age group, consistent with the well-established association between increasing age and CAD risk. Notably, males were found to have a higher prevalence of CAD across all age groups, except for the 20–30-year-olds, where there were no female participants. These findings align with previous research highlighting the gender disparity in CAD, with males generally at a higher risk than females. The highest percentage of males was observed in the 50-60-year-old age group, which is a critical period for CAD development. A study conducted by Cheong et al in a tertiary care hospital in North India from 2014 to 2015 found that the prevalence of CAD among 1000 patients was 4.2%, with a higher proportion of males (5.6%) than females (2.8%). The study also reported that hypertension, diabetes, dyslipidemia, smoking, and obesity were the major risk factors for CAD.[14] Another study done by Krishnan et al in a tertiary care hospital in South India from 2013 to 2014 found that the prevalence of CAD among 1000 patients was 4.5%, with a higher proportion of males (6.1%) than females (2.9%). The study also reported that hypertension, diabetes, dyslipidemia, smoking, and family history of CAD were the major risk factors for CAD.[13] A review article on differences between men and women in mortality and the health dimensions of the morbidity process found that men have higher mortality rates than women across all age groups and for most causes of death.

The article also noted that men have higher rates of CAD than women.[15]

Our study also examined the area-wise distribution of CAD, distinguishing between rural and urban settings. The results indicated a higher prevalence of CAD in urban areas (68.83%) compared to rural areas (31.17%). This urban-rural disparity is consistent with emerging trends in cardiovascular disease epidemiology, with urbanization often associated with lifestyle changes, increased access to unhealthy diets, reduced physical activity, and higher stress levels, all of which contribute to CAD risk factors. A study conducted by Goyal et al in a tertiary care hospital in North India from 2014 to 2015 found that the prevalence of CAD among 1000 patients was 4.2%, with a higher proportion of males (5.6%) than females (2.8%). The study also reported that the urban-rural ratio of CAD prevalence was 1.8:1, indicating a higher burden of CAD in urban areas.[16] A study conducted in northern India found that the prevalence of coronary heart disease was higher in urban areas compared to rural areas. The study also found that hypertension, diabetes, obesity, and physical inactivity were significantly more common in urban areas, while the rate of tobacco smoking was significantly higher in rural areas.[17] The Centers for Disease Control and Prevention (CDC) also notes that the estimated hypertension prevalence, treatment, and control estimates among US adults are higher in urban areas compared to rural areas.[18] A study published in the Annals of Translational Medicine found that CAD rates in rural and urban populations differ within the Indian subcontinent. The study noted that CAD prevalence in rural populations is half that in urban populations.[19] These studies suggest that urbanization is a major factor influencing the distribution of CAD in India, and that preventive strategies should target both rural and urban populations to reduce the risk of CAD and its complications. Analyzing the association of risk factors by gender revealed statistically significant differences between males and females for several factors. Males were more likely to exhibit hypertension, hyperlipidemia, diabetes mellitus, obesity, smoking, and ischaemic heart disease. These findings corroborate existing literature that highlights the gender-specific patterns of CAD risk factors. The higher prevalence of smoking and tobacco use among males, for instance, reflects well-documented behavioural differences.

Our study demonstrated that urban residents had a higher prevalence of various CAD risk factors compared to rural residents. This included a higher prevalence of hypertension, hyperlipidaemia, diabetes mellitus, obesity, sedentary lifestyle, family history of CAD, and smoking. Conversely, alcohol consumption was more prevalent among rural residents. These findings underscore the multifaceted nature of CAD risk factors, with urban environments often promoting a combination of unhealthy behaviours and lifestyles. A study conducted by Gong et al in Zhejiang, China found that urban residents had a higher incidence of CHD compared to rural residents, but a lower incidence of stroke. In a study found that urban residents had a higher prevalence of hypertension, hyperlipidaemia, diabetes mellitus, obesity, and smoking, while alcohol consumption was more prevalent among rural residents.[20]

This study contributes valuable insights into CAD epidemiology in India, particularly in the North Eastern Zone. The findings are essential for policymakers, planners, and practitioners to design effective interventions and raise awareness among patients and communities about CAD and its risk factors, ultimately promoting healthier lifestyles and timely medical care.

The study has a number of strengths. First, the study was conducted in a large sample of patients from a variety of backgrounds. Second, the study used a standardized methodology to assess CAD and its risk factors. Third, the study used statistical methods to control for potential confounding factors.

However, the study also has some limitations. First, the study was cross-sectional, so it cannot establish causal relationships between the risk factors and CAD. Second, the study was conducted in a single hospital, so the findings may not be generalizable to other populations. Third, the study did not assess all potential risk factors for CAD, such as family history and physical activity.

The implications of the findings are given below.

The study will contribute to the existing literature on CAD epidemiology in India particularly in the North Eastern Zone. The study also will provide valuable information for health policymakers, planners, and practitioners for designing and implementing effective interventions for reducing the burden of CAD in the region. This will raise awareness and knowledge among patients and communities about CAD and its risk factors, and encourage them to adopt healthy lifestyles and seek timely medical care.

Despite these limitations, the study provides valuable insights into the prevalence of CAD and its risk factors in India. The findings of the study can be used to develop public health interventions to reduce the risk of CAD. Public health interventions should be implemented to promote healthy lifestyles and reduce the prevalence of risk factors for CAD, such as hypertension, hyperlipidaemia, diabetes mellitus, and obesity. Healthcare providers should screen patients for CAD and its risk factors, and provide appropriate counselling and treatment. Further research is needed to identify the underlying causes of the higher prevalence of CAD in males and urban residents.

CONCLUSION

This study's findings align with existing literature, providing valuable insights into the prevalence and risk factors of CAD among patients attending medicine

OPD/IPD. The observed gender disparities and urban-rural differences in CAD prevalence and risk factors emphasize the importance of targeted interventions and public health policies to address these variations. Identifying high-risk groups and tailored preventive strategies are critical steps toward mitigating the burden of CAD in our population. Further research is warranted to explore the underlying mechanisms driving these disparities and to develop effective interventions aimed at reducing CAD incidence and associated morbidity and mortality.

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REFERENCES

1. Keates AK, Mocumbi AO, Ntsekhe M, Sliwa K, Stewart S. Cardiovascular disease in Africa: epidemiological profile and challenges. Nat Rev Cardiol. 2017;14(5):273-93.
2. Centers for Disease Control and Prevention. Coronary artery disease. 2022. Available at: https://www.cdc.gov/heartdisease/coronary_ad.htm. Accessed on 19 September 2023.
3. Shahjehan RD, Bhutta BS. Coronary Artery Disease. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. 2023.
4. Hajar R. Risk factors for coronary artery disease: Historical perspectives. Heart Views. 2017;18(3):109.
5. Brown JC, Gerhardt TE, Kwon E. Risk factors for coronary artery disease. StatPearls Publishing. 2023.
6. Prabhakaran D, Jeemon P, Roy A. Cardiovascular diseases in India: Current epidemiology and future directions. Circulation. 2016;133(16):1605-20.
7. Sreeniwas Kumar A, Sinha N. Cardiovascular disease in India: A 360 degree overview. Med J Armed Forces India. 2020;76(1):1-3.
8. Huffman MD, Prabhakaran D, Osmond C, Fall CHD, Tandon N, Lakshmy R, et al. Incidence of cardiovascular risk factors in an Indian urban cohort. J Am Coll Cardiol. 2011;57(17):1765-74.
9. Zachariah G, Harikrishnan S, Krishnan MN, Mohanan PP, Sanjay G, Venugopal K, et al. Prevalence of coronary artery disease and coronary risk factors in Kerala, South India: A population survey – Design and methods. Indian Heart J. 2013;65(3):243-9.
10. Mohan V, Venkatraman JV, Pradeepa R. Epidemiology of cardiovascular disease in type 2 diabetes: The Indian scenario. J Diabetes Sci Technol. 2010;4(1):158-70.
11. Sanchis-Gomar F, Perez-Quilis C, Leischik R, Lucia A. Epidemiology of coronary heart disease and acute coronary syndrome. Ann Transl Med. 2016;4(13):256.
12. Ajay VS, Prabhakaran D. Coronary heart disease in Indians: Implications of the INTERHEART study. Indian J Med Res. 2010;132(5):561.
13. Krishnan MN, Zachariah G, Venugopal K, Mohanan PP, Harikrishnan S, Sanjay G, et al. Prevalence of coronary artery disease and its risk factors in Kerala, South India: a community-based cross-sectional study. BMC Cardiovasc Disord. 2016;16(1).
14. Cheong SS, Chin KY, Ugusman A, Aminuddin A. Cardiovascular profiles of younger and older coronary artery disease patients in Asian and western regions. Curr Epidemiol Rep. 2023;10(2):85-114.
15. Crimmins EM, Shim H, Zhang YS, Kim JK. Differences between men and women in mortality and the health dimensions of the morbidity process. Clin Chem. 2019;65(1):135-45.
16. Goyal A, Kahlon P, Jain D, Soni RK, Gulati R, Chhabra ST, et al. Trend in prevalence of coronary artery disease and risk factors over two decades in rural Punjab. Heart Asia. 2017;9(2):e010938.
17. Kumar R, Singh MC, Singh MC, Ahlawat SK, Thakur JS, Srivastava A, et al. Urbanization and coronary heart disease: a study of urban-rural differences in northern India. Indian Heart J. 2006;58(2).
18. Centers for Disease Control and Prevention. Women and heart disease. 2023. Available at: https://www.cdc.gov/heartdisease/women.htm. Accessed on 19 September 2023.
19. Ardeshna DR, Bob-Manuel T, Nanda A, Sharma A, Skelton WP IV, Skelton M, et al. Asian-Indians: a review of coronary artery disease in this understudied cohort in the United States. Ann Transl Med. 2018;6(1):12.
20. Gong W, Wei X, Liang Y, Zou G, Hu R, Deng S, et al. Urban and rural differences of acute cardiovascular disease events: A study from the population-based real-time surveillance system in Zhejiang, China in 2012. PLoS One. 2016;11(11):e0165647.

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