ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Multimed 2025; 29: e2921

Original article

Risk factors associated with ischemic heart disease in the Vista Alegre popular council

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SUMMARY

Introduction: Ischemic heart disease ranks first among the top 10 causes of death in Cuba.

Aim:to determine the risk factors associated with ischemic heart disease.

Methods: An analytical observational case-control study was conducted with a 1:2 ratio, thus the sample was represented by 167 cases and 334 controls.

Results: The female sex represented 62.9% of the cases and the 65-year-old age group, with 54.4%, showed the highest frequencyThe medical office with the highest prevalence rate was Pueblo Nuevo I, with 5.6 per 100,000 inhabitants. The risk factors with the highest degree of association and attribution

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

were, in descending order: hypertension (odds ratio 5.9), smoking (odds ratio 4.3), and diabetes.mellitus odd ratio 3.8.

Conclusions: High blood pressure, smoking, diabetes mellitus, family history of heart disease, dyslipidemia, alcoholism, and sedentary lifestyle were the classic risk factors for cardiovascular disease associated with ischemic heart disease in the territory under study, demonstrating that there is solid scientific evidence of their causal association.

KeywordsRisk factors; Causality; Probabilities.

SUMMARY

Introduction: Ischemic heart disease ranks first among the top 10 causes of death in Cuba.

Objective: To determine the risk factors associated with ischemic heart disease.

Methods: An analytical observational study of cases and controls was carried out with a 1:2 ratio, in this way the sample was represented by 167 cases and 334 controls.

Results: Females accounted for 62.9 % of the cases, and the 65-year-old age group with 54.4 % showed the highest frequency. The medical office with the highest prevalence rate was that of Pueblo Nuevo I with 5.6 per 100,000 inhabitants. The risk factors with the highest degree of associated and attribution were, in descending order, arterial hypertension with an odd ratio of 5.9. Smoking moodds ratio 4.3. Diabetes mellitus odds ratio 3.8.

Conclusions:arterial hypertension, smoking, diabetes mellitus, family history of heart disease, dyslipidemia, alcoholism and sedentary lifestyle were the classic risk factors for cardiovascular disease, associated with ischemic heart disease in the territory under study, which demonstrates that there is solid scientific evidence of its causal association.

Keywords: Risk factors; Causality; Probabilities.

SUMMARY

Introduction: Ischemic heart disease occupies first place among the 10 main causes of death in Cuba.

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Aim: Determine the risk factors associated with ischemic heart disease.

Methods: An analytical observational study of cases and controls was carried out with a proportion of 1:2, so the sample was represented by 167 cases and 334 controls.

Results: The female sex represented 62.9% of the cases, and that at the age of 65, 54.4% occurred more frequently. The medical office with the highest prevalence was in Pueblo Nuevo I, with 5.6 per 100,000 inhabitants. The risk factors with a greater degree of association and attribution for them, in descending order, to arterial hypertension, with an odds ratio of 5.9. Ratio of chances of tobacco addiction 4.3. Odds ratio of diabetes mellitus 3.8.

Conclusions:high blood pressure, smoking, diabetes mellitus, family history of heart disease, dyslipidemia, alcoholism and sedentary lifestyle for the classical risk factors for cardiovascular disease, associated with ischemic heart disease in the territory of the study, which demonstrates that there is solid scientific evidence of its association. causal.

Key words: Cliff factors; Causality; Odds.

Received: 29/10/2024

Approved: 23/09/2025

Introduction

Cardiovascular diseases constitute a serious public health problem. According to the World Health Organization (WHO)representsCardiovascular diseases are the leading cause of death and disability worldwide, accounting for one-third of all deaths and half of all deaths from non-communicable diseases. Annual deaths from cardiovascular diseases are predicted to increase from 17.1 million in 2004 to 23.4 million in 2030. (1)

ONLINE VERSION: ISSN 1028-4818
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Coronary artery disease is comprehensively preventable, as are its negative impacts once it is present. Many deaths are avoidable with early intervention, and most patients who survive the critical phase can return to their normal lives. (2)

Among the most commonly identified risk factors (RFs) in heart disease are the non-modifiable ones (genetic inheritance, age, etc.).sex)and modifiable ones (hypercholesterolemia, high blood pressure, diabetes mellitus, smoking, obesity, sedentary lifestyle and alcoholism). (3)

The presence of the main risk factors does not mean that one will develop coronary heart disease, but it is true that the greater the number of risk factors, the greater the likelihood of becoming ill. In this case, the future depends largely on the individual and their decision, will, and perseverance to modify their lifestyle. (2,3)

Cardiovascular diseases caused 2,705 deaths in Havana alone in 2021, with a mortality rate of 476.6 per 100,000 inhabitants. In Granma province, it was the leading cause of death in recent years.,with a gross rate of 340.7 per 100,000 inhabitants during that period, compared to 251.6 per 100,000 inhabitants in the previous year. The increase of 35.4% is significant, and the trend is upward for the coming years. (4)

In the municipality of Media Luna during 2021, a total of 388 deaths occurred, of which 110 were due to cardiovascular causes, representing 28.4%, a rate of 339.7 per 100,000 inhabitants, and a case fatality rate of 21.5. Within the municipality, the Vista Alegre People's Council 06 had the highest mortality rate from this cause with 470.0 per 100,000 inhabitants, and a case fatality rate of 20.3.

Methods

An analytical observational study of cases and controls (witnesses) was carried out with 501 patients belonging to the family doctor offices of the popular council 06 of Vista Alegre of the Raúl Podio Saborit teaching polyclinic, of Media Luna, in the period from January 1, 2021 to December 31 of the same year. The universe consisted of 7102 patients belonging to the seven medical offices that make up said popular council 06 during the year 2021.

The sample size for case-control studies was determinedThrough stratified probability sampling, the study group ultimately consisted of 167 patients classified as cases (patients diagnosed with the condition under study). For each case, two controls (individuals who did not present with ischemic heart disease during the study) were selected in a paired manner. Thus, 334 controls were investigated according to the matching method used, for a total of 501 individuals.

Definition of cases and controls

Inclusion criteria for cases: patients over 18 years of age, diagnosed with ischemic heart disease in its different clinical presentation forms (cardiac arrest, angina, acute myocardial infarction, heart failure, arrhythmias), who belong to the Vista Alegre popular council and who expressed their willingness to participate in the research.

Exclusion criteria for cases: other clinical form of cardiovascular disease.

Inclusion criteria for controls: that they do not present any evidence of ischemic heart disease.

Exclusion criteria for controls: detection of symptoms and signs of the disease under study. Change of address outside the council area.

Exit criteria: death before data collection.

Operationalization of variables

Dependent variable. Ischemic heart disease, dichotomous nominal qualitative variable, (present 1/ absent 2).

Independent variables:

Age, a discrete quantitative variable, in completed years.

Sex, a dichotomous nominal qualitative variable (male/female).

Family medical history (heredity): present (exposed) 1 / absent (not exposed) 2,

Smoking habit (Smoking), dichotomous nominal qualitative variable: present (exposed) 1/ absent (not exposed) 2.

Obesity, a dichotomous nominal qualitative variable: present (exposed) 1 / absent (not exposed) 2.
Sedentary behavior, a dichotomous nominal qualitative variable: present (exposed) 1 / absent (not exposed) 2.
Hypertension, a dichotomous nominal qualitative variable: present (exposed) 1 / absent (not exposed) 2.
Diabetes mellitus is a qualitative, nominal, dichotomous variable: present (exposed) 1 / absent (not exposed) 2.
Dyslipidemia, dichotomous nominal qualitative variable: present (exposed) 1 / absent (not exposed) 2.

Data collection. Primary data collection took place in the family physician's office through a review of each patient's individual medical record, family health history, and interviews with the corresponding family physicians and nurses. This activity was carried out by the researchers themselves, which ensured uniformity in data collection and thus reduced observer bias. A spreadsheet was then created with the collected data for initial analysis.

Statistical analysis

The statistical analysis was performed using the statistical package for the social sciences, (IBM SPSS Statistics program, from the English, (Statistical Package for the Social Sciences); in its version 25.0 through which the sample was characterized, which involved a description of all the variables and subsequently the degree of association between them was determined; the odds ratio, attributable risk and the percentage attributable risk were calculated.

Results

In this study, the 65 and older age group was the most represented with 91 cases, or 54.5%, while the least affected group was those aged 18 to 49 with 6.0%. Females predominated, with 6 patients (60%). The largest number of cases came from the Pueblo Nuevo I family doctor's office with 41 patients,

ONLINE VERSION: ISSN 1028-4818
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representing 24% of all cases, while the smallest number came from the Chucho Reyes office with 15 cases, or 8.9% of the total.

The family doctor's office in Pueblo Nuevo I had the highest prevalence rate at 5.6 per 100,000 inhabitants, while Pueblo Nuevo II had the lowest at 1.7 per 100,000 inhabitants. This result indicates where further intervention efforts are needed.

In this study, the most affected age group was 65 years and older, with 91 cases, representing 54.5%. The association between hypertension and ischemic heart disease carries a high risk of cardiovascular morbidity and mortality. This association was found to be present in 71.3% of cases and 28.7% of controls. The association measurements used were: odds ratio (OR) 5.9, attributable risk (AR) 0.4, and attributable risk percentage (AR%) 69.8%. (Table 1)

Table 1. Distribution of cases and controls according to arterial hypertension.

High blood pressure	Cases	%	Controls	%	Total	%
Present	119	71.3	96	28.7	215	42.9
Absent	48	28.7	238	71.3	286	57.1
Total	167	100	334	100	501	100
OR: 6.1 RA: 0.3 RA %: 69.8%						

Regarding smoking, this represented 62.9% of cases and 28.4%. The calculated risks for this variable were 0R 4.3, attributable risk (AR) 0.32 and attributable risk percentage (AR%) of 61.5. (table 2)

Table 2. Distribution of cases and controls according to smoking.

Smoking	Cases	%	Controls	%	Total	%
Present	105	62.9	95	28.4	200	39.9
Absent	62	37.1	239	71.6	301	60.1
Total	167	100	334	100	501	100
OR:4.3 RA:0.32 RA%: 60.8						

Diabetes mellitus (DM) accounted for 58.1% of cases and 26.9% of controls. Measures of association for DM yielded the following results: OR 3.8, the attributable risk0.3and the percentage attributable risk58.8.

A family history of ischemic heart disease is one of the main determinants of coronary risk, it was represented by 67.7% of the cases and in the controls 40.1%, the risk calculations were: the odds ratio 3.1, attributable risk 0.24 and the attributable percentage risk 53.3%.

Obesity accounted for 61.7% of cases and 38.0% of controls (OR 2.6, attributable risk 0.21, attributable risk percentage 47.7%). Lipid disorders were present in 59.3% of cases and 46.1% of controls. Their association measures were: OR 1.7, attributable risk0.12The attributable risk percentage was 30.8%. Alcoholism accounted for 28.1% of cases and 23.1% of controls. The results for the different risk factors were: OR 1.3, attributable risk 0.06, and attributable risk percentage 16%.,2%. Sedentary behavior accounted for 62.9% of cases and 58.1% of controls. OR 1.2, attributable risk 0,05 and percentage attributable risk 14.3%.

Discussion

The study showed a predominance of females, a similar result to that obtained in the study conducted by Paz Clara, which also showed a predominance of females over males. (5)

National investigations such as that carried out by Pérez Martínez at the Celia Sánchez Manduley Hospital, (6) and other international studies such as that developed by Castro-Bolívar differ from this result.(7)

Regarding sex, the cardiovascular risk for women is lower because it is related to the protective hormonal effect of estrogens, although the postmenopausal risk is high.

Age is one of the most powerful non-modifiable risk factors in the development of cardiovascular disease. In the study, the majority of patients were over 65 years old.This is consistent with data

obtained in previous research, such as that carried out in Spain by Sacramento and colleagues, where the average age of the study was found to be 67 years. (8)

Similarly, the health outlook for older adults in Cuba indicates that heart disease is the leading cause of death. (9) This situation poses a significant challenge for providing specialized, high-quality care to older adults. The study revealed that patients with hypertension have morerisk of developing the disease, as Diaztagle Fernández demonstrated, who showed that the risk of coronary ischemia is higher in patients with high blood pressure. (10)The findings suggest the need to optimize hypertension screening at the primary care level throughout the country.

Smoking,Smoking increases the likelihood of developing the disease approximately fourfold compared to those who do not smoke. Studies in Cuba and the Americas show that smoking is responsible for 25.1% of ischemic heart disease, and other studies conducted by the Pan American Health Organization (PAHO) support these findings. (11) It is a priority to strongly recommend daily exercise, sports, and cultural activities as a way to avoid smoking.

The evidence obtained in the investigation suggests that people with diabetes mellitus have a higher risk of developing ischemic heart disease than those who have not yet developed this disease. This was also demonstrated by Valdés-Ramos, who presented people with DM in whom ischemic heart disease showed a mortality rate 2 to 4 times higher than the general population.(12)

Diabetes mellitus is considered a “risk equivalent for ischemic heart disease” and deserves special attention, as it is a risk factor whose prevalence has increased in young people. Vegetable consumption is essential in the prevention of non-communicable diseases (NCDs) due to its protective effect against cardiovascular disease and diabetes mellitus.

People with a family history of heart disease have a three times greater risk of developing coronary artery disease. Pérez Guerrero adds that a family history of ischemic heart disease is one of the main coronary risk factors. (13)Although hereditary or genetic risk factors for heart disease increase susceptibility to the disease and are not modifiable, prevention and control are fundamentally based on lifestyle changes.

The research showed that obesity exhibited a behavior indicating that an obese person has a higher risk of developing ischemic heart disease than someone who is not obese; achieving adequate control of this risk factor would significantly reduce the incidence.The above is supported by Pereira Rodríguez, who states that obese individuals are almost twice as likely to suffer cardiac events throughout their lives compared to those who are not obese; in addition, it increases patient mortality and decreases life expectancy and quality of life, especially in young adults. (14) Nutritional education is perhaps the most important aspect of a complete weight management program, and nutritional assessment is the best way to determine whether people's food needs are actually being met.

Regarding lipids, the results showed that elevated blood cholesterol levels are proportional to the development of heart disease, approximately twice as high as those with normal levels (healthy eating habits). Achieving good metabolic control would reduce the incidence. Díaz-Perera Fernández conducted studies demonstrating the high risk association of this factor, which shows the similarity with the research carried out. (15)

Blood lipid variability is determined by endogenous factors related to an individual's metabolism, as well as by exogenous or environmental factors. There is a direct relationship between elevated blood lipid levels and poor diet, sedentary lifestyles, and unhealthy habits. Promoting healthy lifestyles in the population is one of the challenges of contemporary public health.

People exposed to alcohol are more likely to develop coronary artery disease (CAD) than those who do not. The incidence of heart disease is reduced if alcohol is eliminated, and a large percentage of this reduction can be attributed to CAD. Regarding other risk factors,Although it did not constitute the highest degree of association in the research, there is evidence of its relationship with heart diseases such as alcoholismthat's how it's expressedAcosta-Ricachi. (16)Alcohol consumption increases with age and becomes more pronounced during adolescence. It is essential to strengthen public health strategies focused on raising awareness about the consequences of excessive alcohol consumption.

The results of this research lead to the conclusion that a person who does not engage in physical activity in their daily life has a greater risk of experiencing an ischemic heart event than those who engage in

systematic physical activity.Several publications have highlighted the marked benefits of physical exercise in the primary and secondary prevention of ischemic heart disease. A study by Mendoza García S and colleagues demonstrated that active people have a lower risk of death from coronary heart disease than sedentary individuals. (17)

In the investigation, the risk factors with a degree of association with ischemic heart disease were hypertension, smoking, and diabetes mellitus. This is similar to studies from other regions of the Americas, such as that of Peña Mesías, who established that the main risk factors linked to ischemic heart diseases are: diabetes mellitus, hypertension, smoking, dyslipidemia, overweight, obesity, alcohol consumption, physical inactivity, sedentary lifestyle, hereditary factors, and inadequate diet, all of which influence the presence or development of this disease. (18)

The predisposing factors for non-communicable diseases are associated with unhealthy lifestyles, constituting a problem to be addressed by primary health care; therefore, intersectoral actions and community participation are required to modify them.

Identifying risk factors for the development of ischemic heart disease will serve as a guide for attending physicians to act and reduce the occurrence of the disease in patients with risk factors.

Conclusions

The results of the research demonstrated a direct relationship between aging, the occurrence of cardiovascular events, and the predominance of females over males. The risk factors most strongly associated with ischemic heart disease in the study area, in descending order, were hypertension, smoking, diabetes mellitus, family history, dyslipidemia, alcoholism, and lastly, [the text abruptly ends here].sedentary lifestyle.

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

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Conflict of interest

The authors declare that there are no conflicts of interest.

Authorship Contribution

Geovanny Machado Méndez: study design, literature review, information collection, writing, critical review of the article and approval of the final report.

Ana Julia Quezada Font: bibliographic review, critical review of the article and approval of the final report.

Deilys Pérez Martínez: study design, literature review, information collection, critical review of the article and approval of the final report.

Ana Mirtha Guzmán Ortiz: study design, literature review, data collection

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

Carlos Mario Morales: study design, literature review, information collection and approval of the final report.