Coronary risk factors in Cuban adults participating in physical exercise programs

Factores de riesgo coronario en adultos cubanos participantes en programas de ejercicios físicos

Fatores de risco coronariano em adultos cubanos participantes de programas de exercícios físicos

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ABSTRACT: Early identification of coronary risk factors is one of the pillars in established health strategies to prevent and treat cardiovascular diseases. The objective of the study was to identify the main coronary risk factors in a sample of Cuban adults, as a tool to increase the individualization of physical exercise programs. A descriptive cross-sectional study was developed in participants of physical exercise programs, with the presence of obese and hypertensive subjects, with a moderate risk of suffering from cardiovascular diseases and a high prevalence in the consumption of toxic substances. The present work continues previous studies on biochemical, anthropometric, behavioral and socioeconomic factors that predispose people to cardiovascular diseases. It was determined that its study prior to the integration of these subjects in physical exercise programs is essential.

Keywords: Coronary risk factors, cardiovascular diseases, physical exercises, adults.

RESUMEN: La identificación temprana de los factores de riesgo coronario es uno de los pilares en las estrategias de salud establecidas para prevenir y tratar las enfermedades cardiovasculares. El objetivo del estudio fue identificar los principales factores de riesgo coronario en una muestra de adultos cubanos, como herramienta para incrementar la individualización de los programas de ejercicios físicos. Se desarrolló un estudio transversal descriptivo, en participantes de programas ejercicios físicos., con presencia de sujetos obesos e hipertensos, con un riesgo moderado a padecer enfermedades cardiovasculares y alta prevalencia en el consumo de sustancias tóxicas. El presente trabajo continúa estudios precedentes sobre factores bioquímicos, antropométricos, conductuales y socioeconómicos que predisponen a las personas a padecer enfermedades cardiovasculares. Se determinó que es imprescindible su estudio previo a la integración de estos sujetos en los programas de ejercicios físicos.

Palabras clave: Factores de riesgo coronario, enfermedades cardiovasculares, ejercicios físicos, adultos.

RESUMO: A identificação precoce dos fatores de risco coronariano é um dos pilares das estratégias de saúde estabelecidas para prevenir e tratar as doenças cardiovasculares. O objetivo do estudo foi identificar os principais fatores de risco coronariano em uma amostra de adultos cubanos, como ferramenta para aumentar a individualização dos programas de exercícios físicos. Foi desenvolvido um estudo transversal descritivo em participantes de programas de exercícios físicos, com a presença de obesos e hipertensos, com risco moderado de sofrer de doenças cardiovasculares e alta prevalência no consumo de substâncias tóxicas. O presente trabalho dá continuidade a estudos anteriores sobre fatores bioquímicos, antropométricos, comportamentais e socioeconômicos que predispõem as pessoas a doenças cardiovasculares. Foi determinado que seu estudo prévio à integração desses sujeitos em programas de exercícios físicos é essencial.

Palavras-chave: Fatores de risco coronariano, doenças cardiovasculares, exercícios físicos, adultos.

INTRODUCTION

Coronary risk factors are physical, psychological or social agents that expose individuals to an increased susceptibility to suffer from heart disease (Álvarez et al, 2014). Its identification and modification is essential for the prevention and treatment of coronary diseases at all health levels (Cartaya-Ortiz & Del Prado, 2021).

There are different coronary risk factors considered non-communicable chronic diseases and others as inappropriate habits, which predispose and precipitate the onset of cardiovascular or cerebrovascular diseases.

These, together with other factors such as age, sex and personality type, increase the chances of suffering from these diseases at an increasingly early age (Álvarez et al, 2014; ACSM, 2018, MINSAP, 2019).

The longer the influence of these factors is maintained, depending on their irreversibility, the greater the impact on the organism, which, as an aggravating factor, has the particularity of not arising in isolation, but rather have a cause and effect relationship between them, for what an individual has a risk factor, must be carefully evaluated for the presence of other aggravating agents for their health.

Physical exercise is a very useful instrument to intervene in advance and avoid or reduce the damage to health caused by coronary risk factors. The precept of physical exercises, like other therapies, is based on an adequate knowledge of its benefit-risk relationship, on the diagnosis of the particulars of the participants, as well as on adequate control and supervision by qualified personnel; when it is, the benefits are maximum and it is safe for most individuals (ACSM, 2018; Cartaya-Ortiz & Del Prado, 2021).

In addition, for it to serve its purposes, it must have an adequate rate of progression, depending on the functional capacity of the individual, their age, state of health, needs, objectives and preferences (Abellán-Alemán, Sainz de Baranda-Andujar & Ortín- Ortín, 2010, p.68)

The study's general objective was to identify the main coronary risk factors present in a sample of Cuban adults, as a tool to increase the individualization of physical exercise programs.

MATERIALS AND METHODS

A descriptive cross-sectional study was developed, using a sample of 467 participants between 40 to 69 years of age, 280 women and 187 men, who attended community health promotion centers due to risk coronary factors. At the beginning of this stage of life, aging processes begin to become more evident and it is necessary to pay attention to them to guarantee a better quality of life when they reach the elderly and avoid the occurrence of deaths at an early age due to cardiovascular or cerebrovascular diseases.

A health questioning was applied to those selected individuals that included general personal, family and health data (age, weight, height, toxic habits, the disease for which they attended the program, other diseases suffered and history of the practice of physical exercises). Regarding the family history, the main diseases suffered by the parents and, if they were deceased, the causes were investigated. In addition, their resting blood pressure and heart rate were measured.

The inclusion criteria were the systematic participation in the exercise programs, the signing of the informed consent of the participants and the commitment of the work team, the ethical management of the information provided, as stipulated by the Helsinki Convention (World Medical Association, 2013).

RESULTS

The following tables show the fundamental results of the study.

To establish the classification, the criteria of Pérez et al (2017, p.12) were assumed. The blood pressure figures reflected are the result of the measurement at rest during the study.

To establish the stratification, the ACSM (2010, p.34) criterion was assumed, with the purpose of optimizing the guidelines in the treatments to be followed, where the number of risk factors and the diagnosis of cardiorespiratory or metabolic diseases taken into account are present. In this way, the participants were classified as:

Low risk: Men under 45 years old, and women under 55 years old, asymptomatic and with no more than one risk factor.

Moderate risk: 45 year-old men and older and 55 year-old women and older, or with symptoms of two or more coronary risk factors.

High risk: Individuals with one or more signs and symptoms of cardiovascular, pulmonary or metabolic diseases.

To establish the criteria on the presence of toxic habits, the consumption of more than two cups of coffee per day was determined (Pardo-Lozano et al, 2007, p. 9), smokers who consumed more than 10 cigarettes per day (Álvarez, 2008, p. 418) and, the alcohol consumption of 2 or more servings of different drinks per week (Castro-Juárez et al, 2018, p. 158).

Table 1. Stratification of the selected sample by sex and age.

Age ranges	40-44	45 - 49	50 - 54	55-59	60-64	65-69	Total
Women	42	54	62	31	48	43	280
Men	31	33	44	18	31	30	187
X				54			
SD				9,4			

For the stratification by age ranges, the criteria of the yearbook of
the Oficina Nacional Estadística e Information, ONEI (2021, p. 17) were assumed.

Table 2. Risk factors or diseases suffered by the study participants

Diseases	Women	Men	Total	Percentage
Obesity	234	137	371	79,4%
Arterial hypertension	183	112	295	63,2%
Obese-hypertensive	148	77	225	48,2%
Myocardial infarction	8	11	19	4,1%
Anginas	8	5	13	2,8%
Diabetes mellitus	44	37	81	17,3%
Hyperlipidaemia	28	31	59	12,6%
Bronchial asthma	24	14	38	8,1%
Chronic bronchitis	23	10	33	7,1 %
Pulmonary emphysema	5	5	10	2,1%
Venous insufficiency	18	2	20	4,3%
Parkinson's disease	2	4	6	1,3%
Musculoskeletal diseases	49	40	89	19,1%

Table 3. Classification of hypertensive participants included in the sample.

Ranks	Classification	Men	Women	Total	%
Over 140 / Under 90	Isolated systolic HBP	10	13	23	7,8 %
120-139 / 80-89	Pre-hypertension	22	38	60	20,3 %
140- 159 / 90-99	HBP Grade I	57	89	146	49,5 %
160- 179 / 100-109	HBP Grade II	23	43	66	22,4 %
Subtotal		112	183		
Total				295	

Table 4. Behavior of the diabetic participants studied.

Type of diabetes	Men	Women	Total	%
Insulin dependent	5	7	12	14,8 %
Non-insulin dependent	32	37	69	85,2 %
Total	37	44	81	

Table 5. Stratification according to the risk factors suffered by the participants.

Risk stratification	Number	Percentage
Low risk	95	20,4%
Moderate risk	332	71,1%
High risk	40	8,5%

Table 6. Behavior of the sample, according to toxic habits.

Toxic habits	Women	Men	Total	Percentage
Alcohol consumption	15	80	95	20,3 %
Smoking	60	75	135	28,9 %
Coffee consumption	176	99	275	58,9 %
Other habits			Did not refer	

Table 7. Frequency of toxic habits.

Accumulation	Women	Men	Total	Percentage
No toxic habits	127	61	188	40,2 %
With 1 toxic habit	59	84	143	30,6 %
With 2 toxic habits	36	63	99	21,2 %
With 3 toxic habits	13	24	37	8 %

DISCUSSION

The main results illustrate that the most common risk factors are: obesity (79.4%) and hypertension (63.2%); of the total, 48.2% individuals are obese-hypertensive. Except for 25 individuals who only suffer obesity, 23 hypertensive, 4 with high cholesterol levels and 6 diabetics, the rest suffer from more than one risk factor or chronic non-communicable disease, which constitutes an increased risk of suffering from cardiovascular disease.

Regarding arterial hypertension, 49.5% (146) of the participants had figures between 140-159 and 90-99 (Grade I). Furthermore, of the 81 diabetic participants, 85.2% (69) did not require insulin to control the disease.

According to the risk stratification, participants with moderate risk predominated (332, 71.1%) because they are individuals with symptoms of a chronic non-communicable disease and/or two more factors. These results confirm that, although they maintain physical activity, a high percentage is prone to suffering from cardiovascular and cerebrovascular disease in the future.

The risks to these participants are increased when analyzing toxic habits. In Tables 6 and 7, 276 participants (59.1%) consume substances that are harmful to health, 38.6% (108) of the women report toxic habits; of them 95 (33.9%) declared having between one and two. In men, 93% declared the presence of toxic habits and 147 (78.6%) reported the presence between one and two. These results show a higher frequency of toxic habits in men and a predominance of the presence of between one and two in both sexes.

Coffee consumption is the most common habit (275, 58.9%), however, although they have lower figures, alcohol and tobacco consumption is relatively high, with 95 (20.3%) and 135 (28, 9%) respectively. (,) Aspect to take into account due to the negative impact they have on personal health, family and society.

Various national and international studies have directed their attention to coronary risk factors. The health report of the Centro Nacional de Información de Ciencias Médicas, CNICM, (2019, pp. 12-13) shows the incidence in the Cuban adult population of risk factors, where, the percentage of the diabetic population in the 2014 ranged from 9.6% in women to 7.3% in men. In 2015, 16.9% of women and 20.9% of men suffered from high blood pressure. In 2016, 62.5% of women and 54.5% of men were overweight or obese. 42.8% and 30.9%, respectively, had insufficient physical activity regimen. Regarding tobacco and alcohol consumption, around 57.3% of men and 17.1% of women are regular smokers and the per capita alcohol consumption was around 6.1 liters.

Moreno et al (2008, p. 151) in a sample from Villa Clara province, identified as predominant coronary risk factors, sedentary lifestyle, high blood pressure, obesity and smoking. A high percentage of the supposedly healthy participants had several coronary risk factors for coronary heart disease.

Hernández and Valdés (2014, p. 14) in a sample of 317 women from Santa Cruz del Norte, Mayabeque, divided into two groups, one in the climacteric or menopausal stage and the other between 20 and 39 years of age, identified a strong and significant correlation between age, Waist-Hip Index (ICC) and glycemia, a weak and significant correlation between age, Body Mass Index (BMI) and cholesterol. They concluded that during the climacteric and menopause stage there are changes in some anthropometric and metabolic values that increase the risk of cardiovascular diseases.

Varona et al (2015, p. 1561), based on the III National Survey of Risk Factors for Non communicable Diseases, 2010-2011 and the risk prediction tables of the World Health Organization, identified that 5.2% of the Cuban population had high and very high cardiovascular risk, 8.6% moderate risk and 86% low risk. The higher risk prevailed in men from urban areas and in women the low risk predominated. It was also defined that the risk increased with age.

Pérez-Fernández & Soto-García (2017, pp. 7-17), in a sample of autonomous communities in Spain, obtained the results that 2 392 individuals (10.6%) suffered from cardiovascular disease. They determined that the risk factors that contribute to the appearance of these diseases are: male sex, age, physical inactivity, widowhood, low level of education and/or qualification, overweight or obese, high blood pressure, high levels of low-density lipoprotein (LDL) and diabetes.

Castro-Juárez et al (2018, pp. 154-159) in a review of several studies, found that cardiovascular diseases in the Mexican adult population are related to biochemical, anthropometric, behavioural and socioeconomic factors such as: blood glucose levels and LDL values, BMI and ICC, physical inactivity, alcohol intake, tobacco consumption, working conditions, work stress, time and quality of food intake and insufficient rest hours.

Félix-Redondo et al (2019, pp. 3-13) in a sample from the Extremadura region, Spain, defined arterial hypertension as the highest risk of suffering from cardiovascular disease in the future, as well as the highest prevalence of factors risk in men and those over 50 years of age.

Cartaya-Ortiz and Del Prado (2021, pp. 115-116), in a sample of adults included in a cardiovascular rehabilitation program in Santiago de Cuba, through complementary tests, identified that hypertriglyceridemia, hypercholesterolemia and diabetes mellitus are closely linked to coronary heart disease, due to the degenerative changes they cause in the cardiovascular system. As a result of the exercise program, they observed improvements in blood glucose, triglycerides, and serum cholesterol.

Sánchez and Sánchez (2021, p. 152) in a sample from Banes, Holguín, determined the highest prevalence of arterial hypertension, diabetes mellitus and smoking, as modifiable risk factors. Moderate risk and the coexistence of three or more risk factors predominated.

There is a confluence between the results of the present work and previous studies, where there is a greater presence of risk factors in men, arterial hypertension constitutes a high risk of suffering from other cardiovascular diseases.

CONCLUSIONS

The most common risk factors for the sample studied are obesity and arterial hypertension and the combination of these two factors (obese-hypertensive).

Participants with moderate coronary risk predominate, with symptoms of a chronic non-communicable disease and/or two more coronary risk factors.

A high number of the sample consumes between one and two toxic habits, with a higher prevalence in men. The consumption of coffee predominates, although the consumption of tobacco and alcohol is considerable.

The identification of coronary risk factors allows a more accurate prescription of physical exercises, which contributes to increasing the benefit-risk ratio of the programs.

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