Original Article

Risk of cardiovascular disease in fishermen in a community

Risco de doenças cardiovasculares em pescadores de uma comunidade

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ABSTRACT | INTRODUCTION: Cardiovascular diseases are part of the chronic non-transmissible diseases, which are characterized as the main causes of death in Brazil and around the world. Against this fact, a continuous study is necessary in order to evaluate the risks that lead to cardiovascular diseases. **OBJECTIVE:** To evaluate the risk of cardiovascular disease in fishermen in the community of Pontal da Barra, Maceió-AL. **METHODS:** This is an observational, descriptive and cross-sectional study that was carried out from October to November 2016. The sample was defined by fishermen enrolled in Family Health of the unit Tarcísio Palmeira. Blood pressure, abdominal circumference, body mass index, lipid profile and fasting blood glucose were evaluated, and a questionnaire was applied that included questions related to their daily habits and socioeconomic aspects. Metabolic Syndrome was evaluated according to NCEP-ATP III. To evaluate the risk factors for cardiovascular events over the next 10 years, the Framingham score was applied. In the descriptive statistics the quantitative variables were presented such as standard deviation and percentage and the qualitative variables were presented in tables and frequency charts. **RESULTS:** The sample consisted of 37 male fishermen, aged 58.37 ± 13.77 years, with the majority having a monthly income of 1 to 2 minimum wages 89%. Metabolic syndrome was diagnosed in 49% of participants. Following the Framingham score, 22% had a high risk of developing cardiovascular events. CONCLUSION: The fishermen of the study do an intense work activity with the fishing, in addition to the food habit almost daily with the consumption of fish, which contributed to the classification as low risk of cardiovascular events.

KEYWORDS: Cardiovascular diseases. Risk factors. Men's health.

RESUMO | INTRODUÇÃO: Pescadores compõem um grupo de trabalhadores predominantemente do gênero masculino no Brasil. Atrelado ao gênero e à ocupação existem outros fatores de risco como tabagismo, consumo excessivo de álcool, baixo nível de escolaridade e socioeconômicos para desenvolvimento de doença cardiovascular que se constitui na principal causa de morte por doenças não transmissíveis. **OBJETIVO:** Avaliar a prevalência de doença cardiovascular em pescadores na comunidade Pontal da Barra, Maceió-AL. **MÉTODOS:** Estudo observacional transversal realizado no período de outubro a novembro de 2016. A amostra foi composta por pescadores cadastrados na Unidade de Saúde da Família Tarcísio Palmeira. Foram avaliados: pressão arterial, circunferência abdominal, índice de massa corpórea, perfil lipídico, glicemia em jejum e um questionário com perguntas sobre hábitos diários e aspectos socioeconômicos. A Síndrome Metabólica foi avaliada conforme a NCEP-ATP III. Para avaliar fatores de risco para eventos cardiovasculares nos próximos 10 anos, foi aplicado o escore de Framingham. As variáveis foram apresentadas em média, desvio padrão, números absolutos e porcentagem em tabelas e gráficos de frequência. **RESULTADOS:** A amostra foi composta por 37 pescadores, todos do gênero masculino, com idade de 58,37 ± 13,77 anos e com renda mensal de 1 a 2 salários mínimos (89%). A Síndrome Metabólica foi diagnosticada em 49% dos participantes. Segundo o escore de Framingham, 22% apresentaram alto risco de desenvolver eventos cardiovasculares. **CONCLUSÃO:** Os resultados encontrados revelaram que os pescadores na comunidade Pontal da Barra, apresentam um risco moderado para o desenvolvimento de doenças cardiovasculares nos próximos 10 anos.

PALAVRAS-CHAVE: Doenças cardiovasculares. Fatores de risco. Saúde do homem.

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Introduction

Cardiovascular diseases (CVD) represent the main cause of death from chronic noncommunicable diseases (CNCD)[1]. According to the literature, several risk factors underlie the development of CVDs and these are divided into modifiable and non-modifiable, It is important to emphasize that modifiable ones are related to eating habits, lifestyle and personal factors, while non-modifiable factors are related to advanced age, family history of CVD and being male[2]. Atherosclerosis is one of the main causes for the development of CVD, because it causes the accumulation of fatty plaques in the arteries that restrict blood flow. Atherosclerotic plaque develops due to genetic, clinical or behavioral factors[2], consequently Coronary Artery Disease (CAD) may occur due to different risk factors such as Systemic Arterial Hypertension (SAH), Diabetes Mellitus (DM), Sedentary Lifestyle, Smoking, Dyslipidemia, Obesity and genetic factors. Given this fact, it is necessary to continuously assess those exposed to these factors[2].

A major advance in medicine stands out in the sense of being able to identify the main risk factors that cause the development of CVD. The Framingham score is an important tool in the assessment of this risk, as it allows the calculation of the absolute risk of coronary events in people over a 10-year period, in order to identify what the risk factors are, through information regarding to age, smoking, hypertension and other factors[3]. According to the study by Freitas and Rodrigues[4], who assessed the health of fishermen, the research findings pointed out that most fishermen reported having some health problem, including SAH and DM, in addition to harmful lifestyle habits, with emphasis on excessive consumption of alcohol and tobacco.

Due to the high prevalence of cardiovascular events in the male population, this study was necessary in order to assess the risk of cardiovascular diseases that are caused by risk factors that involve behavioral aspects, through the consumption of tobacco and alcohol in excess in unfavorable social conditions and low educational level, in a group of fishermen. Specific lifestyle and belonging in majority to the male sex can lead this group of workers to greater vulnerability to the development of CVD. Given this context, it is necessary to identify risks and develop preventive measures and raise awareness of the risk for CVD, in order to stimulate changes in the lifestyle of fishermen. The aim of this study was to assess the risk of cardiovascular disease in fishermen in the Pontal da Barra community, Maceió-AL.

Materials and methods

This is an observational, descriptive and cross-sectional study. Data collection took place from October to November 2016. Male fishermen registered at the Tarcísio Palmeira Health Unit in the Pontal da Barra community, in the municipality of Maceió-AL participated in the study. As for the total number of the population there were 90 registered fishermen.

The sample size was defined in 37 fishermen considering a prevalence of at least one risk factor of 70%, according to Eyken and Moraes[5], an absolute precision of 15%, a confidence interval of 99% and level significance of 5% (www.openepi.com). The fishermen included in the research were the ones registered in the health team and the ones who participated in the men's health group during the period of data collection. Fishermen with heart disease, those who did not perform laboratory tests in the last six months, as well as fishermen who did not agree to sign the Informed Consent Form (ICF) were excluded.

At first, the fishermen who met the inclusion criteria were invited to participate in the research through health agents, and an appointment was made at the basic health unit to participate in the research. In the second moment, a questionnaire was applied in the unit, which included the following independent variables: age, weight, height, smoking, family income, alcohol consumption and frequency of physical activity practice. The independent variables were constituted by laboratory tests that included: glucose and lipid profile. These data were collected from the fishermen's medical records, the unit that performs periodic laboratory tests and blood pressure and waist circumference measurements were also collected. After obtaining the results, the fishermen were classified according to their lipid profile, the criteria adopted was according to the IV Guidelines on Dyslipidemias and Atherosclerosis Prevention[6], and the glucose result was according to the Brazilian Diabetes Society[7].

As for the Blood Pressure (BP) assessment, the fishermen were seated for at least five minutes, three measurements were taken, with an interval of one minute between them, the average for the final record was established. A properly calibrated tensiometer and a stethoscope were used, all of which are of the Premium brand. The use of antihypertensive medication was not considered during the BP measurement, as, according to the fishermen's report, the participants did not use this measurement on a regular basis. As for the values of systolic blood pressure (SBP) and diastolic blood pressure (DBP), values between SBP ≥ 120mmhg and DBP ≥ 80mmhg were considered normal, while the classification of systemic arterial hypertension (SAH) showed SBP values ≥ 140mmHg and DBP ≥ 90mmHg, according to the VI Brazilian Guideline on Hypertension[8].

Anthropometric measurements were performed using a tape measure. The abdominal circumference was verified, this measurement considered the midpoint between the lower costal margin and the iliac crest, with the research participants in an orthostatic position. As for the value of abdominal circumference, in the male population, it is greater than> 102 cm, so it indicates risk in the development of cardiovascular diseases, according to the National Cholesterol Education Program - Adult treatment panel III[9]. Weight and height were determined with the fisherman wearing light clothing, barefoot and with empty pockets and no accessories, in an upright position, using a scale and measuring tape suitable for later calculation of the body mass index (BMI), whose formula is the ratio between weight in kilograms and the square of height in meters (weight / height2), fishermen were classified as normal weight (18.5-24.9 kg / m2), pre-obese (25 to 29.9 kg / m2) , obese I (30.0 to 34.9 kg / m2), and obese II (35 to 39.9 kg / m2), according to the World Health Organization[10].

Metabolic Syndrome was characterized according to NCEP-ATP III9, in which the participant should have three or more of the following criteria: BP ≥ 130/85 mmHg; Triglycerides ≥ 150 mg / dL; abdominal circumference> 102 cm for men; HDL-c <40 for men and fasting blood glucose> 110 mg / dL.

The Framingham score, which assesses the risk of cardiovascular events was applied to each fisherman and the variables considered were: sex, age group, BP, total cholesterol, HDL-c, DM and smoking. Fishermen were classified according to the absolute risk for cardiovascular events in 10 years as low risk <10%, moderate risk 10% to 20%, and high risk> 20%[2].

Statistical analysis

In descriptive statistics, quantitative variables were presented as means, standard deviations and percentages. Qualitative variables were presented in tables and graphs of frequency.

Ethical aspects

The study was approved by the Ethics Committee of Faculdade Estácio de Alagoas, under registry number 1,771,265 (CAAE 58786216.4.0000.5012). The participants were informed about the objectives of the study and signed the Informed Consent Form.

Results

37 fishermen, registered in the Family Health team of the Tarcísio Palmeira Health Unit, in the Pontal da Barra community in Maceió-AL, were evaluated. All participants had an age range of 58.37 ± 13.77 years, regarding education 78% attended primary school, 89% had a monthly income of about 1 to 2 minimum wages. And regarding to marital status 92% were married. The findings regarding lifestyle were as follow, 84% reported not to smoke, 51% said they did not consume alcohol, 16% consumed alcohol twice a week and 33% consume it frequently. As for the practice of physical exercises, 73% reported not to practice physical activity, (Table 1).

Table 1. Biosocial characteristics of fishermen in the Pontal da Barra community from October to November 2016

Variables	N	%
	37	**100**
Education		
Illiterate	4	11
Primary	29	78
High school	3	8
Imcomplete higher education course	1	3
Family Income (In minimum wages)		
1 a 2	33	89
3	3	8
≥4	1	3
Marital Status		
Single	2	3
Married	34	92
Widow	1	5
Smoking		
No	31	84
Yes	6	16
Alcoholism		
No	19	51
2x a week	6	16
Daily	12	33
Atividade Física		
No	27	73
2x a week	6	16
≥ 3 times a week	4	11

As for the findings related to clinical characteristics, the lipid profile showed an arithmetic mean (MA) and ± standard deviation (SD) in the result of total cholesterol 179.54 ± 52.30mg / dl, respectively. While 62% had total cholesterol at the desirable values 38% had borderline values above 240mg / dL, and 51% had HDL-C rated as excellent but 49% had a value below 40mg / dL, with a MA ± DV was 40.13 ± 10.39mg / dl respectively. As for the LDL-c findings, 76% had optimal and desirable values, (24%) had borderline values or above 160 ≥ 190 mg / dL, with AM ± DV it presented 98.82 ± 42.38mg / dl , respectively. As for the value of triglycerides, 38% showed desirable values and 62% showed borderline values and above 201 to ≥ 409 mg / dL, with the MA ± DV of 181.29 ± 94.54mg / dl, respectively.

The result of fasting blood glucose showed that only 5% of fishermen had Diabetes mellitus, with MA ± DV of 90.05 ± 42.64mg / dl. The waist circumference was at increased risk in 49% of fishermen with MA ± DV of 95.27 ± 10.64 cm. Regarding to blood pressure levels, 32% had prehypertension with BP of 130/139 - 80mmhg, while 38% were hypertensive (≥140 / 90mmhH) with MA ± DV was 131.89 ± 15.60mmHg. In the evaluation of the BMI it was revealed that (59%) of the fishermen had weight with values above the normal, with MA ± DV of 26.87 ± 4.47kg / m^2, (Table 2).

Table 2. Clinical distribution of fishermen from the Pontal da Barra community, Maceió -AL.2016

Characteristics	N	%	Mean ± standard deviation
	37	**100**	
Cholesterol Total(mg/dL)			179.54 ± 52.30
Desirable < 190 mg/dL	23	62	
Borderline 200-239mg/dL	10	27	
High ≥ 240	4	11	
HDL-c (mg/dl)			40.13 ± 10.39
Desirable > 40 mg/dL	19	51	
Low < 40 mg/dL	18	49	
LDL-c (mg/dl)			98.82 ± 42.38
Optimum < 100 mg/dL	18	49	
Desirable 100-129mg/dL	10	27	
Borderline130-159mg/dL	6	16	
High 160 ≥ 190 mg/dL	3	8	
Triglycerides (mg/dl)			181.29 ± 94.54
Desirable < 175mg/dL	14	38	
Borderline 150-200mg/dL	10	27	
High 201 a ≥ 409	13	35	
Glucose fasting (mg/dl)			90.05 ± 42.64
Normal 70 a 99 mg/dL	30	81	
Glucose tolerance 100 a 126 mg/dL	5	14	
Diabetes > 126 mg/dL	2	5	
Abdominal circumference (cm)			95,27 ± 10,64
Normal < 102 cm	19	51	
Increased risk ≥102cm	18	49	
Blood Pressure (mmHg)			131,89 ± 15,60
Normal ≤ 120/ 80	11	30	
Prehypertension 130/139 - 80	12	32	
Hypertensive ≥140/90	14	38	
BMI (Kg/m²)			26,87 ± 4,47
Normal Weight	15	41	
Pre-obese	13	35	
Grade obesity	7	19	
Grade obesity II	2	5	

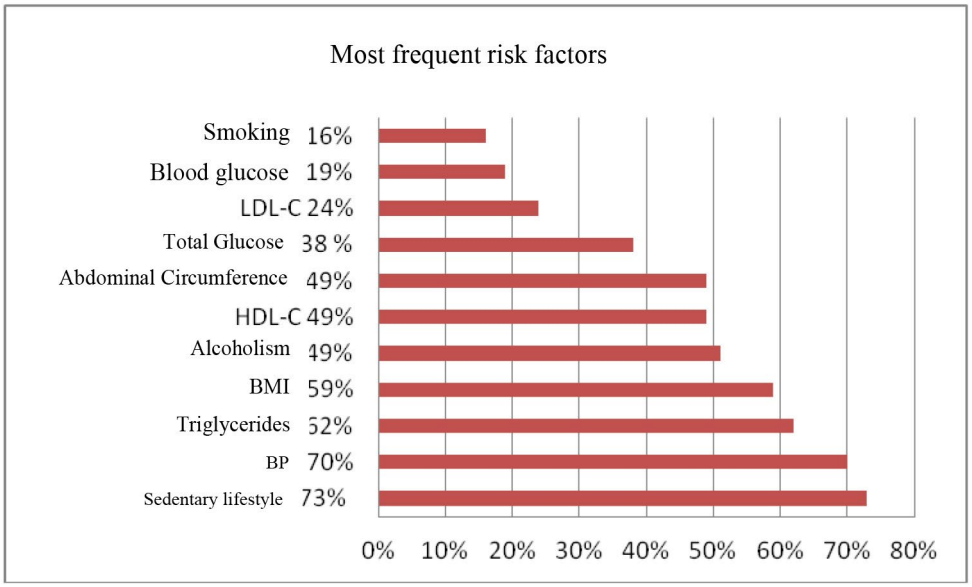
Metabolic Syndrome was present in 49% of the participants. Blood pressure and triglyceride were the most frequent and most contributing criteria for the diagnosis of the syndrome, both with 94%, followed by an increase in abdominal circumference with (72%), HDL-C with 61%, and fasting glycemia with 28%, this being the least influential in the diagnosis of Metabolic Syndrome, (Table 3).

Table 3. Distribution and characteristics of the components of the Metabolic Syndrome in a group of fishermen belonging to the Pontal da Barra community, Maceió-AL, from October to November 2016

Variable – MS	N	%
	18	49
Blood Pressure ≥ 130 ou ≤ 85mmHg	17	94
Triglycerides ≥ 150 mg/dL	17	94
Abdominal circumference ≥ 102 cm	13	72
HDL-c < 40 (mg/dL)	11	61
Fasting blood glucose ≥ 110 mg/dL	5	28

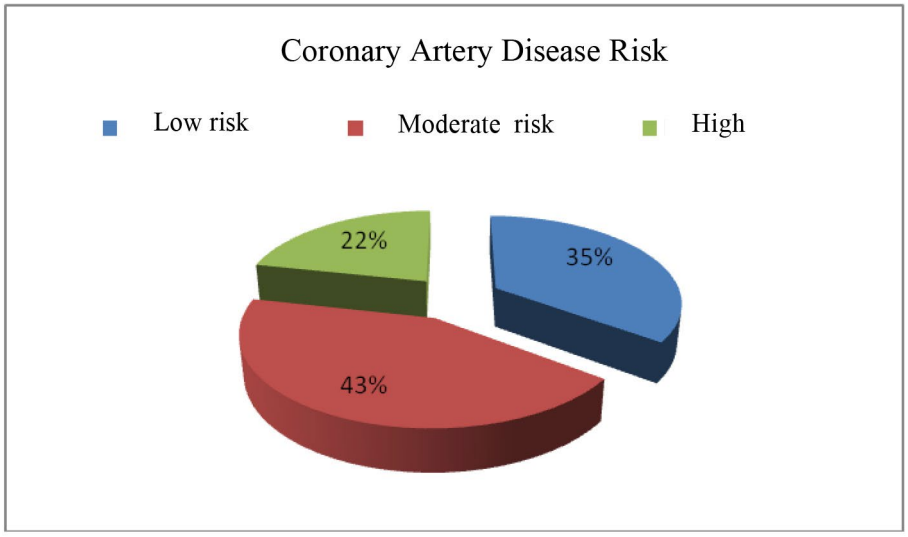
As for risk factors for the evolution of cardiovascular diseases among fishermen, physical inactivity represented 73%, followed by BP with values above normal 70%, triglycerides above normal 62%, BMI with weight above normal 59%, alcoholism, HDL- c and Abdominal Circumference with 49%, Total Cholesterol 38%, LDL-c 24%, Glycemia with values above normal 19%, and smoking with 16%, showing the least influence among risk factors, (Figure 1).

Figure 1. Most frequent risk factors for cardiovascular events found in fishermen in the Pontal da Barra Maceió-AL community. 2016



The risk of cardiac events over a ten-year period was calculated using the Framingham score, attributing variables such as: sex, age, total cholesterol, blood glucose, smoking, HDL-c and systolic blood pressure. Among fishermen evaluated, 35% had a low risk, 43% a moderate risk and 22% a high risk of cardiac events in ten years, (Figure 2).

Figure 2. Classification of the risk of cardiovascular events in ten years among fishermen in the Pontal da Barra community, Maceió-AL.2006



Discussion

In this research, the Framingham score pointed to a moderate risk for the development of CVD in the next 10 years. Other published studies with the same age group compared to the result found in this study, revealed different results. The research carried out by Klein and Oliveira[11], whose participants were male, had a higher risk of developing CVD in ten years, while the study by Larré and Almeida[12], found a value slightly lower than the chance of developing CVD in ten years.

In the present study, the average age of fishermen was 58.37 years. This average age is because the new generations have devoted themselves more to their studies, and less to the fishing profession in the Pontal da Barra community, Maceió-AL. These data were corroborated with those produced by Rosa and Matos[13], who found a similar age range among fishermen. In another population survey, the researchers assessed the prevalence and factors associated with CVD in a population made up of fishermen and crab scavengers whose age range was similar as well.

The fishermen who participated in this research had a low family income and schooling. The need to work at an early age in order to help with family income was also highlighted by Tamano et al.[15] when researching the education of a group of fishermen in Lagoa Mundaú / AL. However, these findings represent important risk factors in the evolution of cardiovascular diseases. Corroborating the results of this research, Martins et al., 2014[16] when carrying out a review study pointed out that education and socioeconomic level have a great correlation with the frequency and intensity of cardiovascular risk factors.

The consumption of alcoholic beverages was reported by almost half of the participants (49%). The use of alcoholic drinks increases the risk for the evolution of cardiovascular diseases. However, in a survey carried out by Oliveira[18], fishermen reported a higher intake of alcoholic beverages (60.7%), a probable difference in the values found in these studies, refers to the fact that the fishermen evaluated in this research, have the support of equipment support groups for alcoholism. It is worth mentioning, however, that a limitation of studies on alcohol consumption are based on self-reported information, consequently underestimation of the data, may have occurred.

In this study, a sedentary lifestyle was the most frequent risk factor for developing CVD (73%). Fishermen reported that they did not practice physical activities because the work activity itself involves physical exhaustion and fatigue at the end of the day. A study by Teston et al.[14], with the adult population, sedentary lifestyle (82.8%) was high. It is worth mentioning that a sedentary lifestyle causes weight gain and, consequently, increases the risk of CVD.

The BMI and abdominal circumference of the fishermen were high, and these values can be attributed to a sedentary lifestyle. Pitanga and Lessa[19], stated in a population study that the accumulation of abdominal fat favors the high risk of myocardial infarction. These data were corroborated by Oliveira[18], in a study also carried out with a population of fishermen. It was also emphasized in a research carried out by Pires et al.[20], with adults from Northern Angola, high BMI and abdominal obesity represented risk factors strongly associated with CVD. These authors stressed the need for strategies to improve prevention, diagnosis and access to treatment for hypertension and the various factors associated with morbidity and mortality from cardiovascular diseases.

In the present study, a high prevalence of arterial hypertension (38%) and prehypertension (32%) was observed. It is worth mentioning that some fishermen were unaware that SAH represents a risk in the evolution of cardiovascular diseases. Scientific evidence shows great variation in SAH rates, but, in general, they are always high. In the study by Teston et al.[14], 25.8% of the interviewed population was hypertensive, while in the study by Klein and Oliveira[11] this condition was estimated to be 40%. Thus, Portela et al.[21], affirm that Systemic Arterial Hypertension represents a worldwide public health problem, being recognized as the main risk factor for cardiovascular morbidity and mortality.

There was a low percentage of diabetics among fishermen, as well as those who showed glucose tolerance, this finding was related to low sugar consumption, as reported by the interviewees who, in general, prefer consumption of salty foods that is rich in sodium, which may also explain the high prevalence of SAH. The results observed in this study differed from some studies described in the literature, considering that Diabetes did not represent one of the important

findings of this research, thus It does not represent one of the risk factors for cardiovascular diseases. In the study by Oliveira[18], the rate of diabetes among fishermen was 37.5%. However, a study published by Larré and Almeida[12] the main cause of morbidity and mortality from cardiovascular disease was associated with Diabetes Mellitus. According to the Brazilian Diabetes Society (2016)[22], the person with Diabetes has a high cardiovascular risk when compared to non-diabetics.

As for the lipid profile of the fishermen, many had normal levels, except for the value of triglycerides, which in only 38% the findings found were considered normal. When analyzing total cholesterol and HDL-c, they showed normal values, as well, LDL-c indicated the optimal and desirable value. And, these findings can be justified by the eating habits of the research participants, as there is a high consumption of fish-based foods, which have a low saturated fat content. However, the results of the study by Klein and Oliveira[11], showed as a result a higher rate of normality of the lipid profile compared to this study, and those by Renner et al.[23], showed lower values in the rate of normal total cholesterol, which was 54, 3%. Borba et al.[24], advocate the early assessment of the lipid profile, which allows the identification of modifiable risk factors for coronary artery disease.

Metabolic Syndrome (MS) was present in 49% of the sample studied. These data are similar to those produced in a population study carried out in municipalities in the southern region of Brazil, in which the researchers identified a high prevalence of MS in individuals aged 40 years or older, of both sexes. It is worth mentioning that the difference in the estimated prevalence between the present study and that carried out in southern Brazil can be explained by the inclusion of female individuals in the latter, since women had higher rates of MS than men.

The study made it possible to know the risk factors for CVD in the population studied and to identify its need for specific interventions. Therefore, this study will contribute to plan actions to help Family Health professionals develop actions aimed at preventing health problems and consequently promoting health which will contribute greatly to the reduction of morbidity and mortality rate in this population.

Conclusion

The results found pointed out that fishermen in the Pontal da Barra community have a moderate risk for the development of cardiovascular diseases in the next 10 years.

Author contributions

Barbosa SES participated in the conception, design, collection and analysis of data and writing of the scientific article. Mourão ARC participated in the conception, design, interpretation of results and writing of the scientific article. Silva DLR participated in data collection and analysis. Trindade-Filho EM participated in the statistical analysis of the research data, in the interpretation of the data and writing of the scientific article.

Competing interests

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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