

Cardiovascular risk factors in patients with fibromyalgia

Hugo Ribeiro Zanetti¹, Tábata de Paula Facioli², Roberto Furlanetto Júnior¹, Eduardo Gaspareto Haddad³, Leandro Teixeira Paranhos Lopes⁴, Alexandre Gonçalves³

ABSTRACT

Objective: To assess the cardiovascular risk factors in patients with fibromyalgia. **Methods:** The study consisted of 40 women diagnosed with FM and forwarded to the Physical Rehabilitation department at the Hospital of Uberlândia. A survey was applied from the American College of Sports Medicine containing questions about family history, smoking, hypertension, dyslipidemia, impaired fasting glucose, obesity, physical inactivity, and alcohol consumption. **Results:** The prevalence of physical inactivity was 92.5%, heredity 52.5%, obesity 50%, hypertension 45%, dyslipidemia 37.5%, smoking 25%, alcohol consumption 8%, and diabetes 7.5%. Furthermore, 60% of the sample had three or more risk factors, 30% had 2 factors and 10% had only one risk factor. **Conclusion:** Patients with FM have multiple cardiovascular risk factors, thus, such patients should be advised to change lifestyle in order to reduce such factors and consequent future cardiac events, and provide improvement of the pain.

Keywords: Fibromyalgia, Risk Factors, Sedentary Lifestyle

¹ Postgraduate student in physical education, Universidade Federal do Triângulo Mineiro - UFTM.

² Postgraduate student in Rehabilitation and Functional Performance, Ribeirão Preto School of Medicine of the Universidade de São Paulo - FMRP/USP.

³ Lecturer, Instituto Master de Ensino Presidente Antônio Carlos - IMEPAC.

⁴ Lecturer, Centro Universitário do Triângulo - UNITRI.

Mailing address:

Hospital de Clínicas de Uberlândia
Hugo Ribeiro Zanetti
Avenida Pará, 1702
CEP 38405-320
Uberlândia - MG
E-mail: hugo.zanetti@hotmail.com

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INTRODUCTION

Fibromyalgia (FM) is a rheumatic rather than inflammatory syndrome with an unknown etiology, predominantly affecting women. It is characterized by the diffuse and chronic pain it causes in the musculoskeletal system, at specific anatomical sites, with sensitivity exacerbated by palpation at certain "tender points" located symmetrically on both sides of the body.

FM is frequently associated with fatigue, sleep disturbances, morning stiffness, and psychological disturbances such as anxiety and depression. This is why various studies still consider it to be a somatic syndrome.^{3,4}

The clinical presentation of this syndrome is usually polymorphic, requiring a careful anamnesis and detailed physical examination, which supply few findings, since the only significant clinical data is the presence of painful sensitivity.^{1,2,5,6}

Physical exercise has stood out as the most effective and best-known non-pharmacological treatment for this population. In addition to the known benefits of improving cardio-respiratory condition, lipid profile, and strength and flexibility, exercise has the unique ability to enhance medical treatments for reducing the diffuse pain in patients with FM.^{7,8,9}

In view of the fact that FM afflicts from 3 to 5% of the world's population, it is important to do more studies on this disease and correlate it with cardiovascular risk factors (CRF), since there is no registry in the literature of this connection. The CRFs studied are: 1) family history; 2) smoking; 3) hypertension; 4) dyslipidemia; 5) impaired fasting glucose; 6) obesity; 7) sedentary lifestyle; and 8) drinking alcohol.¹⁰

OBJECTIVE

This study sought to verify the CRFs in FM patients that were sent to the Physical Rehabilitation department of the Hospital de Clínicas of the Universidade Federal de Uberlândia (HCUFU).

METHOD

There were 40 women who participated in this study, aged 57.04 years \pm 12.12 years and diagnosed with fibromyalgia by the Rheumatology department and sent to Physical Rehabilitation unit of the Hospital de Clínicas (HCUFU).

Before beginning the physical exercise program, the patients were first interviewed by department professionals (physical educator, nurse, and physiotherapist). Information was collected in the anamneses concerning family history, associated diseases, tests to check the tender points, physical evaluation, and CRFs.

To collect this last information, the questionnaire named "Coronary Artery Disease Risk Factors Thresholds" from the American College of Sports Medicine (2011) was applied to stratify the ACSM risks and classified following the criteria from Chart 1.

The questionnaire approached questions on the following positive risk factors: 1) family history; 2) smoking; 3) hypertension; 4) dyslipidemia; 5) impaired fasting glucose; 6) obesity; 7) sedentary lifestyle; and 8) drinking alcohol.¹⁰

All ethical procedures were scrupulously adopted and included only those who agreed and signed the free and informed consent terms.

The Excel® 2007 Microsoft Office databank was used to analyze and tabulate the data and to create tables and respective percentages for positive CRFs.

RESULTS

Table 1 shows the distribution of cardiovascular risk factors for patients and the corresponding percentage.

Table 1 shows that sedentary lifestyle was the greatest prevalence among the risk factors

(92.5%). Following are heredity (52.5%), obesity (50%), hypertension (45%), dyslipidemia (37.5%), smoking (25%), drinking (8%), and DM (7.5%) complete the list of risk factors.

Table 2 shows the distribution according to the number of risk factors per patient.

Table 2 shows the high prevalence of the patients having three or more risk factors (60%). Notice that another 30% have two factors, and only 10% have only one risk factor.

DISCUSSION

The interest in doing this study started the moment a patient started having angina pectoris while exercising on a treadmill and was sent to the emergency room at HC-UFU. The examinations revealed significant blockage of the coronary artery. The patient then went through revascularization surgery of the myocardium and was again sent to the Rehabilitation Unit where they rehabilitate cardiac patients. Stratification of cardiovascular risk must be done succinctly for the best prescription and safety for the patient as well as the department staff.

Studies have demonstrated the impact of such risk factors on the morbidity and mortality rates from heart disease. However, the main risk factors are modifiable simply by means of changing one's lifestyle such as abandoning sedentariness by incorporating habits of daily physical activity and eating healthier foods.^{11,12}

One extremely important fact was revealed in the present study-the high percentage of sedentariness. These findings suggest

Chart 1. Coronary Artery Disease Risk Factors Thresholds to stratify the ACSM risks

Risk Factors (Positive)	Defining Criteria
1. Family history	Myocardial infarction, coronary revascularization, or sudden death before 55 years of age in father or other male first-degree relative (i.e., brother or son), or before 65 years of age in mother or other female first-degree relative (i.e., sister or daughter)
2. Cigarette smoking	Current cigarette smoker or those who quit within the previous 6 months.
3. Hypertension	Systolic blood pressure of \geq 140 mm Hg or diastolic \geq 90 mm Hg, confirmed by measurements on at least 2 separate occasions, or on antihypertensive medication.
4. Dyslipidemia	Low-density cholesterol (LDL) $>$ 130 mg/dl (3.4 mmol/L) or high-density cholesterol (HDL) $<$ 40 mg/dl (1.03 mmol/L), or lipid-reducing medication.
5. Impaired fasting glucose	Fasting blood glucose of \geq 100 mg/dl (5.6 mmol/L) confirmed by measurements on at least 2 separate occasions
6. Obesity	Body Mass Index of \geq 30 kg/m ² or waist measurement of $>$ 102 cm for men and 88 cm for women, or waist/hip ratio \geq 0.95 for men and \geq 0.86 for women.
7. Sedentary lifestyle	Body Mass Index of \geq 30 kg/m ² or waist measurement of $>$ 102 cm for men and 88 cm for women, or waist/hip ratio \geq 0.95 for men and \geq 0.86 for women.
8. Drinking	Current drinker or one who quit drinking within the previous 6 months.

Table 1. Prevalence of cardiovascular risk factors

Risk Factor	N	%
Family History	21	52.5
Smoking	10	25
Hypertension	18	45
Dyslipidemia	15	37.5
Impaired fasting glucose	3	7.5
Obesity	20	50
Sedentary lifestyle	37	92.5

Table 2. Number of risk factors per person

Number of RFs	N	%
1	4	10
2	12	30
3 or more	24	60

that these patients, by presenting diffuse muscular pain, stiffness, and fatigue, opt to not exercise and thereby jeopardize their health. They enter into a vicious circle of increasing pain and diminishing activity, which consequently worsens the fibromyalgia situation. In addition, physical inactivity is considered the primary factor in developing heart disease and increasing the risk of obesity, hypertension, and dyslipidemia, which respectively represent the third, fourth, and fifth greatest prevalences in these patients.^{13,14}

Directly related to the sedentary lifestyle is obesity, which is turning into the great problem of this century, mainly due to lifestyles and advanced technologies. Evidence shows that the obese have more musculoskeletal pain and physical dysfunctions than those of normal weight. There is an association between obesity and certain rheumatologic conditions, showing up in the lower limbs in osteoarthritis of the knee, for example. In addition, there is a positive link between an elevated BMI and shorter distances on the treadmill, reaching a higher peak pulse rate during the test, and heart diseases.¹⁶

In the present study 50% of the participants were obese. These findings are corroborated by previous studies suggesting that obesity is a common comorbidity among individuals with FM, reporting that 32 – 50% of their patients were obese and 21 – 30% were overweight, representing a higher BMI than individuals free of pain.^{17,18,19}

One also observes a high prevalence of this pattern in the patients' family histories. Family history is also known to pose a non-modifiable risk factor and, if associated with other risks, plays a fundamental role in heart diseases.

Although only 25% of the current patients smoked, this is important information since smoking is related to ischemic heart diseases and the development of atherosclerotic plaques by favoring the oxidation of LDL-c. Also, there are substances in a cigarette that can trigger important hemodynamic alterations such as tachycardia, alterations in blood pressure, and reduced heart rate during physical exercise.^{20,21,22}

In all, 15 patients had altered LDL-c levels. This condition increases intracellular cholesterol and inhibits the expression of LDL receptors, hence there is a diminished capture rate of LDL-c, which then remains in the plasma. LDL-c in circulation has the ability to penetrate the subendothelial layer of blood vessels where it gets oxidized; oxidized LDL attracts macrophages, which enter the vessel wall and become trapped. These macrophages also have LDL receptors so they ingest the LDL, but there is no receptor inhibition due to the increased concentration of cholesterol, hence this cholesterol accumulates, forming spongy cells that agglomerate in the intima tunica, forming atheromatous plaques, which leads to significant hemodynamic alterations and possible future cardiac events.^{23,24}

In recent years hypertension has been stipulated as the leading cause of death among all the cardiovascular diseases. By itself it is responsible for 45% of deaths and, when associated with other CRFs, the percentage rises to 70% of all deaths.²⁵ Therefore the prevention as well as the control of these pressure levels is linked to a lower risk of death. We must remain aware that hypertension is correlated with systemic diseases such as renal insufficiency, cardiac insufficiency, ventricular hypertrophy, and strokes.²⁶

Table 2 shows that 60% of the patients present 3 or more associated CRFs. Strategies must be established for multiprofessional interventions, with the help of nutritionists, psychologists, and physical educators, in order to avoid possible aggravation of the patients' health since several previous studies have already proven that the greater number of risk factors in an individual, the greater are the chances of an acute cardiac event.

Therefore new, more in-depth laboratory studies must be done to correlate the CRFs, heart diseases, and the FM syndrome, to seek to understand and diagnose the disease more accurately.

CONCLUSION

Fibromyalgia can contribute to the development of cardiovascular risk factors such as sedentariness, obesity, and diseases stemming from the latter such as dyslipidemia, insulin resistance, and hypertension. However, many CRFs are modifiable simply by changing the lifestyle, and combatting and preventing heart diseases, aside from improving the symptoms arising from FM by reducing pain at the tender points, morning stiffness, fatigue, anxiety, and depression.

In view of the scarcity of data available in the literature concerning CRFs and FM, additional studies must be done to better understand the disease and the best form of treating it without medications.

REFERENCES

1. Clauw DJ. Fibromyalgia: an overview. *Am J Med.* 2009;122(12 Suppl):S3-S13. DOI: <http://dx.doi.org/10.1016/j.amjmed.2009.09.006>
2. Helfenstein M, Feldman D. Síndrome da fibromialgia: características clínicas e associações com outras síndromes disfuncionais. *Rev Bras Reumatol.* 2002;42(1):8-14.
3. Spitzer AR, Broadman M. A retrospective review of the sleep characteristics in patients with chronic fatigue syndrome and fibromyalgia. *Pain Pract.* 2010;10(4):294-300. DOI: <http://dx.doi.org/10.1111/j.1533-2500.2009.00352.x>
4. Berber JSS, Kupek E, Berber SC. Prevalência de depressão e sua relação com a qualidade de vida em pacientes com síndrome da fibromialgia. *Rev Bras Reumatol.* 2005;45(2):47-54. DOI: <http://dx.doi.org/10.1590/S0482-50042005000200002>
5. Haun MVA, Ferraz MB, Pollak DF. Validação dos critérios do Colégio Americano de Reumatologia (1990) para classificação da fibromialgia, em uma população brasileira. *Rev Bras Reumatol.* 1999;39(4):221-30.

6. Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Katz RS, Mease P, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res (Hoboken)*. 2010;62(5):600-10. DOI: <http://dx.doi.org/10.1002/acr.20140>
7. Bressan LR, Matsutani LA, Assumpção A, Marques AP, Cabral CMN. Efeitos do alongamento muscular e condicionamento físico no tratamento fisioterápico de pacientes com fibromialgia. *Rev Bras Fisioter*. 2008;12(2):89-93. DOI: <http://dx.doi.org/10.1590/S1413-3552008000200003>
8. Redondo JR, Justo CM, Moraleda FV, Velayos YG, Puche JJ, Zubero JR, et al. Long-term efficacy of therapy in patients with fibromyalgia: a physical exercise-based program and a cognitive-behavioral approach. *Arthritis Rheum*. 2004;51(2):184-92. DOI: <http://dx.doi.org/10.1002/art.20252>
9. Marques AP, Ferreira EAG, Matsutani LA, Assumpção A, Capela CE, Pereira CAB. Efeito do exercício de alongamento na melhora da dor, flexibilidade e qualidade de vida em pacientes com fibromialgia. *Fisioter Movimento*. 2004;17(4):35-41.
10. American College of Sports Medicine. *Diretrizes do ACSM para os testes de esforço e sua prescrição*. 8 ed. Rio de Janeiro: Guanabara Koogan; 2010.
11. Look AHEAD Research Group. Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial. *Diabetes Care*. 2007;30(6):1374-83. DOI: <http://dx.doi.org/10.2337/dc07-0048>
12. Ketola E, Sipilä R, Mäkelä M. Effectiveness of individual lifestyle interventions in reducing cardiovascular disease and risk factors. *Ann Med*. 2000;32(4):239-51. DOI: <http://dx.doi.org/10.3109/07853890009011767>
13. Estefani GA, Arice MC. Diagnóstico diferencial e a fisioterapia na fibromialgia e síndrome miofacial. *Fisioter Movimento*. 2001;14(2):47-51.
14. Ellingson LD, Shields MR, Stegner AJ, Cook DB. Physical activity, sustained sedentary behavior, and pain modulation in women with fibromyalgia. *J Pain*. 2012;13(2):195-206. DOI: <http://dx.doi.org/10.1016/j.jpain.2011.11.001>
15. Peltonen M, Lindroos AK, Torgerson JS. Musculoskeletal pain in the obese: a comparison with a general population and long-term changes after conventional and surgical obesity treatment. *Pain*. 2003;104(3):549-57. DOI: [http://dx.doi.org/10.1016/S0304-3959\(03\)00091-5](http://dx.doi.org/10.1016/S0304-3959(03)00091-5)
16. Okifuji A, Bradshaw DH, Olson C. Evaluating obesity in fibromyalgia: neuroendocrine biomarkers, symptoms, and functions. *Clin Rheumatol*. 2009;28(4):475-8. DOI: <http://dx.doi.org/10.1007/s10067-009-1094-2>
17. Bingeors K, Isacson D. Epidemiology, co-morbidity, and impact on health-related quality of life of self-reported headache and musculoskeletal pain—a gender perspective. *Eur J Pain*. 2004;8(5):435-50. DOI: <http://dx.doi.org/10.1016/j.ejpain.2004.01.005>
18. Felson DT, Zhang Y, Anthony JM, Naimark A, Anderson JJ. Weight loss reduces the risk for symptomatic knee osteoarthritis in women. The Framingham Study. *Ann Intern Med*. 1992;116(7):535-9. DOI: <http://dx.doi.org/10.7326/0003-4819-116-7-535>
19. Christensen R, Astrup A, Bliddal H. Weight loss: the treatment of choice for knee osteoarthritis? A randomized trial. *Osteoarthritis Cartilage*. 2005;13(1):20-7. DOI: <http://dx.doi.org/10.1016/j.joca.2004.10.008>
20. Kallio K, Jokinen E, Saarinen M, Hämäläinen M, Volanen I, Kaitosaari T, et al. Arterial intima-media thickness, endothelial function, and apolipoproteins in adolescents frequently exposed to tobacco smoke. *Circ Cardiovasc Qual Outcomes*. 2010;3(2):196-203. DOI: <http://dx.doi.org/10.1161/CIRCOUTCOMES.109.857771>
21. Yatsuya H, Folsom AR; ARIC Investigators. Risk of incident cardiovascular disease among users of smokeless tobacco in the Atherosclerosis Risk in Communities (ARIC) study. *Am J Epidemiol*. 2010 Sep 1;172(5):600-5. DOI: <http://dx.doi.org/10.1093/aje/kwq191>
22. Bullen C. Impact of tobacco smoking and smoking cessation on cardiovascular risk and disease. *Expert Rev Cardiovasc Ther*. 2008;6(6):883-95. DOI: <http://dx.doi.org/10.1586/14779072.6.6.883>
23. Golan DE, Tashjian AH, Armstrong EJ, Armstrong AW. *Princípios de farmacologia*. Rio de Janeiro: Guanabara Koogan; 2009.
24. Sociedade Brasileira de Cardiologia. IV Diretriz Brasileira sobre Dislipidemias e Prevenção da Aterosclerose. *Arq Bras Cardiol*. 2007;88(Suplemento I):2-19.
25. Brasil. Ministério da Saúde. *Saúde Brasil 2011: uma análise da situação de saúde e a vigilância da saúde da mulher*. Brasília: Ministério da Saúde; 2012.
26. Santos Filho RD, Martinez TLR. Fatores de risco para doença cardiovascular: velhos e novos fatores de risco, velhos problemas! *Arq Bras Endocrinol Metab*. 2002;46(3):212-4.