

## Lifestyle and level of physical activity in individuals with chagasic myocardopathy

### Estilo de vida e nível de atividade física de indivíduos portadores de miocardiopatia chagásica

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**ABSTRACT | INTRODUCTION:** Chagas disease (CD) is a parasitic infection caused by the flagellated protozoan *Trypanosoma cruzi*. Estimates point to the existence of approximately five million infected individuals, mainly in Latin America, with Brazil dating between 1.9 and 4.6 million individuals under the same infectious aspect. The cardiac outcome is one of the most important aspects with manifestations consistent with systolic or diastolic ventricular dysfunction, cardiac autonomic dysfunction, and sudden death. **OBJECTIVE:** To correlate the lifestyle and physical activity level of individuals with Chagas cardiomyopathy (CM). **MATERIAL AND METHODS:** A cross-sectional analytical study was carried out in a reference outpatient clinic for cardiomyopathies, with state coverage. A form was created by the authors, which included, in addition to the clinical variables and demographic, variables related to the analysis of the participants' lifestyle and physical activity, this being applied in the waiting room, while the subjects waited for medical care. **RESULTS:** Seventy-four individuals with CM were selected. The mean age of the sample was  $61.2 \pm 8.5$  years, with 50 (68.0%) individuals being female. Regarding the level of physical activity, the "not active" category was predominant, corresponding to 60 individuals (71.0%). The lifestyle was classified as "very good" for 41 (55.0%) participants and "good" for 22 (30.0%) participants, with no individuals allocated to the "need to improve" category of the questionnaire. **CONCLUSION:** The results obtained allow us to conclude that, in general, the lifestyle and the level of physical activity of individuals with CM were characterized as "good" / "very good" and not active, respectively.

**KEYWORDS:** Chagasic cardiomyopathy. Lifestyle. Physical activity.

**RESUMO | INTRODUÇÃO:** A doença de Chagas (DC) constitui uma infecção parasitária causada pelo protozoário flagelado *Trypanosoma cruzi*. Estimativas apontam a existência de, aproximadamente, cinco milhões de indivíduos infectados, principalmente na América Latina, com o Brasil datando entre 1,9 a 4,6 milhões de indivíduos sob o mesmo aspecto infeccioso. O desfecho cardíaco configura um dos aspectos mais importantes, com manifestações condizentes à disfunção ventricular sistólica ou diastólica, disfunção autonômica cardíaca e morte súbita. **OBJETIVO:** correlacionar o estilo de vida e o nível de atividade física de indivíduos portadores de miocardiopatia chagásica (MC). **MATERIAL E MÉTODOS:** Realizou-se um estudo analítico, de corte transversal, em ambulatório de referência para Miocardiopatias, com abrangência estadual. Utilizou-se formulário próprio construído pelas autoras, o qual contemplava além das variáveis clínicas e demográficas, variáveis relativas à análise do estilo de vida e atividade física dos participantes, sendo esse aplicado em sala de espera, enquanto os sujeitos aguardavam atendimento médico. **RESULTADOS:** Foram selecionados 74 indivíduos portadores de MC. A média de idade da amostra foi de  $61,2 \pm 8,5$  anos, sendo que 50 (68,0%) indivíduos eram do sexo feminino. Em relação ao nível de atividade física, houve predomínio da categoria "não ativo", correspondendo a 60 indivíduos (71,0%). O estilo de vida foi classificado como "muito bom" para 41 (55,0%) participantes e "bom" para 22 (30,0%) participantes, não havendo indivíduos alocados na categoria "necessita melhorar" do questionário. **CONCLUSÃO:** Os resultados obtidos permitem concluir que, de modo geral, o estilo de vida e o nível de atividade física de indivíduos portadores de MC caracterizaram-se como "bom" / "muito bom" e não ativos, respectivamente.

**PALAVRAS-CHAVE:** Miocardiopatia chagásica. Estilo de vida. Atividade física.

## Introduction

Chagas disease (CD) is a parasitic infection caused by the flagellated protozoan *Trypanosoma cruzi*<sup>1-3</sup>. Discovered in 1909 by the health doctor Carlos Chagas, despite the reductions observed in incidence, over the years<sup>1-2</sup>, estimates point to the existence of approximately five million infected individuals, mainly in Latin America<sup>3</sup> with Brazil dating between 1.9 to 4.6 million individuals with the same infectious aspect, which represents 1 to 2.4% of the population<sup>3,4</sup>.

Southern Cone countries, in 1995, committed themselves to seek the elimination of the vector responsible for the transmission of this disease<sup>5</sup>. Thus, countries such as Uruguay, in 1997 and Chile, in 1999, were initially certified, with Brazil being the most belatedly recognized as a State whose vector transmission had been eradicated<sup>5</sup>. Furthermore, in 2018, an important decision was taken in the context of recognizing the importance of this disease in the country, which despite the reduction in incidence, has morbidity that impacts the lives of millions of Brazilians<sup>6</sup>. The approval of the Clinical Protocol and Therapeutic Guidelines, within the scope of SUS, represented the recognition of a clinically neglected disease, despite the social cost brought to the system<sup>5,6</sup>.

The disease may have a systemic character of involvement, leading, in its chronic phase, to changes in target organs such as the heart - making up the cardiac form - esophagus and colon - making up the digestive form<sup>3,4</sup>. The cardiac outcome is one of the most important aspects, accounting for 25 to 30% of chronic cases, with manifestations consistent with systolic or diastolic ventricular dysfunction, arrhythmias, cardiac autonomic dysfunction, thromboembolism, and sudden death<sup>4</sup>.

Like other chronic diseases, chagasic cardiomyopathy (CM) is influenced by factors related to lifestyle, translated by identifiable behavior patterns, resulting from the interaction of the individual's socioeconomic environment, cultural values, and personal attitudes<sup>8,9</sup>. Similarly, the functional limitations resulting from the disease, especially in the more advanced stages

of heart failure (HF), due to symptoms such as palpitations, chest pain, and dyspnea, interfere with lifestyle, with favorable evidence regarding reduced productivity and alteration of the balance of components that generate well-being<sup>8,9</sup>.

In this context, physical exercise is inserted as a favorable alternative to improve the functional capacity of these individuals<sup>7-9</sup>. Using the Human Activity Profile Questionnaire, Costa et al., in 2019, evaluated the association between this tool, functional capacity, functional class, and systolic function in individuals with CM7. Gender, older age, functional class (NYHA II and III), systolic and diastolic pressure, body mass index, and low oxygen consumption were associated with lower values obtained in the questionnaire, demonstrating the impact of the disease on the ability to perform activities of daily living (ADLs) by these individuals<sup>7</sup>.

Considering that CD remains neglected by health organizations in Brazil and worldwide, making early diagnosis difficult, as well as the need to identify factors that interfere with the health conditions presented by this population, the objective of the present study was to characterize the style of life and the level of physical activity of individuals with Chagas cardiomyopathy (CM).

## Material and methods

An analytical, cross-sectional study was carried out in an outpatient referral center for cardiomyopathies with individuals with CM confirmed in the medical record by a positive serology test for Chagas Disease, who attended the previously scheduled medical consultation, above 18 years of age and both sexes. Communication difficulties that compromised the understanding of the instrument, and the limitation regarding access to medical records, were constituted as criteria for exclusion from the research; with the primary data collected through the applied form and the secondary data obtained from medical records.

Data collection took place from February 2014 to June 2014, preceded in a waiting room at the referred outpatient clinic, while individuals waited for the appointment with the referring physician. A form of self-authorship was used to obtain sociodemographic and clinical data, it was applied once, at the time of waiting for the consultation, by a single researcher and in a clear manner, to ensure the standardization of the collection process and so that the doubts about any questions were answered. Then, the questionnaire regarding the questions about the lifestyle of the participants was applied, and they were characterized according to the score of the questions.

To assess the lifestyle of individuals, the questionnaire validated in Brazil for young adults, "FANTASTIC lifestyle"<sup>11</sup>, developed in 1984, in Canada, was used in order to assist doctors working in primary care<sup>11</sup>. Constituted by twenty-five closed questions, arranged in the form of a Likert-type scale, it explores nine domains on the physical, psychological, and social components of the individuals' lifestyle in the last month<sup>10,11</sup>.

The variables used originated from the acronym of the term FANTASTICO, in its corresponding form in English - FANTASTIC, referring to the domains covered by the instrument: family and friends; physical activity; nutrition; tobacco and toxics; alcohol; sleep, seat belt, stress and safe sex; type of behavior; introspection and work. The total score ranges from zero to one hundred, which allows the lifestyle to be classified as: excellent (85-100 points); very good (70 to 84 points); good (55 to 69 points); regular (35 to 54 points); and needs to improve (0 to 34 points)<sup>10,11</sup>.

Physical activity was measured using the International Physical Activity Questionnaire (IPAQ), in its short version, composed of seven open questions, allowing the measurement of the time spent by the individual in carrying out activities of different dimensions (walking and physical efforts of intensity

moderate and vigorous) as well as during physical inactivity (sitting position) during the week<sup>12,13</sup>. Thus, to be classified as active, the individual must have performed vigorous activity  $\geq$  three days a week and  $\geq$  20 minutes per session; or moderate activity or walking  $\geq$  five days a week and  $\geq$  30 minutes per session; or any combined activity,  $\geq$  five days and  $\geq$ 150 minutes per week (walking + moderate activity + vigorous activity). Individuals who performed physical activity, but not enough to be classified as active, or who did not complete ten continuous minutes of physical activity, in the previous week, were categorized as non-active<sup>12,13</sup>.

The demographic variables evaluated included age, expressed in years, sex, was dichotomized into female or male, and the place of birth, classified in Salvador, from the interior of Bahia or from another state. Schooling was categorized as low for individuals who did not finish elementary school or high school, medium for those who completed high school and high for those who attended or were attending higher education. Skin color was dichotomized into black and non-black and the marital relationship was categorized as yes or no.

The socioeconomic variables consisted of income, classified by less than one minimum wage, between 1-2 minimum wages, between 3-4 minimum wages, between 4-5 minimum wages and greater than five minimum wages; and working hours, dichotomized as yes or no. Clinical variables corresponded to weight, expressed in Kg; the height, expressed in meters (m) and the body mass index (BMI), expressed in Kg / m<sup>2</sup>. The functional class of Heart Failure (HF), according to the New York Heart Association (NYHA), was subdivided into classes I-II / III and the left ventricular ejection fraction (LVEF), expressed as (%). The presence of comorbidities was categorized as yes or no, as well as the use of a pacemaker, with the time to discover the disease defined in years from the initial diagnosis.

In the present study, the sample was obtained on a convenience basis, according to the individuals' visit to the Chagas Cardiomyopathy clinic. The database was structured using the Microsoft Excel (XP) computer program and data analysis using the Statistical Package for the Social Sciences (SPSS) version 17, with the values presented in mean, standard deviation, and proportions, when indicated. Kurtosis analysis was performed to identify the behavior of continuous variables concerning normality. The t-student test was used to compare the average of the total score obtained in the questionnaire "FANTASTIC lifestyle" in relation to the distribution by sex (male/female), functional class (I-II / III), education (low/medium/high), color (black/non-black) and level of physical activity (active / not active) and the chi-square test, to assess the association between the scores of the lifestyle and physical activity questionnaires with the severity of the disease. A  $p < 0.05$  was considered statistically significant.

We sought to guarantee the anonymity and confidentiality of the information obtained, and the consent for participation and autonomy in the study was obtained through the application of the Free and Informed Consent Term issued in two copies, signed according to the guidance of Resolution 466 / 12 of the CNS. The research project was approved by the Research Ethics Committee of the University of the State of Bahia, under opinion 532.517 / 2013, and at the University Hospital Professor Edgard Santos / UFBA, opinion no. 624,701 / 2014 (CAAE 20188413.5.3001.0049).

## Results

Ninety individuals with CM were selected at a referral clinic, in the city of Salvador, Bahia. According to the inclusion criteria previously mentioned, 74 individuals comprised the sample, with sixteen exclusions (17.7%) related to the limitation to access to medical records. The mean age of the sample was  $61.2 \pm 8.5$  years, with 50 (68%) individuals being female; the other sociodemographic characteristics are described in Table 1.

**Table 1.** Sociodemographic characteristics of individuals with Chagas cardiomyopathy treated at a referral clinic, Salvador, Bahia- 2014

<b>Variables</b>	<b>n=74</b>	<b>%</b>
<b>Sex</b>		
Female	50	68,0
Male	24	32,0
<b>Color</b>		
Black	51	69,0
Non-black	23	31,0
<b>Religion</b>		
Yes	73	99,0
No	1	1,0
<b>Schooling</b>		
Elementary School	62	84,0
High School	12	16,0
<b>Marital status</b>		
Yes	37	50,0
No	37	50,0
<b>Income (in minimum wages)</b>		
<1	6	6,0
1-2	68	64,0
2-3	6	6,0
<b>Labor Activity</b>		
Yes	15	20,0
No	59	80,0
<b>Naturalness</b>		
Soteropolitano	6	8,1
Interior of Bahia	66	89,2
Another state	2	2,7
<b>Variables</b>		
<b>Age (years)</b>	<b>Average</b>	<b>Standard deviation</b>
	61,2	8,5

As for the clinical aspects evaluated, present in Table 2, it was observed that 71 (96.0%) individuals were among NYHA functional classes I-II and had an average LVEF of  $52.2 \pm 16.0\%$ . Regarding the level of physical activity, there was a predominance of the “not active” category, corresponding to 60 individuals (81%). The lifestyle was classified as “very good” for 41 (55%) participants and “good” for 22 (30%) participants, with no individuals allocated to the “need to improve” category of the questionnaire.

**Table 2.** Frequency of clinical parameters of individuals with Chagas cardiomyopathy treated at a referral clinic, Salvador, Bahia. 2014

Variables	n=74	%
<b>NYHA</b>		
Class I-II	71	96,0
Class III	3	4,0
<b>Pacemaker</b>		
Yes	14	19,0
No	60	81,0
<b>Comorbidities</b>		
Yes	62	84,0
No	12	16,0
<b>FANTASTIC</b>		
Regular	2	3,0
Good	22	30,0
Very good	41	55,0
Excellent	9	12,0
<b>IPAQ- short version</b>		
Sedentary	16	22,0
Irregularly active	44	59,0
Active	14	19,0
<b>Quantitative Parameters</b>	<b>Average</b>	<b>Standard deviation</b>
<b>BMI (Kg/m<sup>2</sup>)</b>	26,3	5,3
<b>LVEF (%)</b>	52,2	16,0
	<b>Median</b>	<b>Interquartile Range</b>
<b>Disease discovery time (years)</b>	18	51 (2-53)

The average score achieved in FANTASTICO corresponded to  $73.2 \pm 8.8$ . The domains with the lowest score corresponded to "physical activity" and "sleep, safety, stress and safe sex",  $2.2 \pm 1.8$  and  $12.0 \pm 4.0$ , respectively (Table 3).

**Table 3.** Description of the values obtained in each domain of the FANTASTIC lifestyle questionnaire, of individuals with Chagas cardiomyopathy treated at a referral clinic, Salvador, Bahia - 2014

Domains	FANTASTIC Score		Expected Value
	Mean (SD)*	Mín-Máx**	Mín-Máx
Family and friends	6,5±2,1	1-8	0-8
Physical activity	2,2±1,8	0-4	0-8
Nutrition	9,0±2,5	3-12	0-12
Tobacco and Toxic	14,1±1,6	9-16	0-16
Alcohol	11,7±1,1	6-12	0-12
Sleep, safety, stress and safe sex	12,0±4,0	0-20	0-20
Type of behavior	5,2±2,3	0-8	0-8
Insight	9,0±2,5	2-12	0-12
Work	3,7±0,9	0-4	0-4
<b>Total FANTASTIC</b>	<b>73,2±8,8</b>	<b>52-93</b>	<b>0-100</b>

\* SD = standard deviation / \*\* Min-Max = value

There was no statistical difference between the total score in the different domains of lifestyle in relation to the distribution by sex ( $p = 0.33$ ), skin color ( $p = 0.14$ ) and functional class ( $p = 0.91$ ). When associated with the participants' marital relationship, a statistically significant result was obtained ( $p = 0.01$ ) (Table 4).

**Table 4.** Correlation between the classification obtained in the FANTASTIC lifestyle questionnaire with clinical and demographic variables of individuals with Chagas cardiomyopathy treated at a referral clinic, Salvador, Bahia-2014

Variables	FANTASTIC classification								p value
	Regular		Good		Very good		Excellent		
	n	%	n	%	n	%	n	%	
<b>Sex</b>									
Female	2	4,0	16	32,0	28	56,0	4	8,0	0,33
Male	-	-	6	25,0	13	54,2	5	20,8	
<b>Schooling</b>									
Elementary School	2	3,0	17	27,0	34	55,0	9	15,0	0,41
High School	-	-	5	41,7	7	58,3	-	-	
<b>Color</b>									
Black	2	4,0	12	23,5	32	62,7	5	9,8	0,14
Non Black	-	-	10	43,5	9	39,1	4	17,4	
<b>Marital status</b>									
Yes	-	-	7	18,9	22	59,5	8	21,6	<b>0,01</b>
No	2	5,4	15	40,5	19	51,4	1	2,7	
<b>NYHA*</b>									
Class I-II	2	2,8	21	29,6	39	54,9	9	12,7	0,91
Class III	-	-	1	33,3	2	66,7	-	-	
<b>Comorbidities</b>									
Yes	2	3,3	19	30,6	32	51,6	9	14,5	0,36
No	-	-	3	25,0	9	75,0	-	-	

\* New York Heart Association

The level of physical activity did not show statistical difference when related to the distribution by sex ( $p = 0.67$ ), FANTASTIC classification ( $p = 0.72$ ) and functional class ( $p = 0.47$ ), (Table 5).



**Table 5.** Associations between IPAQ categories with sex and clinical parameters of individuals with Chagas cardiomyopathy, seen at a referral clinic, Salvador, Bahia-2014

Variables	Physical activity level - IPAQ*						p value
	S**		IA***		A****		
	n	%	n	%	n	%	
<b>Sex</b>							
Female	10	20,0	31	62,0	9	18,0	0,81
Male	6	25,0	13	54,2	5	20,8	
<b>FANTASTIC</b>							
Regular	1	50,0	1	50,0	-	-	0,60
Good	5	22,8	14	63,6	3	13,6	
Very good	10	24,4	22	53,6	9	22,0	
Excellent	-	-	7	77,8	2	22,2	
<b>NYHA****</b>							
Class I-II	15	21,1	43	60,6	13	18,3	0,64
Class III	1	33,3	1	33,3	1	33,4	
<b>Comorbidities</b>							
Yes	14	22,5	35	56,5	13	21	0,45
No	2	16,7	9	75,0	1	8,3	
<b>Pacemaker</b>							
Yes	4	28,6	7	50,0	3	21,4	0,70
No	12	20,0	37	61,7	9	18,3	
<b>Discovery time</b>							
≤ 10 years	9	42,9	8	38,1	4	19,0	<b>0,01</b>
> 10 years	7	13,2	36	67,9	10	18,9	

\* International Physical Activity Questionnaire / \*\* Sedentary / \*\*\* Insufficiently Active / \*\*\*\* Active / \*\*\*\*\* New York Heart Association.

## Discussion

In the present study, it was observed that the lifestyle and the level of physical activity of individuals with CM were characterized as "good"/"very good" and "not active", respectively. Although varied studies point to the most negative outcome of subjects with HF of Chagasic etiology<sup>14,15</sup>, when compared to other etiologies, lifestyle habits categorized as "good" / "very good", could be related to the presence of clinical variables, as LVEF and functional class, with a lower degree of alteration, similar to other studies<sup>14,15</sup>.

Lifestyle knowledge has been used as a support tool for professional practice in some target populations<sup>16-18</sup>. Key elements in its characterization are essential factors in describing the health conditions of specific groups<sup>16-18</sup>. Araújo et al.<sup>17</sup>, in 2011, determined the lifestyle of hypertensive individuals, from the municipality of Pirai, Rio de Janeiro, obtaining results, in general, "very good". These authors associated with the probable changes made by these subjects, such as, adopting a balanced diet, performing physical activity and decreasing alcohol consumption, a possible explanation for the outcome found.

Overall, the score obtained in FANTASTIC by the individuals in the present sample was high, corroborating the study by Moctezuma et al.<sup>16</sup>, in 2003, carried out with diabetic subjects, which had an average score of 71 points. In the analysis of the domains of the FANTASTIC instrument, the worse performance was observed in the categories "physical activity", ratified by the results obtained with the IPAQ, and "sleep, safety, stress and safe sex".

The quality of sleep in individuals with HF has been the subject of more recent discussions, due to its impact on the individual's functional capacity<sup>19,20</sup>. Bornhausen, Kessler & Gasperin, in 2018, in a study carried out with 43 ischemic heart patients in the municipality of Itajaí, using the Pittsburg Sleep Quality Index questionnaire, they obtained a proportion of 88.3% of subjects who reported sleep disorders. Among the main complaints, difficulties in initiating sleep, multiple nighttime awakenings, early awakening and persistent drowsiness/fatigue during the day, were the most important symptoms among those highlighted by the authors<sup>19</sup>.



In addition, using the same questionnaire, Edmealem et al., in 2020, at the hospital of Debre Markos, evaluated the sleep quality of 384 individuals with chronic diseases, Diabetes Mellitus, Arterial Hypertension and Heart Failure, between February to April 2018. Approximately 75% of the sample reported sleep disorders, with age, education and perception of the disease prognosis one of the factors associated with poorer sleep quality among the participants<sup>20</sup>.

Although the general classification obtained in FANTASTIC indicated a "good" / "very good" lifestyle, it is noteworthy that the questionnaire quantifies the information regarding the subject's perception in relation to his way of life, which is, therefore, of subjective and dependent on the circumstances that occurred in the given data collection period. The fact that it was designed as a useful tool for assessing the lifestyle of individuals attended in primary care units<sup>13</sup> turns the questionnaire into an important tool by giving professionals a quick and easy overview of the health conditions of the individual. However, the failure to include parameters consistent with CM, such as time of diagnosis, therapeutic adherence, functional class of HF, associated comorbidities, reduces the accuracy of the instrument in predicting lifestyle in this population.

Most of the subjects in the present sample did not perform regular physical activity, a fact corroborated by the study by Jackson et al.<sup>21</sup>, in 2012, when analyzing the presence of metabolic, mental health and socioeconomic factors on Latin American migrants with CD, accompanied by a university hospital in Geneva, Switzerland. This study obtained a proportion of 62.8% of individuals with irregular physical activity, attributing such result to the behavioral changes observed among them after the migratory process.

More recently, the 2019 HF-ACTION trial evaluated the exercise capacity of 1494 subjects with chronic systolic heart failure, using the short version of the IPAQ for this purpose<sup>22</sup>. It was observed that those individuals categorized in the highest tertile of physical activity, showed higher peak oxygen consumption (VO<sub>2</sub> peak), longer duration in the cardiopulmonary exercise test (TCP) and greater distance in the

six-minute walk test (6MWT) when compared to other tertiles, demonstrating that cardiac patients, physically more active, had a more favorable clinical profile and greater exercise capacity when compared to those with a lower level of physical activity<sup>22</sup>.

The lifestyle was significantly correlated with the existence of a conjugal relationship between the subjects of the sample, a fact confirmed by other studies<sup>23,24</sup> that demonstrated the positive influence exerted by social support on the lifestyle habits of individuals predominantly, elder. In 2010, Serafim et al., with a hypertensive population, pointed out that, among the factors that could influence the treatment and, consequently, the control of hypertension, the marital status of these subjects configured an important biosocial variable.

The presence of a partner, as the most frequent social partner, is of relevant importance as a result of the support provided, in a study with elderly women<sup>23,24</sup>, by providing a permanent exchange of assistance between members, which contributes to healthier lifestyles. Urzúa<sup>24</sup>, in 2008, with a sample of Chilean subjects with various chronic diseases, observed that, among the variables that influence the quality of life of these individuals, social support, despite the absence of significant correlation, proved to be important insofar as the recognition of the existence of support, more than the actual presence of that support, was related to a better quality of life. Thus, the social support provided by the presence of a marital relationship would justify the result found.

The assessment of life habits presented by these participants is necessary as it provides professionals, quickly and easily, with valuable information regarding the individual's functional parameters, allowing the obtaining of data related to the health conditions of this specific group. New studies, however, that assess the impact caused by changes in lifestyle resulting from the evolution of HF of Chagasic etiology are necessary in order to complement the knowledge concerning these individuals, enabling the improvement of existing educational and therapeutic actions.

The study had some limitations. First, the small number of publications from research groups of other nationalities, despite being a relevant aspect of knowledge production by Brazilians, made comparison with international data difficult. Second, the fact that it was carried out in a single center for the treatment of individuals with CM did not allow the creation of generalizations in the analysis performed, and these results were evaluated sparingly.

## Conclusion

The results obtained allow us to conclude that, in general, lifestyle seems to be related to the level of physical activity of individuals with CM, which are characterized as "good" / "very good" and not active, respectively. The assessment of life habits presented by these participants is necessary as it provides professionals, quickly and easily, with valuable information regarding the individual's functional parameters, allowing the obtaining of data related to the health conditions of this specific group.

## Author contributions

Soares NS participated in the conception, design, data collection, search and statistical analysis of research data, interpretation of results and writing of the scientific article. Batista AKM participated in the interpretation of results and writing of the scientific article. Aras R participated in the interpretation of the results. Camelier FWR participated in the conception, design, data collection, search and statistical analysis of research data, interpretation of results and writing of the scientific article.

## Competing interests

No financial, legal or political conflicts involving third parties (government, companies and private foundations, etc.) have been declared for any aspect of the submitted work (including, but not limited to, grants and funding, participation in advisory council, study design, preparation of the manuscript, statistical analysis, etc.).

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