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Prevalence of Physical Inactivity and Associated Factors: A study with military policemen from Macapá-AP/Brazil

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***Keywords*—Physical Inactivity. Military Police. Associated Factors.**

***Abstract*—** *The present study aimed to estimate the general prevalence of physical inactivity and identify associated factors. Participants were 162 military police officers from Macapá-AP/Brazil, of both sexes and aged between 23 and 54 years, 25.9% female. The assessment of the level of physical activity was obtained using the International Physical Activity Questionnaire (IPAQ) short version 8. The identification of association factors were obtained by the Socioeconomic Classification Questionnaire of the Brazilian Association of Research Companies (ABEP) version 2018, and by the Body Mass Index (BMI). Descriptive statistics were used to obtain the relative frequency in percentage with a confidence interval of 95%. The association between inactivity and associated factors was performed using the chi-square independence test and Spearman's correlation coefficient with a significance level of $p < 0.05$. It was identified that 27.8% of the studied sample is physically inactive and is associated with a lower economic class and with the perception of "poor/regular" health. Therefore, approximately three out of ten military police officers in the city of Macapá-AP/Brazil were classified as physically inactive and these rates are associated with socioeconomic and sociodemographic factors.*

I. INTRODUCTION

In a study carried out in 168 countries with 1.9 million participants, it was pointed out that 32% of women and about 23% of men do not reach sufficient levels of physical activity to maintain a healthy life, which corresponds to 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity per week [1].

The reduction in physical activity levels and the increase in time spent in sedentary behavior have contributed to the occurrence of chronic non-communicable diseases (NCDs), such as cardiovascular diseases, diabetes, some types of cancer, obesity and depression and anxiety, among other morbidities. High blood pressure, diabetes, cancer and obesity can affect longevity, quality of life and social costs arising from this scenario [2, 3].

On the other hand, the understanding related to physical activity refers to the recognition of its importance in improving the health of the population. To this end, the World Health Organization (WHO) recommends the regular practice of physical activity in different areas (commuting, free time (leisure), work or study, and/or household chores) indicated in its guides [4, 5]. However, the Brazilian reality, supported by epidemiological surveys, shows that the prevalence of physical inactivity in people over 18 is 32.1% for men and 47.5% for women [6]. In this context, the military police officer, by working

actively in public security, is subject to a high stress load that forces him to work more ostensibly to protect the population. According to Barbosa et al. [7], some factors such as diet, physical and mental health, environment and genetics influence the health of this group of workers.

It is important to emphasize that the nature of daily activities, overload, rigid hierarchy and military discipline, insecurity, fear of dying, among others, make these professionals more exposed to risks for NCDs [8, 9] . As a result, this population group is more vulnerable, in addition to other chronic diseases, to the progressive growth of inactivity. Therefore, it can be considered that the decrease in physical inactivity would have a great impact on the costs of health services and on the improvement of the health of this population group.

Thus, it is of fundamental importance for health, quality of life and the exercise of police activities, the relevance of knowledge of scientific production directed in order to enable a greater understanding of the risk factors associated with levels of physical inactivity in military police officers. Because there is still a shortage on the aforementioned topic related to this professional category, which will allow for a deeper understanding of the epidemiological pattern of this practice and monitoring its prevalence in population subgroups.

Therefore, the present study aims to estimate the general prevalence of physical inactivity and identify associated factors in military police officers of both sexes in Macapá-AP/Brazil.

II. METHODOLOGY

This is a study with quantitative, descriptive, cross-sectional and epidemiological designs carried out with military police officers from the city of Macapá-AP/Brazil, in 2021. Macapá is the capital of the state of Amapá, located in the Southeast of the state to the extreme North of the Brazil.

Data were collected from an estimated target population of 2,965 military police officers distributed in seven Battalions. For this study, police officers belonging to three main Battalions in the city of Macapá-AP/Brazil were selected, being the 1st, 2nd and 6th, which totaled an initial population for the study of 279 military police officers.

Through the calculation formula proposed by Agranonik and Hirakata [10] in which n = N.Z2.p.(1-p) / Z2.p.(1-p) + e2.N-1 (n: calculated sample, N: population, Z: normal variable, p: real probability of the event, and: sampling error), we arrived at the value of n = 162 military police officers.

All military police officers of both sexes were considered eligible for this study; aged between 23 and 54 years; active; active in the Military Police Battalion in Macapá; be working in the end activity or in the middle activity. Exclusion criteria for participation in this study were police officers who were on sick leave; vacation; special license; those in the capacity of attaché and; those who did not present a duly signed Free and Informed Consent Term (ICF).

Data collection consisted of the following variables and instruments: 1) Assessment of physical activity level by the International Physical Activity Questionnaire (IPAQ), short version 8; 2) Assessment of socioeconomic and sociodemographic indicators by the Socioeconomic Classification Questionnaire of the Brazilian Association of Research Companies (ABEP), version 2018 and; 3) Anthropometric measurements of body weight (kg) and height (m).

The 2018 version of the ABEP questionnaire contains questions that encompass the characteristics of family socioeconomic indicators, consisting of 15 questions referring to household characteristics, housing conditions and educational status (education level). Each question receives a score that can vary between 0 and 14 depending on the answer, according to the points table predetermined by the study instrument itself. The economic classification was divided into a social stratification resulting from the final score, with the following social classes A (45-100 points), B1 (38-44 points), B2 (29-37 points), C1 (23-28 points), C2 (17-22 points) and D-E (0-16 points).

The IPAQ was proposed by the World Health Organization (WHO) [11], with the aim of validating the characteristics of physical activity in a single instrument. The short version covers items on walking, physical activities of moderate and vigorous intensity, as well as physical activity in the domains of light, moderate and vigorous intensity, and sedentary behavior [12]. The sum of frequency, duration of activities and self-report of intensities performed allows to quantify the level of physical activity/inactivity of individuals.

Currently, the WHO [5] recommends that adults engage in moderate physical activity of 150 to 300 minutes or 75 to 150 minutes of intense physical activity per week. The IPAQ in short form, version 8, classifies the levels of physical activity of those evaluated considering the relationship between time and intensity of physical activity. In this study, according to the IPAQ, physical inactivity was considered as an outcome, defined as practicing physical activities of vigorous and/or moderate intensity inside or outside the work environment, in a

structured or unstructured way, for less than 150 minutes per day. week.

Anthropometric measurements of body weight (kg) and height (m) were obtained based on self-reported values by study participants. Anthropometric status was assessed using the Body Mass Index (BMI), according to the formula BMI = weight (Kg)/height2(m), for sex and age. As for the classification, the proposal of the World Health Organization [13] was used, which establishes the following indicators: obese BMI values ≥ 30 Kg/m², and those with excess weight with BMI values ≥ 25 Kg/m.

Statistical analysis was performed using the IBM SPSS program, version 26 for Windows. The variables were characterized through absolute and relative frequencies (in %).

To study the association of physical inactivity level (ordinal variable) with sociodemographic and socioeconomic factors, the Chi-square test of independence (study of association with nominal qualitative variables) and Spearman's Correlation Coefficient (association with ordinal variables) were used. and quantitative). For the conclusions of the results of the statistical tests, associations were considered statistically significant when the significance value was less than 0.05 ($p < 0.05$) and respective intervals with 95% confidence (95% CI).

This study complied with the ethical aspects according to the Human Research Protocol established by the National Health Council (CNS), Resolution No. 510, of 04/07/2016 and was approved by the Ethics Committee of the Federal University of Amapá/Brazil (UNIFAP) under protocol, number: 28291019.3.0000.0003.

III. RESULTS AND DISCUSSION

The studied sample consisted of 162 military police officers, 42 female and 120 male. Figure 1 shows the distribution of the prevalence of physical inactivity according to the sex of the military police.

According to the results of the present study, it was identified that the general prevalence of physical inactivity in the studied sample was 27.8%. These results corroborate those of Jesus and Jesus [14], indicating that 37% of those studied did not reach the international recommendations regarding the regular practice of physical activity.

Despite the need for police officers to maintain sufficient levels of physical activity in addition to maintaining health and for the good performance of their professional functions, the studies by Sassen et al. [15] also pointed out that 48.2% of the participating police officers reported being physically inactive, and 37.7%, in addition to being inactive, still had a low intention to start practicing physical activities. As in the study conducted by Minayo, Assis and Oliveira [16] with a sample of military police officers in the city of Rio de Janeiro (Brazil), it was identified that almost 25% of the military police officers interviewed reported not doing any type of physical activity.

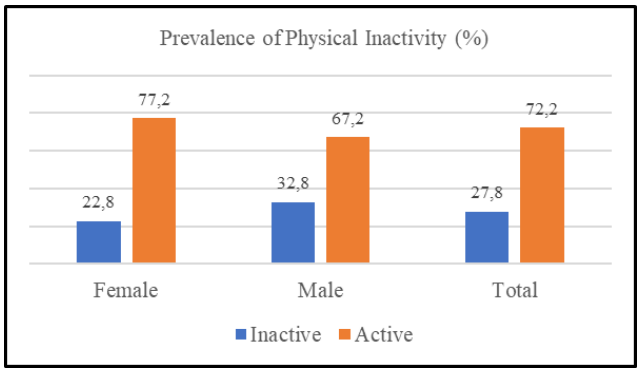

Fig.1. Distribution of the prevalence of physical inactivity according to the sex of military police officers (n = 162), Macapá-AP/Brazil, 2021.

Source: Study authors, 2021.

Therefore, these findings lead to the reflection that intervention strategies must be directed to this population group of both sexes. The increase in physical inactivity levels has contributed to the occurrence of chronic non-communicable diseases (NCDs) such as hypertension, diabetes, cancer and obesity, which have important repercussions on longevity, quality of life and social costs arising from this scenario [2, 3].

Table 1 presents the results of the study of the statistical association of sociodemographic and socioeconomic factors with physical inactivity.

Table 1. Association of sociodemographic and socioeconomic factors with levels of physical inactivity of military police officers (n = 162), Macapá-AP/Brazil, 2021.

		Physical Activity Level	
Variables	**Active**	**Inactive**	***p***
Social class			
C (n = 43)	14 (32,6%)	29 (67,4%)	**0,011** (1)
B (n = 105)	29 (27.6%)	66 (72,4%)	
A (n = 14)	2 (14,2%)	12 (85,7)	
Spearman Correlation	R = 0,270		**0,001** (2)

Coefficient			
Health condition			
Bad/regular (n = 26)	9 (34,6%)	17 (65,4%)	< **0,001**(1)
Good (n = 70)	25 (35,7%)	45 (64,3%)	
Very good/excellent (n = 66)	13 (16,6%)	55 (83,3%)	
Spearman Correlation Coefficient	R = 0,331		< **0,001** (2)

(1) significance value of the chi-square test; (2) significance value of the Spearman Correlation Coefficient.

Source: Study authors, 2021.

In the present study, in both sexes, a significant statistical association was identified between insufficient levels of physical activity and variables related to health status and social classification. Regarding health status, it was observed that the more active the study participants are, the better their perception of health. However, it is important to highlight that although the concept of health is quite broad, the results obtained in the present study indicated that 62.1% self-declared with a perception of good/excellent health, 33.3% overweight and 42.2% are obese.

These are risk factors for NCDs, and this perspective can be confirmed by studies such as those by Strating et al. [17] who applied a field test that assesses competence for the development of police activity, verifying that police officers, both men and women, with higher BMI had a lower performance and that the BMI and the test result were significantly related to the hours of work. physical activities performed by the police.

In a study conducted by Minayo, Assis and Oliveira [16], when investigating the impact of professional activities on the physical and mental health of civil and military police officers in the state of Rio de Janeiro, it was found that in both corporations there is a 60% or more of police officers with overweight, with obesity being observed more frequently in military police.

Considering that physical activity is an important aspect of human health, the association between insufficient levels of physical activity, excess body weight and negative perception of health in different population groups seems to indicate the urgent need for intervention programs to increase activity levels. physics.

Regarding social classification, it was observed in the present study that the sample has a socioeconomic profile of greater concentration between social classes A and B, totaling 73.4%, regardless of gender. These data allow us to identify, in a general way, concentration in the classes with greater social stratification. In a study conducted with military police officers in the state of Pernambuco, it was observed that police officers with high school education had two or more unhealthy lifestyle habits, such as smoking, insufficient level of physical activity, abusive consumption of alcoholic beverages, among others [18].

Data from a study by Ribeiro and Barata [19] indicate that physical activity levels and of physical inactivity and levels are impacted by several factors that make up social stratification such as housing location, neighborhood safety and vehicular mobility affect these results, with physical activity for groups of higher economic level is divided between work and leisure. These data corroborate those of Santos, Leão and Silva [20], who identified that more physically active individuals, in general, have a higher level of education. Another cross-sectional study, conducted by Nunes et al. [21], concluded that females with lower levels of physical activity have less schooling.

However, the study by Andrade, Hech-Dominski and Liz [22] conducted with 120 civil and military police officers from the state of Santa Catarina (Brazil), aged between 21 and 58 years, found that most belong to the socioeconomic class B2 (40.9%) and is sufficiently active. These results can be justified by the fact that there is no consensus regarding the techniques of social stratification in Brazil, as highlighted by França [23]. Another aspect to highlight is the fact that Andrade, Hech-Dominski and Liz [22] focus on military and civil police, which differs from the study in question, which only addressed military police officers.

Therefore, although studies reinforce that individuals with higher socioeconomic status have greater access to the means of action to positively change their quality of life, belonging to a lower socioeconomic class does not mean having levels of physical inactivity, as it is important to highlight that there are ways to improve their quality of life. different ways of measuring social class and level of physical inactivity.

It is important to highlight that the other variables of the present study such as sex; age; schooling; daily working hours and; nutritional status were not statistically associated with physical inactivity.

Finally, it is possible to understand that the dynamics of society can create mechanisms in the explanation of behavior and lifestyle related to physical activity. The expanded understanding of physical activity refers to the

recognition of its importance related to human development, as a social right and from the perspective of the right to the city [24].

Some limitations of the present study must be considered, such as the use of an instrument that assesses physical activity in a global way and that considers at least 150 minutes per week as a criterion for classification as active, makes it difficult to identify shorter periods, as well as variations in type and intensity of physical activity performed. The fact that the data collection survey related to associated factors that could be linked to levels of physical inactivity did not have a consensus regarding the techniques of social stratification in Brazil. And finally, the sample included only military police officers from three battalions in the city of Macapá-AP/Brazil, which does not allow the generalization of the results for the other military police officers.

IV. CONCLUSIONS

Based on the findings of the present study, it can be inferred that approximately three out of ten military police officers were classified as physically inactive, being more pronounced in male police officers. The prevalence of physical inactivity was associated with military police officers of both sexes who self-declared with a "poor/regular" health perception. Although these rates are similar among police officers of both sexes, the magnitude was not the same, being higher in males than in females. And military police officers of both sexes from lower socioeconomic strata also had higher rates of physical inactivity.

Therefore, this information can help guide the objectives and actions of programs to promote physical activity among military police, suggesting that it is important to encourage these professionals to increase their level of physical activity both through regular practices in the work environment and in tasks. of daily life, daily activities such as walking, so that healthy habits are established.

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