

## CARDIOVASCULAR HEALTH METRICS OF UNIVERSITY WORKERS

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### ABSTRACT

Cardiovascular diseases are the leading causes of death worldwide, and the university work environment, with its distinct demands, can contribute to factors that impair cardiovascular health. The objective of the study was to assess the cardiovascular health of university workers. This is a descriptive study conducted with 121 university employees. To assess cardiovascular health, it was done through the recommendation of the American Heart Association, which established seven metrics (diet, physical activity level (PAL), smoking, body mass index (BMI), fasting blood glucose, total cholesterol, systemic blood pressure (SBP)), descriptive data. The results identified that, when analyzing the average values, the BMI, PA, diet, and SBP metrics were at intermediate levels. The metrics that had the highest percentage of poor CVS were NAF (30.6%), BMI (17.4%), and BP (23.1%). It is concluded that 25% of the employees had poor SCV. And the university work environment needs public policies for the promotion of cardiovascular health.

**Keywords:** Cardiovascular health; Cardiovascular diseases; Workers; Adult.

### INTRODUCTION

Work in general, regardless of the role performed, over time becomes tiring/exhausting and can be considered a social determinant of health (1). Thus, the most frequent impairments are found in quality of life with a reduction in physical and mental aspects (1,2). There is evidence that the work environment contributes to risk factors related to cardiovascular diseases (CVDs) such as elevated systemic blood pressure, fasting blood glucose, and total cholesterol, as well as being associated with unfavorable levels of physical activity, dietary intake, and body mass index (3–5). Like any other job, university employees also face these health risks.

CVDs are the leading causes of death worldwide, and to reduce deaths by about 20%, as well as minimize public health costs and improve the quality and life expectancy of the population, the American Heart Association (AHA) established seven metrics that

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are divided into four behavioral (diet, BMI, physical activity, and smoking) and three biological (blood pressure, total cholesterol, and fasting blood sugar) (6). However, cardiovascular health is defined through the harmonious functioning between the heart and the vascular system without the presence of pre-existing clinical pathologies in the cardiovascular system (6).

University workers are less studied in terms of cardiovascular health prevention and promotion. And the university work environment can contribute to the development of factors that influence the onset of CVDs, such as physical inactivity, inadequate nutrition due to the short period of time, smoking, and increases in BMI, blood sugar, total cholesterol, and blood pressure (3–5). In this way, the objective of the present study is to evaluate the seven metrics of cardiovascular health of university workers.

## **METHODOLOGY**

This is a descriptive cross-sectional study conducted with the employees of a higher education institution located in the city of Anápolis - GO, Brazil. Approved by the Ethics and Research Committee of the Evangelical University of Goiás under the number 4.512.382/2021.

Employees aged 18 to 59 and those hired since 2019 were included. The excluded employees had some type of clinical diagnosis of chronic obstructive disease or cardiovascular disease. At the time of the research, 302 collaborators were invited, 133 accepted to participate in the study, 12 were excluded (continuous use of medications for blood pressure and blood sugar control), and in the end, 121 collaborators were evaluated.

The data were collected from January to June 2021 during the morning, afternoon, and evening periods. An identification form was filled out with sociodemographic data (age, sex, education level, monthly income, current position, and working hours). Afterwards, the International Physical Activity Questionnaire (IPAQ-short version) (7) and the Mediterranean diet questionnaire (8) were administered. Blood samples were collected by a laboratory specialized in clinical analyses, and all participants were fasting for 8 hours. The glucose and total cholesterol were measured using the enzymatic colorimetric method, with a recommended fasting period of 8-12 hours. Smoking was assessed using a self-report questionnaire (current smoker, ex-smoker, never

smoked). The BMI was calculated by dividing the weight (kg) by the height squared. The diastolic and systolic blood pressures were measured using a semi-automatic device (brand, OMRON, model HEM 705CP, Kyoto, Japan). The CVH was assessed following the AHA recommendations (6) and was classified as poor, intermediate, and ideal.

The data were expressed as mean, standard deviation, frequency, percentages, and graph. All the results were analyzed using the Statistical Package for Social Science (SPSS).

## RESULTS

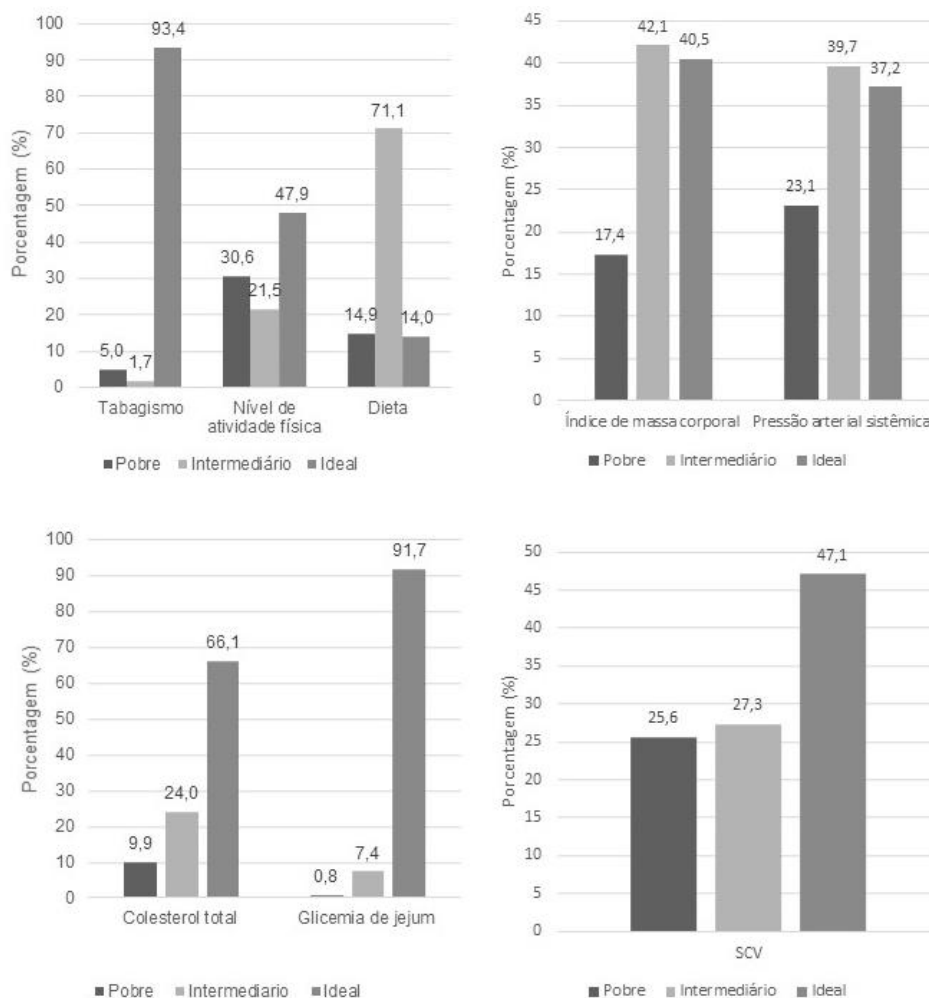
The characterization of the sample is described in Table 1.

**Table 1** - Characterization of the studied sample (n=121).

Variables	Value (n=121)
<b>Baseline data, mean (SD)</b>	
Age (years)	35,97 (10,13)
Height(cm)	166,95 (10,33)
Body mass (kg)	72,77 (17,86)
<b>Sex, n (%)</b>	
Male	50 (41,3)
Female	71 (58,7)
<b>Level of education, n (%)</b>	
Elementary education	4 (3,3)
High school	20 (16,5)
Incomplete higher education	29 (24,0)
Complete higher education	32 (26,4)
Postgraduate studies	36 (29,8)
<b>Job title n (%)</b>	
Teachers	12 (9,9)
Administrative	91 (75,2)
General services	18 (14,9)
<b>Work schedule, n (%)</b>	
5-7 hours/day	10 (8,3)
8-9 hours/day	96 (79,3)
10-12 hours/day	15 (12,4)
<b>Monthly income, n (%)</b>	
Up to a minimum wage	50 (41,3)
One to two minimum wages	41 (33,9)
Two to three minimum wages	9 (7,4)
Above three minimum wages	21 (17,4)

Abbreviations: SD = standard deviation. Source: Authors (2023).

**Figure 1.** Classification of the seven SCV metrics according to the AHA.



Abbreviations: CVH = Cardiovascular health. Source: Authors (2023).

Table 2 refers to the average of the seven SCV metrics of the university employees.

**Table 2.** Behavioral and biological metrics of cardiovascular health according to the AHA of university employees (n=121).

Cardiovascular health	Media (SD)
<b>Behavioral metrics</b>	
Level of physical activity (min/day)	35,12 (29,07)
Diet (points)	27,87 (5,70)
BMI (kg/m <sup>2</sup> )	25,97 (5,06)
<b>Biological Metrics</b>	
Fasting blood glucose (mg/dL)	86,36 (20,23)
Total cholesterol (mg/dL)	181,96 (40,36)
Systolic blood pressure (mmHg)	123,37 (15,28)
Diastolic blood pressure (mmHg)	80,77 (11,01)
Cardiovascular health score	9,89 (2,14)

Abbreviations: SD = standard deviation. Source: Authors (2023).

## CONCLUSION

It is concluded that thirty-three of the employees showed poor CVS and the NAF, BMI, and systemic blood pressure metrics are the most affected among university employees.

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