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*Professional paper*

# SOCIODEMOGRAPHIC AND ANTROPOMETRIC CHARACTERISTICS OF PATIENTS WITH PERIPHERAL ARTERIAL DISEASE- A CROSS SECTIONAL STUDY

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**Abstract**

**Introduction**:Peripheral arterial disease is twice often in patients with type 2 diabetes mellitus compared to general population and it usually occurs as a part of systemic atherosclerosis in the coronary and cerebral arteries. Patients with T2DM and PAD shared distinct sociodemographic and antropometric profiles marked by older age, long standing hypergicemia and central obesity.
**Materials and methods**:The obtained data are processed using the Python programming language, through appropriate libraries for statistical analysis and data processing.The basic sociodemographic and antropometric characteristics of the examined sample included a total of 230 subjects with peripheral arterial disease, of which 200 patients with diabetes mellitus type 2 and 30 patients without diabetes mellitus type 2. Age, sex, body mass index and BMI categories were analyzed. For age and BMI, the aritmetic mean, standard deviation, median, interquartile range, minimum and maximum value were calculated, while gender and BMI categories were shown with frequencies and percentages.
**Results:**The average age of the responders is 64,44 years with a standard deviation of 10,66 years. The median age is 65 years, and the interquartile range is from 58,25 to 72 years.
In terms of gender the sample included 120 women, representing 52,2% of the total number of patients and 110 men,i.e.47,8%. The average value of the body mass index is 28,96 kg/m2 with a a standard deviation of 4,54 kg/m2. According to the BMI categories, the largest part of the patients is in the overweight category with a BMI of 25-30 kg/m2.
**Aim:** Evaluating sociodemographic and antropometric profiles of patients with PAD with particular emphasis on age, sex, BMI and BMI categories with T2DM and to compare with patients without diabetes mellitus helps identify high risk individuals and may provide useful information for prevention and management strategies.
**Conclusion:**The middle-aged and older population is the main representation of peripheral arterial disease, which is expected given the nature of peripheral arterial disease, the distribution according to gender is relatively even with a slightly higher representation in women, the average patient falls in the category of overweight or obesity, which represents a significant cardiometabolic risk factor in the context of peripheral arterial disease and diabetes mellitus type 2.

**Kewwords**: *type 2 diabetes mellitus , body mass index, gender, age*

## Introduction

Peripheral arterial disease (PAD) is characterized by narrowing or occlusion of the arteries of lower extremities. It usually occurs as a part of systemic atherosclerosis and is associated with increased cardiovascular mortality and morbidity. This disease is an important public health problem among patients with metabolic and cardiovascular risk factors. Type 2 diabetes mellitus is one of the major risk factors for the development and progression of PAD.
Patients with type 2 diabetes mellitus (T2DM) and peripheral arterial disease have a higher central adiposity, advanced age and vascular comorbidity compared to non diabetic controls.
Obesity is a key risk factor measurable through BMI index and is associated with an increased risk of developing diabetes and cardiovascular disease.

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Patients with T2DM and PAD shared distinct sociodemographic and antropometric profiles marked by older age, long standing hyperglicemia and central obesity.

## Materials and methods

This cross sectional observational study included a total of 230 patients diagnosed with peripheral arterial disease. The study population was divided into two groups:
**Group I:** 200 patients with peripheral arterial disease and type 2 diabetes mellitus.
**Group II:** 30 patients with peripheral arterial disease without diabetes mellitus.
All participants were adults and were evaluated according to a standardized clinical protocol

### Socidemographic characteristics

The following sociodemographic characteristic were analyzed:

- Age, expressed in years;
- Sex, categorized as male or female.

Age was analyzed both as a continuous variable and where appropriate by age groups.

### Anthropometric characteristics

Antropometric assessment included measurement of body weight and body height. Body mass index (BMI) was calculated according to the following formula:
BMI (kg/m2)= body weight (kg)/height 2 (m2).
Participants were classified according to BMI using the following categories:

- Underweight: BMI<18,5 kg/m2
- Normal weight: BMI 18,5-24,9 kg/m2
- Overweight: BMI 25.0-29,9 kg/m2
- Obesity: BMI>30.0 kg/m2

For statistical analysis, continuous variables were expressed as mean+_standard deviation (SD) or median and interquartile range, as appropriate based on data distribution. Categorical variables were presented as absolute numbers and percentages. Differences between groups were evaluated using appropriate statistical tests. A p- valuae < 0,05 was considered statistically significant.

## Results

A total of 230 patients with peripheral arterial disease were included in the study. Of these 200 (87.0%) had type 2 diabetes mellitus, whereas 30 (13.0%) did not have diabetes mellitus.

Table 1. Distribution of participants according to the presence of type 2 Diabetes Mellitus

| Variable | N | % |
|---|---|---|
| **With T2DM** | 200 | 87 |
| **Without T2DM** | 30 | 13 |

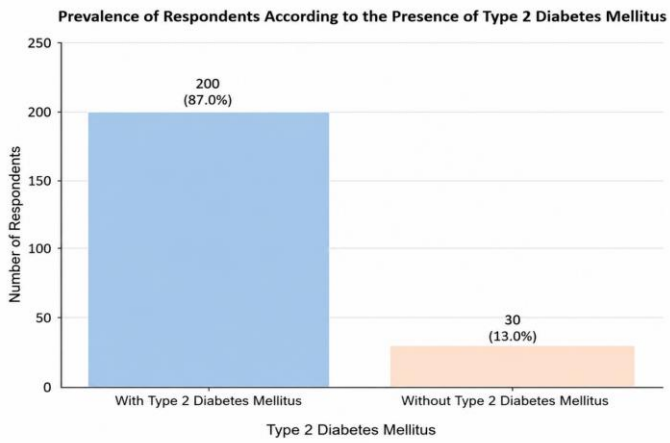



Figure 1. Distribution of participants according to the presence of type 2 diabetes mellitus

Table 2. Descriptive Statistics for Age and Body Mass Index (BMI)

| Variable | N | Mean | SD | Me | Q1 | Q3 | IQR | Min | Max |
|---|---|---|---|---|---|---|---|---|---|
| **Age** | 230 | 64.44 | 10.66 | 65 | 58.25 | 72 | 58.25-72.0 | 34 | 91 |
| **BMI** | 230 | 28.96 | 4.54 | 28.45 | 26 | 31.2 | 26.0-31.2 | 21.7 | 50.8 |

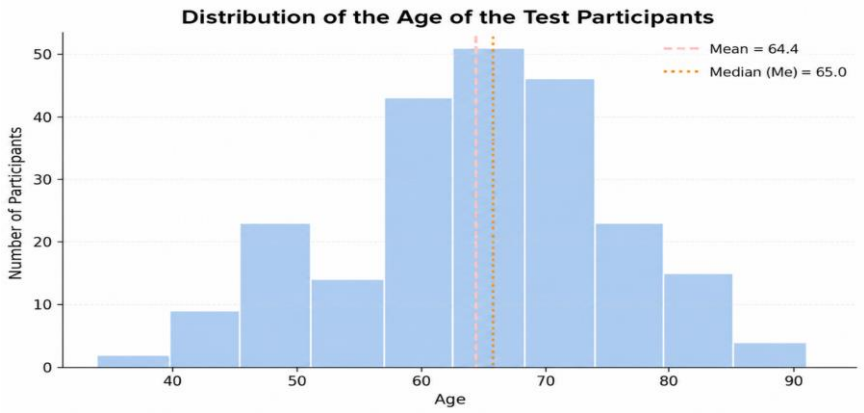



Figure 2. Distribution of participants by age

The average age of the study population is 64,44 years with a standard deviation of 10,66 years. The median age is 65 years, and the interquartile range is from 58,25 to 72 years. The youngest patient is 34 years old, while the oldest patient id 91 years old. These results indicate that the examined sample mainly includes the middle-aged and old aged population which is expected with the nature of peripheral arterial disease.

Table 3. Distribution of Participants by Gender

| gender | N | % |
|---|---|---|
| **female** | 120 | 52.2 |
| **male** | 110 | 47.8 |

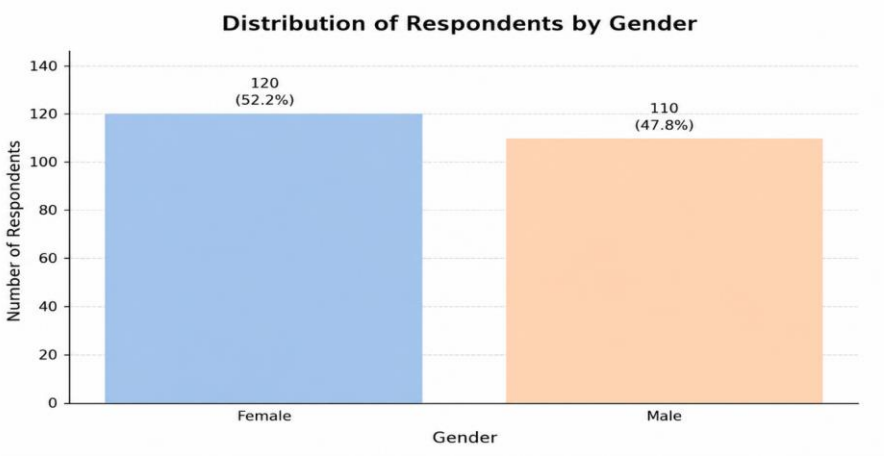


Figure 3. Distribution of participants by gender

Regarding sex distribution, the sample included 120 women, representing 52,2% of the total number of patients and 110 men, i.e.47,8%. The distribution by gender is relatively even with slightly higher representation of female patients.

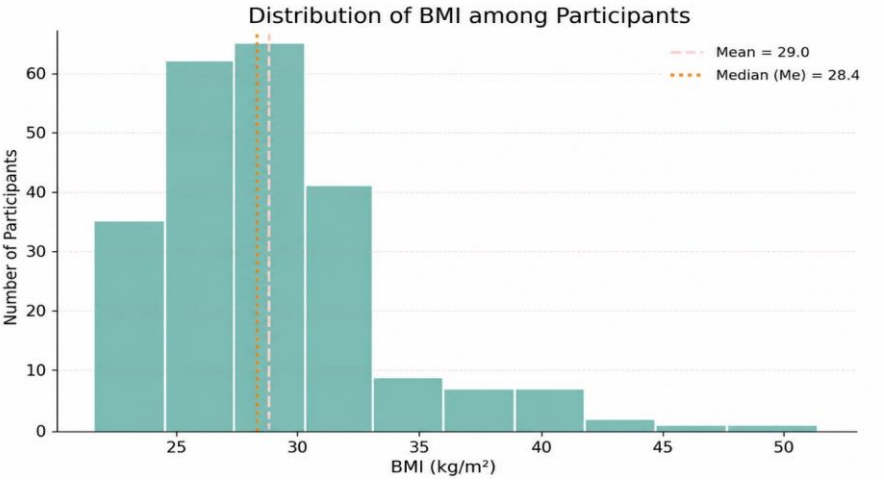


Figure 4. Distribution of participants by BMI

The average value of the body mass index is 28,96 kg/m2 with a standard deviation of 4,54 kg/m2. The median BMI is 28,45kg/m2 and the interquartile range is 26 to 31,2 kg/m2. The minimum value of BMI is 21,7 kg/m2, while the maximum value is 50,8 kg/m2.

Table 3. Distribution of Participants by Body Mass Index (BMI) Category

| BMI category | N | % |
|---|---|---|
| **BMI<25 kg/m2** | 43 | 18.7 |
| **BMI25-30kg/m2** | 108 | 47 |
| **BMI>30kg/m2** | 79 | 34.3 |

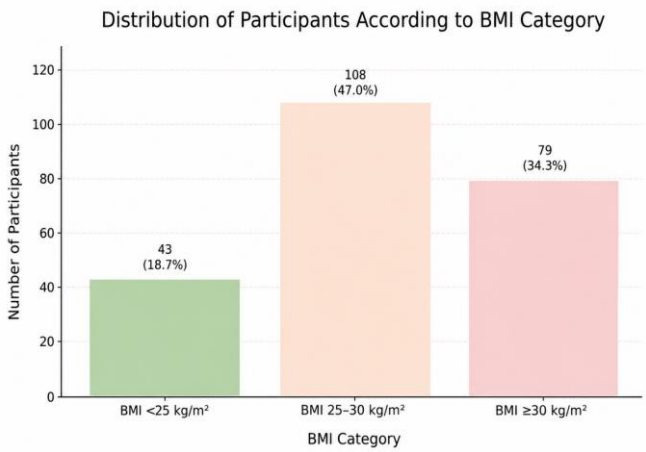


Figure 4. Distribution of participants by BMI category

According to the BMI categories, the largest part of the patients is in the overweight category with a BMI of 25-30 kg/m2, 108 patients, which represents 47,0% of the sample. Normal body weight <25 kg/m2 have 43 patients or 18,7%, while 79 patients or 34,3% have BMI >30 kg/m2 which corresponds to the category of obesity. This distribution shows that more than four fifths of the patients have increased body weight or obesity, which represent a significant cardiometabolic risk factor in the context of peripheral artery disease and diabetes mellitus type 2. Summarized the study included a total of 230 patients with a relatively even distribution according to age and average age of 64,44 years. In relation to the antropometric characteristics the average BMI is 28,96 kg/m2 and the largest part of patients is in the category of overweight or obesity.

The analysis demonstrate that overweight and obesity were common among patients with PAD, particularly among those with T2DM.

This findings indicate that patients with PAD and T2DM are predominantly older population with a prevalence of elevated BMI. This antropometric caracteristics may contribute to the overall cardiovascular risk profile of this patient population.

## Discussion

The present findings are consistent with previous studies showing that PAD predominantly affects older adults and is usually related by metabolic risk factors, T2DM and obesity. Similar investigations have reported a high prevalence of overweight and obesity among patients with diabetes related PAD, and association between adiposity, insulin resistance, systemic inflammation and accelerated atherosclerosis. Studies by Jude et al., (2010) Selvin and Erlinger, (2004) and Criqui and Aboyans (2015) further demonstrate that diabetes, obesity and advancing age are important predictors of PAD prevalence and progression. The predominance of T2DM in this cohort also agrees with studies identifying diabetes as an important factor of PAD development, progression and adverse cardiovascular outcomes. Differences in BMI distribution between diabetic and non diabetic patients may vary across studies and also this discrepancies may reflect differences in age , sex, disease severity, treatment and population caracteristics. The importance of integrating anthropometric assessment and diabetes management into PAD risk stratification and prevention strategies is crucial.

## Conclusion

Patients with peripheral arterial disease and type 2 diabetes mellitus are an important high risk population characterized by advanced age and a high prevalence of overweight and obesity. Assesment and classification of BMI provide valuable information regarding the anthropometric profile of these patients.
Identification od sociodemographic and antropometric risk factors, particularly age, sex and BMI may lead to better management of patients with PAD and T2DM. Further studies involving larger cohorts and longitudinal follow up are very important to determine the independent factors of these characterstics to PAD severity and clinical outcomes.

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