

ASSOCIATION BETWEEN OBESITY, CHOLESTEROL, AND DIABETES: INSIGHTS FROM A POINT-OF-CARE SCREENING CAMPAIGN IN BRAZIL



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Introduction

Obesity is a major risk factor for type 2 diabetes. This study examines the prevalence of obesity and its relationship with diabetes during the World Obesity Day campaign using point-of-care (POC) devices.

Methodology

Data were collected from 534 participants during the campaign in São Paulo city, Brazil. POC devices measured health indicators like blood glucose, cholesterol, and body metrics. The sample included various ages and sexes. Data on age, sex, weight, height, waist circumference (CA), BMI, hypertension (HAS), diabetes (DM), and cholesterol levels were collected. Data was analyzed using RStudio.

Results and Discussion

The mean age was 48.41 years (SD = 15.70), with 31.89% being female. The average weight was 78.73kg (SD = 19.01kg), height was 1.62m (SD = 0.09m), and BMI was 30.00kg/m² (SD = 6.26), with 44.47% classified as having obesity. The average waist circumference was 98.31cm (SD = 15.34cm), and blood glucose averaged 112.24mg/dL (SD = 50.89mg/dL). Hypertension prevalence was 35.9%, diabetes 11.9%, 17.1% used cholesterol medication, and 20.4% had undergone weight loss treatment. Detailed results are seen in Table 1.

| Characteristic | Mean / Prevalence | Standard Deviation |
|---|-------------------|--------------------|
| Age (years) | 48.41 | 15.70 |
| Sex (Female) | 31.89% | |
| Obesity (BMI > 29.9) | 44.47% | |
| Hypertension (HAS) | 35.9% | |
| Diabetes Mellitus (DM) | 11.9% | |
| Use of Cholesterol Medication | 17.1% | |
| Previous Weight Loss Treatment | 20.4% | |
| Body Mass Index (BMI, kg/m ²) | 30.00 | 6.26 |
| Weight (kg) | 78.73 | 19.01 |
| Height (m) | 1.62 | 0.09 |
| Waist Circumference (cm) | 98.31 | 15.34 |
| Blood Glucose (mg/dL) | 112.24 | 50.89 |



BMI was significantly correlated with blood glucose ($r = 0.159$, $p < 0.001$) and diabetes ($r = 0.127$, $p < 0.004$). Waist circumference was also correlated with diabetes ($r = 0.122$, $p < 0.011$). Cholesterol levels were strongly linked to diabetes ($r = 0.239$, $p < 0.001$).

Regression analysis showed that being female increased diabetes risk by 1.47 times, each year of age by 1.23 times, and high cholesterol tripled the risk (OR = 3.04). BMI and waist circumference were correlated with diabetes but didn't show independent effects in the regression model, possibly due to mediation by age and cholesterol.

Conclusion

This study highlights the strong connection between obesity, particularly abdominal obesity, and diabetes. Targeted interventions are vital for managing these risks. POC devices offer crucial real-time data for early detection and management of obesity and diabetes.

Acknowledgements

ADJ Diabetes Brasil acknowledges Merck, NovoNordisk, MedLevensohn, Painei Brasileiro de Obesidade, Instituto Cordial and CPTM for all support in the action.