LIFEstyle Strategies to Tackle cardiovascular and metabolic Risk

DOI: COFAC/ILIND/CBIOS/3/2024

Project Reference: https://doi.org/10.62658/COFAC/ILIND/CBIOS/3/2024

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18 months
Project Duration

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Abstract:

Non-communicable diseases (NCDs) are among the most pressing global public health challenges. Cardiovascular diseases (CVD) are the leading cause of death worldwide, while metabolic disorders such as obesity and type 2 diabetes mellitus (T2DM) significantly reduce quality-adjusted life years (QUALYs). Adopting healthy lifestyles-particularly regarding nutrition and physical activity - is critical for disease prevention and health promotion across the lifespan. However, the real-world impact of such interventions in at-risk populations remains underexplored.

This pilot project aims to evaluate the effects of simple lifestyle changes - focusing on diet quality and physical activity - on cardiovascular and metabolic risk markers in sedentary adults.

The study will recruit 60 omnivorous men and women over 40 years old, presenting with overweight or obesity and a sedentary lifestyle. Participants will undergo comprehensive baseline assessments, including body composition via dual-energy X-ray absorptiometry (DXA), anthropometric measurements, dietary intake using the Diet Quality Index-International (DQI-I), and physical activity levels via the International Physical Activity Questionnaire (IPAQ). Fasting capillary blood samples will be used to assess key metabolic biomarkers. Hemodynamic and vascular health will be evaluated non-invasively through ankle-brachial index (ABI) calculations and assessments of lower limb perfusion asymmetries. Risk stratification will include the SCORE2® algorithm to estimate 10-year cardiovascular risk and the FINDRISC tool for T2DM risk. Participants will be grouped accordingly at baseline.

The intervention will involve small dietary modifications aligned with Portuguese national guidelines, alongside a minimally supervised home-based physical activity program designed by our team, following the FITT (Frequency, Intensity, Time, and Type) principle. The program is intended for daily completion at each participant's convenience. Data will be collected at baseline and at 1, 3, and 6 months. The primary goal is to improve metabolic and cardiovascular profiles, ultimately reducing long-term CVD and T2DM risk. This project will provide evidence that accessible, consistent lifestyle changes can meaningfully improve health and well-being.

Partners: