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Effect of low-calorie diets with different macronutrient composition and distribution macronutrient distribution in shift workers with type 2 diabetes: study design and preliminary results.

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Background and Aims: Shift work, particularly involving night shifts, is associated with increased risk of metabolic disturbances such as type 2 diabetes mellitus (T2DM). Thus, it is important to explore mechanisms underlying this deleterious effect and strategies that could prevent or mitigate it. We aim to study the effect of three low-calorie diets with different macronutrients composition and distribution along day on glucose metabolism and other health outcomes in overweight or obese shift workers with prediabetes or T2DM.

Methods: In this randomized controlled trial, we plan to recruit 120 shift workers with a BMI > 27.5 kg/m2 and diagnosed with prediabetes or T2DM. The trial assesses three low-calorie diets effects on glucose metabolism, body composition, and health outcomes over 12 weeks. These diets include: A) high-protein dinner (60% of total daily protein), B) low-protein dinner (15% of total daily protein), and C) normoproteic diet. Currently, 24 participants are enrolled.

Conclusion: Shift work, especially night shifts, increases cardiometabolic disease risk. Urgent strategies are needed to mitigate this risk, including exploring the impact of macronutrient timing on metabolism, particularly for night-shift workers.