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Assessing the Association Between Sedentary Behaviour and Glycemic Control in Individuals with Type 2 Diabetes: A Clinic-Based Observational Study

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Abstract

Background: Sedentary behaviour is a modifiable lifestyle factor often overlooked in diabetes management. This observational study examines the relationship between sedentary hours and glycemic control among patients with Type 2 diabetes mellitus (T2DM).

Methods: A cross-sectional study was conducted with 384 patients attending a diabetes clinic at SAGA Healthcare, Malda. Patients were stratified into High Sedentary Group (HSG) and Low Sedentary Group (LSG) based on self-reported sedentary time (>6 or ≤6 hours/day). Glycemic markers, anthropometric indices, blood pressure, lipid profile, and diabetic complications were compared.

Results: HSG patients (n=204) exhibited significantly higher HbA1c (9.0% vs. 7.4%), FPG (175 mg/dL vs. 140 mg/dL), and PPG (246 mg/dL vs. 174 mg/dL) than LSG. They also had a higher prevalence of nephropathy (25% vs. 15%), retinopathy (15% vs. 8%), and neuropathy (20% vs. 12%). Blood pressure and lipid parameters were worse in HSG. BMI and waist circumference were also higher among HSG.

Conclusion: Sedentary behaviour significantly impacts glycemic control and associated comorbidities in T2DM. Incorporating sedentary behaviour assessment into routine care may enhance management outcomes.

Keywords: Sedentary behaviour, Type 2 diabetes, HbA1c, glycemic control, complications, observational study

Introduction

Type 2 diabetes mellitus (T2DM) is a growing public health concern, often exacerbated by modifiable lifestyle factors such as sedentary behaviour. This study explores how prolonged sitting and physical inactivity influence glycemic control and associated comorbidities in individuals with T2DM.

Methods

Design: Clinic-based observational study conducted between August and December 2023.

Participants: 384 individuals with T2DM aged 30-65 years attending SAGA Healthcare.

Inclusion criteria: Diagnosed with T2DM, aged 30–65 years, regular follow-up.

Exclusion criteria: Pregnancy, CKD, frailty.

Sedentary behaviour was self-reported and categorized based on a 6-hour/day cutoff. Glycemic control was evaluated via HbA1c, FPG, and PPG. Anthropometric and clinical data were collected. Statistical analyses included descriptive statistics and between-group comparisons.

Results

- High Sedentary Group (HSG): 204 participants; avg. sedentary time = 7.5 hrs/day

- Low Sedentary Group (LSG): 180 participants; avg. sedentary time = 4.2 hrs/day

Glycemic Outcomes:

1. HbA1c: HSG = 9.0%, LSG = 7.4%
2. FPG: HSG = 175 mg/dL, LSG = 140 mg/dL
3. PPG: HSG = 246 mg/dL, LSG = 174 mg/dL

Complications:

1. Nephropathy: HSG = 25%, LSG = 15%
2. Retinopathy: HSG = 15%, LSG = 8%
3. Neuropathy: HSG = 20%, LSG = 12%

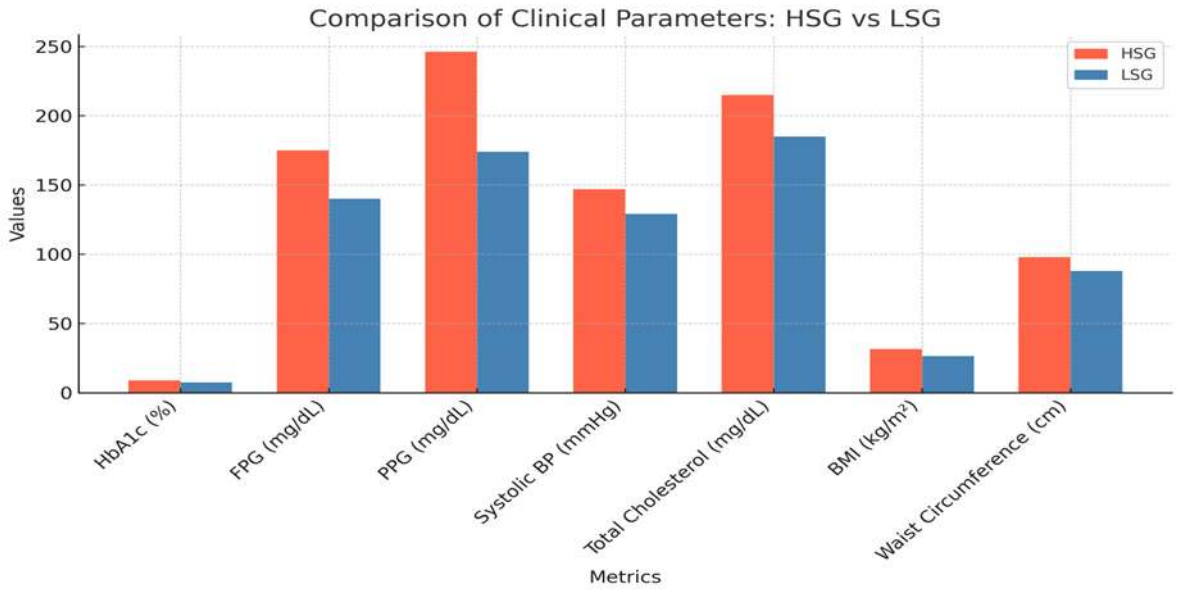
Cardiovascular Risk Profile:

1. Systolic BP: HSG = 147 mmHg, LSG = 129 mmHg
2. Total Cholesterol: HSG = 215 mg/dL, LSG = 185 mg/dL
3. LDL: HSG = 135 mg/dL, LSG = 107 mg/dL
4. HDL: HSG = 33 mg/dL, LSG = 42 mg/dL

Anthropometry:

1. BMI: HSG = 31.5 kg/m², LSG = 26.5 kg/m²
2. Waist Circumference: HSG = 98 cm, LSG = 88 cm

Figure 1: Comparison of Clinical Parameters between Groups



This bar chart illustrates the differences in HbA1c, blood glucose levels, blood pressure, cholesterol, BMI, and waist circumference between the High Sedentary Group (HSG) and Low Sedentary Group (LSG).

Discussion

Prolonged sedentary time is associated with poorer glycemic outcomes, adverse cardiovascular risk profiles, and higher complication rates in T2DM. Our findings support the inclusion of sedentary time monitoring in diabetes management protocols and point toward the benefits of behavioural interventions.

Conclusion

Sedentary behaviour is an independent risk factor for poor glycemic control and diabetes-related complications. Addressing it through clinical and public health interventions may significantly improve T2DM outcomes.

References

1. Wisse BE et al. Diabetes Vasc Dis Res. 2007;4(4):353–362.
2. Han TS et al. Int J Obes. 1997;21(7):587–593.
3. Ferriolli E et al. Arch Gerontol Geriatr. 2007;44(2):185–193.
4. Sardinha LB et al. Diabetes Care. 2008;31(3):569–575.
5. Colberg SR, Sigal RJ. JAMA. 2016;315(24):2724–2725.
6. Alothman S et al. J Phys Ther Sci. 2019;31(11):925–930.
7. Sgrò P et al. J Med Life. 2017;10(3):175–181.
8. ADA. Diabetes Care. 2019;42(Suppl 1):S61–S70.

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9. WHO. Global Recommendations on Physical Activity for Health. 2010.
10. NICE. Type 2 Diabetes in Adults: Management. NICE guideline [NG28]; 2015.

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