

Prevalence and correlates of sleep disorders in Greek patients with type 2 diabetes: comparison of an urban and a semi-urban population

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Sleep disturbances are common in type 2 diabetes (T2D) patients [1]. To promote better management of T2D, sleep disorders must be addressed in these patients and treated early [2]. Therefore, the aim of the present study was to estimate the prevalence and correlates of sleep disorders in Greek patients with T2D, comparing an urban and a semi-urban population.

The study population comprised 308 T2D patients: 139 (80 men, mean age \pm standard deviation: 65.5 \pm 10.1 years, glycosylated hemoglobin (HbA_{1c}) 7.3 \pm 1.4%, body mass index (BMI) 30.7 \pm 6.1 kg/m², duration of T2D 10.9 \pm 7.9 years) attending the Diabetes Center of “Tzaneio” General Hospital of Piraeus (urban population, group A) and 169 (82 men, mean age: 67.9 \pm 12.4 years, HbA_{1c} 7.0 \pm 1.3%, BMI 30.8 \pm 6.1 kg/m², duration of T2D 11.2 \pm 8.7 years) attending the Diabetes Clinic of General Hospital – Health Center of Sitia (semi-urban population, group B) from July to December 2018. Quality of sleep was evaluated by administering the Pittsburgh Sleep Quality Index (PSQI), a self-report questionnaire that assesses sleep quality and quantity over a month-long period [3].

The mean PSQI score of group A was 11.22 \pm 6.44, while 88.5% of participants had a PSQI score \geq 5, indicating poor quality of sleep. The same pattern was observed in group B where the mean PSQI score was 12.48 \pm 5.85, and 88.8% had a PSQI score \geq 5. Participants with a PSQI score \geq 5 did not differ between study groups ($p = 0.13$). Logistic regression analysis, after adjustment for sex, BMI, presence of hypertension and dyslipidemia, smoking, diabetes micro- and macrovascular complications, and oral antidiabetic treatment, showed that poor quality of sleep (PSQI score \geq 5) in the total sample population was associated with insulin treatment (odds ratio (OR) = 0.03, 95% confidence interval (95% CI): 0.31–0.99) and HbA_{1c} (OR = 6.56, 95% CI: 1.93–16.14). In group A, poor quality of sleep was associated with insulin treatment (OR = 0.02, 95% CI: 0.10–0.84) and HbA_{1c} (OR = 7.55, 95% CI: 1.97–18.81). In group B, poor quality of sleep was associated only with age (OR = 1.36, 95% CI: 1.06–1.74).

Our study suggested that Greek patients with T2D have a high prevalence of sleep disorders. There was no significant difference regarding

sleep disorders between studied populations. Our analysis also indicated that insulin treatment and HbA_{1c} were the greatest predictors of sleep disorders. It is well known that sleep disturbances among T2D patients are associated with increased HbA_{1c} levels [4]. On the other hand, continuous positive airway pressure therapy of obstructive sleep apnea in T2D patients improves glycemic control [5]. In accordance with our findings, recent studies in T2D patients correlated poor sleep quality with insulin treatment [6, 7]. Interestingly, insulin administration has been reported to be significantly correlated with sympathetic overactivity and may increase sympathetic activity [8].

In conclusion, Greek patients with T2D have a high prevalence of sleep disorders. Therefore, it is important to emphasize the need for early identification of sleep disorders in T2D patients in order to treat them early and improve patients' quality of life.

Conflict of interest

The authors declare no conflict of interest.

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