

## Paper Session E4: Sleep: Focus on Special Populations

### ***Type II Diabetes Contributes to Sleep Disorders & Sleep-Related Daytime Symptoms in Patients with Stable Heart Failure***

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**Purpose:** Type 2 Diabetes (T2DM) and heart failure (HF) are often comorbid conditions and each is associated with sleep disorders. However, little is known about the extent to which T2DM contributes to sleep disorders and sleep-related daytime symptoms in people who have HF. We hypothesized that: T2DM is associated with increased severity of sleep disorders and daytime symptoms in adults with stable HF.

**Theoretical Framework:** Two process model of sleep regulation

**Methods:** We recruited patients with stable chronic NYHA Class II-IV HF from HF disease management programs. Participants completed one night of unattended full polysomnography in their homes, the sleep habits questionnaire (insomnia), and the Epworth Sleepiness, Global Fatigue, and the Centers for the Epidemiological Studies of Depression Scales

**Results:** The sample included 173 patients (M age = 60.3 + 16.1 years; N = 60 (35% female; LVEF M = 32.6 + 15.2), of whom 50 (29%) had T2DM. T2DM was associated with greater apnea hypopnea index (AHI) ( $p = .004$ ) and oxygen desaturation ( $p = .007$ ) in bivariate, but not multivariate analyses that controlled for BMI, age, and gender. T2DM was associated with % wake after sleep onset ( $p = .01$ ), and decreased % Stage 2 ( $p = .022$ ) and total sleep ( $p = .024$ ) in bivariate, as well as analyses that controlled for BMI, age, gender, and AHI. T2DM was associated with insomnia symptoms in people with none-mild sleep apnea (AHI < 15), [OR = 1.90, CI95% = 1.03, 3.48,  $p = .038$ ], but not in those with moderate-severe sleep apnea. Diabetic patients were sleepier ( $p = .019$ ), but were not more fatigued or depressed. Among those with T2DM, 40% were excessively sleepy, compared to 23% of those without. T2DM was related to excessive daytime sleepiness, after controlling for age, gender, BMI, EF, AHI, and sleep time [OR = 2.39; CI95 = : 1.17, 5.14,  $p = .019$ ].

**Conclusions:** Among patients with stable HF, T2DM is associated with poor sleep continuity and excessive daytime sleepiness. T2DM is associated with insomnia symptoms only in patients who have none-mild sleep apnea. Further research is needed to examine the determinants of excessive daytime sleepiness in patients with comorbid HF and T2DM.