

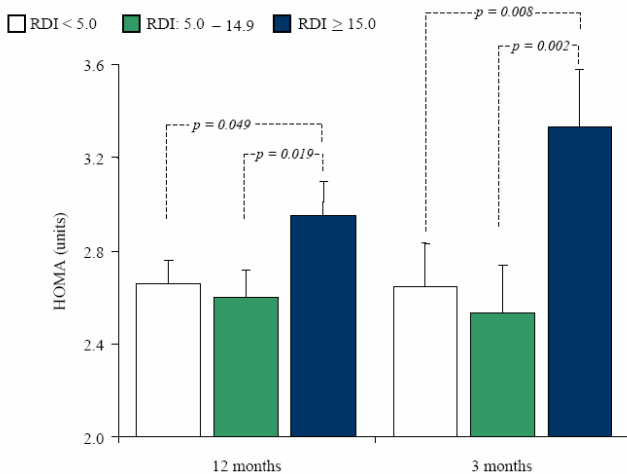
Sleep-Disordered Breathing, Glucose Intolerance, and Insulin Resistance

The Sleep Heart Health Study

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ABSTRACT

Clinic-based studies suggest that sleep-disordered breathing (SDB) is associated with glucose intolerance and insulin resistance. However, in the available studies, researchers have not rigorously controlled for confounding variables to assess the independent relation between SDB and impaired glucose metabolism. The objective of this study was to determine whether SDB was associated with glucose intolerance and insulin resistance among community-dwelling subjects ($n = 2,656$) participating in the Sleep Heart Health Study (1994–1999). SDB was characterized with the respiratory disturbance index and measurements of oxygen saturation during sleep. Fasting and 2-hour glucose levels measured during an oral glucose tolerance test were used to assess glycemic status. Relative to subjects with a respiratory disturbance index of less than 5.0 events/hour (the reference category), subjects with mild SDB (5.0–14.9 events/hour) and moderate to severe SDB (15 events/hour) had adjusted odds ratios of 1.27 (95% confidence interval: 0.98, 1.64) and 1.46 (95% confidence interval: 1.09, 1.97), respectively, for fasting glucose intolerance (p for trend < 0.01). Sleep-related hypoxemia was also associated with glucose intolerance independently of age, gender, body mass index, and waist circumference. The results of this study suggest that SDB is independently associated with glucose intolerance and insulin resistance and may lead to type 2 diabetes mellitus. *Am J Epidemiol.* 2004; 160(6): 521-530C



Adjusted mean value of the homeostasis model assessment (HOMA) index as a function of the respiratory disturbance index (RDI) for 12-month ($n = 1,067$) and 3-month ($n = 405$) time windows, Sleep Heart Health Study, 1994–1999. Bars, standard error.

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