Data mining of inpatient records reveals the disease pattern of obstructive sleep apnea

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A study in the Dec. 15 issue of the *Journal of Clinical Sleep Medicine* is the first to show the full clinical picture of comorbid conditions associated with obstructive sleep apnea (OSA), quantify their frequency of occurrence and reveal their possible interrelationships.

Results show that the number of cases of OSA peaks between the ages of 0-4 years, is low during adolescence, and then rises from 25-29 years to a peak at 55-59 years. The rates are slightly higher for girls than boys in the 0-4 age group (9.4% and 6.7%) and the 5-9 age group (6.0% and 3.9%), and the occurrence rate in males is higher than in females after 20-24 years of age.

According to the study's co-author,Chin Moi Chow , PhD, Senior of health sciences, at the University of Sydney, this study will have a significant impact on the understanding of the disease pattern of OSA and conditions associated with it.

"This research provides a clinical picture of OSA from over six million hospital admissions of all medical conditions and those associated with OSA, and describes its occurrences according to age and gender groups," Chow said.

Findings indicate that OSA patients are high users of health-care services, with comorbid conditions most often involving cardiovascular diseases, endocrine/metabolic diseases (mainly diabetes) and respiratory diseases. Comorbid conditions most frequently appearing with OSA in

adults are essential hypertension, obesity, hypercholesterolemia, type 2 diabetes, past or current tobacco use, and ischemic heart conditions.

Data plotting shows that the onset and peak occurrences of obesity and OSA are identical. From obesity onset there is a latent period of five years for the development of hypertension and type 2 diabetes and 15 years for chronic ischemic heart conditions.

A random dataset from the years 1999 through 2004 was extracted using a Health Outcomes and Information Statistical Toolkit. The data set was a representative collection of hospital records in the Inpatient Data Collection System of New South Wales, the most populated Australian state. The data included patient records from 278 public hospitals and 180 private hospitals.

The extracted dataset contained a total of 1.51 million hospital records. Four percent of all records – representing 60,197 patients - had a principal or secondary diagnosis of OSA, with a male to female ratio of 2.6:1. The authors report that previous knowledge of disease associations with OSA was fragmented and did not explain possible interrelationships between comorbid diseases. The data mining technique was used to provide the full clinical picture of comorbid conditions associated with OSA.

Source: American Academy of Sleep Medicine