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## Cephalometric and demographic characteristics of obstructive sleep apnea: An evaluation with partial least squares analysis

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### ABSTRACT

Obstructive sleep apnea (OSA) is caused by repeated obstruction of the upper airway during sleep. The purpose of this study was to test the relative contributions of specific demographic and cephalometric measurements to OSA severity. Demographic, cephalometric, and overnight polysomnographic records of 291 male OSA patients and 49 male nonapneic snorers were evaluated. A partial least squares (PLS) analysis was used for statistical evaluation. The results revealed that the predictive powers of obesity and neck size variables for OSA severity were higher than the cephalometric variables used in this study. Compared with other cephalometric characteristics, an extended and forward natural head posture, lower hyoid bone position, increased soft palate and tongue dimensions, and decreased nasopharyngeal and velopharyngeal airway dimensions had relatively higher associations with OSA severity. The respiratory disturbance index (RDI) was the OSA outcome variable that was best explained by the demographic and cephalometric predictor variables. We conclude that the PLS analysis can successfully summarize the correlations between a large number of variables, and that obesity, neck size, and certain cephalometric measurements may be used together to evaluate OSA severity.

**KEY WORDS:** Obstructive sleep apnea, Cephalometrics, Obesity, Partial least squares analysis.

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