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Title: Validation of the four –variable screening tool in a European population for assessing obstructive sleep apnea syndrome

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Body: Background: The 4-Variable screening tool (4-V) was developed and validated in Japan from Takegami et al as a tool for the identification of Obstructive Sleep Apnea Syndrome (OSAS). Objectives: To evaluate the ability of the 4-V to estimate the incidence of OSAS as measured by Apnea Hypopnea Index (AHI) in a European Population as the antropometric data differ between race (caucasian-asian). Methods: The risk of OSAS was calculated by the 4-V tool in 1057 patients visiting a sleep clinic in Greece. All patients underwent polysomnography (PSG). Results: The mean age of patients (73.8%male) was 52 ± 14 yr, BMI 32.9 ± 7 kg/ m2, neck circumference 41.75 ± 4.3 cm, Epworth Sleepiness Scale (ESS) 11.5 ± 5.4, Apnea Hypopnea Index (AHI) 32.7 ± 26.5/h, Oxygen Desaturation Index (ODI) 37.7 ± 29.6 and 4-V score 13.3 ± 2.5. OSAS was diagnosed with PSG in 849(80.3%) patients: 13.6% mild, 19.1% moderate,47.6% severe. By 4-V (≥14) 45.1% (477) of patients were classified as being at high risk of OSAS. The sensitivities of 4-V for AHI ≥5, ≥ 15 and ≥ 30 were 50.7%, 54.9% and 61%, respectively; the specificities 78%,74.4%,69.3%; the positive predictive values 90.3%, 81.1%, 64.3%; the negative predictive values 27.9%, 45.1% and 66.2%. The area under the ROC curve at AHI≥ 5 was 0.68. Conclusions: In a European population 4-V may miss cases suffering from OSAS (relatively low sensitivity) but it has good specificity classifying fewer normal persons as high-risk for OSAS.