

Development of a novel clinical scoring system to predict **Moderate to Severe Obstructive Sleep Apnea** in patients undergoing bariatric surgery

**Moderate to Severe OSA** >> Perio-op cardiopulmonary complications  
Recommend to use **CPAP 2 weeks before surgery** to reduce their risks

The objective is to create a **scoring system that can predict the presence of Moderate to Severe OSA** who require special preventive measures.

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# Methods

- **Single center study: Prince of Songkhla university, Thailand**
- **Included patients** who underwent bariatrics surgery and had a pre-operative polysomnography results (**STOP-BANG score  $\geq 3$** )
- **Total 646 patients were included.**
  - Mild OSA; 138 patients (21.3%)
  - **Moderate; 133 patients (20.5%)**
  - **Severe; 331 patients (51.2%)**

**>> Moderate-Severe OSA 464 (71.7%)**

# *Odd ratio of significant predictor* for Moderate to Severe OSA

Predictors	OR ratio (95% CI)
Age $\geq$ 31	3.49 (2.28-5.35)
Male gender	1.92 (1.14-3.26)
Neck circumference $\geq$ 42 cm	4.19 (2.66-6.62)
Snoring	2.86 (1.54-5.30)
Choking	2.13 (1.38-3.30)
Friedman tongue position Grade III-IV	2.09 (1.14-3.26)

*2 Points*

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# ROC curve analysis for each model of the scoring system for predicting Moderate-Severe OSA

Models	Moderate-Severe OSA, AUC
<b>1<sup>st</sup> model</b> Age $\geq$ 31 NC $\geq$ 42 Male sex Snoring	0.763
<b>2<sup>nd</sup> model</b> Age $\geq$ 31 NC $\geq$ 42 Male sex Snoring Choking	0.786
<b>3<sup>rd</sup> model</b> Age $\geq$ 31 NC $\geq$ 42 Male sex Snoring Choking Friedman tongue position Gr III-IV	0.796
<b>4<sup>th</sup> model *</b> Age $\geq$ 31 NC $\geq$ 42 Male sex Snoring Choking BMI $\geq$ 45	0.801

***BMI instead***

The predictive parameters in our final model for predicting Moderate-Severe OSA are **categorized into high risk or low risk based on the scoring system.**

Score	High risk N, (%)	Low risk N, (%)	Sensitivity (%)	Specificity (%)	Accuracy (%)	PPV (%)	NPV (%)	OR (95% CI)
1 vs < 1	640 (99.0%)	6 (1%)	99.8	27.5	72.4	72.3	83.3	13.0 (1.51-112.7)
≥ 2 vs < 2	610 (94.4%)	36 (5.6%)	97.4	13.2	73.7	74.1	67.7	5.7 (2.8-11.7)
≥ 3 vs < 3	559 (86.5%)	87(13.5%)	94.4	33.5	77.2	78.4	70.1	8.4 (5.1-14.0)
≥ 4 vs < 4	458 (70.9%)	188 (29.1)	83.6	61.5	77.4	84.7	59.6	8.1 (5.5-12.0)
≥ 5 vs < 5	322 (49.8%)	324 (50.2%)	62.5	82.4	68.1	90.1	46.3	7.8 (5.1-11.9)
≥ 6 vs < 6	213 (33.0%)	433 (67.0%)	43.3	93.4	57.4	94.4	39.3	10.8 (5.8-20.0)
≥ 7 vs < 7	122 (19.9%)	524 (81.1%)	25.0	96.7	45.2	95.1	33.6	9.7 (4.2-22.6)
≥ 8 vs < 8	32 (5.0%)	614 (95%)	66.8	99.5	32.8	96.9	29.5	12.9 (1.7-95.6)