

# Impact of Mask Type on CPAP Efficacy and Compliance: A Systematic Review and Meta-analysis

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## Objective:

Continuous positive airway pressure (CPAP) is the standard treatment for obstructive sleep apnea (OSA). The impact of the mask type on the efficacy and acceptance of CPAP is inconclusive. The present study aimed to compare the effects and compliance of oronasal and nasal mask by the meta-analysis of the existing trials.

## Methods:

Studies were retrieved from PubMed, EMBASE, and CENTRAL up to August 2016. The literature was reviewed by two independent authors. The mean difference of residual apnea-hypopnea index (AHI), therapeutic pressure, usage hour, and preference between oronasal and nasal mask was quantified. The pooled effect was analyzed with random-effect generic inverse variance and the heterogeneity was assessed with  $I^2$ .

## Results:

From 6070 articles, 13 studies comprising 4000 subjects were included for the meta-analysis. The number of recruited subjects was different and the recruited trials were heterogeneous for all five outcomes. The Newcastle-Ottawa scale showed that two studies (120 subjects) enrolling participants inadequately response to oronasal CPAP were biased. Compared to nasal masks, the oronasal masks had higher residual AHI for 5.5/hour (95% CI 2.3-8.8,  $p < 0.001$ ,  $I^2$  94%, 676 subjects), higher therapeutic pressure for 1.3 cmH<sub>2</sub>O (0.6-2.0,  $p < 0.001$ ,  $I^2$  79%, 2727 subjects), shorter usage per night for 0.6 hour (-0.79 - -0.40,  $p < 0.001$ ,  $I^2$  0%, 3432 subjects), less preferred (odds ratio 0.08, 95% CI 0.01-0.46,  $p = 0.005$ , 162 subjects), and more 95<sup>th</sup> percentile leak for 15.5 L/min (3.8-27.2,  $p = 0.01$ ,  $I^2$  65%, 96 subjects). The subgroup analysis of 11 unbiased trials (3880 subjects) gave the same results for all five outcomes. Subgroup analysis of 5 randomized control trials (RCT) (176 subjects) had similar results except that therapeutic pressure was similar between two masks ( $p = 0.26$ ).

## Conclusion:

The present studies showed that oronasal masks were associated with higher residual AHI, higher therapeutic pressure, shorter usage, less preference, and higher leak compared to nasal masks.

中文題目：面罩的型式對正壓呼吸器療效與病患順從性的影響 系統性文獻回顧及統合分析

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