Osahs Patients With CPAP Complained of Multiple Side Effects: A Meta-analysis of Randomized Trials

Chunxue Zhu

Jiangsu University Hospital

Qing Liu

Jiangsu University Hospital

Qinyuan Lu

Affiliated Renmin Hospital of Jiangsu University: Zhenjiang First People's Hospital

Yicheng Wang

Jiangsu University Hospital

Chengyu Liu

Jiangsu University Hospital

Xilong Zhang

Jiangsu Province Hospital and Nanjing Medical University First Affiliated Hospital

Hanpeng Huang (✉ hpxhld2019@163.com)

Nantong University Fifth Affiliated Hospital: Jiangsu Taizhou People's Hospital <https://orcid.org/0000-0001-8287-2651>

Research article

Keywords: CPAP, OSAHS, Continuous Positive Airway Pressure, Obstructive Sleep Apnea-Hypopnea Syndrome, Side effects

Posted Date: May 4th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-488776/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

PURPOSE:

CPAP (Continuous Positive Airway Pressure) is the "gold standard" treatment for OSAHS (Obstructive Sleep Apnea Hypopnea Syndrome). However, its compliance is only 30% to 70%. Much of the compliance reduction depends on its side effects. This study aimed to perform a meta-analysis of all randomized trials that statistically analyzed the side effects of CPAP.

METHODS:

The Cochrane, Embase, and Pubmed were searched for relevant studies from inception until September 2019 with the following terms: "OSAHS" and "CPAP" and "side effects". Two reviewers independently extracted data. Meta-analyses on adverse outcomes were calculated with a frequentist approach. Summary sensitivity analysis, risk of bias, and 95% CIs were also obtained. All statistical analyses were performed with R package meta

RESULTS:

All side effects investigated can be broadly classified into four categories including respiratory tract discomfort, discomfort of the mask, psychological pressure and specific gastrointestinal symptoms. Overall, the random effects meta-analysis revealed that dry symptoms (0.23;95% CI, 0.16-0.32), gas leakage (0.17;95% CI, 0.10-0.27) and sleep disorders (0.14;95% CI, 0.11-0.18) were associated with a higher incidence. Another intergroup analysis showed statistically significant differences in the incidence of dryness and sleep disturbance (0.23;95% CI, 0.16-0.32 vs. 0.14;95% CI, 0.11-0.18, respectively; $P = .04$)

CONCLUSION:

Side effects of CPAP are multifaceted and occur in combination with high probability. The impact of specific side effects on compliance needs to be further investigated in clinical data. Meanwhile, medical workers need to consider further the impact of side effects and timely adjust relevant treatment plans or nursing service in the clinic.

Full-text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the manuscript can be downloaded and accessed as a PDF.

Tables

Due to technical limitations, table 1 is only available as a download in the Supplemental Files section.

Figures

Figure1 Reporting The Items Involved In The Meta-Analysis Flow Diagram

Figure 1

please see the manuscript file for the full caption

Figure 2 Incidence of upper respiratory adverse reactions included higher dry symptoms(A) and lower runny nose(B).

Figure 2

please see the manuscript file for the full caption

Figure3 Incidence of local discomfort included higher gas leakage(A) and lower eye irritation(B)

Figure 3

please see the manuscript file for the full caption

Figure 4 A: Incidence of gastrointestinal reactions included aerophagy and GERD

B: Incidence of psychological stress included higher sleep disorders and lower claustrophobia

Figure 4

please see the manuscript file for the full caption

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table1.jpg](#)