

# Adenotonsillectomy outcomes in patients with Down syndrome and obstructive sleep apnea: case series and systematic review

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## INTRODUCTION

Patients with Down syndrome (DS) have a higher risk of experiencing obstructive sleep apnea (OSA). Adenotonsillectomy (AT) is the most commonly offered surgical treatment for children with OSA, however those with DS are at higher risk of treatment failure following AT, owing to their tenuous and complex airway.

The purpose of this study was to review the literature for studies examining polysomnography (PSG) outcomes in DS patients with OSA following AT as well as conduct a chart review at our institution for similar patients.

## METHODS

A systematic review of the medical literature was conducted to identify articles reporting objective outcomes following AT for OSA treatment in DS patients. Two reviewers screened titles, abstracts, and full text, and the references of the included full texts were screened for additional articles. Articles were critically appraised to assess level of evidence and bias and the results of articles were summarized.

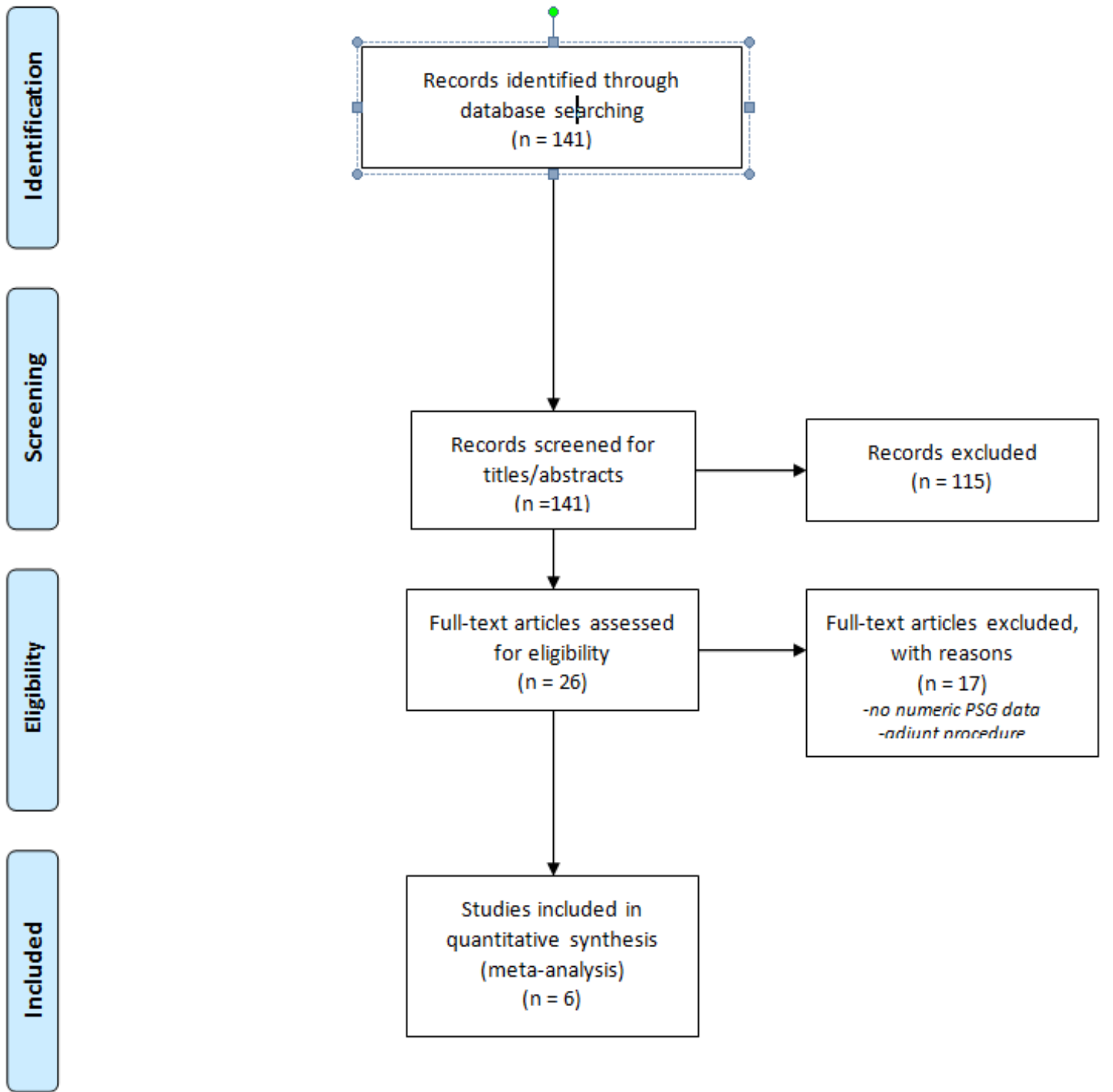
A review of medical records for patients with confirmed DS and OSA was conducted at our institution, evaluating AT efficacy by comparing pre- and post-treatment PSG data.



Six articles were identified, including 1 randomized controlled trial (RCT), 1 prospective cohort study, and 4 retrospective chart reviews. All articles showed benefit from AT in the treatment of DS patients with OSA, but subjects frequently had persistence of OSA.

Of the selected articles, 2 included overlapping populations from the same institution. The one RCT examined both DS and mucopolysaccharidosis patients together in surgical and non-surgical treatment groups.

Figure 1. PRISMA diagram detailing literature search



## RESULTS

Twenty-four patients were identified from medical records (10 males). The median age at time of AT was 4.73 years (range 0.9-14.73).

Median preoperative AHI was 11.35 [Interquartile range (IQR) =6.61-17.68] and postoperatively was 3.5 (IQR=1.96-10.6);  $p=0.032$ . Twenty percent of patients had preoperative AHIs <5; this proportion increased to 62.5% following surgery. 20.8% of patients had postoperative AHIs <1.

## CONCLUSIONS

There is relatively little objective data in the literature addressing AT efficacy in treating OSA in DS patients. Furthermore, that data is highly heterogeneous. DS patients show objective improvement in sleep parameters following AT for OSA, however this benefit may not be as great as in non-syndromic patients. AT should be suggested as a first line treatment for DS children with OSA, keeping in mind that monotherapy may be insufficient for this specific population. Future studies utilizing objective measures are required to further quantify the effect in this patient population.

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