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#142 THE RESPIRATORY MICROBIOME ALPHA-DIVERSITY AND CHRONIC RESPIRATORY DISEASES IN CHILDREN: A SYSTEMATIC REVIEW

Allan-Patrick Ake^{1*}, Mariam Diomande^{1*}, Daniela Valoura-Esteves^{1*}, Raphaël Enaud², Laurence Delhaes³, Marta Avalos-Fernandez^{1,4}
¹Univ of Bordeaux, Public Health, ²Univ Hospital, Pediatrics, ³Univ Hospital, Parasitology-Mycology, ⁴Inria-Inserm, Biostatistics, *Equal contribution
Bordeaux, FRANCE



Background and Aims

While there seems to be a consensus that a decrease in gut microbiome diversity is related to poorer health status, the links between respiratory microbiome diversity and chronic respiratory disease remain a matter of debate, as highlighted by a recent review of the literature in adults. In industrialized countries, respiratory diseases and allergies are the most common chronic diseases in children. These diseases vary considerably between childhood and adulthood.

Methods

We conducted searches on PubMed and Scopus for articles meeting specific criteria: children under 18, respiratory microbiome, microbiome diversity indices, and chronic respiratory diseases. We included online publications up to February 23, 2023, and performed an update on July 27, 2023.

Excluded were articles that didn't meet these criteria, weren't research papers, lacked a case-control design based on illness status, or were not in English or French.

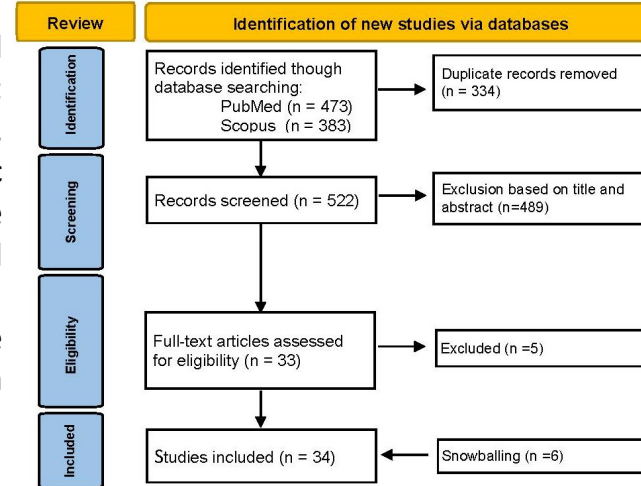
We also screened all the articles that cite our included papers and all the articles cited by our included papers.

Data import was managed using Zotero software.



Scopus

Results



We reviewed 522 articles based on title and abstract, with 28 meeting our inclusion criteria. Through a snowballing approach, we expanded this to 34 articles.

The primary diseases studied included asthma, cystic fibrosis, wheezing, and respiratory allergies. The main sampling technique was the nasopharyngeal swab. All studies exclusively focused on the bacteriome and measured the Shannon index. In over half of the studies, the control group consisted of healthy subjects.

Conclusion

The majority of diseases were significantly linked to a decrease in diversity, except for asthma, where findings were inconsistent (some studies showed a significant decrease while others reported an increase). Only the studies on bronchiectasis, pulmonary hypertension and bronchitis showed no change in the respiratory microbiome diversity.

(Some) References

OPEN ACCESS Freely available online **SCIENTIFIC REPORTS**

Upper Airways Microbiome and Healthy Infant
Paul Andres Cardenas^{1,2,3}, Philip Miriam F. Moffatt^{1*}, William Osm...
12 March 2017

Airway Microbial Diversity is Inversely Associated with Mite-Sensitized Rhinitis and Asthma in Early Childhood
Chih-Yung Chai^{1,2}, Yi-Ling Chan¹, Yu-Shuen Tsai², Szu-An Chen¹, Chia-Jung Wang¹, Kuan-Fu Chen¹ & Li-Fang Chuang^{1*}
12 May 2017

The respiratory microbiota alpha-diversity in chronic lung diseases: first systematic review and meta-analysis
PLOS ONE

The Alteration of Nasopharyngeal and Oropharyngeal Microbiota in Children with MPP and Non-MPP
Zhiwei Lu^{1,4}, Wenkui Dai^{2,4}, Yanhong Liu^{3,4}, Qian Zhou³, Heping Wang¹, Dongfang Li^{3,4}, Zhenyu Yang¹, Yinhu Li³, Gan Xie¹, Shuaicheng Li^{2,4} and...