CONCLUSIONS

The Pediatric Respiratory Cannula Flow algorithm of the Noxturnal software version 5.1 was tested against the pediatric manual analysis of a registered polysomnographic technologist.

According to our findings, the agreement between the pediatric manual analysis and the tested automatic analysis was poor.

The automatic analysis consistently overestimated the apnea-hypopnea index (AHI). This led to a high rate of misclassification of obstructive sleep apnea (OSA) severity.

Our findings imply that improvements in especially the automatic detection of the obstructive apnea index (OAI) are needed before the tested automatic analysis can be implemented in the clinic.

INTRODUCTION

Home sleep testing is becoming more common in the diagnostics of pediatric OSA.

Many portable sleep monitors are equipped with software that allows automatic analysis.

The aim of this study was to examine the agreement between manual and automatic analysis of home sleep examinations in children and adolescents.

RESULTS

Scatter plot of automatically analyzed AHI vs. manually analyzed AHI:

![Scatter plot of automatically analyzed AHI vs. manually analyzed AHI](image)

Comparison of manually and automatically analyzed sleep parameters in 51 participants:

<table>
<thead>
<tr>
<th>Sleep parameter</th>
<th>Manually analyzed</th>
<th>Automatically analyzed</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHI</td>
<td>2.7 (0.2, 28.2)</td>
<td>11.9 (4.2, 45.6)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>OAI</td>
<td>0.1 (0.0, 16.0)</td>
<td>9.2 (2.5, 35.3)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>HI</td>
<td>2.3 (0.2, 22.8)</td>
<td>2.4 (0.30, 16.4)</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Data are presented with medians and ranges

AHI: Apnea-hypopnea index, OAI: Obstructive apnea index, HI: Hypopnea index

The overall misclassification rate of OSA severity by automatic analysis was 84.3%.

METHODS

- 51 home sleep examinations on children and adolescents were included
- Participants were between 7-17 years old (median age: 13.6) and had a history of both overweight and OSA
- The NOX T3™ portable sleep monitor was used to record all sleep examinations
- The Pediatric Respiratory Cannula Flow algorithm of the Noxturnal software version 5.1 was used for automatic analysis
- All manual analyses were performed by the same registered polysomnographic technologist

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