Is comorbid depression a risk factor for non-compliance with PAP? A historical cohort study

Background

- It is well-established that there is a higher prevalence of depression among people with obstructive sleep apnea (OSA) than the general population, with comorbid depression prevalence ranging from 5% to 63%. The relationship is complex and the two conditions share many symptoms.

Symptoms of OSA and Depression:

<table>
<thead>
<tr>
<th>OSA Symptoms</th>
<th>Depression Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snoring</td>
<td>Sadness</td>
</tr>
<tr>
<td>Witnessed apneas</td>
<td>Anhedonia</td>
</tr>
<tr>
<td>Snort arousals</td>
<td>Agitation</td>
</tr>
<tr>
<td>Weight gain</td>
<td>Guilt</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Weight loss</td>
</tr>
<tr>
<td>Poor concentration</td>
<td></td>
</tr>
<tr>
<td>Irritability</td>
<td></td>
</tr>
<tr>
<td>Psychomotor retardation</td>
<td></td>
</tr>
</tbody>
</table>

- Since depression is a commonly accepted risk factor for low treatment adherence, some studies have investigated the association between depression and positive airway pressure (PAP) non-compliance, yet these studies were conducted with small sample sizes and have mixed conclusions.

Objective

- To examine the relationship between depression and PAP compliance in a large Medicare Advantage population.

Methods

- **Study Design**: Observational historical cohort study from the 2013 calendar year
- **Data Source**: Administrative claims data from Humana Inc., a health care company insuring over 2.5 million Medicare Advantage members at the time of the study
- **Cohort Selection**:
  - Administrative claims data from Humana Inc., a health care company insuring over 2.5 million Medicare Advantage members at the time of the study
  - Individuals with OSA (ICD codes 337.2, 327.23, 780.51, 780.53, 790.57, or a device-related claim for continuous, bi-level, or automatic or PAP) were stratified into PAP compliant vs. non-compliant cohorts based on the presence or absence of a claim for PAP or a sleep test in the previous 12 months.
- **Exposure**:
  - Depression was identified using ICD-9 codes 296.3, 309.0, 309.1, 309.28, and 311.0. The association between depression and PAP compliance was tested using chi-square test for significance.
- **Health care resource utilization**:
  - The rate of inpatient hospitalizations was reported for each patient group according to PAP compliance status and depression status using descriptive statistics.

Results

1. **Approximately 1 in 4 patients were non-compliant with their PAP treatment.**

2. **Patients with depression were 9.4% more likely to be PAP non-compliant.**

Table 2. Inpatient Admissions per 1,000

<table>
<thead>
<tr>
<th>PAP Non-compliant</th>
<th>PAP Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>1115</td>
</tr>
<tr>
<td>No Depression</td>
<td>1097</td>
</tr>
</tbody>
</table>

Conclusions

- Comorbid depression was a significant risk factor for PAP non-compliance, and patients with comorbid depression who were non-compliant with PAP had more inpatient hospitalizations.
- Targeted strategies aimed at optimizing PAP compliance, particularly in the subset of patients with comorbid depression, may be impactful in the care of both disease states.

Limitations

- **A single PAP related claim over 1 year was used as a proxy for compliance and may have overestimated the PAP compliance rates.**
- **This was an unadjusted analysis and did not control for potential confounding variables which may have affected the rate of PAP compliance.**
- **This study is subject to inherent limitations to claims-based analyses including miscoding and missing data.**

References