Obstructive Sleep Apnea: cluster analysis and visualization

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Why obstructive sleep apnea (OSA)?

- One of the most prevalent sleep disorders
- Remains underdiagnosed and underestimated
- Clinical history is not sufficient to diagnose OSA
- Polysomnography is time-consuming and expensive

Why cluster analysis?

- Identify subtypes of patients with unique characteristics
- Classify patients into smaller and homogeneous groups

Objective:

- To better understand OSA heterogeneity by applying categorical cluster analysis and visualizations into observable and measurable OSA characteristics

Methods:

- Patients aged >18 years old and suspicion of OSA (N=318)
- All administrative records were collected retrospectively
- 48 variables: demographic, physical, history, and comorbidities
- R software to perform *k*-modes categorical clustering

Conclusion:

- Phenotypes can be identified in the OSA population
  - Cluster 1 and 3: middle-aged males or elderly
  - Cluster 2: middle-aged women
- OSA patients' stereotype needs to be redefined

Results:

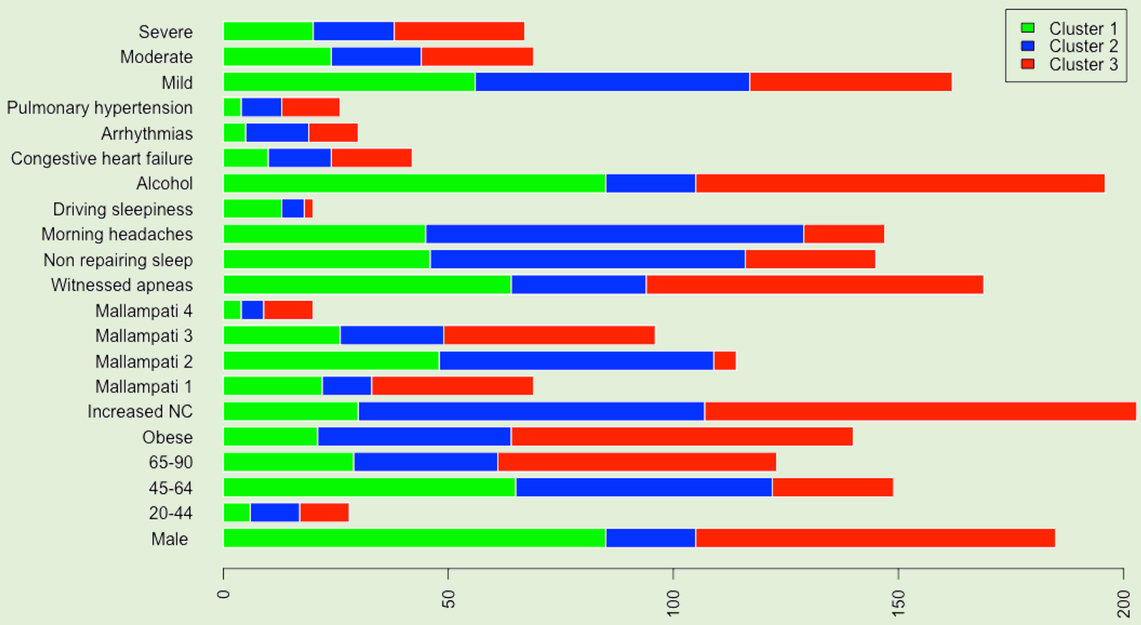

Figure 1. Clinical characteristics of the obstructive sleep apnea cohort in Cluster 1, 2 and 3 visualized in a bar plot.

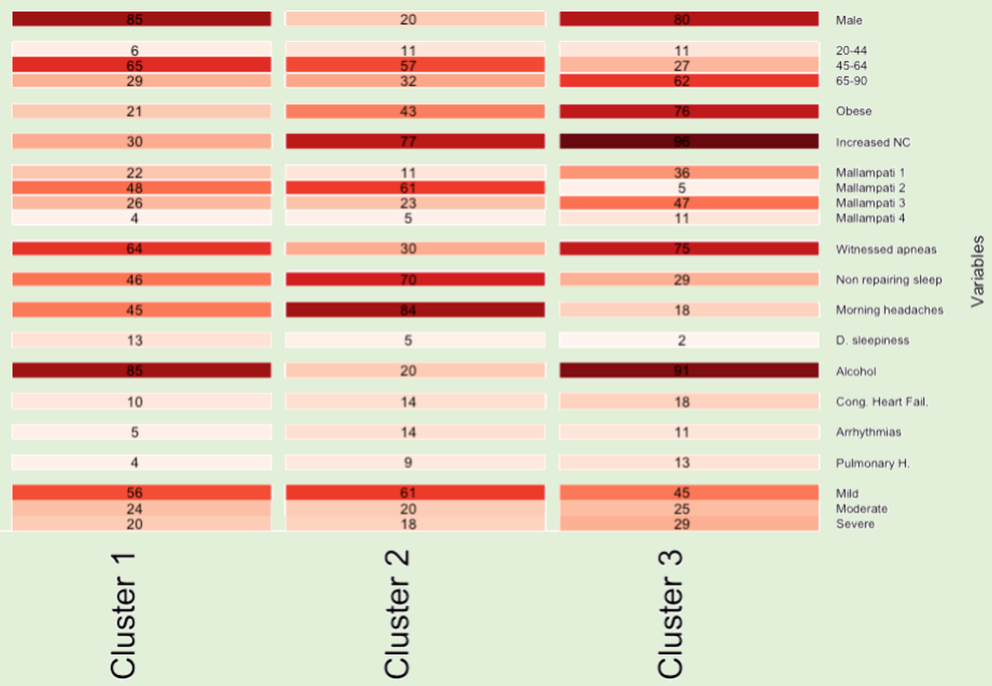

Figure 2. Percentages of each clinical characteristics in obstructive sleep apnea patients' phenotypes visualized in a heatmap.

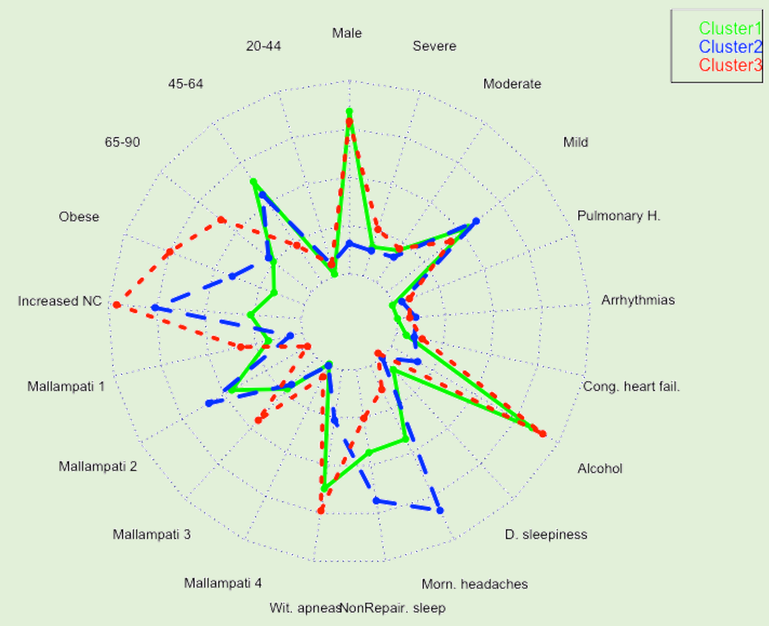

Figure 3. Radar plot of obstructive sleep apnea patients' clinical characteristics distribution by cluster.

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