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Title: A network-based approach to sleep apnea syndrome

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Body: Objectives. To identify patterns of developing obstructive sleep apnea (OSA), with a complex network cluster analysis. Methods. 1367 patients, Timisoara “Victor Babes“ Hospital sleep lab, analyzed inspired by the Network Medicine approach. A patient was a node in a network where a link is inserted if there is a risk relationship between 2 corresponding patients, if two nodes have >5 of 7 parameters: sex, age, systemic hypertension, BMI>30, neck circumference, mean and desaturation index. Graphical generation with Gephi 0.8.1, to extract network attributes and reveal the compatibility clusters. Results. AHI classifies the apnea severity.

With network cluster analysis, 7 distinct compatibility clusters were found, each corresponding to a specific profile which leads to a certain probability of developing the disease.

There are 3 clusters of with severe OSA (1, 2 and 5), 3 clusters with mild-moderate OSA (3, 6, and 7). Cluster 4 reflects a transitory stage that cannot be characterized by a stable AHI group. Conclusion. Measuring simple parameters may pave a way for automatically predicting, with a high degree of accuracy, if a patient is prone to developing OSA.