OBSTRUCTIVE SLEEP APNEA AND COGNITIVE DECLINE IN THE ELDERLY: THE HYPNOLAUS STUDY

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Introduction: Obstructive sleep apnea (OSA) has been associated with cognitive impairment in middle age. However, the link between OSA and cognitive decline is still controversial in the elderly population. We tested the hypothesis about an association between OSA features and cognitive decline in the community-dwelling elderly population.
Materials and Methods: We studied non-demented participants aged ≥65 years from the CoLaus|PsyCoLaus cohort who underwent polysomnography and cognitive assessment at baseline, followed by a second cognitive assessment 5.2-year apart. OSA was defined as an apnea-hypopnea index (AHI) ≥15/h. The neuropsychological test battery included Mini-mental state examination (MMSE), Free and cued selective reminding test (FCSRT), Stroop test, verbal fluency test, DO-40 naming test, CERAD constructional praxis test, and clinical dementia rating (CDR). The primary outcome was the cognitive change over the follow-up ($\Delta score = score_{follow\text{-}up} - score_{baseline}$). The secondary outcome was the presence of a significant cognitive decline defined as a worsening >1.0 SD above the mean change. Robust regression estimated associations between cognitive changes and OSA parameters. Logistic regression estimated associations between incidence of cognitive decline and OSA parameters. The moderator effect of age, sex, and apolipoprotein E4 (ApoE4) was also examined. Analyses were adjusted for age, sex, education, ApoE4, cardiovascular risk factors, alcohol, Epworth sleepiness scale, depression, psychotropic drugs, continuous airway positive pressure (CPAP) therapy, chronic obstructive pulmonary disease, and baseline cognitive score. The significance threshold was set at a $p < 0.01$.
Results: The final sample included 340 participants (mean age 71.0±4.1 years, 58.0% females). In the whole sample, there was no significant association between OSA status and cognition. However, mean oxygen saturation (meanSpO2; standardized β=0.23, p<0.001) and sleep time with SpO2 <90% (T90; β=-0.19, p<0.001) were associated with ΔFCSRT delayed free recall. MeanSpO2 (OR for +1%=0.70, p<0.007) and T90 (OR for +1%=1.04, p<0.001) were also associated with decline in FCSRT delayed free recall. After investigation of moderator effects, OSA was associated with ΔStroop test 1 and 2 in participants aged ≥74 years (β=0.86, p=0.007; β=1.02, p=0.005), T90 was associated with ΔFCSRT delayed total recall in men (β=-0.25, p=0.009), and T90 was associated with FCSRT delayed free recall in ApoE4 non-carriers (β=-0.30, p<0.001). In addition, T90 was associated with decline in FCSRT delayed free recall in men (OR=3.34, p=0.002), meanSpO2 was associated with decline in CDR in men (OR=0.40, p=0.008), and meanSpO2 and T90 were associated with decline in FCSRT delayed free recall in ApoE4 non-carriers (OR=0.40, p=0.001; OR=2.26, p<0.001).
Conclusions: The presence of OSA was associated with worsening of the Stroop test 1 and 2 (processing speed) only in older participants (≥74 years old). Markers of nocturnal hypoxemia (low meanSpO2 and T90) were associated with worsening of the FCSRT (memory) and CDR in the whole sample, men and/or ApoE4 non-carriers.
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PREDICTIVE VALUE OF THE EPWORTH SLEEPINESS SCALE, THE PITTSBURGH SLEEP QUALITY INDEX AND THE BERLIN QUESTIONNAIRE IN ADULT AND ELDERLY PATIENTS WITH OBSTRUCTIVE SLEEP APNEA SYNDROME: A RETROSPECTIVE OBSERVATIONAL STUDY.

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Introduction: Obstructive sleep apnea syndrome is a disease caused by a complete or partial obstruction of the upper airways which occurs during sleep and which gives rise, respectively, to phenomena of apnea or hypoapnea. Although epidemiological studies have shown a high prevalence of the disorder, obstructive sleep apnea syndrome remains underdiagnosed. Various screening questionnaires have been developed, with the aim of identifying as many patients as possible at risk with low-cost procedures. Considering the high costs, the limited availability at a territorial level and the long waiting lists of polysomnography, the gold standard in the diagnosis of OSAS, this would have the advantage of directing existing resources towards a population selected on the basis of tests (in addition to and guidelines), reducing the number of negative tests as much as possible.
The aim of the study: To evaluate the predictive value of the Epworth Sleepiness Scale (ESS), the Pittsburgh Sleep Quality Index (PSQI) and the Berlin Questionnaire (BQ) in adult (<65) and elderly (> 65) patients with Obstructive Sleep Apnea (OSAS), comparing the results of the individual tests with the AHI values detected by polygraphy.
Materials and methods: The data were collected on a sample of 1160 patients who came to visit the clinic from 2012 to 2019. Paper medical records were used from which the following data were extrapolated: age; sex; results from the ESS, the PSQI and the BQ; polygraphy report (AHI, ODI). Only 961 people out of the total sample analyzed were eligible because they met the minimum requirements for the study, the remaining 199 were excluded. Exclusion criteria: lack of informed consent, absence of tests, absence of AHI and ODI parameters.
Results: In patients under 65, setting the AHI cut-off to 5, the Epworth Sleepiness Scale (ESS) was found to be the most sensitive (61.49%) and the most specific (73.53%).
In patients over 65, always setting the AHI cut-off to 5, the Pittsburgh Sleep Quality Index (PSQI) was found to be the most sensitive (68.37%) while as regards specificity it was found to be similar (75%) in the ESS and PSQI.
Finally, the Berlin questionnaire (BQ) was found to be the least sensitive (60.61% - 59.69%) and the least specific (61.76% - 58.33%) in both groups.
False negatives detected in screening tests decrease as the OSA grade increases and, in parallel, the number of true positives increases as the AHI index increases.
Discussion and Conclusions: In the under 65s the Epworth Sleepiness Scale (ESS) is the most sensitive (61.49%) and most specific (73.53%) test, while in the over 65s the Pittsburgh Sleep Quality Index (PSQI) is the most sensitive. (68.37%) and the most specific (75%) together with the ESS, which showed a similar specificity. Given the sensitivity and specificity values detected, none of the three tests were found to be accurate enough to be used alone.
However, by using all three tests in the screening phase, we are able to do a good stratification of patients with high and low OSA risk.:

SELF-REPORTED SLEEP DISTURBANCES ATTRIBUTED TO LIGHT, TEMPERATURE, AND NOISE DECLINE LINEARLY WITH AGE: A BIG-DATA ANALYSIS OF 92,702 USERS

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Introduction: Age related changes to sleep and sleep quality are well-characterized. Older adults experience less deep and consolidated sleep, with more frequent awakenings. It remains unclear to what extend potential sleep disturbing factors impact sleep across age in the general population. The purpose of the present data analysis was to examine the relations between age, gender, and self-reported awakenings attributed to sleep disruptors in general and to specific ambient sleep disruptive factors (light, temperature, and noise).
Materials and Methods: The data set contained the responses of 92,702 individuals to the questionnaires included in the SleepScore mobile application (SleepScore Labs, Carlsbad, US), collected between 2017-10-11 and 2021-07-29. Age, gender, and sleep disruptive factors were included in the data set. We utilized logistic regression models to analyze how the likelihood of reporting these disruptors was related to age and gender. Disruptors entered into the models included: 1) the occurrence of any