generally focused on the forward movement of the maxillomandibular complex. The impact of high mandibular plane angle on surgical outcomes remained unclear. The purpose of this study is using cephalometry to investigate the role of high mandibular plane angle and correction in maxillomandibular advancement.

Materials and methods: A retrospective review was conducted on 106 medical records of patients (33 females and 73 males) who underwent MMA. To avoid the impact of gender and obesity, 50 male patients with a BMI<26 (Kg/m2)(26 of them had the surgical cure of post-op AHI<5) were included. Cephalometry and polysomnographic indices before and more than three months after surgery were collected for analysis. The paired T-test was applied to compare measurements before and after surgery. Non-paired T-test was used to compare between groups.

Results: On average, the maxilla(at A point) and the mandible(at B point) were advanced 4.0 ±2.9mm and 13.2±3.7mm, respectively. A lower pre-op mandibular plane angle (to Frankfort horizon) of 29.3±9.8° was noted in the surgical-cure group, compared to 35.8±8.5° in the non-cure group (p=0.012). There were significant differences in the angle counterclockwise rotation between non-cure (clockwise 2.8±3.6°) and cure group (clockwise 0.39±5.67°)(p=0.034); and a significant difference in the velopharyngeal airway between the non-cure group (10.1±2.6mm) and the cure group (11.0±2.9mm)(p=0.032).

Conclusions: A higher mandibular plane angle could have a negative impact on the surgical cure of MMA surgery in non-obese male patients with OSA.

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IMPACT OF NOCTURNAL AIR POLLUTION ON SLEEP QUALITY AND EMERGENCY HEALTH SERVICE UTILIZATION FOR RESPIRATORY AND CARDIOVASCULAR CONDITIONS IN PORTUGAL: AN ECOLOGICAL ANALYSIS USING OPEN DATA

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Introduction: Poor air quality is a recognized risk factor for respiratory and cardiovascular diseases. Nocturnal exposure to air pollutants may further impair sleep quality, compounding health risks and increasing emergency healthcare utilization. The interplay between nighttime environmental stressors and sleep disruption remains underexplored in the Portuguese context. With this work, authors aimed to examine the association between nocturnal air pollution, sleep quality indicators, and emergency department visits for respiratory and cardiovascular complaints across multiple regions in Portugal.

Materials and methods: This ecological study combined open-access data from the Portuguese National Environmental Monitoring Network (QualAr), national health surveillance systems, and population-level sleep quality metrics from EUROSTAT and the National Institute of Health Doutor Ricardo Jorge (INSA). Hourly nighttime pollutant concentrations (PM2.5, PM10, NO2, O3, CO; 22:00–06:00) were analyzed over a 3-year period (2020–2022). Emergency visits were classified by ICD-10 codes for respiratory (J00–J99) and cardiovascular (I00–I99) conditions. Regional sleep quality indicators—including prevalence of insomnia symptoms and self-reported sleep difficulties—were used to explore potential mediating effects. Time-series and geospatial analyses assessed correlations among air pollution levels, sleep disturbances, and acute health outcomes.

Results: Elevated nocturnal concentrations of PM2.5 and NO2 were significantly associated with increased rates of emergency department visits for both respiratory and cardiovascular conditions ($p < 0.01$), with the strongest effects observed in densely populated urban areas such as Lisbon and Porto. A seasonal trend was also noted, with higher pollutant levels and emergency visit rates during colder months.

Sleep quality emerged as an important modifying factor: regions with lower average sleep quality scores and higher self-reported insomnia prevalence exhibited greater vulnerability to the adverse health effects of air pollution. Multivariate Poisson regression models revealed that each 10 μg/m^3 increase in PM2.5 was associated with a 6–8% increase in emergency visits, while higher sleep quality scores were independently associated with a significant reduction in visits for both disease categories ($p < 0.001$).

Interaction terms between pollutants and sleep quality were explored. Although the interaction between PM2.5 and sleep quality index was not statistically significant, a trend was observed suggesting that poor sleep may potentiate the effects of NO2 exposure on cardiovascular outcomes. These findings point to a possible synergistic relationship between environmental and behavioral factors in the context of nocturnal health vulnerability.

The models explained a substantial portion of daily variability in emergency visits (pseudo-$R^2 > 0.30$), and the inclusion of sleep-related indicators improved model fit and predictive performance.

Conclusions: Nocturnal air pollution is not only linked to a higher burden of acute cardiorespiratory events but may also indirectly exacerbate these risks through disruption of sleep quality. These findings underscore the importance of integrating environmental and sleep health policies to reduce preventable emergency healthcare demand.

Acknowledgments: Data were obtained from open-access sources, including air quality metrics from the Portuguese Environmental Agency's QualAr platform, population-level sleep indicators from EUROSTAT and the National Institute of Health Doutor Ricardo Jorge (INSA), and health service utilization records from the Portuguese Ministry of Health databases. HypnosAir project (PTDC/CTA-AMB/3263/2021/BI/12M).

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INSOMNIA, STIGMA, AND DEPRESSION IN TUBERCULOSIS PATIENTS: LONGITUDINAL INSIGHTS FROM A CROSS-LAGGED MODEL AND GROWTH MODELS

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Introduction: Depression is prevalent and severe in tuberculosis (TB) patients. It is often linked to insomnia, stigma, lack of social support, and other psychological factors. However, most studies are cross-sectional, which only examine correlations. The longitudinal relationships between depression and other factors are unclear.

Materials and methods: Through convenience sampling, we selected participants for a 6-month longitudinal study. Depression, insomnia, stigma, social support, anxiety, and stress were assessed at the start of treatment (T1), and after one (T2), two (T3), and six months (T4). SPSS 26.0 and Mplus 8.3 were used for data analysis. A cross-lagged model (CLM) and latent growth models (LGMs) were constructed to study longitudinal associations.

Results: In total, 266 TB inpatients were enrolled (166 men, 100 women, mean age 48.1 ± 18.0 years). The comorbid depression detection rate fell from 23.3% at T1 to 10.1% at T4. The CLM showed insomnia at T1 significantly predicted depression at T2 ($\beta = 0.341$, $P < 0.05$). Depression at T1 predicted insomnia at T2 ($\beta = 0.182$, $P < 0.05$). Insomnia at T2 predicted depression at T3 ($\beta = 0.571$, $P < 0.05$). However, depression at T2 did not predict insomnia at T3 ($\beta = 0.073$, $P = 0.165$). Insomnia at T3 predicted depression at T4 ($\beta = 0.216$, $P < 0.05$). Depression at T3 predicted insomnia at T4 ($\beta = 0.174$, $P < 0.05$). The LGM revealed social support as a significant negative predictor of depression progression ($P < 0.05$). Stigma from T1 to T4 had a positive effect on depression over the same period ($P < 0.05$). Anxiety at T1, T2, and T4 positively influenced depression ($P < 0.05$). Perceived stress at T1 had a significant impact on depression ($P < 0.05$).

Conclusions: Insomnia predicts depression in TB patients, supporting interventions that improve sleep quality. The impact of perceived stigma on depression remains significant. Enhanced social support can accelerate recovery, underscoring the need to reduce stigma and increase support in TB depression management.