World Academy of Science, Engineering and Technology
International Journal of Civil and Environmental Engineering
Vol:13, No:09, 2019

Relationships of Driver Drowsiness and Sleep-Disordered Breathing Syndrome

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Abstract : Background: Driving drowsiness related to inadequate or disordered sleep accounts for a major percentage of traffic accidents. Sleep-disordered breathing (SDB) syndrome is a common respiratory disorder during sleep. However, the effects of SDB syndrome on driving fatigue remain unclear. Objective: This study aims to investigate the relationship between SDB pattern and driving drowsiness. Methodologies: The physical condition while driving was obtained from the questionnaires to classify the state of driving fatigue. SDB syndrome was quantified as the polysomnography, and the air flow pattern was collected by the thermistor and nasal pressure cannula. To evaluate the desaturation, the mean hourly number of greater than 3% dips in oxygen saturation was sentenced by reregistered technologist during examination in a hospital in New Taipei City (Taiwan). The independent T-test was used to investigate the correlations between sleep disorders related index and driving drowsiness. Results: There were 880 subjects recruited in this study, who had been done polysomnography for evaluating severity for obstructive sleep apnea syndrome (OSAS) as well as completed the driver condition questionnaire. Four-hundred-eighty-four subjects (55%) were classified as fatigue group, and 396 subjects (45%) were served as the control group. Significantly higher values of snoring index (242.14 ± 205.51 /hours) were observed in the fatigue group ($p < 0.01$). The value of respiratory disturbance index (RDI) (31.82 ± 19.34 /hours) in fatigue group were significantly higher than the control group ($p < 0.01$). Conclusion: We observe the considerable association between SDB syndrome and driving drowsiness. To promote traffic safety, SDB syndrome should be controlled and alleviated.

Keywords : driving drowsiness, sleep-disordered breathing syndrome, snoring index, respiratory disturbance index.
Conference Title : ICCEEP 2019 : International Conference on Civil Engineering and Environmental Protection
Conference Location : Amsterdam, Netherlands
Conference Dates : September 18-19, 2019