

Polysomnographic Findings between Obese and Non-Obese Pediatrics with Obstructive Sleep Apnea

Masoume Mansouri¹, Saeed Sadr², Hoormehr Nozari³, Elnaz Parsarad⁴, Heshmat Ghasemi⁵, Zahrasadat Mohammadi⁶, * Shabnam Jalilolghadr⁷

1 Sleep Medicine Fellowship, Department of Pediatrics, School of Medicine, Clinical Research Development Unit, Qods Hospital, Qazvin University of Medical Sciences, Qazvin, Iran.

2 Assistant professor Pediatric Pulmonology, Department of Pediatric Pulmonary Diseases, Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

3 General Practitioner, Children Growth Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran.

4 MSc neonatal intensive care nursing, Children Growth Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran.

5 BS of nursing, Clinical Research Development Unit, Qods Hospital, Qazvin University of Medical Sciences, Qazvin, Iran.

6 BS of statistics, Children Growth Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran.

7 Professor of Pediatric, Sleep Medicine Fellowship, Department of Pediatrics, School of Medicine, Children Growth Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran.

Abstract

Background: The prevalence of childhood obesity, which is associated with the health risk of OSA, is increasing. This study aimed to assess the polysomnographic findings of obese and non-obese children and adolescents with OSA.

Methods: In this cohort retrospective study, all the obese and non-obese children and adolescents with OSA referring to Sleep Disorders Clinic, Qazvin Children Hospital, during 2014-2019 were included. The participants were 52 peditrics within the age range of 1-16 years old and mean age of 6.47 ± 3.59 years, 20 (38.5%) of whom were female and 32 (61.5%) were male. The number of samples was determined according to previous studies, and the patients' case information was applied in this research. Obese children and adolescents were determined according to their BMI. PSG was performed for all the participants and its variables including sleep onset, sleep efficiency, sleep stages (N1, N2, N3, rapid eye movement (REM)), arousal index (AI), apnea hypopnea index (AHI), mean arterial oxygen saturation (SaO₂), and total sleep time were determined and compared between the two groups.

Results: Mann-Whitney test showed a statistically significant difference in the percentage of REM sleep stage between the obese and non-obese groups ($P=0.017$). There was no statistically significant difference in the other polysomnographic variables between the two groups. In the obese group, linear regression showed significant correlation between body mass index (BMI) and AHI as well as mean arterial SaO₂.

Conclusion: the percentage of REM sleep stage in the obese group with OSA was lower than that in the non-obese group. There was a correlation ($P \leq 0.05$) between obesity and respiratory events in sleep. It is predicted that with increasing age, obese people are more likely to have severe sleep apnea.

Key Words: Adolescents, Children, Obesity, Obstructive Sleep Apnea (OSA), Polysomnography (PSG).