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Title: Effects of obesity on lung function and SaO_2 in children with habitual snoring

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Body: BACKGROUND: Habitual Snoring (HS) is a common pediatric condition with a prevalence ranged between 7 and 10 %. It has a multifactorial etiology and it is often associated with several comorbilities. Many studies showed low spirometric values in overweight and obese children, but the association with HS is still unclear. AIM: The purpose of this Study is to evaluate the relationship between obesity, lung function and nocturnal minimum oxygen saturation (SaO_2) in a pediatric population with HS. METHODS: We enrolled 53 children (mean age 9,5, 34 male) in the Pediatric Department of Immunology and Allergology of Policlinico Umberto I in Rome. All patients were positive to a validated questionnaire for sleep disordered breathing, performed a spirometry and a nocturnal pulse oximetry. Percentile Body Mass Index (BMI) was calculated for each patient. The selected patients were divided into 4 percentile BMI groups (Group I: percentile 0-25, group II: percentile 26-50, group III: percentile 51-75, group IV: percentile 76-100). RESULTS: We found that group IV (BMI>75th percentile) had significantly lower values of SaO_2 and forced expiratory volume in one second (FEV1) when compared with the other groups (respectively $p<0,02$ and $p<0, 05$). CONCLUSIONS:Lung function (reduced FEV1) and minimum SaO_2 areinfluenced by the progressive increase in percentile BMI with changes in FEV1 better demonstrated when BMI >75th percentile. Our findings suggest that in children with HS, the presence of obesity can cause a sistemic inflammatory pattern that negatively influence lung function and blood SaO.