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**Title:** Snoring is not a specific symptom of obstructive sleep apnea in children

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**Body:** Objective To determine if snoring is a specific symptom of obstructive sleep apnea (OSA) in children. Methods 141 Chinese patients were included in this retrospective study. Each child had a sleep questionnaire and nocturnal polysomnography (PSG). Snoring was recorded using a microphone during PSG. An apnea-hypopnea index (AHI)  $>5$  was defined as OSA. A sleep physician interpreted the nocturnal PSG and snoring data. The occurrence ratio of sleep problems were compared between the OSA and non-OSA groups by the chi-square test. The Pearson correlation test was used to determine the correlation of snoring items and occurrences of sleep problems with AHI. Results Among the 141 patients aged 21 months to 12.8 years, 78 (55%) had OSA as determined by PSG. No significant difference was found between the OSA and non-OSA groups in terms of the occurrence ratio of snoring based on the data from the questionnaire (87.2% vs 85.7%,  $P > 0.05$ ). The occurrence of observable apnea during sleep, mouth breathing, and restlessness was significantly different between the OSA and non-OSA groups (20.5% vs 4.8%, 85.9% vs 71.4%, and 69.2% vs 52.4%, respectively,  $P < 0.05$ ). The average duration of each snore, total snoring duration, and ratio of snoring duration to total sleep duration were not correlated with AHI ( $P > 0.05$ , correlation coefficients = 0.109, 0.143 and 0.163 respectively). However, the occurrence of observable apnea during sleep, mouth breathing, and restlessness were correlated with AHI ( $P < 0.05$ , correlation coefficients = 0.229, 0.249 and 0.172.) Conclusion Snoring is not a specific symptom of OSA in children. Observable apnea during sleep, mouth breathing, and restlessness were more important in the diagnosis of OSA in children.