

BEHAVIORAL DISTURBANCES ASSOCIATED WITH SNORING IN SCHOOL CHILDREN

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INTRODUCTION

- Sleep-disordered breathing (SDB) is associated with restless sleep, daytime sleepiness, and hyperactive and aggressive behavior in pre-school children¹.
- Population-based studies on symptoms associated with snoring in school children are rare.
- Aim of this study was to obtain the prevalence of habitual snoring (HS) in primary school children and to establish associated behavioral disturbances potentially influencing academic performance.

METHODS

- As part of a population-based, cross-sectional study on the prevalence of SDB in primary school children, all children attending the third grade of 27 randomly selected regular primary schools located in Hannover, Germany were asked to participate.
- Parents were given a 25-item questionnaire concerning signs and symptoms of SDB (e.g. snoring), daytime symptoms (e.g. hyperactivity, concentration deficits, daytime tiredness and sleepiness [falling asleep while watching TV; falling asleep at school]), and personal factors (e.g. gender, age, parental education).
- Snoring was investigated with the question "Does your child snore?" and was rated on a 4-point scale (i.e. "never", "occasionally", "frequently", or "always").
- HS was defined as snoring "frequently" or "always".
- Adjusted odds ratios (OR) and 95% confidence intervals (95%CI) were calculated using unconditional logistic regression. Confounders were included into the model if this changed the odds ratio between exposure (snoring) and outcome (behavioral disturbances) by 10% or more. Adjustments were made for gender, age, and parental education.

RESULTS

- A total of 1760 children was contacted and 1144 parents and their children (65%; study sample) agreed to participate and returned a completed questionnaire.
- There were 559 girls (48.9%); mean (SD) age was 9.6 years (0.7).
- Of 1129 children for whom information on snoring was available, 410 (36.3%) snored "never" and 605 (53.6%) "occasionally", 89 (7.9%) and 25 (2.2%) were reported to snore "frequently" or "always", and were therefore classified as habitual snorers (n=114; 10.1%).
- HS was significantly associated with daytime tiredness (OR; 95%CI: 7.0 [2.9-17.1]), daytime sleepiness (OR; 95%CI: 2.7 [1.7-4.1] for falling asleep while watching TV and 4.8 [1.4-16.1] for falling asleep at school), concentration deficits (OR; 95%CI: 3.8 [2.3-6.2]), and hyperactivity (OR; 95%CI: 2.3 [1.5-3.7]; Table 1).
- Occasional snoring was also significantly associated with hyperactivity (OR; 95%CI: 1.6 [1.2-2.1]), concentration deficits (OR; 95%CI: 1.8 [1.2-2.6]), daytime tiredness (OR; 95%CI: 2.2 [1.01-5.0]), and daytime sleepiness (OR; 95%CI: 1.7 [1.3-2.3] for falling asleep while watching TV; Table 1).

CONCLUSION

- HS was associated with increased daytime tiredness and sleepiness, hyperactivity, and concentration deficits in these primary school children.
- This may have an influence on academic performance (Figure 1; see accompanying poster).
- Occasional snoring was also associated with increased daytime tiredness and sleepiness, hyperactivity, and concentration deficits, probably indicating a long-lasting effect of snoring on behavior (programming).
- The high prevalence of occasional snoring (53.6%) underscores the importance of snoring as a public health problem in school children.

REFERENCES

1. Ali NJ, Pitson DJ and Stradling JR. Snoring, sleep disturbance, and behaviour in 4-5 year olds. Arch Dis Child 1993;68:360-366

SNORING AND BEHAVIORAL DISTURBANCES

		Hyperactivity	Concentration Deficits	Daytime Tiredness	Falling Asleep while Watching TV	Falling Asleep at School
		Frequently/Almost Always			Present	
		n				
NS	n	82	45	8	100	5
	%	20.2	11.1	2.0	24.8	1.2
OS	n	169	108	26	217	8
	%	28.3	18.0	4.3	36.2	1.3
	OR	1.6	1.8	2.2	1.7	1.1
	95%CI	1.2-2.1	1.2-2.6	1.01-5.0	1.3-2.3	0.4-3.3
HS	n	42	36	14	52	6
	%	37.2	31.9	12.4	46.8	5.7
	OR	2.3	3.8	7.0	2.7	4.8
	95%CI	1.5-3.7	2.3-6.2	2.9-17.1	1.7-4.1	1.4-16.1

Table 1. Abbreviations: NS: never snoring; OS: occasional snoring; HS: habitual snoring; OR: odds ratio; CI: confidence interval.

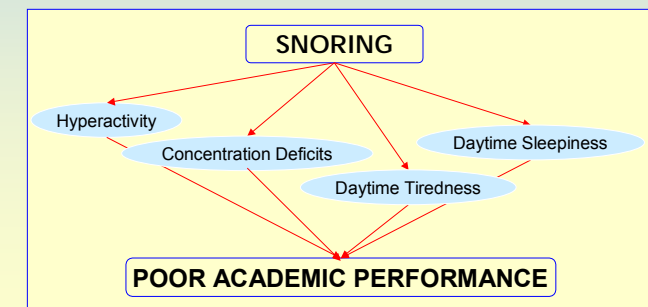


Figure 1.