

**Table S1:** Association of ICS with sleep parameters in obese and healthy-weight children with asthma.

Variable	Obese Asthma			Healthy-weight Asthma		
	ICS (n=214)	No ICS (n=75)	<i>P</i>	ICS (n=125)	No ICS (n=29)	<i>P</i>
SE (%)	82.67 ± 12.9	77.49 ± 18.1	0.03	86.00 ± 9.21	80.17 ± 16.45	0.12
AAI <sup>a</sup>	12.76 ± 8.06	14.95 ± 11.08	0.18	11.23 ± 5.99	14.37 ± 8.17	0.01
% time in N1	6.82 ± 4.51	10.51 ± 10.52	0.01	5.5 ± 3.4	6.91 ± 3.4	0.03
% time N2	47.68 ± 11.53	47.08 ± 12.14	0.7	44.95 ± 9.82	43.09 ± 9.08	0.35
% time in N3	28.89 ± 11.95	25.77 ± 12.96	0.059	30.85 ± 9.84	31.41 ± 8.87	0.78
% time in REM	17.17 ± 6.31	16.89 ± 6.92	0.74	18.75 ± 5.95	18.92 ± 6.74	0.89
PLMI <sup>a</sup>	17.14 ± 31.00	22.7 ± 44.98	0.61	28.46 ± 48.19	29.86 ± 39.93	0.33
AHI <sup>a</sup>	4.75 ± 10.51	9.4 ± 15.57	0.003	2.71 ± 5.24	4.95 ± 7.31	0.05
OSA	84 (39.3)	43 (57.3)	0.002	46 (36.8)	14 (48.3)	0.19
Baseline O <sub>2</sub> saturation	97.87 ± 3.37	98.11 ± 1.84	0.57	98.54 ± 1.39	98.9 ± 1.4	0.21
O <sub>2</sub> saturation nadir	89.92 ± 7.96	87.5 ± 11.42	0.047	90.83 ± 8.33	90.03 ± 5.27	0.63
Baseline ETCO <sub>2</sub>	41.08 ± 5.10	41.55 ± 5.79	0.7	40.09 ± 5.5	39.65 ± 7.24	0.64
Peak ETCO <sub>2</sub>	48.62 ± 6.31	49.76 ± 5.18	0.14	48.58 ± 5.99	49.77 ± 6.8	0.43

Sleep variables are reported as mean ± standard deviation except OSA reported as proportion, n (%).

<sup>a</sup> Reported in events/h.

SE: sleep efficiency; AAI: arousal awakening index; PLMI: periodic limb movement index; AHI: apnea-hypopnea index; ETCO<sub>2</sub>: end-tidal CO<sub>2</sub>.

**Table S2:** Association of Montelukast with sleep parameters in obese and healthy-weight children with asthma.

Variable	Obese Asthma			Healthy-weight Asthma		
	Montelukast (n=174)	No Montelukast (n=115)	<i>P</i>	Montelukast (n=92)	No Montelukast (n=62)	<i>P</i>
SE (%)	83.89 ± 10.27	77.44 ± 18.68	<0.001	85.32 ± 10.89	84.23 ± 11.5	0.57
AAI <sup>a</sup>	12.34 ± 7.94	14.77 ± 10.22	0.02	11.38 ± 4.81	12.50 ± 8.41	0.72
% time in N1	6.92 ± 5.04	9.09 ± 8.67	0.02	5.35 ± 3.36	6.4 ± 3.5	0.03
% time N2	46.59 ± 11.43	48.93 ± 11.96	0.1	44.76 ± 10.49	44.35 ± 8.42	0.8
% time in N3	30 ± 12.29	25.2 ± 11.74	0.001	31.28 ± 10.27	30.47 ± 8.67	0.61
% time in REM	17.28 ± 6.48	16.82 ± 6.46	0.55	18.79 ± 6.12	18.77 ± 6.07	0.98
PLMI <sup>a</sup>	19.02 ± 37.90	17.96 ± 30.72	0.58	30.27 ± 47.88	26.44 ± 45.01	0.86
AHI <sup>a</sup>	4.46 ± 9.83	8.05 ± 14.62	0.02	2.66 ± 4.77	3.8 ± 6.87	0.88
OSA	65 (37.4%)	62 (54%)	0.01	37 (40.2)	23 (37.1)	0.71
Baseline O <sub>2</sub> saturation	98.28 ± 1.59	97.41 ± 4.4	0.02	98.64 ± 1.45	98.55 ± 1.32	0.71
O <sub>2</sub> saturation nadir	90.14 ± 8.47	88.01 ± 9.7	0.05	90.02 ± 9.45	91.61 ± 4.53	0.22
Baseline ETCO <sub>2</sub>	40.28 ± 5.62	42.55 ± 4.48	0.001	40.07 ± 5.89	39.91 ± 5.87	0.94
Peak ETCO <sub>2</sub>	48.14 ± 6.02	50.08 ± 5.89	<0.001	48.55 ± 6.34	49.18 ± 5.9	0.52

Sleep variables are reported as mean ± standard deviation except OSA reported as proportion, n (%).

<sup>a</sup> Reported in events/h.

SE: sleep efficiency; AAI: arousal awakening index; PLMI: periodic limb movement index; AHI: apnea-hypopnea index; ETCO<sub>2</sub>: end-tidal CO<sub>2</sub>.

**Table S3:** Association of nasal steroids with sleep parameters in obese and healthy-weight children with asthma.

Variable	Obese Asthma			Healthy-weight Asthma		
	Nasal steroid (n=89)	No nasal steroid (n=200)	<i>P</i>	Nasal steroid (n=44)	No nasal steroid (n=110)	<i>P</i>
SE (%)	80.47 ± 14.41	81.7 ± 14.62	0.47	84.53 ± 12.59	85.05 ± 10.53	0.78
AAI <sup>a</sup>	14.73 ± 11.12	12.76 ± 7.89	0.33	10.63 ± 3.87	12.31 ± 7.3	0.31
% time in N1	8.14 ± 7.94	7.62 ± 6.23	0.38	5.45 ± 3.26	5.89 ± 3.51	0.41
% time N2	45.11 ± 11.5	48.59 ± 11.62	0.02	46.26 ± 9.3	43.93 ± 9.79	0.18
% time in N3	30.14 ± 13.29	27.16 ± 11.72	0.056	29.94 ± 9.08	31.36 ± 9.87	0.41
% time in REM	16.78 ± 7.29	17.24 ± 6.07	0.57	18.99 ± 5.56	18.69 ± 6.31	0.78
PLMI <sup>a</sup>	20.03 ± 40.27	17.96 ± 32.73	0.80	23.36 ± 39.66	30.87 ± 49.15	0.21
AHI <sup>a</sup>	8.73 ± 15.6	4.64 ± 9.94	0.07	3.55 ± 5.34	2.95 ± 5.84	0.18
Baseline O <sub>2</sub> saturation	97.3 ± 4.81	98.2 ± 1.77	0.07	98.82 ± 1.08	98.52 ± 1.49	0.47
O <sub>2</sub> saturation nadir	87.68 ± 12.09	90 ± 7.21	0.6	92.07 ± 8.54	90.14 ± 7.51	0.01
Baseline ETCO <sub>2</sub>	41.98 ± 5.17	40.86 ± 5.32	0.16	41.0 ± 5.4	39.59 ± 6.01	0.24
Peak ETCO <sub>2</sub>	48.95 ± 6.19	48.93 ± 5.98	0.97	48.68 ± 6.35	48.87 ± 6.09	0.84

Sleep variables are reported as mean ± standard deviation.

<sup>a</sup> Reported in events/h.

SE: sleep efficiency; AAI: arousal awakening index; PLMI: periodic limb movement index; AHI: apnea-hypopnea index; ETCO<sub>2</sub>: end-tidal CO<sub>2</sub>.

**Table S4:** Association of antihistamine with sleep parameters in obese and healthy-weight children with asthma.

Variable	Obese Asthma			Healthy-weight Asthma		
	Antihistamine use (n=69)	No Antihistamine use (n=220)	<i>P</i>	Antihistamine use (n=50)	No Antihistamine use (n=104)	<i>P</i>
SE (%)	81.87 ± 13.53	81.15 ± 14.87	0.9	83.43 ± 11.77	85.62 ± 10.77	0.27
AAI <sup>a</sup>	12.53 ± 10.08	13.59 ± 8.69	0.19	10.85 ± 5.18	12.3 ± 7.09	0.19
% time in N1	7.04 ± 4.95	8.01 ± 7.27	0.65	5.95 ± 3.35	5.69 ± 3.5	0.77
% time N2	48.7 ± 12.86	47.16 ± 11.3	0.34	45.75 ± 9.48	44.04 ± 9.78	0.31
% time in N3	26.19 ± 10.25	28.67 ± 12.81	0.14	30.04 ± 9.14	31.39 ± 9.88	0.42
% time in REM	18.06 ± 6.63	16.8 ± 6.4	0.16	18.77 ± 4.68	18.79 ± 6.68	0.99
PLMI <sup>a</sup>	20.81 ± 50.03	17.9 ± 29.1	0.74	22.5 ± 39.73	31.72 ± 49.51	0.11
AHI <sup>a</sup>	3.82 ± 8.36	6.56 ± 13	0.2	2.66 ± 5.52	3.33 ± 5.81	0.55
Baseline O <sub>2</sub> saturation (%)	98.05 ± 1.69	97.9 ± 3.37	0.6	98.57 ± 1.4	98.62 ± 1.4	0.75
O <sub>2</sub> saturation nadir	91.1 ± 7.04	88.71 ± 9.52	0.03	90.98 ± 8.34	90.53 ± 7.62	0.14
Baseline ETCO <sub>2</sub>	41.67 ± 4.99	41.07 ± 5.39	0.46	40.1 ± 5.23	39.96 ± 6.14	0.77
Peak ETCO <sub>2</sub>	47.16 ± 5.74	49.48 ± 6.03	0.006	48.3 ± 6.12	49.04 ± 6.17	0.52

Sleep variables are reported as mean ± standard deviation.

<sup>a</sup> Reported in events/h.

SE: sleep efficiency; AAI: arousal awakening index; PLMI: periodic limb movement index; AHI: apnea-hypopnea index; ETCO<sub>2</sub>: end-tidal CO<sub>2</sub>.