

SUPPLEMENTAL MATERIAL

Table 1. Summary of CPAP studies conducted in stroke settings

Author	Duration	Received CPAP (N)	Outcome Variables	Significance
Observational Studies				
Bassetti et al., (2006) ¹	60+/-16 months	70	Treatment adherence	Eight patients (11%) were CPAP adherent at follow-up. Of those patient discharged from the hospital using CPAP, (31%) were adherent at follow
Broadley et al. (2007) ²	NA	16	Treatment adherence	CPAP was “accepted” by 13 (81%) patients and “well tolerated” in eight (50%)
Disler et al., (2002) ³	NA	5	Oxygen saturation Treatment acceptance	CPAP resulted in “normalization of oxygen saturation” in all patients Treatment was “tolerated well”.
Martinez-Garcia, et al., (2005) ⁴	18 months	15 vs 36 (CPAP non-adherent)	New vascular events	CPAP adherence associated with fewer new vascular events (6.7% vs 36. $p = 0.03$).
Martinez-Garcia et al (2009) ⁵	5 years	28 vs 68 (CPAP non-adherent)	Mortality	CPAP adherence was associated with decreased risk of mortality (49.6 % vs 68.3%; HR = 1.58; $p = 0.04$).
Martinez-Garcia et al. (epub) ⁶	7 years	28 vs 68 (CPAP non-adherent)	Non-fatal CVE	CPAP adherence was associated with decreased risk of non-fatal CVE (17 vs 38.2%; HR = 2.87; $p = 0.03$).
Palombini & Guilleminault (2006) ⁷	8 weeks	32	Treatment adherence	Seven patients (22%) were CPAP adherent at follow-up.
Scala et al. (2009) ⁸	1 night	12	Treatment adherence	Ten patients (84%) agreed to try CPAP; of those five (42%) used CPAP ≥ 6 hours, five (42%) used CPAP for 1-3 hours.
Wessendorf et al. (2001) ⁹	10 days	105	24-h Blood Pressure (BP) Subjective wellbeing Treatment acceptance	16 patients underwent 24-h BP monitoring. CPAP was associated with decreased nocturnal BP in CPAP compliant patients (N=11) compared to noncompliant patients (N=5) ($\Delta -8$ vs $\Delta 0.8$, $p = 0.04$). There was no difference in mean daytime BP between groups ($\Delta -4.3$ vs $\Delta -6.8$, $p = 0.57$). Subjective wellbeing was assessed in 41 patients. CPAP use was associated with improvements compared to controls ($\Delta 26$ vs $\Delta 2$, $p = 0.02$) 74/105 patients (70.5%) agreed to CPAP titration

Randomized Studies (CPAP group/Control Group (Treatment as Usual))				
Bravata et al. (2010) ¹⁰	3 months	30/12	Adherence to auto-CPAP	Regular CPAP use ($\geq 70\%$ nights for ≥ 4 hours/night) was observed in 12 patients (40%), 18 patients (60%) had "some use (< 70% nights for < 4 hours/night"
			Recurrent vascular event rate	Vascular event rate was highest amongst sleep apnea patients with no CPAP use (16%), lower in those with "some use" (5%) and lowest in those with "acceptable adherence (0%) ($p = 0.08$)
Bravata et al. (2011) ¹¹	1 month	31/24	National Institutes of Health Stroke Scale (NIHSS)	CPAP use associated with greater improvements on the NIHSS ($\Delta -3.0$) than control ($\Delta -1.0$) ($p = 0.03$).
Hsu et al. (2006) ¹²	8 weeks	15/15	Extended Activities of Daily Living (EADL) Total	CPAP use, compared to control, was not associated with improvements in the EADL total at 6-month follow-up (28 vs 23, $p = 0.50$)
			Barthel Index (BI)	CPAP use, compared to control, was not associated with improvements in the BI at 6-month follow-up (18 vs 19, $p = 0.64$)
			Short Form-36 Health Survey (SF-36) Physical Summary	CPAP use, compared to control, was not associated with improvements in the SF-36 Physical Summary at 6-month follow-up (28.4 vs 19.8, $p = 0.25$)
			SF-36 Mental Summary	CPAP use, compared to control, was not associated with improvements in the SF-36 Mental Summary at 6-month follow-up (54.3 vs 52.8, $p = 0.80$)
Hui et al., (2002) ¹³	NA	34/25	Treatment acceptance/adherence	16 patients (47%) agreed to a CPAP titration study, of which 4 (12%) agreed to continue using CPAP at home.
Parra et al. (2011) ¹⁴	24 months	71/69	BI	CPAP use not associated with changes on the BI compared to control ($\Delta 1.0$ vs $-\Delta 19.6$, $p > 0.05$)
			Canadian scale	CPAP use not associated with changes in the Canadian scale compared to control ($\Delta 1.0$ vs $\Delta 1.5$, $p > 0.05$)
			Rankin Scale	CPAP use not associated with changes in the Rankin scale compared to control ($\Delta -0.5$ vs $\Delta -0.6$, $p > 0.05$)
			SF-36	CPAP use not associated with changes in the SF-36 compared to control ($\Delta 7.5$ vs $\Delta 7.8$, $p > 0.05$)

Ryan et al. (2011) ¹⁵	1 month	22/22	Cardiovascular events	CPAP associated with longer mean time until next cardiovascular event (versus 7.9 months, $p = 0.04$)
			Cardiovascular mortality	CPAP use not associated with differences in cardiovascular mortality compared to control (87.7% versus 88.4%, $p = 0.91$)
			6-minute walk test	CPAP use was not associated with improvements on the 6-minute walk test compared to controls ($\Delta 113$ vs $\Delta 46$, $p = 0.75$)
			Canadian Scale	CPAP use was associated with improvements on the Canadian scale compared to controls ($\Delta 2.3$ vs $\Delta 0.7$, $p < 0.001$)
			Chedoke-McMaster Stroke Assessment Scale (CMSAS)	CPAP use was marginally associated with improvements on the CMSAS total subscale ($\Delta 1.1$ vs $\Delta 0.5$, $p = 0.08$) and was associated with improvements on the leg subscale compared to controls ($\Delta 0.8$ vs $\Delta 0.4$, $p = 0.001$). CPAP use was not associated with improvements on the hand ($\Delta 0.7$ vs $\Delta 0.7$, $p = 0.92$) or foot subscales ($\Delta 0.5$ vs $\Delta 0.7$, $p = 0.64$)
			Functional Independence Measure (FIM)	CPAP use was marginally associated with improvements on the FIM compared to controls ($\Delta 27.3$ vs $\Delta 20.0$, $p = 0.07$)
			Sustained Attention Response Time (SART)	CPAP use was not associated with improvements on the SART, total number of false positive errors ($\Delta 2$ vs $\Delta -1$, $p = 0.26$) or mean RT in the 4 trials before false press ($\Delta 12$ vs $\Delta -51$, $p = 0.26$) compared to controls
			Digit + visual spatial	CPAP use was not associated with improvements on the Digit + visual spatial span-forward ($\Delta 3$ vs $\Delta -3$, $p = 0.27$) or span-backward ($\Delta 10$ vs $\Delta 5$, $p = 0.32$) compared to controls
			Purdue Pegboard	CPAP use was not associated with improvements on the Purdue Pegboard dominant hand score ($\Delta 3$ vs $\Delta 6$, $p = 0.88$), nondominant hand score ($\Delta 4$ vs $\Delta 7$, $p = 0.37$) or affected hand score ($\Delta 4$ vs $\Delta 7$, $p = 0.62$) compared to controls
			Beck Depression Inventory (BDI)	CPAP use was not associated with improvements on the somatic component of the BDI (values not reported). A significant reduction in the affective component was observed, compared to controls ($\Delta -2.6$ vs $\Delta -1.4$, $p = 0.001$)
Sandberg et al., (2001) ¹⁶	1 month	33/30	Epworth Sleepiness Scale (ESS)	CPAP group showed improvements on the ESS compared to controls ($\Delta -2.6$, $p < 0.0001$)
			Stanford Sleepiness Scale (SSS)	CPAP group showed improvements on the SSS compared to controls ($\Delta -1.1$ vs $\Delta -0.9$, $p = 0.05$)
			BI	CPAP use not associated with changes in the BI compared to control ($\Delta 1.1$, $p = 0.98$)
			Delirium (%)	CPAP use not associated with changes in delirium compared to control ($\Delta 1.1$, $p = 0.98$)

			Mini-Mental Status Exam (MMSE)	15.4% vs Δ -19.0%, $p = 0.88$ CPAP use not associated with improvements on the MMSE compared to control (Δ 2.6 vs Δ 2.8, $p = 0.77$)
			Montgomery-Asberg Depression Rating Scale (MADRS)	CPAP use associated with greater improvements on the MADRS than control (Δ -5.4 vs Δ 1.8, $p < 0.01$).
Randomized Study (CPAP group/Control Group Sham CPAP)				
Brown et al. (epub) ¹⁷	3 months	15/17	BI	CPAP use not associated with changes on the BI compared to control (95 vs 100, $p > 0.05$)
			ESS	CPAP use not associated with improvements on the ESS compared to control (8 vs 7, $p > 0.05$)
			Fatigue Severity Score (FSS)	CPAP use not associated with changes on the FSS compared to control (3 vs 2.4, $p > 0.05$)
			Patient Health Questionnaire (PHQ-9)	CPAP use not associated with changes on the PHQ-9 compared to control (2 vs 2, $p > 0.05$)
			NIHSS	CPAP use not associated with changes on the NIHSS compared to control (2 vs 2, $p > 0.05$)

Addenbrooke's Cognitive Examination; ADL = activities of daily living; BDI = Beck Depression Inventory; BI= Barthel Index; BP = blood pressure; CMSAS = Chedoke-McMaster Stroke Assessment Scale; CPAP = continuous positive airway pressure; CVE = cardiovascular events; EADL = Extended Activities of Daily Living; ESS = Epworth Sleepiness Scale; FIM = Functional Independence Measure; FSS = Fatigue Severity Score; MADRS = Montgomery-Asberg Depression Rating Scale; MMSE = Mini-Mental Status Exam; NA = Not available; NIHSS = National Institutes of Health Stroke Scale; PHQ-9 = Patient Health Questionnaire; SSS = Stanford Sleepiness Scale; SART = Sustained Attention Response Time; SF-36 = Short Form-36 quality of life questionnaire; TAU = Treatment as usual

Table 2. Recruitment and Retention in Observational Studies

Author	Study Duration	Potential Participants N	Assigned to Sleep Study	Diagnosed with OSA N *	Prescribed CPAP N	CPAP Adherent in Hospital N	CPAP Adherent at Last Follow-up Point N
Bassetti et al., (2006) ¹	60+/-16 months	NA	152	70	70	48	8
Broadley et al. (2007) ²	6 weeks	81	57	23	16	8	NA
Disler et al., (2002) ³	NA	38	38	19	5	5	5
Martinez-Garcia, et al., (2005) ⁴	18 months	139	95	51	51	NA	15
Martinez-Garcia et al (2009) ⁵	5 years	223	166	96	96	NA	28
Martinez-Garcia et al. (epub) ⁶	7 years						
Palombini & Guilleminault (2006) ⁷	2 months	50	21	14	14	12	7
Scala et al. (2009) ⁸	1 night	NA	12	12	12	5	NA
Wessendorf et al. (2001) ⁹	10 days	NA	105	NA	105	74	NA

* OSA criteria varied by study team from AHI \geq 5/hour to AHI \geq to 30/hour. Our table reflects the individual study diagnosis criteria.

NA = Not available

Table 3. Recruitment and Retention in Randomized Studies

Author	Study Duration	Potential Participants N	Potential Participants w/o exclusionary criteria N	Refused to Participate	Assigned to Sleep Study	Diagnosed with OSA N *	Randomized to CPAP/Control	Available for Follow-up Assessment N	CPAP Adherent at Last Follow-up Point N
Randomized Studies, Control Group TAU									
Bravata et al. (2010) ¹⁰	3 months	360	213	137	70	42	30/12	NA	12 **
Bravata et al. (2011) ¹¹	1 month	955	199	144	55	28	15/13	NA	10
Hsu et al. (2006) ¹²	2 months	658	96	25	71	33	15/15	30	7
Hui et al., (2002) ¹³	NA	80	NA	NA	51	34	34/25	NA	4
Parra et al. (2011) ¹⁴	24 months	NA	NA	NA	235	140	71/69	126	NA
Ryan et al. (2011) ¹⁵	1 month	466	194	91	103	48	25/23	44	22
Sandberg et al., (2001) ¹⁶	1 month	151	NA	NA	NA	63	31/28	59	16 **
Randomized Study, Control Group Sham CPAP									
Brown et al. (epub) ¹⁷	3 months	803	264	133	87	54	15/17	19	8

* OSA criteria varied by study team from AHI \geq 5/hour to AHI \geq to 30/hour. Our table reflects the individual study diagnosis criteria.

** Defined as CPAP use for longer than 4 hours/night

NA = Not available

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