Seminari del Venerdì del Gruppo di Ricerca Geriatrica

Brescia, 28 giugno 2019

Il punto sull'OSAS nell'anziano

Piera Ranieri

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Prevalence of sleep-disordered breathing in the general population: the HypnoLaus study

R Heinzer, S Vat, P Marques-Vidal, H Marti-Soler, D Andries, N Tobback, V Mooser, M Preisig, A Malhotra, G Waeber, P Vollenweider, M Tafti,* J Haba-Rubio*

Coorte 3043 soggetti
Polisonnografia in 2121 soggetti

Main risk factors associated with presence of SDB:

- Sex
- **Age**
- BMI
- Neck circumference
- waist-to-hip ratio (in women)
- snoring

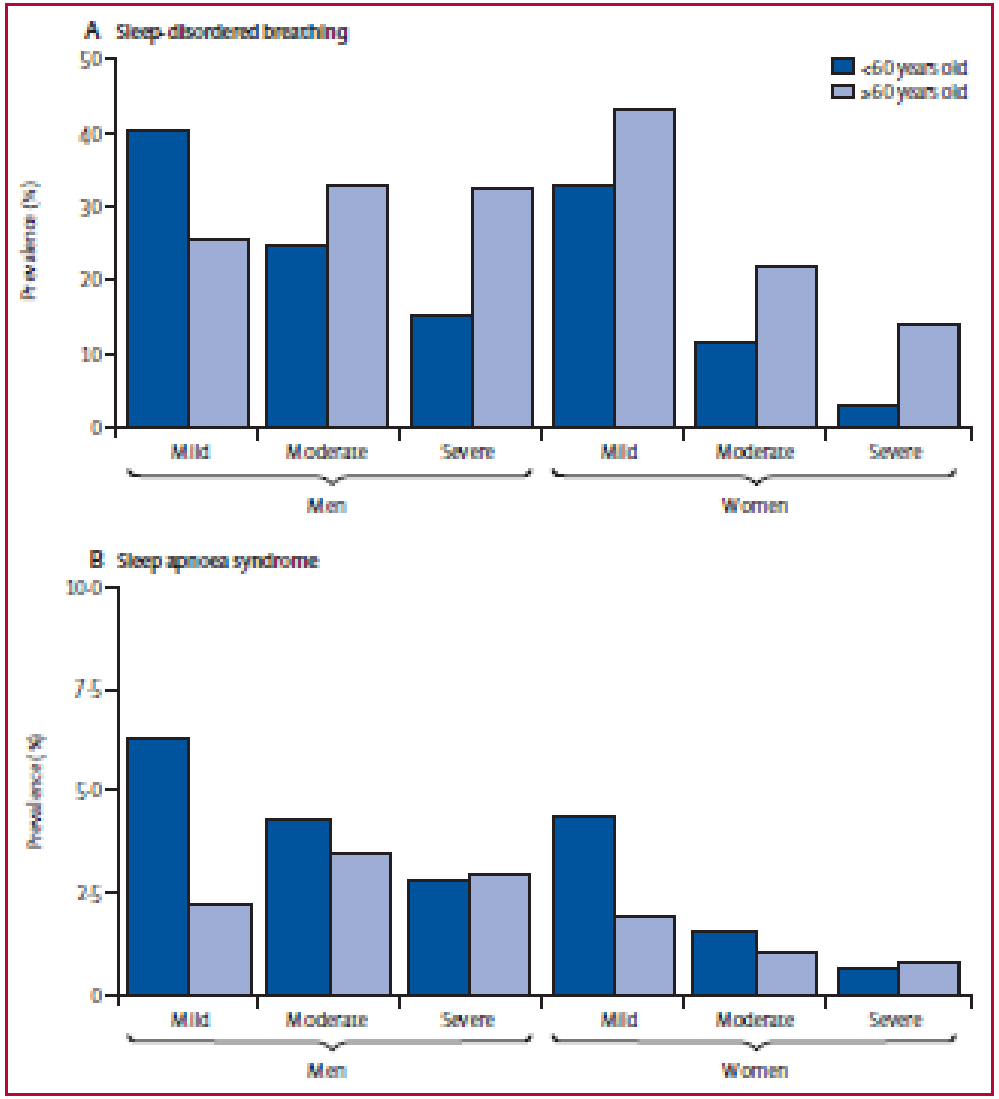


Figure 1: Prevalence of sleep-disordered breathing and sleep apnoea syndrome, according to age and sex
(A) Mild sleep-disordered breathing was defined as ≥5 to <15 events per h, moderate was ≥15 to <30 events per h, and severe was ≥30 events per h. Sleep-disordered breathing categories differed by age; p<0·0001 in men and p<0·0001 in women. (B) Mild sleep apnoea syndrome was defined as ≥5 to <15 events per h and an Epworth score >10, moderate was ≥15 to <30 events per h and an Epworth score >10, and severe was ≥30 events per h and an Epworth score >10. Categories of sleep apnoea syndrome differed by age; p<0·0001 in men and p<0·0001 in women.

Heinzer R. Lancet RM 2016

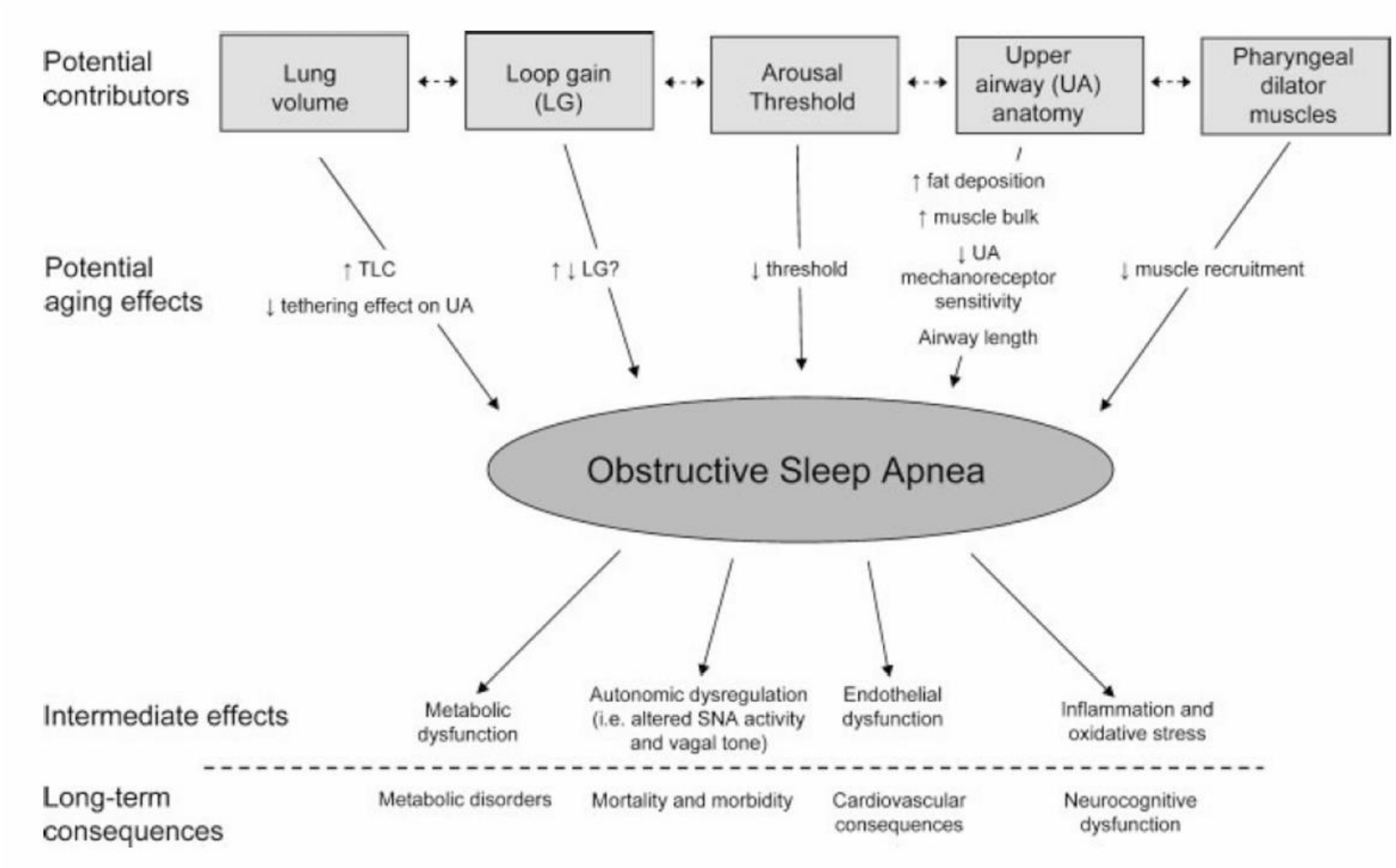
Table 1 A review of the literature describing the prevalence of sleep apnoea in older people

First author [ref.]	Subjects n	Females %	Age yrs	Population	BMI kg per m^2	Prevalence of SDB %	
						AHI ⩾5	AHI ⩾10/ ⩾15
Carskadon [24]	40	55	62–86	Community		36	
Coleman [25]	83	28	66±5	Sleep clinic		39	
McGinty [26]	26	0	64.4±4.4	Community			62
Roehrs [27]	97		61–81	Sleep clinic		27	
Smallwood [28]	30	20	50–80	Community	±15%	37	
Yesavage [29]	41	0	69.5±6.5	18 community and 23 clinic		73	
Hoch [30]	56	52	69.3±5.4	Community	±20%	5	4
Knight [31]	27	NG	75.8±5.9	Primary care	25	37	
Mosko [32]	46	65	68.7±6.7	Community		28	16
Ancoli-Israel [33]	233	65	65–101	Nursing home	30.6±6.0	70	
Hoch [18]	105	53	60–91	Community	25.4±3.8	26	13
Philips [34]	92	52	64.2±8.6	Community	25.6±4.3	15	
Ancoli-Israel [19]	346	53	72.8±6.1	Community	24.4±4.2		30
	54	57	70.8±6.2	Community	27.2±5.4		32
Bixler [20]	75	0	65–100	Community		31	24
Young [21]	3448		60–99	Community		54	20
Endeshaw [35]	58	76	77.7±6.7	Community		56	19
Haas [22]	3643	52	70.2±6.9	Community	28.2±5.0	46	20
Hader [23]	80	50	74.1±6.3	General medical clinic	26.8±4.6	43	19

BMI: body mass index; SDB: sleep-disordered breathing; AHI: apnoea–hypopnoea index.

Il rapporto Età-OSA

(Edwards BA et al. Semin Respir Crit Care Med. 2010; 31: 618)



CLINICAL INVESTIGATION

Physicians Report Sleep Apnea Infrequently in Older and Older Vulnerable Adults

Andrew M. Namen, MD, Daniel J. Forest, MD,§ Karen E. Huang, MS,‡ Steven R. Feldman, MD, PhD,‡ William R. Hazzard, MD,† Stephen P. Peters, MD, PhD,* and Edward F. Haponik, MD**

OBJECTIVES: To determine how often outpatient physician visits detect sleep apnea (SA) in older persons in the United States.

DESIGN: Retrospective Analysis.

SETTING: US non hospital and hospital based clinics.

PARTICIPANTS: US physicians.

MEASUREMENTS: National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey data from 1993 to 2011 were used to assess the frequency of physicians' coding diagnoses of SA in persons aged 65 and older. Which specialties are most likely to report SA, the most-common comorbid conditions reported with SA, and the likelihood of reporting SA in patient visits for dementia and preoperative care were assessed.

RESULTS: From 1993 to 2011, physicians reported SA in 0.3% of all office visits in persons aged 65 and older. SA reported in visits increased from 130,000 in 1993 to 2,070,000 in 2011, with an annual per capita visit reporting rate of 0.07% to 0.74%. In older populations, the proportion of documented SA visits by specialists rose, and that of primary care providers decreased. Older adults with a diagnosis of SA had higher average number of comorbidities than those without SA (1.8 vs 1.3). Reporting SA was low in visits with a diagnosis of dementia and classified as a preoperative visits.

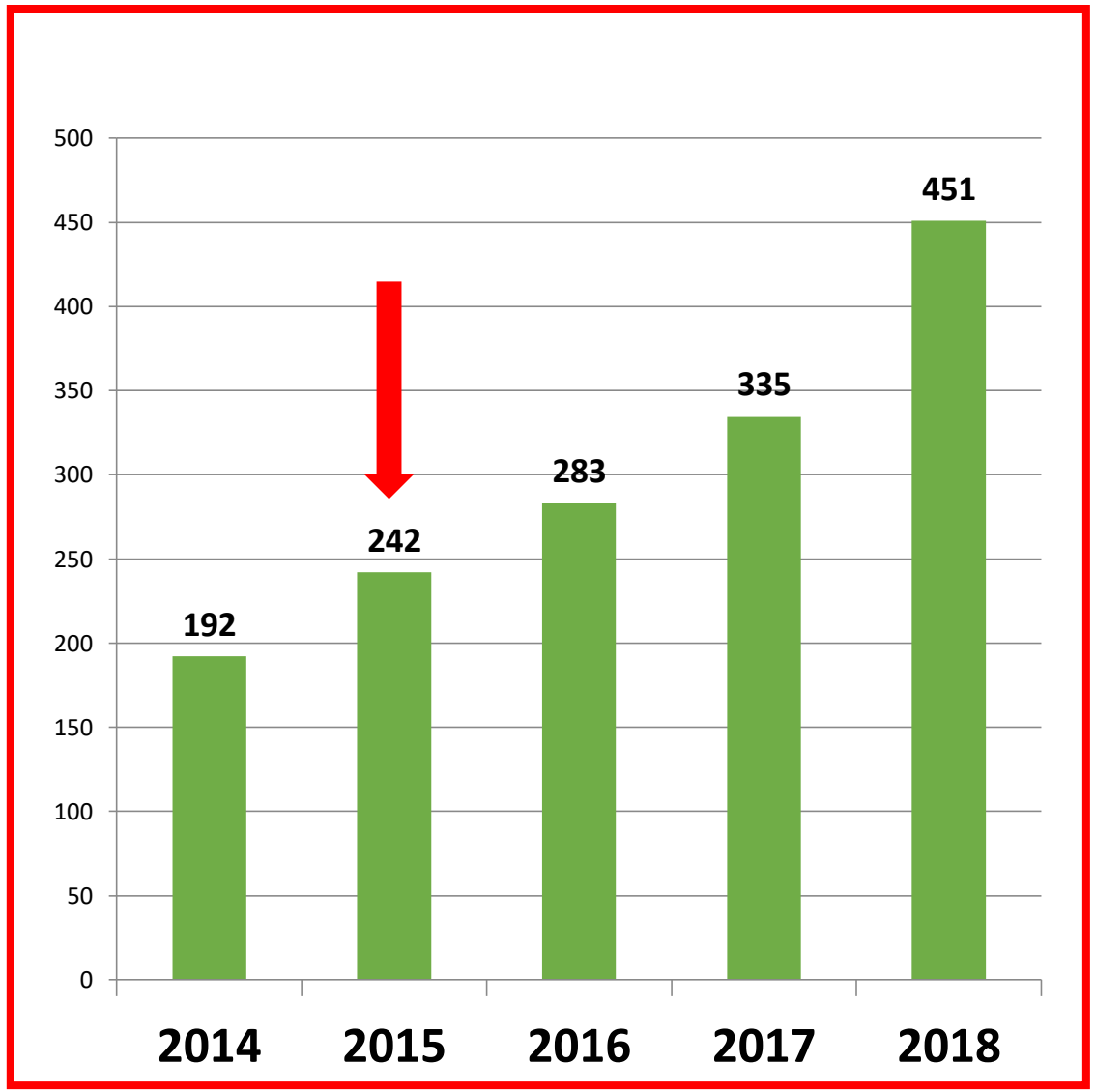
CONCLUSION: In two nationwide surveys, SA reporting by physicians in elderly adults was 16 as greater in 2001 as in 1993, although reporting of SA remains infrequent (<1% of visits) even in vulnerable populations. **J Am Geriatr Soc 2017.**

Sleep apnea (SA) is a common condition with major cardiovascular and cerebrovascular morbidity that contributes to rising healthcare costs.[1,2] Persons with SA are at high risk of motor vehicle crashes, cardiovascular disease, and postoperative complications.[3–7] SA syndromes have an estimated population prevalence of 10%[8–10] and are more common in persons with hypertension (30%), congestive heart failure (–60%), hemispheric stroke (–80%), and diabetes mellitus (–35%).[11–14] Reported prevalence of SA increases with age, with estimates up to 57% in community-dwelling older adults, 45% in those with cognitive disorders, and 60% in those with Parkinson's disease.[15–17] Older adults have more comorbid conditions at the time of their SA diagnosis than younger cohorts.[18,19] Those with clinically relevant SA can develop new-onset cardiovascular conditions, such as hypertension, coronary syndromes, stroke, and white matter changes associated with dementia.[20–23] Moreover, the epidemiology of SA in older adults would be expected to differ according to whether sleep laboratory (incorporating polysomnographic, apnea–
hypopnea index–based diagnosis) or general clinical signs, symptoms, and associated conditions are used for diagnosis. Nonetheless, up to 93% of women and 80% of men with obstructive SA have not been diagnosed.[10] Whether SA is not recognized in older persons at physician visits is unclear. Using two nationally representative surveys, trends in SA reporting at physician visits of older persons were assessed.

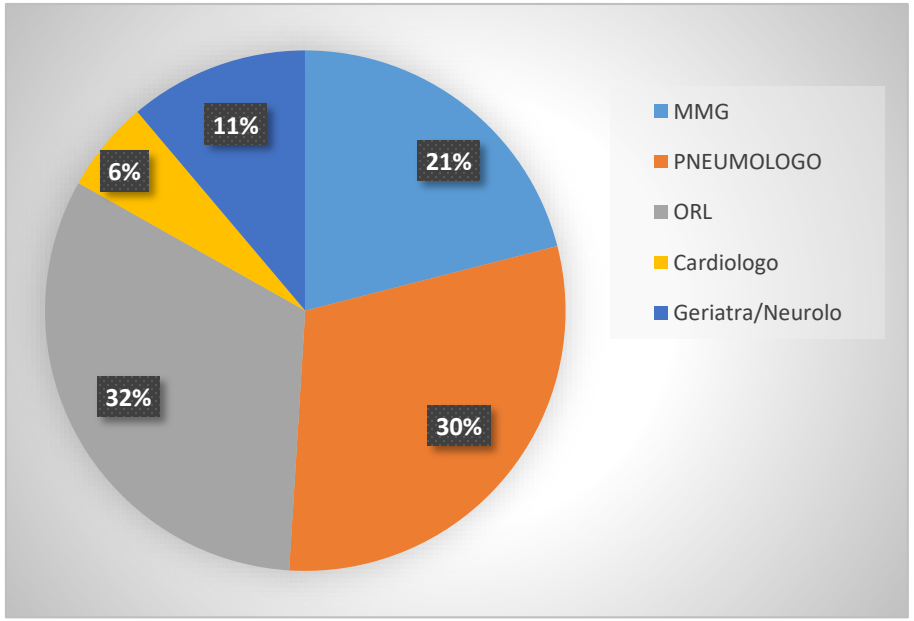
Incremento del 16% dal 1993 al 2001

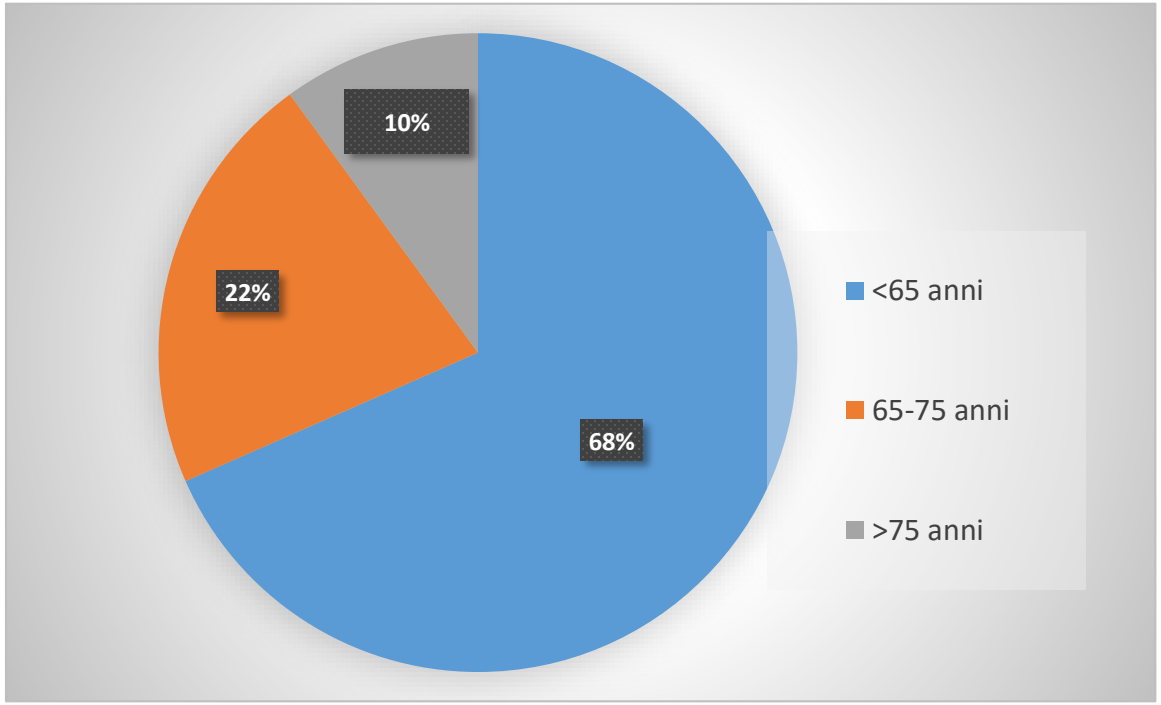
Report dei DRS <1% delle visite ultra65enni

POLISONNOGRAFIE eseguite dall'AMBULATORIO DISTURBI RESPIRATORI del SONNO
Istituto Clinico S.Anna

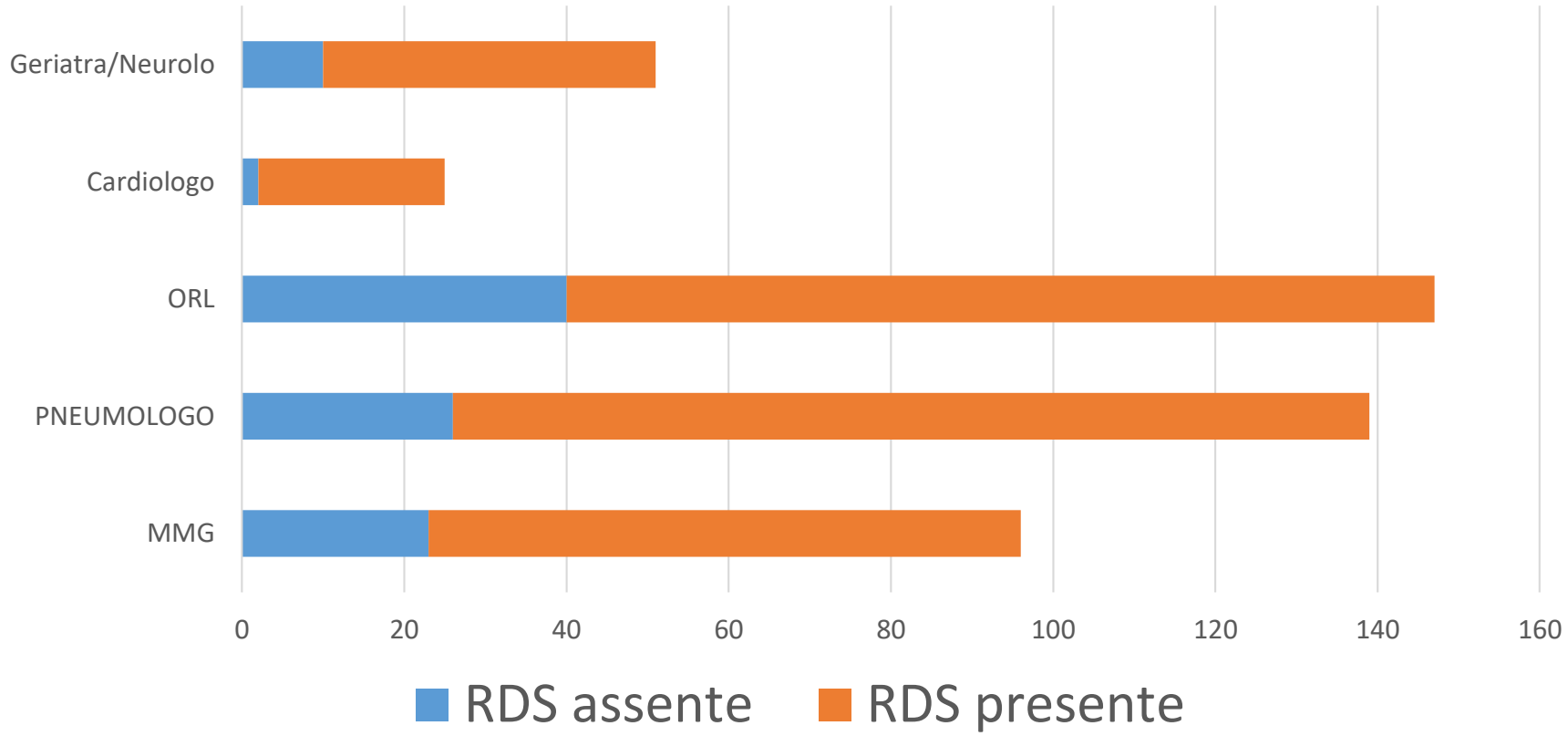


RICHIESTE POLISONNOGRAFIA nel 2018 (n=453) Istituto Clinico s. Anna

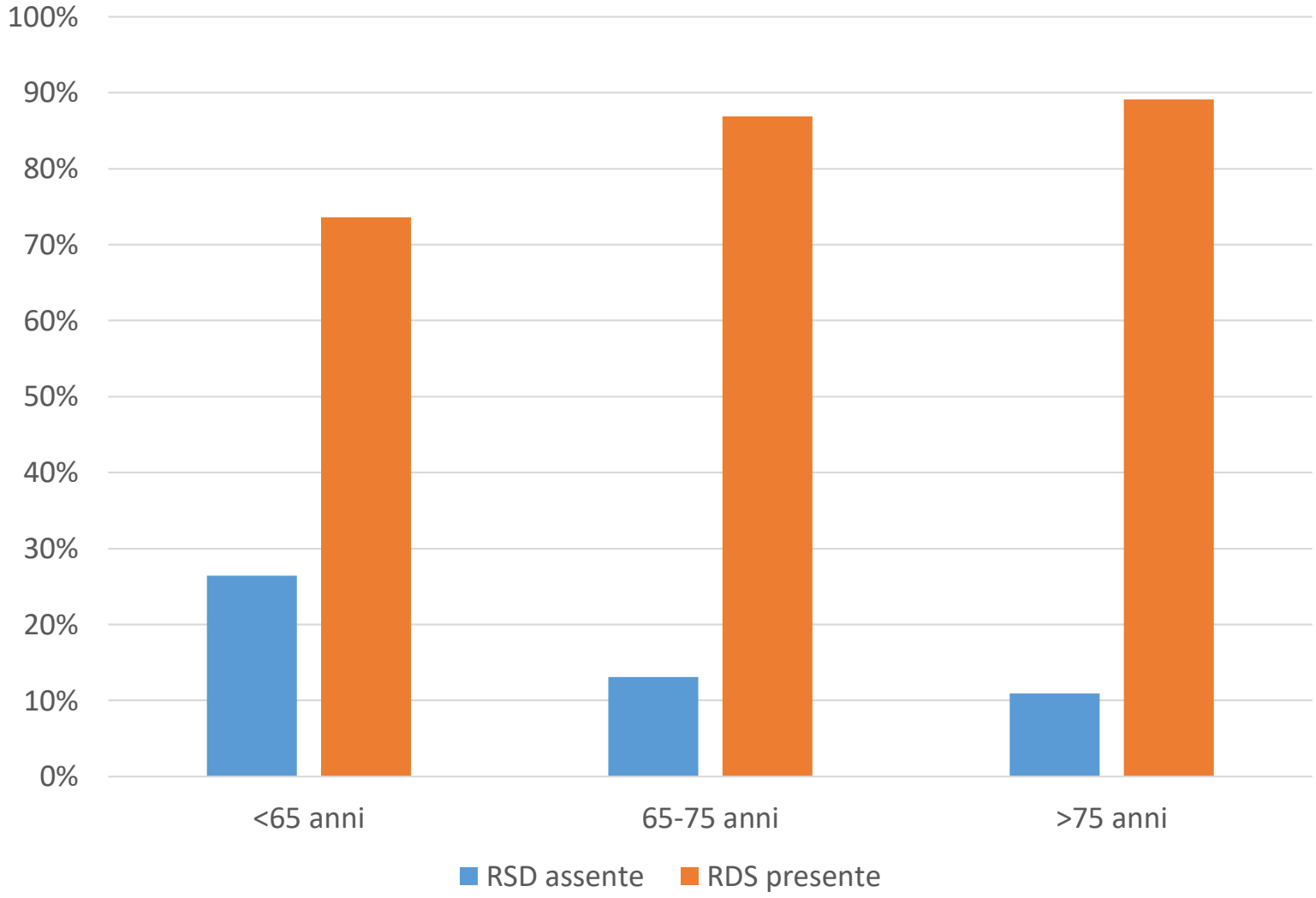




ESITO PSG stratificata per RICHIESTA



PREVALENZA DRS ICSA stratificata per ETA’



DRS nell’anziano: difficoltà diagnostiche

- Presentazione atipica della malattia (difficoltosa interpretazione dei sintomi spesso correlata in modo causale alla comorbilità e spesso mascherata dalla comorbilità stessa)

Le stigmate classiche dell'OSA spesso mancano nell'anziano…

(Endeshaw YW. JAGS 2006; 54:1740)

Table 2. Traditional Risk Factors of Obstructive Sleep Apnea According to Obstructive Sleep Apnea Status

Characteristic	AHI <15 (n = 67)	AHI ≥15 (n = 27)	*P*-value
Age, mean ± SD	77.3 ± 6.1	76.9 ± 7.4	.74
Snoring, n (%) (N = 89)			
<1 time a week	16 (26)	5 (19)	
≥1 times a week	9 (14)	7 (27)	.25
Don't know, n (%)	38 (60)	14 (54)	
Told to be snoring, %	41	56	.22
Body mass index, kg/m^2, mean ± SD	25.1 ± 3.6	26.7 ± 4.6	.08
AHI/hour of sleep	7 ± 4	32 ± 16	.001

AHI = apnea-hypopnea index; SD = standard deviation.

…e la presentazione dell'OSA può sfuggire

Table 3. Subjective Sleep Characteristics According to Obstructive Sleep Apnea* (OSA) Status

	Female (n = 67)		Male (n = 27)		Total (N = 94)	
Self-Reported Symptoms	OSA −	OSA+	OSA −	OSA+	OSA −	OSA+
Problem falling asleep, %	22	17	17	7	21	11
Time to fall asleep, minutes, mean ± SD	27.5 ± 27.1	26.4 ± 19.9	23.0 ± 28.8	29.1 ± 32.4	26.8 ± 27.2	27.1 ± 28.0
Number of times you wake up, n, mean ± SD	2.3 ± 1.4	2.5 ± 1.3	2.3 ± 0.5	2.8 ± 1.3	2.3 ± 1.3	2.7 ± 1.3
Problem getting back to sleep, %	21	21	0	40†	17	31
Do not feel well rested in the morning, %	27	75‡	18	39	25	56‡
Number of naps/day, n, mean ± SD	0.8 ± 0.6	1.0 ± 0.5	1.1 ± 0.3	1.4 ± 0.9	0.8 ± 0.6	1.2 ± 0.8†
Epworth Sleepiness Scale, mean ± SD	5.1 ± 2.6	9.2 ± 4.8‡	7.7 ± 2.5	7.3 ± 3.8	5.6 ± 2.8	8.3 ± 4.4‡
Nocturia frequency per night, n, mean ± SD	1.7 ± 0.9	2.1 ± 1.4	1.1 ± 1.0	2.1 ± .7‡	1.6 ± 1.0	2.1 ± 1.1†

* Apnea-hypopnea index ≥15 per hour of sleep.
$P <$ †.05, ‡.01.

L'OSA è causa importante di nicturia

(Endeshaw YW et al. JAGS 2004; 52:957)

Table 2. Selected Demographic and Clinical Findings by Sleep-Disordered Breathing Category

Finding	A AHI 0–9 (n = 26)	B AHI 10–24 (n = 21)	C AHI ≥25 (n = 11)	*P*-value*
	Mean ± Standard Deviation			
Age	76.9 ± 6.0	79.7 ± 6.9	76.5 ± 7.3	.260
Body mass index, kg/m^2	24.5 ± 3.8	23.4 ± 3.0	28.0 ± 5.7	.010†
Epworth Sleepiness Scale	5.5 ± 3.8	6.6 ± 2.4	8.4 ± 5.4	.100
Geriatric Depression Scale	1.8 ± 1.4	1.8 ± 1.8	2.6 ± 1.9	.380
Mean arterial blood pressure, mmHg	99.9 ± 11.5	91.9 ± 11.3	105.2 ± 14.7	.015‡
Nocturia episodes	1.7 ± 1.1	1.6 ± 0.9	2.6 ± 1.4	.028§

* Analysis of variance.
† C > A (P = .040); C > B (P = .008); (Tukey honestly significant difference (HSD)).
‡ C > B (P = .021); (Tukey HSD).
§ C > A (P = .050); C > B (P = .021); (Tukey HSD).
AHI = Apnea Hypopnea Index.

DRS nell’anziano: difficoltà diagnostiche

- Presentazione atipica della malattia (difficoltosa interpretazione dei sintomi spesso correlata in modo causale alla comorbilità e spesso mascherata dalla comorbilità stessa)
- Le figure professionali che «curano» i pazienti anziani, spesso non sono «formate» per identificare/trattare i disturbi del sonno dell’anziano (che possono essere complessi/multipli)

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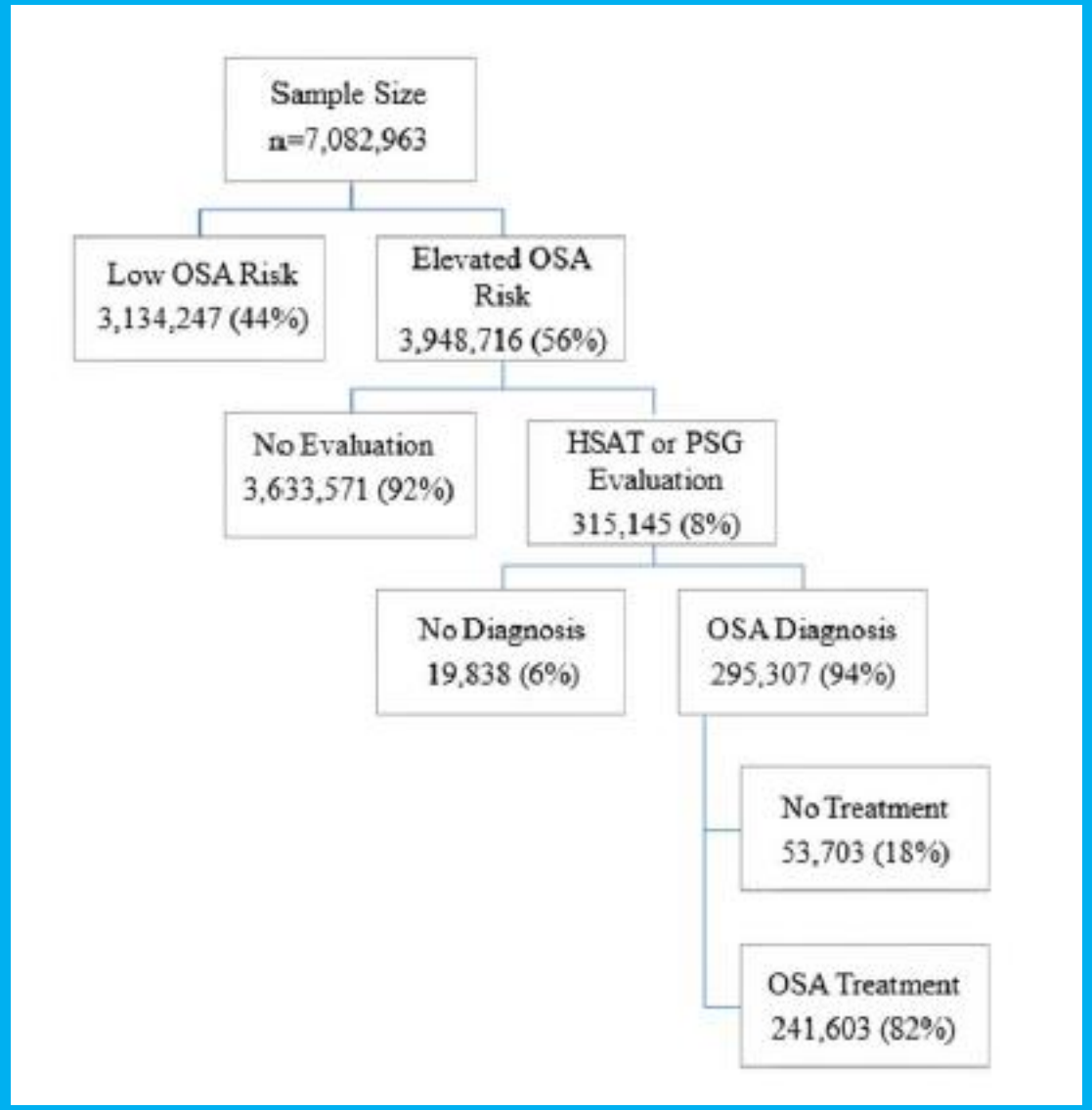

CLINICAL INVESTIGATION

Recognition and Diagnosis of Obstructive Sleep Apnea in Older Americans

Tiffany J. Braley, MD, MS,[1†] Galit Levi Dunietz, PhD, MPH,[1*†] Ronald D. Chervin, MD, MS,[*†] Lynda D. Lisabeth, PhD, MPH,[‡] Lesli E. Skolarus, MD, MS,[†] and James F. Burke, MD, MS[†]*

Although traditional correlates of OSA (snoring, sleepiness, hypertension) are recognized triggers for PSG in the general population, many of these characteristics are also attributed to normal aging.

Consequently, older adults who exhibit these characteristics may be more likely than their middle-aged counterparts to escape sleep evaluations.

Older adults may also be less likely to seek medical attention for symptoms that signal OSA in younger individuals or more likely to experience sequelae not classically associated with OSA in younger individuals

Table 3. Predictors of *International Classification of Diseases, Ninth Revision*, Obstructive Sleep Apnea (OSA) Diagnosis in All Round 3 National Health and Aging Trends Study Fee-for-Service Participants

Predictors of OSA	Bivariate Model	Multivariate Model
	OR (95% Confidence Interval)	
Age (reference 65–69)		
70–74	0.8 (0.5–1.3)	0.9 (0.5–1.4)
75–79	0.8 (0.5–1.2)	0.9 (0.5–1.5)
80–84	0.6 (0.3–0.9)	0.8 (0.4–1.3)
85–89	0.5 (0.3–0.8)	0.8 (0.4–1.5)
≥90	0.2 (0.1–0.5)	0.4 (0.2–1.0)
Male	1.4 (1.0–1.9)	1.4 (1.1–2.0)
Married or cohabiting	1.5 (1.1–2.1)	1.4 (1.0–2.0)
BMI[a]	1.1 (1.1–1.2)	1.1 (1.0–1.1)
Use mobility device	1.4 (1.1–1.9)	1.3 (0.9–1.8)
Pain in last month	1.8 (1.3–2.4)	1.4 (1.0–2.0)
Cardiovascular disease	1.6 (1.1–2.4)	1.1 (0.7–1.7)
Diabetes mellitus	2.2 (1.5–3.1)	1.3 (1.0–1.9)

[a]The odds ratio (OR) for body mass index (BMI) represents the effects of a 1-unit increase in BMI on the odds of OSA diagnosis. For example, the odds of an individual with a BMI of 30.0 kg/m^2 having an OSA diagnosis is $(1.1)^4 = 1.46$ times that of an individual with a BMI of 26.0 kg/m^2.

DRS nell’anziano: difficoltà diagnostiche

- Presentazione atipica della malattia (difficoltosa interpretazione dei sintomi spesso correlata in modo causale alla comorbilità e spesso mascherata dalla comorbilità stessa)
- Le figure professionali che «curano» i pazienti anziani, spesso non sono «formate» per identificare/trattare i disturbi del sonno dell’anziano (che possono essere complessi/multipli)
- Difficoltà di accesso ai laboratori del sonno (soprattutto per l’anziano affetto da elevata comorbilità/non-autosufficiente) E VICEVERSA
- Difficoltà a stabilire a quale livello di AHI/RDI il paziente anziano vada trattato

OSAS: Chronicity and Need for Long-Term Manangement

- OSA is associated wiith long-term morbidity and mortality. For example, in cardiovascular and cerebrovascular disease
  - Autonomic nervous systemic activaction
  - Myocardial effects
  - Increased platelet aggregability and coagulability
- Decrease cognitive function
- Increased risk of depression
- Societal consequences of OSA and excessive sleepiness
  - Motor vehicle accidents
  - Difficulties with work-place performance
- Decrease quality of life

Pagel JF, *J Fam Pract* 2008;57:S3-S8

DRS come FATTORE DI RISCHIO di STROKE

Obstructive sleep apnea and risk of stroke: A meta-analysis of prospective studies

Min Li, Wen-Shang Hou, Xiao-Wei Zhang, Zhen-Yu Tang *

Department of Neurology, The Second Affiliated Hospital, School of Medicine, Nanchang University, Nanchang 330006, Jiangxi Province, China

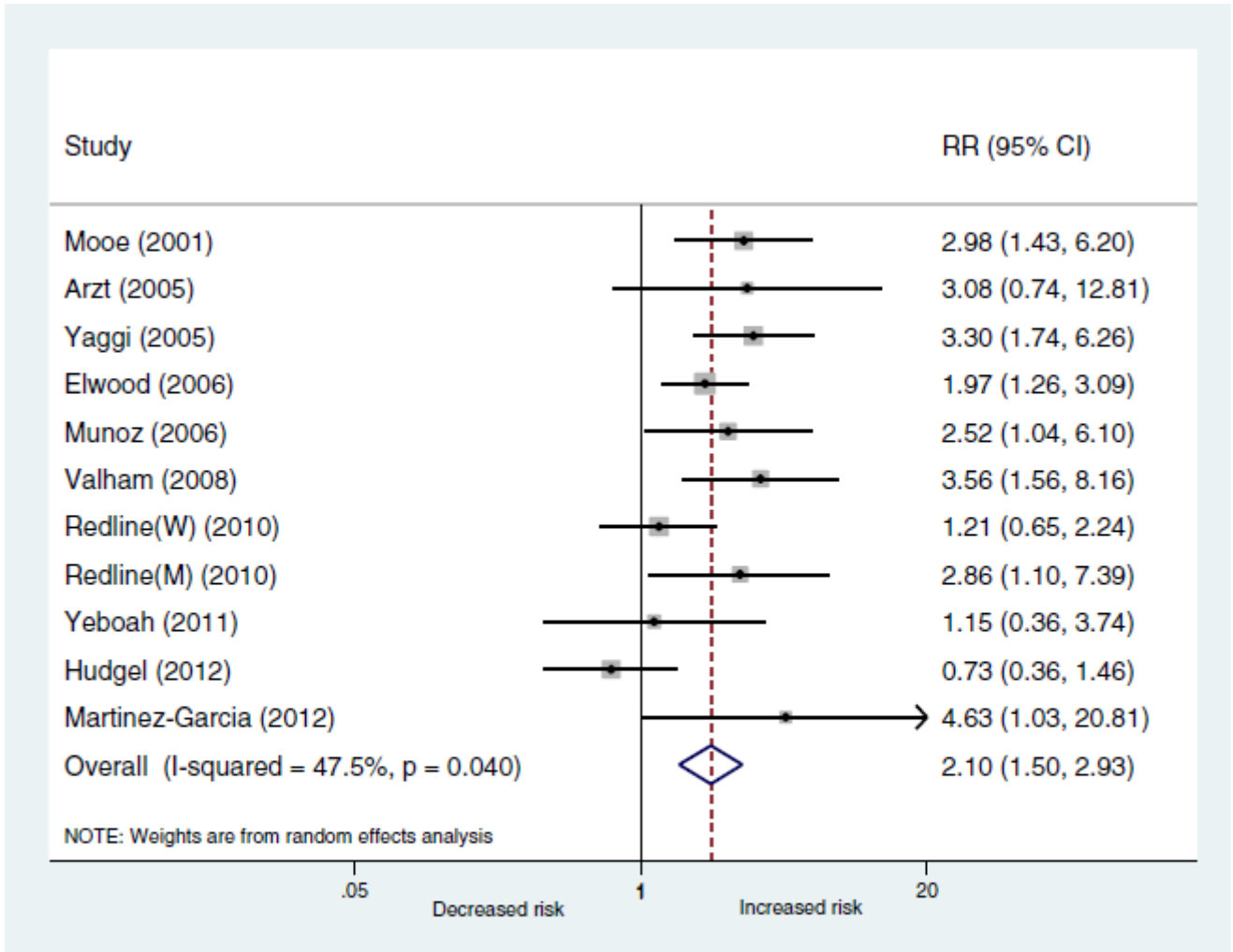

Fig. 2. Association between OSA and risk of stroke. OSA: obstructive sleep apnea.

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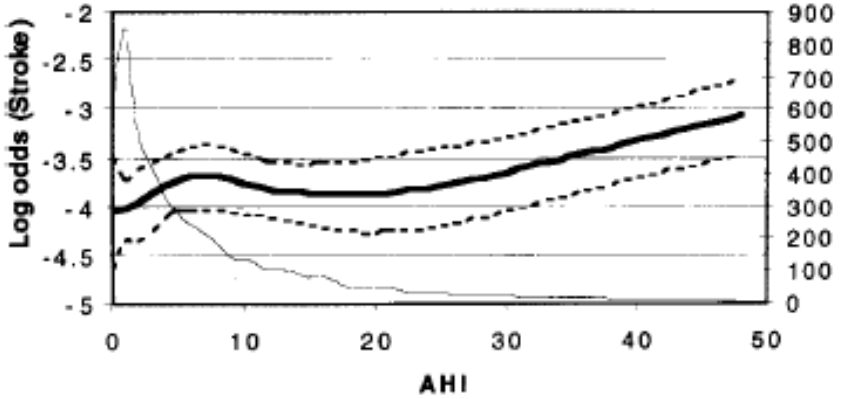
http://dx.doi.org/10.1016/j.ijcard.2013.12.230

Sleep-disordered Breathing and Cardiovascular Disease

Cross-sectional Results of the Sleep Heart Health Study

CROSS SECTIONAL



SHHS

Sahar E., et al. Am. J. Respir. Crit. Care Med. 2001, 163:19.

Association of Sleep-disordered Breathing and the Occurrence of Stroke

WISCONSIN

Artz M. et al. Am J Respir Crit Care Med. 2005; 172: 1447

Association between SDB and Stroke

Dose-response

TABLE 2. ADJUSTED ODDS RATIOS FOR THE PREVALENCE OF STROKE FOR SUBJECTS GROUPED BY THE APNEA-HYPOPNEA INDEX

	Model 1A		Model 2A		Model 3A	
AHI (*events/h*)	OR (95% CI), adjusted for age, sex, BMI, alcohol, and smoking	p Value	OR (95% CI), adjusted for age, sex, BMI, alcohol, smoking, and hypertension	p Value	OR (95% CI), adjusted for age, sex, BMI, alcohol, smoking, diabetes, and hypertension	p Value
< 5*	1.0		1.0		1.0	
≥ 5 to < 20	0.50 (0.11–2.33)	0.38	0.48 (0.10–2.27)	0.36	0.49 (0.10–2.81)	0.36
≥ 20	4.33 (1.32–14.24)	0.02	3.87 (1.19–12.63)	0.02	3.83 (1.17–12.56)	0.03

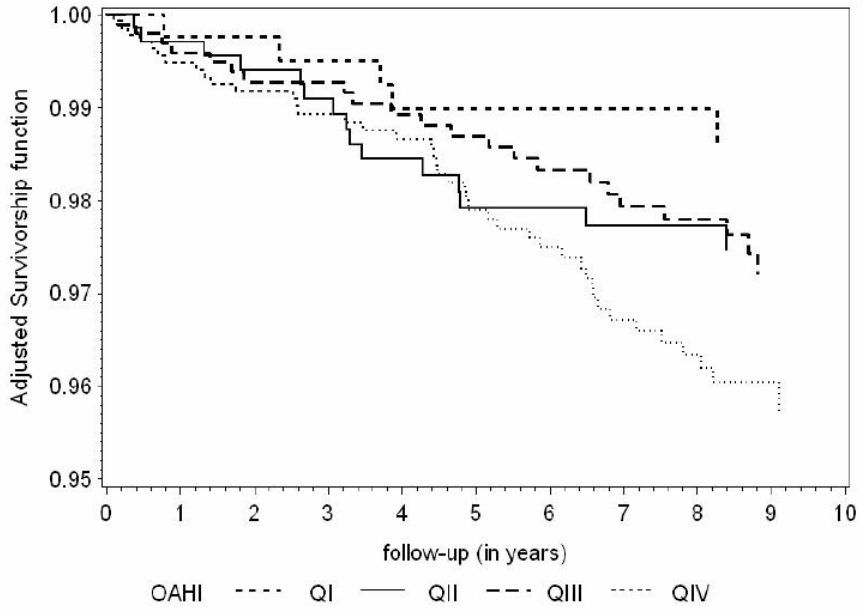
Definition of abbreviations: AHI = apnea-hypopnea index; BMI = body mass index; CI = confidence interval; OR = odds ratio.
* This category served as the reference group.

pnea and Incident Stroke: The Sleep Heart Health Study

Table 3A: Results of Cox proportional hazard model regression hazard of developing incident ischemic stroke among Men, N = 2,462

Covariate	Unadjusted	Adjusted	
		Age -Adjusted	Fully Adjusted§
	Hazard Ratio (95% Confidence Interval for Ratio of Hazards)		
OAHI			
IV quartile (19.13 – 164.5)	3.91 (1.55, 9.86)	3.05 (1.21, 7.72)	2.86 (1.10, 7.39)
III quartile (9.50 – <19.13)	2.35 (0.89, 6.20)	1.97 (0.74, 5.21)	1.86 (0.70, 4.95)
II quartile (4.05 - <9.50)	1.96 (0.71, 5.40)	1.86 (0.68, 5.13)	1.86 (0.67, 5.12)
I quartile (0 – <4.05)	1.0	1.0	1.0
P-value for test of linear trend for AHI	0.0004	0.006	0.016

Figure 2A.



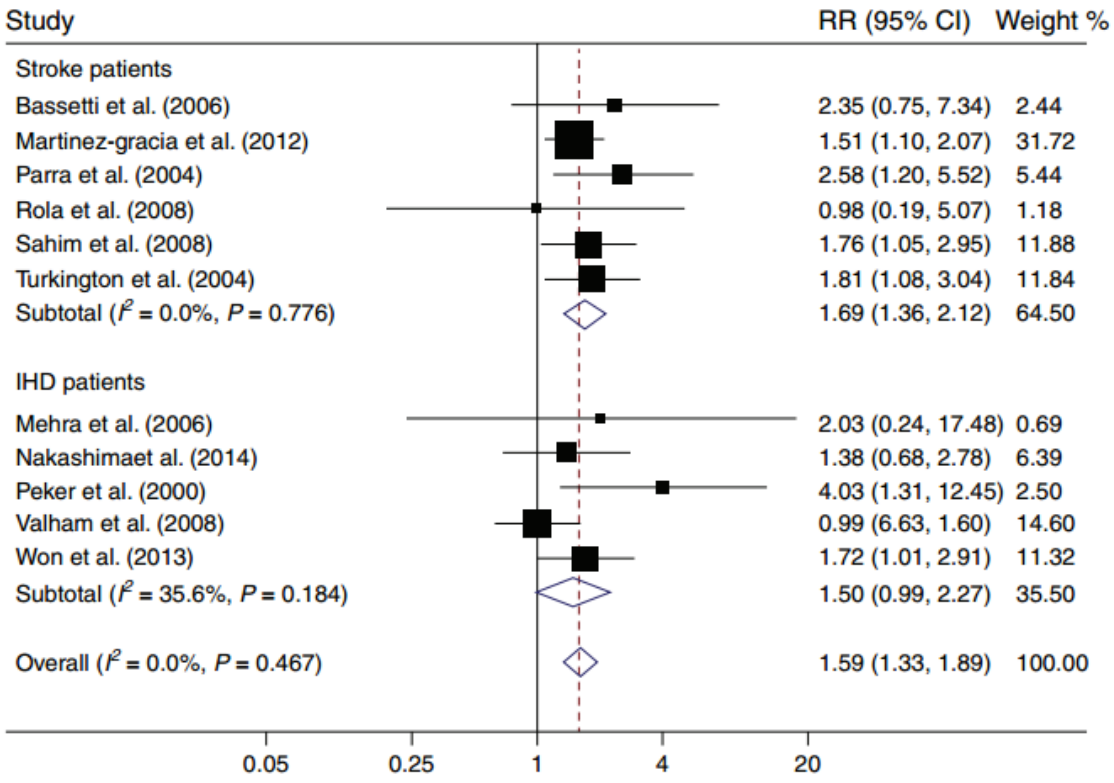
Wider data showed an Increased Risk (HR) for Stroke in patients with an AHI>20

6% increase of Stroke risk for each point of AHI

(Redline S. Am J Respir Crit Care Med. 2010; 182: 269)

Obstructive Sleep Apnea and Serious Adverse Outcomes in Patients with Cardiovascular or Cerebrovascular Disease

A PRISMA-Compliant Systematic Review and Meta-Analysis



Xie et al 2014

OSA may be a significant predictor of serious adverse outcomes following stroke

Eur Respir J 2011; 37: 1128–1136
DOI: 10.1183/09031936.00034410

Early treatment of obstructive apnoea and stroke outcome: a randomised controlled trial

O. Parra, Á. Sánchez-Armengol, M. Bonnin, A. Arboix, F. Campos-Rodríguez, J. Pérez-Ronchel, J. Durán-Cantolla, G. de la Torre, J.R. González Marcos, M. de la Peña, M. Carmen Jiménez, F. Masa, I. Casado, M. Luz Alonso and J.L. Macarrón

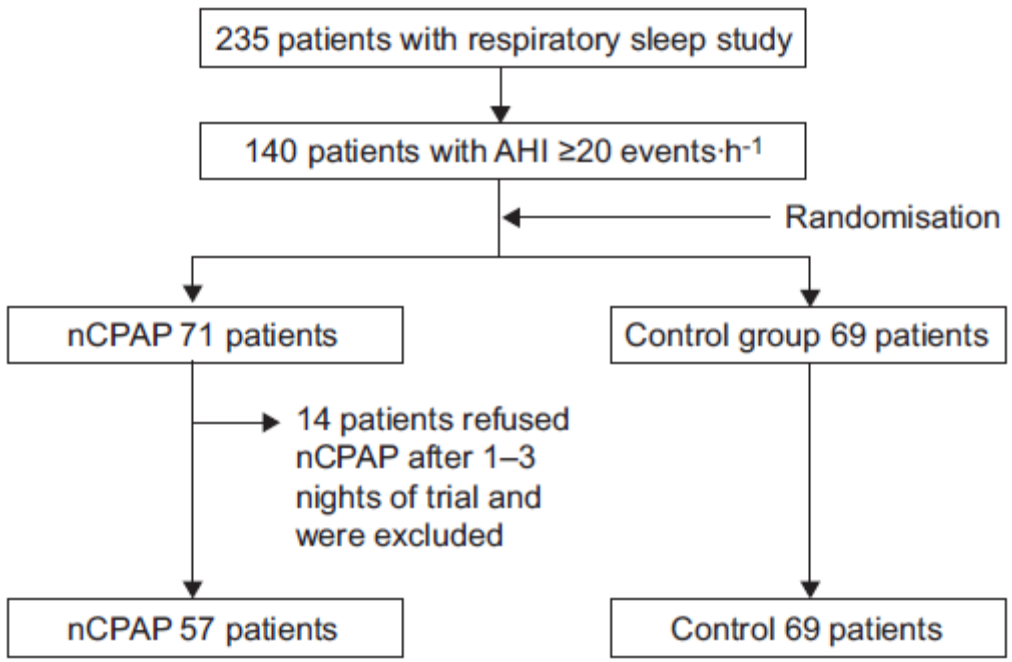
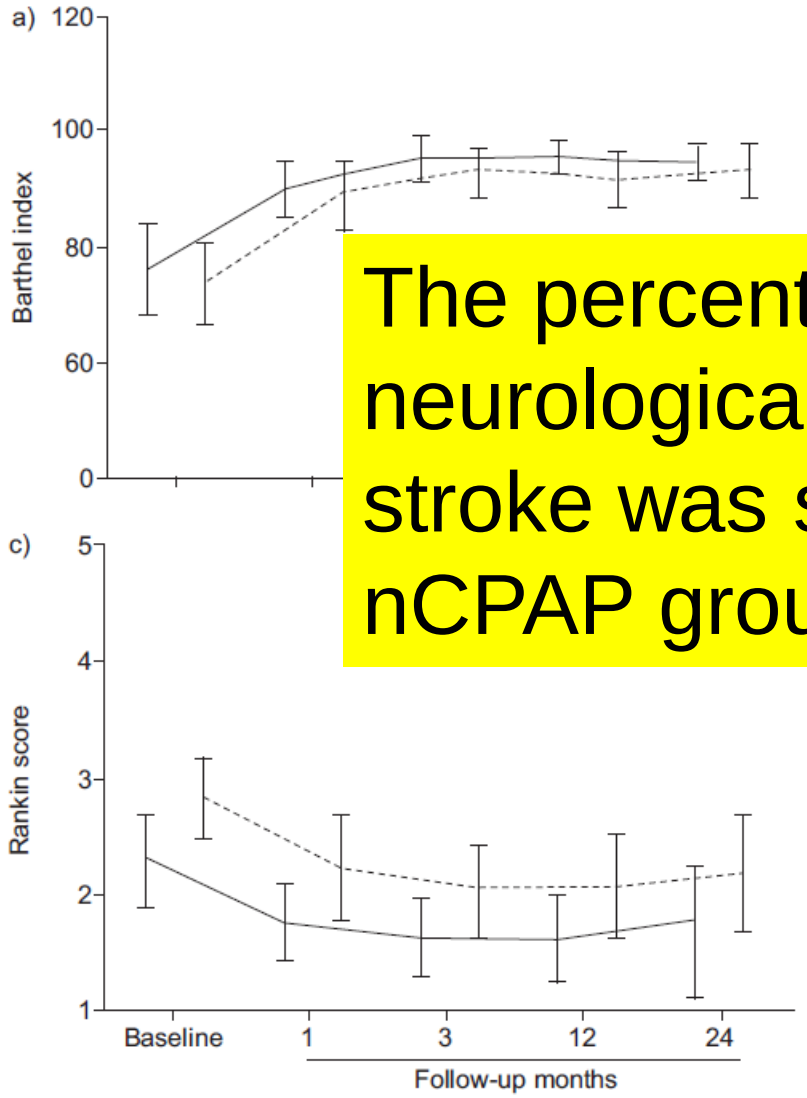


FIGURE 1. Flow chart of the study population. AHI: apnoea–hypopnoea index; nCPAP: nasal continous positive airway pressure.



The percentage of patients with neurological improvement 1 month after stroke was significantly higher in the nCPAP group (p=0.01)

			CI)	p-value#
Subjects n	57	69		
Barthel index, improvement ⩾1 point of disability				
All patients	43/52 (82.7)	45/54 (83.3)		0.567
Excluding patients with less severe stroke	26/35 (74.3)	30/39 (76.9)		0.502
Rankin scale, reduction ⩾1 point per category				
All patients	30/33 (90.9)	18/32 (56.3)	7.78 (1.73–39.84)	0.002
Excluding patients with less severe stroke	21/24 (87.5)	14/28 (50.0)	7.00 (1.47–37.86)	0.004
Canadian scale, increase of ⩾0.5 points				
All patients	45/51 (88.2)	40/55 (72.7)	2.81 (0.91–9.07	0.038
Excluding patients with less severe stroke	33/39 (84.6)	28/43 (65.1)	2.95 (0.91–9.93)	0.038

Data are presented as n/N (%), unless otherwise stated. nCPAP: nasal continuous positive airway pressure. #: between the nCPAP group and the control group (Chi-squared test).

FIGURE 2. Changes in the mean values of the a) Barthel index, b) Canadian scale and c) Rankin score throughout the study. ----: control group; ——: nasal continuous positive airway pressure group.

(O. Parra et al.Eur Respir J 2011; 37: 1128–1136)

When will it be time? Evaluation of OSA in stroke and TIA patients

Johnson KG, Johnson DC,

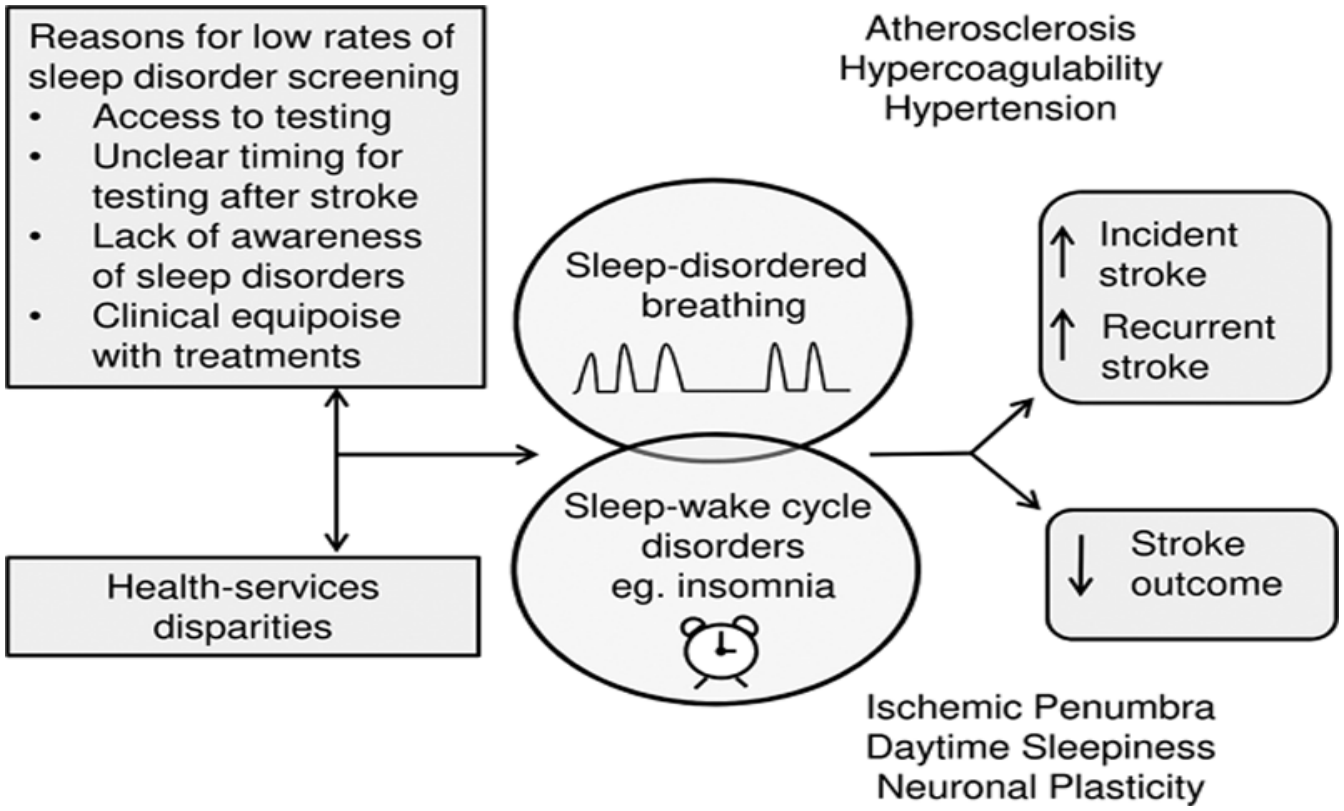
- OSA also has decremental effects on recovery after stroke and longer time spent in rehabilitation, and small-randomized trials have shown benefit in stroke recovery with continuous positive airway pressure (CPAP)
- Despite these reasons to believe that treating OSA with CPAP is an important part of risk factor reduction and stroke recovery, guidelines still do not strongly recommend evaluation and treatment.
- Standard workup after strokes and TIAs involves testing to determine stroke etiology and determining optimal risk factor management. Many of the modifiable risk factors that are commonly tested for have similar or lower adjusted relative risk of stroke than OSA

Table 1: Modifiable Stroke Risk factors

Risk Factor	Adjusted Relative Risk for stroke
Hypertension	1.4 (age 80) 4.0 (age 50)
Smoking	1.8
Diabetes	1.8-6
Atrial fibrillation	2.6-4.5
High cholesterol	2.0
Lupus anticoagulant	1.8
Carotid stenosis	2.0 for asymptomatic
PFO	0.95-1.83
PFO + Atrial Septal Aneurysm	2.98- 4.96 (yearly stroke risk of 4%)
Obstructive Sleep Apnea (AHI > 5)	2.24 (95% CI 1.57-3.19)

AHI: apnea hypopnea index; Adapted from Goldstein et al., [20,21].

Sleep Medicine, https://doi.org/10.1016/j.sleep.2018.10.016.



Sleep and Stroke, 2019; Volume: 50, Issue: 6, Pages: 1612-1617

Funzioni cognitive e Disturbi Respiratori del Sonno

Cognitive complaints in obstructive sleep apnea

Tim J.A. Vaessen [a,b,*], Sebastiaan Overeem [c,d], Margriet M. Sitskoorn [b]

Sleep Medicine Reviews 19 (2015) 51–58

Cognitive complaints in OSA patients compared to healthy controls.

Study	Cognitive complaints		p	Comment
Concentration problems				
Chen et al. [6]	Attention & vigilance	↑	.01	
Ulfberg et al. [50]	Concentrating on new tasks	↑	<.05	Odds ratio 7.5
	Performing monotonous tasks	↑	<.05	Odds ratio 20
Memory complaints				
Chen et al. [6]	Memory & learning	↑	.02	
Daurat et al. [7]	Memory capacity		.10	
Hood & Bruck [45]			ns	
Daurat et al. [7]	Memory stability	↑	.012	Cohen's $d = .75$
Hood & Bruck [45]			ns	
Daurat et al. [7]	Anxious about memory	↑	.009	Cohen's $d = .85$
Hood & Bruck [45]			ns	
Ulfberg et al. [50]	Learning new tasks	↑	<.05	Odds ratio 9.1
Executive function complaints				
Chen et al. [6]	Emotional control & motivation	↑	.01	
	Abstract thinking & problem solving		.07	

↑ = more severe cognitive complaints compared to healthy controls; ns = non-significant with no exact p-values provided in the paper.

Although cognitive complaints are common among OSA patients, not every patient is affected to the same degree and reports the same type of cognitive dysfunction

Neurol Sci
DOI 10.1007/s10072-014-1873-7

REVIEW ARTICLE

Recommendations of the Sleep Study Group of the Italian Dementia Research Association (SINDem) on clinical assessment and management of sleep disorders in individuals with mild cognitive impairment and dementia: a clinical review

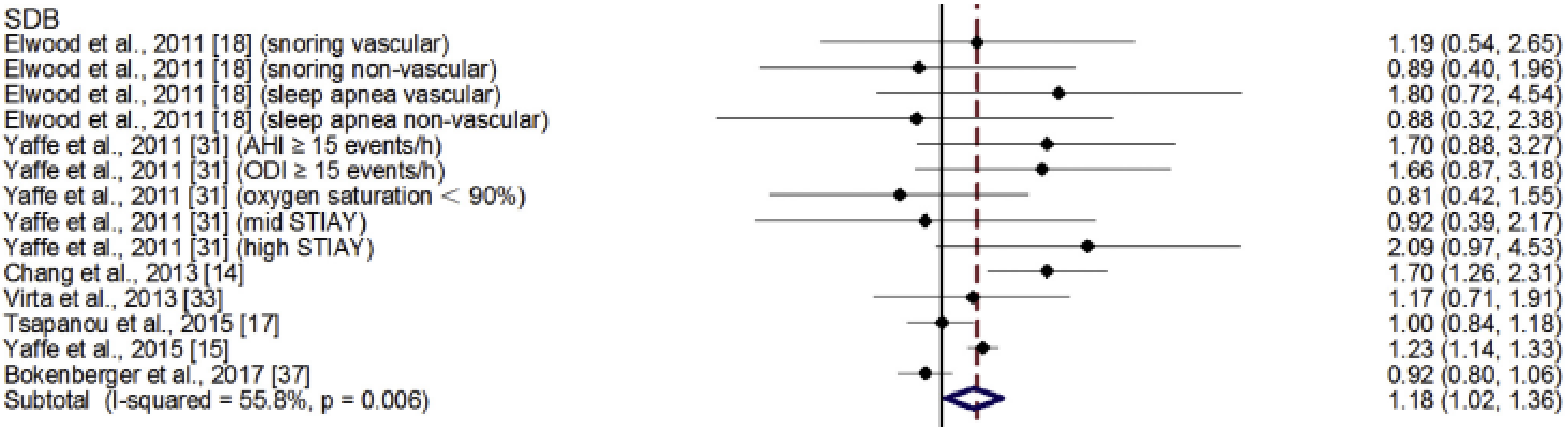
AIMS contribution

Approved by the Italian Association of Neurology on February 2014

Recommendations for the assessment of sleep disorders	Strength of evidence
Sleep disorders are frequent and tend to occur almost invariably in association in patients with cognitive decline : they have to be always carefully investigated using an in-depth sleep history, a physical examination and questionnaires and scales, whenever possible validated with acceptable and definite values of sensitivity and specificity, directly filled by the patient with the support of the direct caregiver, when possible	A
Recommendations for older adults can be considered a good instrument also for individuals with MCI and dementia of the same age when specific recommendations are unsatisfactory or insufficient	A
Instrumental supports should be considered in selected patients, after a referral to a sleep specialist	A

Sleep disturbances increase the risk of dementia: A systematic review and meta-analysis

Le Shi [a, b], Si-Jing Chen [b], Meng-Ying Ma [c], Yan-Ping Bao [a], Ying Han [a], Yu-Mei Wang [d], Jie Shi [a], Michael V. Vitiello [e], Lin Lu [b, a, *]



Sleep disturbances increase the risk of dementia: A systematic review and meta-analysis

Le Shi [a, b], Si-Jing Chen [b], Meng-Ying Ma [c], Yan-Ping Bao [a], Ying Han [a], Yu-Mei Wang [d], Jie Shi [a], Michael V. Vitiello [e], Lin Lu [b, a, *]

Sleep Medicine Reviews xxx (2017) 1–13

Sleep Disturbance Breathing (SDB) WAS ASSOCIATED WITH A HIGHER INCIDENCE OF ALL-CAUSE DEMENTIA

INSOMNIA INCREASED THE RISK OF AD, BUT NOT VASCULAR OR ALL-CAUSE DEMENTIA

Research

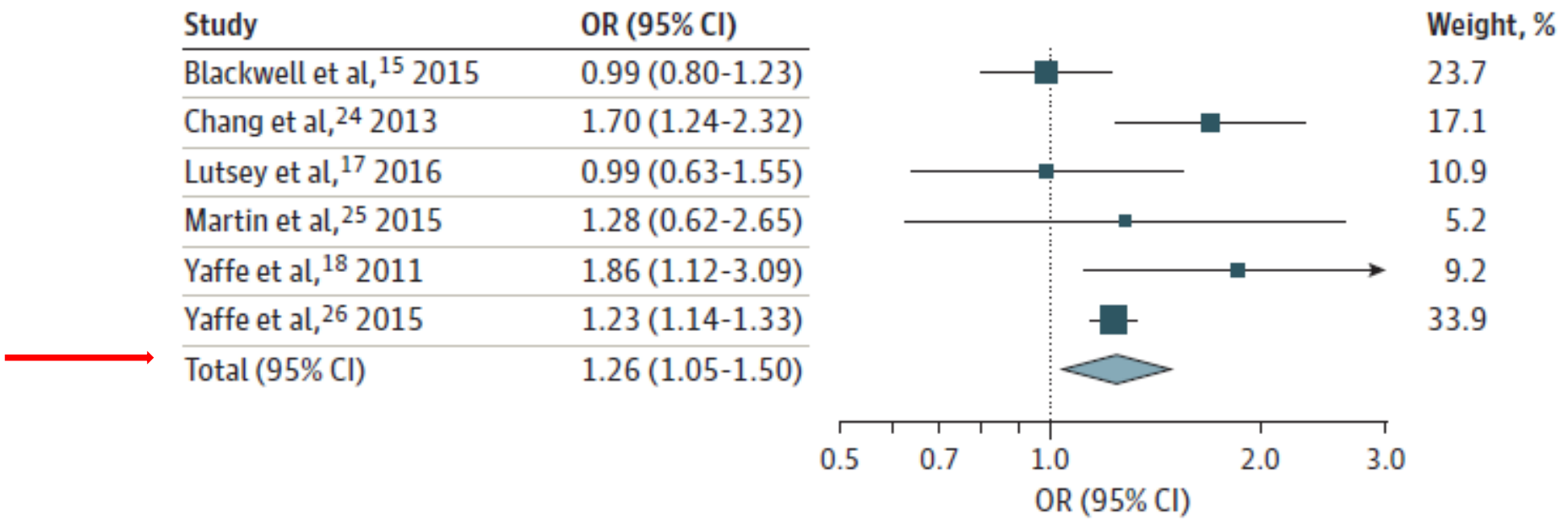
JAMA Neurology | Original Investigation

Association of Sleep-Disordered Breathing With Cognitive Function and Risk of Cognitive Impairment
A Systematic Review Meta-analysis

Yue Leng, PhD; Claire T. McEvoy, PhD; Isabel E. Allen, PhD; Kristine Yaffe, MD

JAMA Neurol. doi:10.1001/jamaneurol.2017.2180
Published online August 28, 2017.

Figure 1. Forest Plot of Prospective Studies on Association Between Sleep-Disordered Breathing and Risk of Cognitive Impairment



Pooled analysis of the 6 prospective studies (including 212 943 participants) indicated that those with SDB were 26% (risk ratio, 1.26; 95% CI, 1.05-1.50) more likely to develop cognitive impairment, defined by clinically relevant cognitive Decline or risk of dementia

Research

JAMA Neurology | Original Investigation

Association of Sleep-Disordered Breathing With Cognitive Function and Risk of Cognitive Impairment
A Systematic Review Meta-analysis

Yue Leng, PhD; Claire T. McEvoy, PhD; Isabel E. Allen, PhD; Kristine Yaffe, MD

CONCLUSIONS: Identification of SDB in elderly persons might help to predict future risk of cognitive impairment. Clinicians should closely follow patients who experience significant levels of SDB for the occurrence of cognitive dysfunction and might consider administering full neuropsychological batteries in some instances.

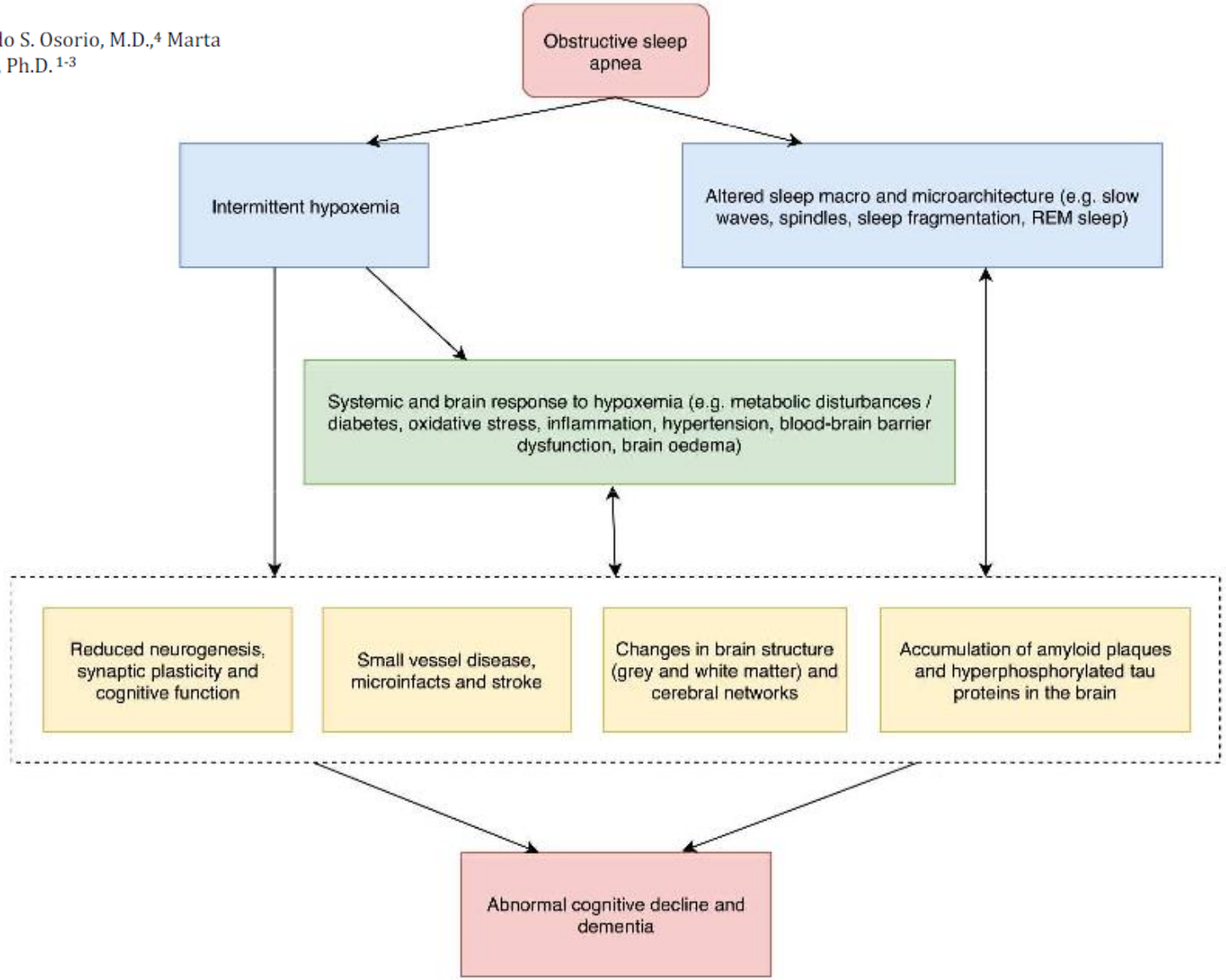
This is potentially important for the early detection of dementia.

This might open up new opportunities for the prevention of cognitive decline and dementia in elderly persons.

JAMA Neurol. doi:10.1001/jamaneurol.2017.2180
Published online August 28, 2017.

Obstructive Sleep Apnea And The Risk Of Cognitive Decline in Older Adults

Nadia Gosselin, Ph.D.[1-3], Andrée-Ann Baril, B.Sc.[1-3], Ricardo S. Osorio, M.D.,[4] Marta Kaminska,[3,5] M.D., M.Sc., and Julie Carrier, Ph.D.[1-3]



AJRCCM Articles in Press. Published on 16-August-2018 as 10.1164/rccm.201801-0204PP

Correlazione DRS e decadimento cognitivo

Several mechanisms have been proposed for the association between SDB and neurocognitive decline, including **hypoxemia, daytime sleepiness, sleep fragmentation, and oxidative stress**.

To date, it remains controversial which is the most likely mechanism, especially in the absence of well-designed interventional studies to help disentangle the causal pathways.

Notably, there has been growing attention on the important role that **hypoxemia** might play in the relationship
between SDB and cognition.

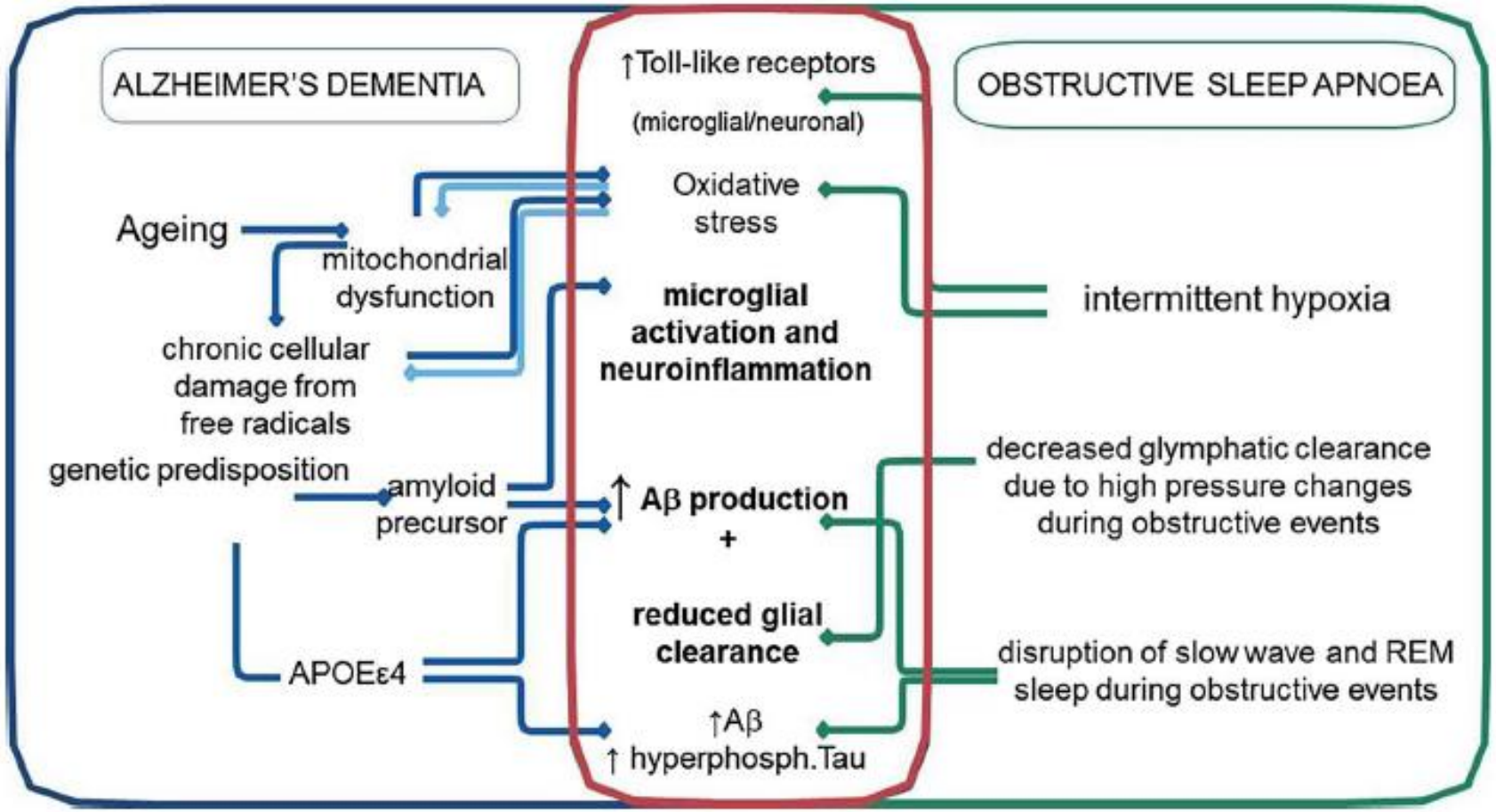
Findings from the *HypnoLaus study, the Sleep Heart Health Study, the Apnea Positive Pressure Long-term Efficacy Study, and the Study of Osteoporotic Fractures* all suggest **that degree of hypoxemia or oxygen desaturation rather than sleep fragmentation might affect cognitive performance in middle aged and elderly persons**.

Regular intermittent hypoxia may cause vascular dysfunction, kill neurons, and impair the blood-brain barrier, leading to long-term disruption of the brain's microenvironment and synaptic plasticity.

Obstructive sleep apnoea and Alzheimer's disease: In search of shared pathomechanisms

D. Polsek[a,b,1], N. Gildeh[a,c,1], D. Cash[a,d], R. Winsky-Sommerer[e], S.C.R. Williams[d], F. Turkheimer[d], G.D. Leschziner[a,c,f], M.J. Morrell[g], I. Rosenzweig[a,c,*]

Neuroscience and Biobehavioral Reviews 86 (2018) 142–149



CHEST Postgraduate Education Corner
CONTEMPORARY REVIEWS IN SLEEP MEDICINE

Neurocognitive Impairment in Obstructive Sleep Apnea

Chitra Lal, MD, D-ABSM, FCCP; Charlie Strange, MD, FCCP; and David Bachman, MD

CHEST 2012; 141(6):1601–1610

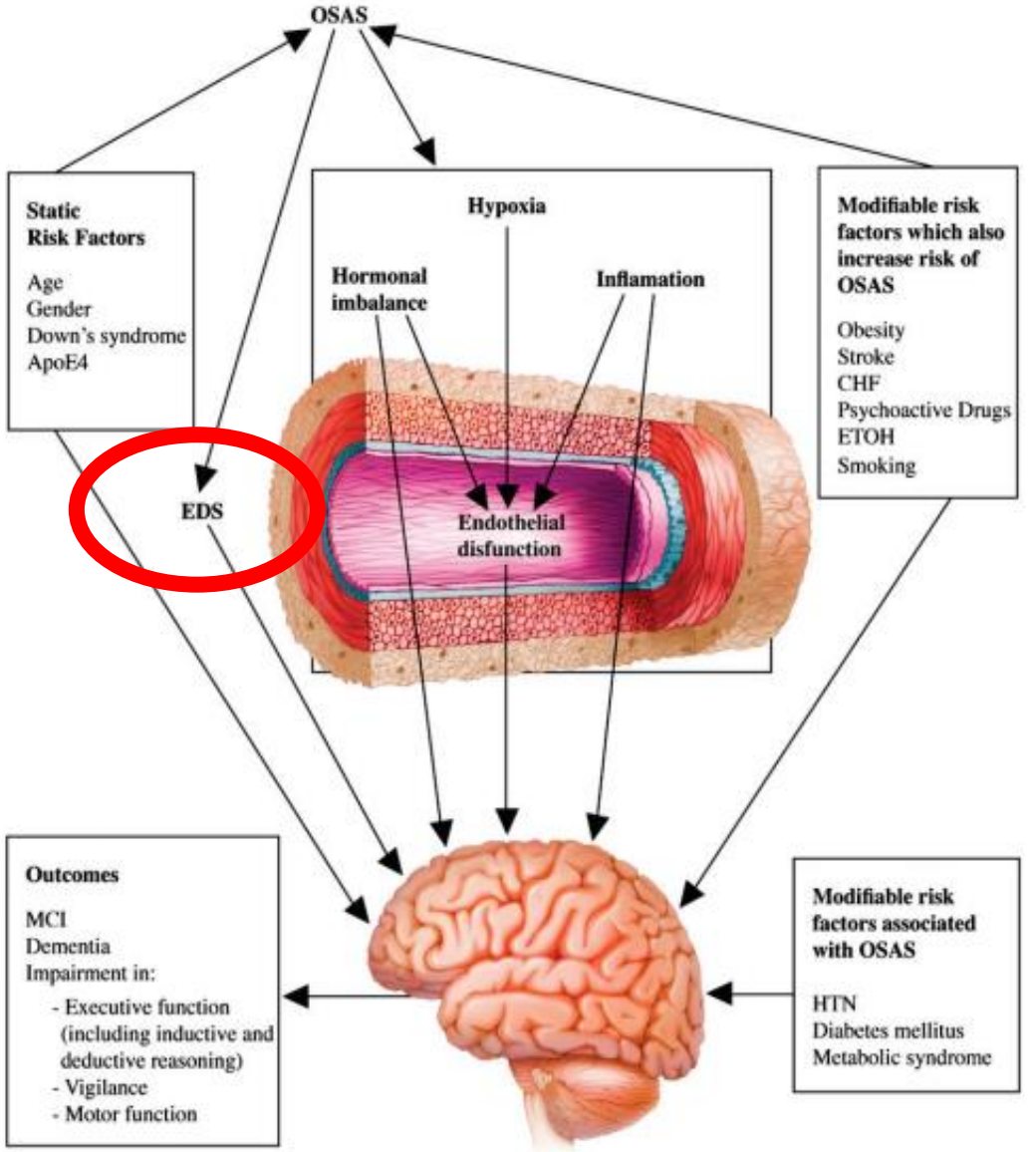


FIGURE 1. Proposed model for pathogenesis of neurocognitive impairment in OSAS. ApoE4 = apolipoprotein E ε4 allele; CHF = congestive heart failure; EDS = excessive daytime sleepiness; ETOH = ethanol; HTN = hypertension; MCI = mild cognitive impairment; OSAS = obstructive sleep apnea syndrome.

La sonnolenza, non l'insonnia, è marker di fragilità

(Vaz Fragoso C et al. J Am Geriatr Soc 2009; 57:2094–2100)

Table 3. Slow Gait Speed According to the Epworth Sleepiness Scale (ESS) and Insomnia Severity Index (ISI)

		Odds Ratio (95% Confidence Interval)	
Sleep Questionnaire	**n/N (%)**	**Unadjusted**	**Adjusted***
ESS score			
<10 (no drowsiness)	126/284 (44.4)	1.00	
≥10 (daytime drowsiness)	61/87 (70.1)	2.94 (1.76–4.92)	3.12 (1.72–5.65)†
ISI score			
<8 (no insomnia)	112/216 (51.9)	1.00	
8–14 (subthreshold insomnia)	57/122 (46.7)	0.81 (0.52–1.27)	0.68 (0.39–1.17)‡
>14 (clinical insomnia)	25/39 (64.1)	1.66 (0.82–3.36)	1.01 (0.42–2.44)‡

CLINICAL REVIEW

Cognitive complaints in obstructive sleep apnea

Tim J.A. Vaessen [a,b,*], Sebastiaan Overeem [c,d], Margriet M. Sitskoorn [b]

Sleep Medicine Reviews 19 (2015) 51–58

1) OSA patients with higher level of subjective sleepiness are more likely to report cognitive complaints.

2) Cognitive complaints are not necessarily a sign of objective cognitive impairment.

3) Current validated objective tests for cognition are designed to detect cognitive impairments in brain injured patients and not to specifically assess cognition in OSA.

Review Article

A review of neurocognitive function and obstructive sleep apnea with or without daytime sleepiness

Junying Zhou [a,b], Macario Camacho [b,c], Xiangdong Tang [a,*], Clete A. Kushida [b,**]

[a] [redacted]
[b] Department of Psychiatry and Behavioral Sciences, Division of Sleep Medicine, Stanford Hospital and Clinics, Redwood City, CA, USA
[c] Otolaryngology-Head and Neck Surgery, Division of Sleep Surgery and Medicine, Tripler Army Medical Center, Honolulu, HI, USA

The evidence suggests that daytime sleepiness possibly relates to the domain and extent of cognitive impairments in OSA, and CPAP therapy has little effect on the improvement of cognitive deficits in OSA patients without EDS.

Article history:
Received 18 November 2015
Received in revised form 7 January 2016
Accepted [illegible] January 2016
Available online 2 March 2016

Keywords:
Cognitive function
Sleepiness
Obstructive sleep apnea
Therapeutics
Continuous positive airway pressure

Excessive daytime sleepiness (EDS) and neurocognitive dysfunction are commonly observed in patients with obstructive sleep apnea (OSA), and these daytime functional deficits can be reversed partly or completely with treatment such as continuous positive airway pressure (CPAP). Although daytime sleepiness is a possible etiology for neurocognitive dysfunction in OSA patients, EDS is not universally present in all patients with OSA. The objective of this review is to summarize the relationship between neurocognitive function and EDS in OSA, as well as the difference in cognitive domains, improvement, and application of CPAP therapy between patients with and without EDS.

Two authors independently searched PubMED/Medline, The Cochrane Library and Scopus through May 27, 2015. Sixty-five articles were included in this review. The literature demonstrated a wide range of neurocognitive deficits in OSA patients with EDS, but no more extensive and complex cognitive domains (eg, executive function) in patients without EDS. However, the current literature had very few studies with large sample sizes and extended follow-up that evaluated the effect of CPAP for OSA in patients with and without sleepiness. CPAP failed to improve cognitive dysfunction in OSA patients without EDS after short-term therapy.

The evidence suggests that daytime sleepiness possibly relates to the domain and extent of cognitive impairments in OSA, and CPAP therapy has little effect on the improvement of cognitive deficits in OSA patients without EDS. We recommend that additional prospective studies be performed to further quantify the relationship between neurocognitive function in OSA patients with and without EDS.

Effetto sulle funzioni cognitive

Published Ahead of Print on December 30, 2016 as 10.1212/WNL.0000000000003577

EDITORIAL

The link between sleep-disordered breathing and cognition in the elderly

New opportunities?

Il trattamento dei DRS nel paziente ANZIANO migliora la prognosi?

Obstructive sleep apnoea in the elderly: role of continuous positive airway pressure treatment

Miguel Ángel Martínez-García[1,2], Eusebi Chiner[3], Luis Hernández[4], Jose Pascual Cortes[5], Pablo Catalán[6], Silvia Ponce[7], Jose Ramón Diaz[8], Ester Pastor[9], Laura Vigil[10], Carmen Carmona[2,11], Josep Maria Montserrat[12], Felipe Aizpuru[13], Patricia Lloberes[14], Mercedes Mayos[15], Maria José Selma[1], Jose Fernando Cifuentes[1] and Alvaro Muñoz[1]on behalf of the Spanish Sleep Network[16]

Eur Respir J 2015; 46: 142–151

TABLE 1 Baseline characteristics of randomised patients

	All patients	CPAP treatment	No CPAP treatment
Subjects	224	115	109
Age years	75.5±3.9	75.4±3.8	75.6±4.0
Sex male	153 (68.3)	73 (63.5)	80 (73.4)
BMI kg·m^{-2}	32.9±6.3	33.0±7.3	32.8±5.1
BMI ⩾30 kg·m^{-2}	144 (64.6)	73 (64.0)	71 (65.1)
Neck circumference cm	42.6±3.6	42.6±3.8	42.7±3.5
ESS	9.5±3.8	9.6±4.0	9.3±3.6
ESS ⩾10	84 (37.7)	43 (37.4)	41 (38.0)
Sleep study, respiratory polygraphy	152 (68.5)	76 (66.7)	76 (70.4)
Past cardiovascular events	61 (27.2)	31 (26.9)	30 (27.5)
Systemic hypertension	179 (80.3)	92 (80)	87 (79.8)
Psychotropic drug use	66 (29.5)	33 (28.7)	33 (30.3)
AHI event h^{-1}	50.4±14.9	53.5±15.6	47.2±13.4
Tsat90%	25.9±27.6	29.8±30.6)	21.6±23.1
ODI3%	45.3±18.7	49.6±20.2	40.3±15.4)
Central AHI	2.2±5.7	2.3±6.5	2.1±4.7
Minimum O_2 saturation	72.2±12.9	70.7±12.5	73.9±13.2

Data are presented as n, mean±SD or n (%). BMI: body mass index; ESS: Epworth Sleepiness Scale; AHI: apnoea–hypopnoea index; ODI: oxygen desaturation index; Tsat90%: nighttime spent with an oxygen saturation below 90%.

Obstructive sleep apnoea in the elderly: role of continuous positive airway pressure treatment

Miguel Ángel Martínez-García[1,2], Eusebi Chiner[3], Luis Hernández[4], Jose Pascual Cortes[5], Pablo Catalán[6], Silvia Ponce[7], Jose Ramón Diaz[8], Ester Pastor[9], Laura Vigil[10], Carmen Carmona[2,11], Josep Maria Montserrat[12], Felipe Aizpuru[13], Patricia Lloberes[14], Mercedes Mayos[15], Maria José Selma[1], Jose Fernando Cifuentes[1] and Alvaro Muñoz[1]on behalf of the Spanish Sleep Network[16]

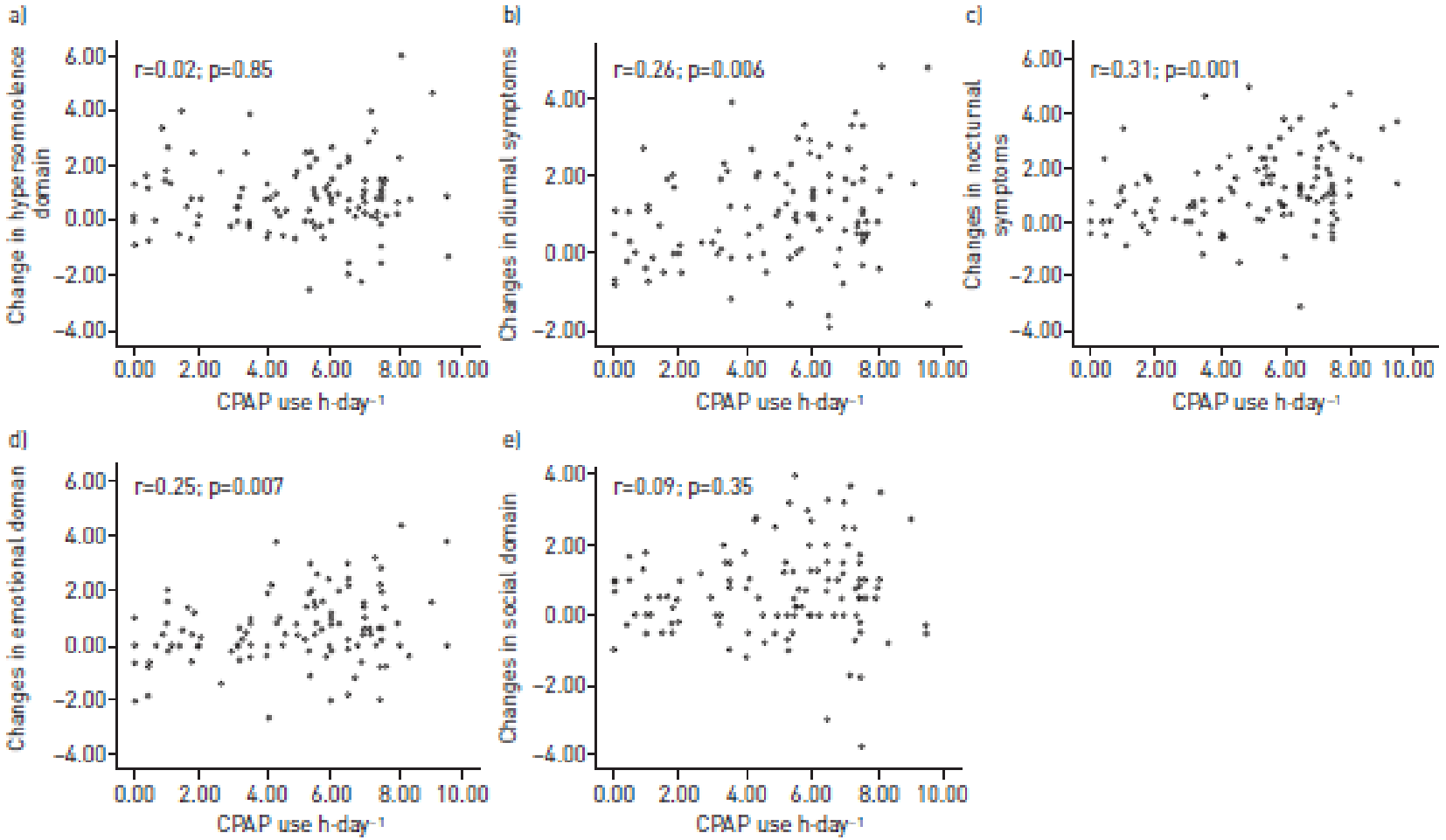


FIGURE 2 Pearson correlation between hours of continuous positive airway pressure (CPAP) use and changes in Quebec Sleep Questionnaire domains: a) hypersomnolence; b) diurnal symptoms; c) nocturnal symptoms; d) emotional; and e) social interactions.

CPAP treatment resulted in an improvement in quality of life, sleep-related symptoms, anxiety and depression indexes and some neurocognitive aspects in elderly people with severe OSA

CPAP Adherence May Slow 1-Year Cognitive Decline in Older Adults with Mild Cognitive Impairment and Apnea

Kathy C. Richards, PhD, Nalaka Gooneratne, MD,† Barry Dicicco, MD,‡ Alexandra Hanlon, PhD,§ Stephen Moelter, PhD,¶ Fannie Onen, MD,†‖** Yanyan Wang, PhD,*†† Amy Sawyer, PhD,§‡‡ Terri Weaver, PhD,§§¶¶ Alicia Lozano, MS,§ Patricia Carter, PhD,* and Jerry Johnson, MD‖‖*

54 elderly patients with MCI

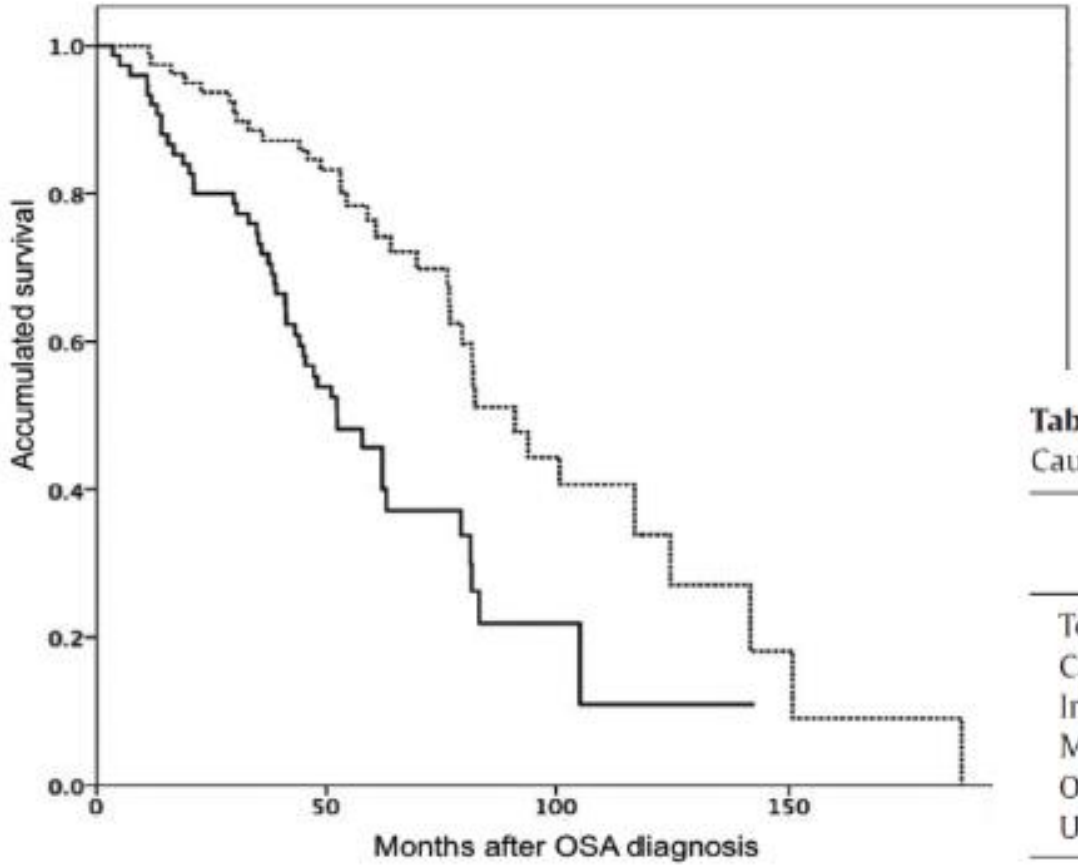
MCI +CPAP=29 pts (mean age 67.4±7.2 years)
MCI –CPAP=25 pts (mean age 73.2±8.6 years)

Controlling for baseline differences, 1 year of CPAP adherence in MCI +OSA significantly improved cognition, compared with a nonadherent control group, and may slow the trajectory of cognitive decline.

JAGS 67:558–564, 2019

Continuous positive airway pressure and survival of very elderly persons with moderate to severe obstructive sleep apnea

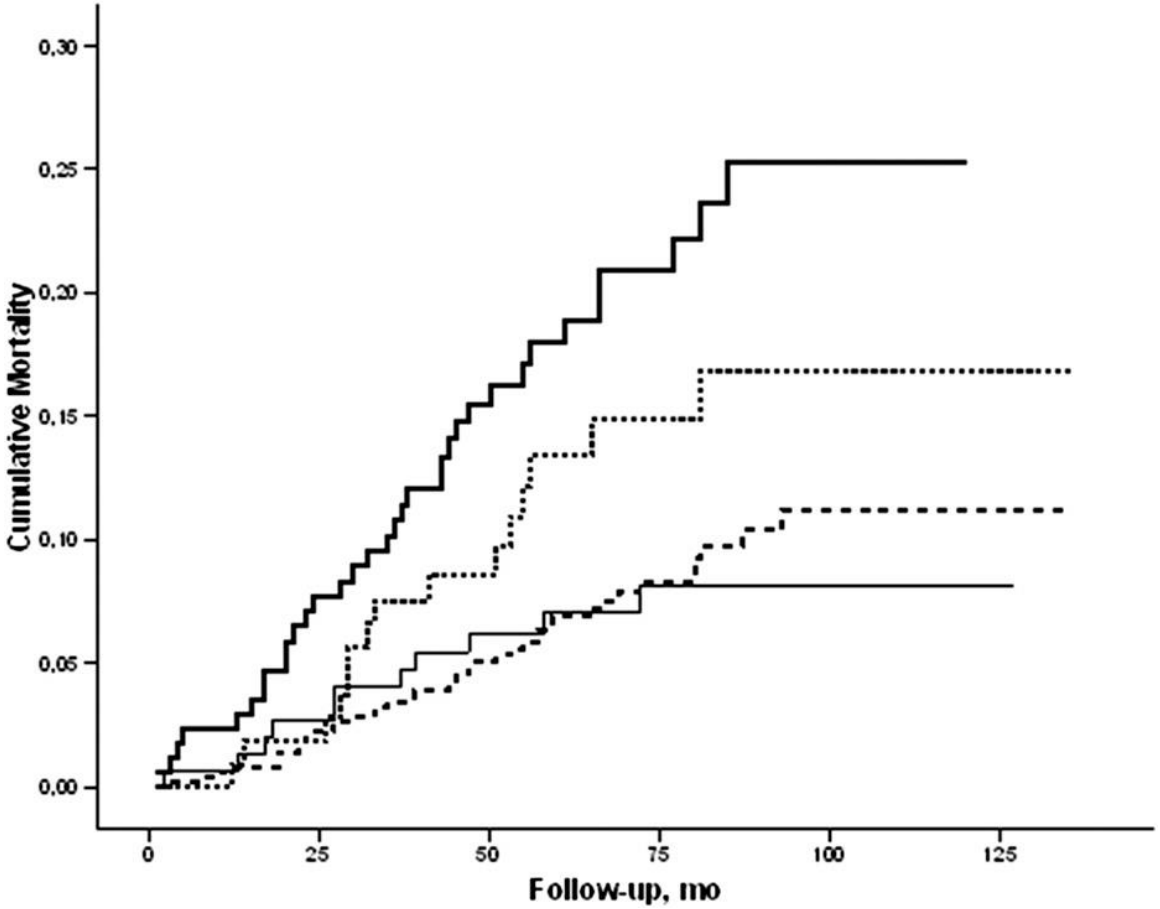
Daniel López-Padilla [a,*], Rodrigo Alonso-Moralejo [a,b], Miguel Ángel Martínez-García [c,d], Salvador De la Torre Carazo [a], María Josefa Díaz de Atauri [a,b,d]



Studio osservazionale, retrospettico
Soggetti over 80
oAHI>20 (valori medi 49,2)
79 # CPAP (>4 ore/notte)
76# no CPAP (< 4 ore /notte o mancata prescrizione)
53 mesi di follow up (41-77 mesi)

Table 2
Causes of death according to CPAP treatment.

	Entire population (n = 155)	Treated (n = 79)	Untreated (n = 76)	*p*
Total	83 (54)	35 (44)	48 (63)	**0.02**
Cardiovascular	23 (15)	11 (14)	12 (16)	NS
Infections	23 (15)	9 (11)	14 (18)	NS
Malignancy	16 (10)	6 (8)	10 (13)	NS
Other	9 (6)	4 (5)	5 (6)	NS
Unknown	5 (3)	1 (1)	4 (5)	NS



OSA AHI > 30 non trattato

OSA 15 < AHI < 30 non trattato

OSA trattato con CPAP

Gruppo controllo AHI < 15

155 # controls (AHI<15)
108# oAHI 15-29 senza CPAP
173# oAHI>30 senza CPAP
503# oAHI>30 con CPAP
69 mesi di follow up medio
BMI medio 32.4-35.1
Età> 65 anni

Cardiovascular Mortality in Obstructive Sleep Apnea in the Elderly: Role of Long-Term Continuous Positive Airway Pressure Treatment

A Prospective Observational Study

Miguel-Angel Martínez-García[1,2], Francisco Campos-Rodríguez[1], Pablo Catalán-Serra[4], Juan-José Soler-Cataluña[4], Carmen Almeida-Gonzalez[1], Ines De la Cruz Morón[1,3], Joaquin Durán-Cantolla[2,6], and Josep-Maria Montserrat[2,7]

Am J Respir Crit Care Med Vol 186, Iss. 9, pp 909-916, Nov 1, 2012

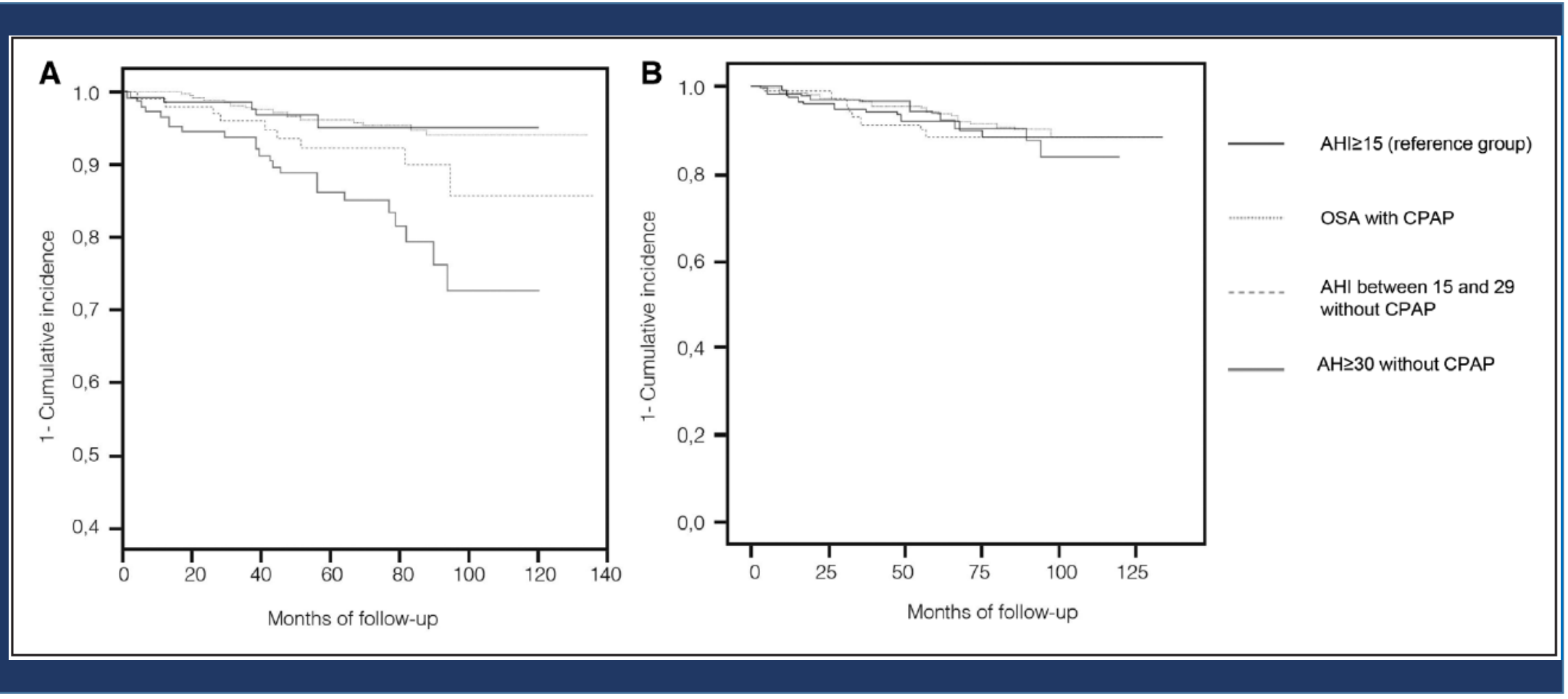
Increased Incidence of Stroke, but Not Coronary Heart Disease, in Elderly Patients With Sleep Apnea

Role of Continuous Positive Airway Pressure Treatment

Pablo Catalan-Serra, MD; Francisco Campos-Rodriguez, MD; Nuria Reyes-Nuñez, MD; Maria Jose Selma-Ferrer, MD; Cristina Navarro-Soriano, MD; Marta Ballester-Canelles, MD; Juan-José Soler-Cataluña, MD; Pilar Roman-Sanchez, MD; Carmen V. Almeida-Gonzalez, BSc(Stat); Miguel A. Martinez-Garcia, MD

Stroke. 2019;50:491-494.

1005 pts >65 anni



Increased Incidence of Stroke, but Not Coronary Heart Disease, in Elderly Patients With Sleep Apnea

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Carmen V. Almeida-Gonzalez, BSc(Stat); Miguel A. Martinez-Garcia, MD

Stroke. 2019;50:491-494.

In this large, observational study, untreated severe OSA was an independent risk factor for incident stroke, but not for CHD in a clinical population of elderly individuals with suspected OSA.

Adequate CPAP therapy may reduce this cerebrovascular risk.

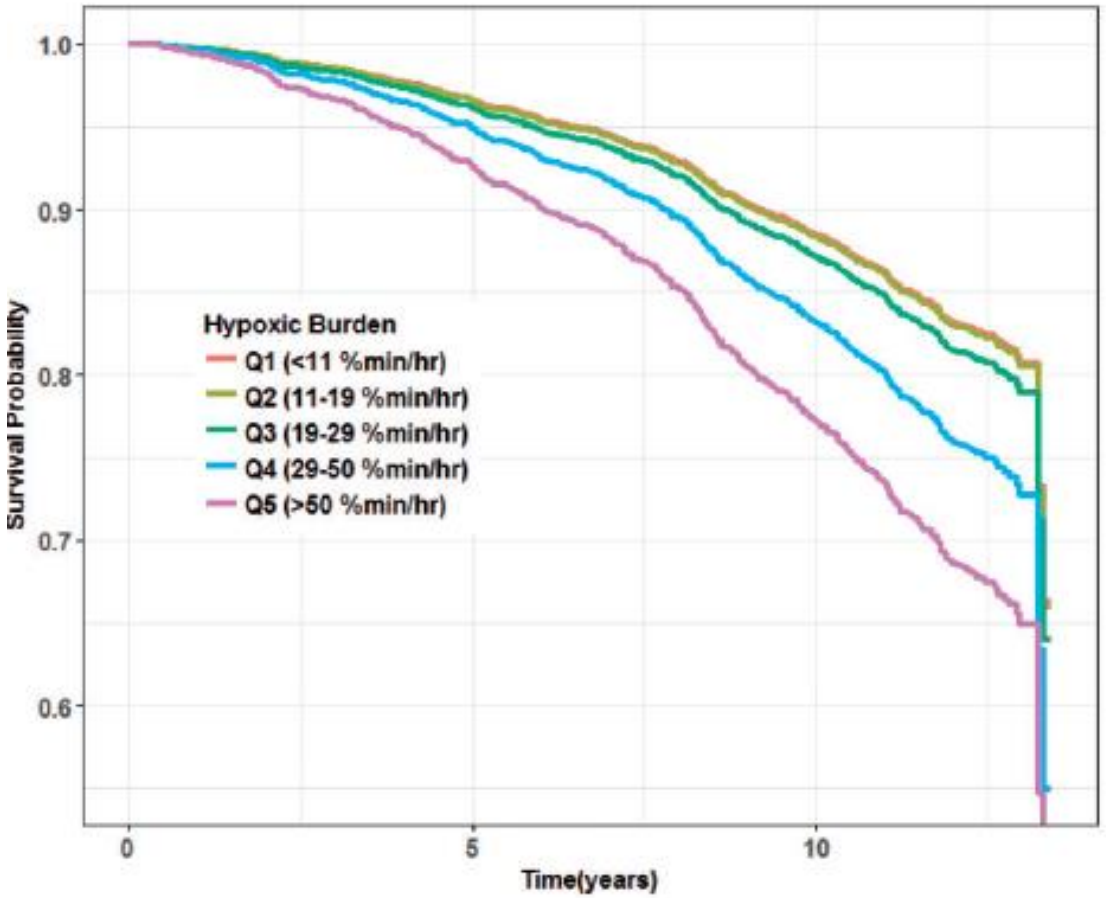
ESC European Society of Cardiology
European Heart Journal (2018) 0, 1–10
doi:10.1093/eurheartj/ehy624

CLINICAL RESEARCH
Prevention and epidemiology

The hypoxic burden of sleep apnoea predicts cardiovascular disease-related mortality: the Osteoporotic Fractures in Men Study and the Sleep Heart Health Study

Ali Azarbarzin[1]*, Scott A. Sands[1], Katie L. Stone[2,3], Luigi Taranto-Montemurro[1], Ludovico Messineo[1], Philip I. Terrill[4], Sonia Ancoli-Israel[5,6], Kristine Ensrud[7], Shaun Purcell[1,8], David P. White[1], Susan Redline[1], and Andrew Wellman[1]

Outcomes of Sleep Disorders in Older Men (MrOS): 2743 M, Mean age: 76.3 ± 5.5 years
Sleep Heart Health Study (SHHS): 5111 F, Mean age: 63.7 ± 10.9 years



CHEST

Personalized Management Approach for OSA

Jayne C. Carberry, PhD; Jason Amatoury, PhD; and Danny J. Eckert, PhD

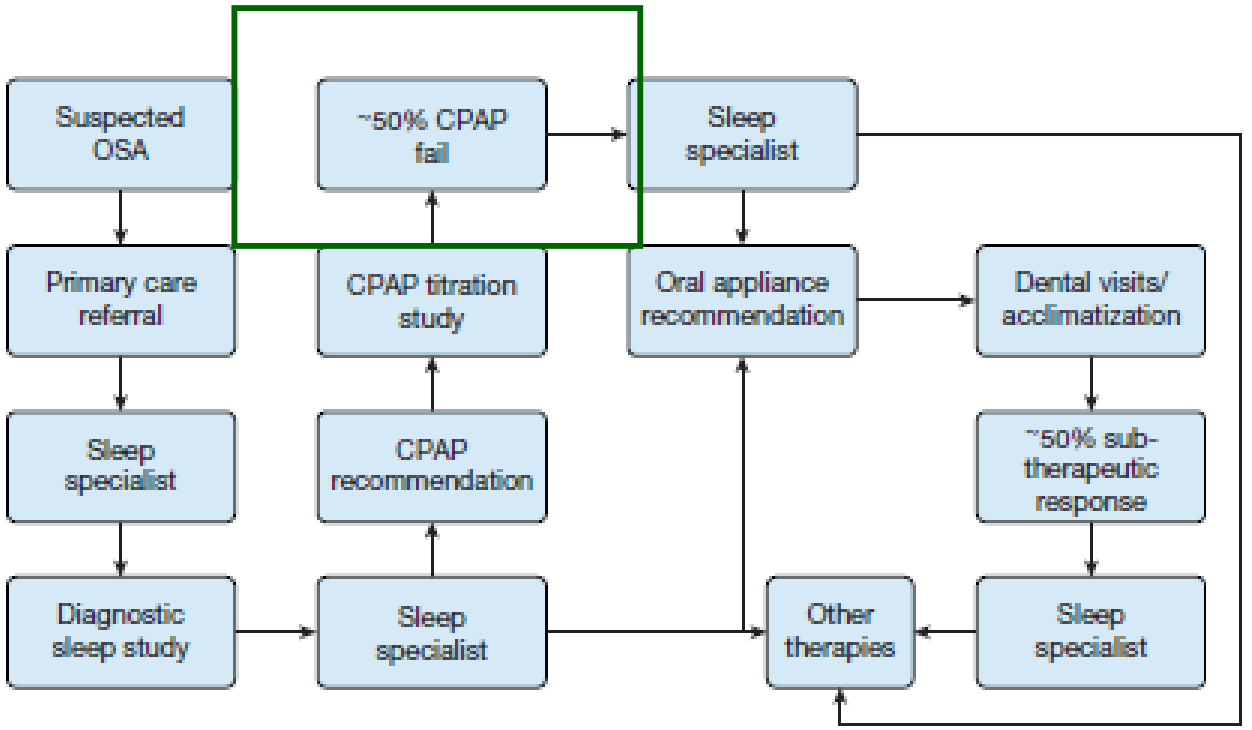


Figure 2 – *Example of current diagnosis and treatment flow diagram for someone with suspected OSA. As shown by the large number of potential steps, particularly for those who fail CPAP therapy, this schematic highlights the potentially cumbersome, time-consuming, and often frustrating process that many patients with OSA face in their diagnosis and treatment journey. (Note: several therapies and treatment pathways have been omitted for simplicity.) Not surprisingly, many patients are lost to follow-up at various stages throughout the process depending on their experiences and responses to prescribed therapy. Advances in technology (eg, autotitrating CPAP and home sleep testing) have emerged to streamline some of the steps. Similarly, simplified models of care that do not require a sleep specialist have been trialed[9] and have been shown to yield comparable outcomes for certain patient groups (eg, those with severe OSA and minimal comorbidities). However, rather than trial and error, the ultimate goal remains to personalize the management process to deliver one or more targeted therapies according to phenotypic characterization as first-line therapy with high predictive success rates. The text and Figures 1, 3, and 4 provide further details.*

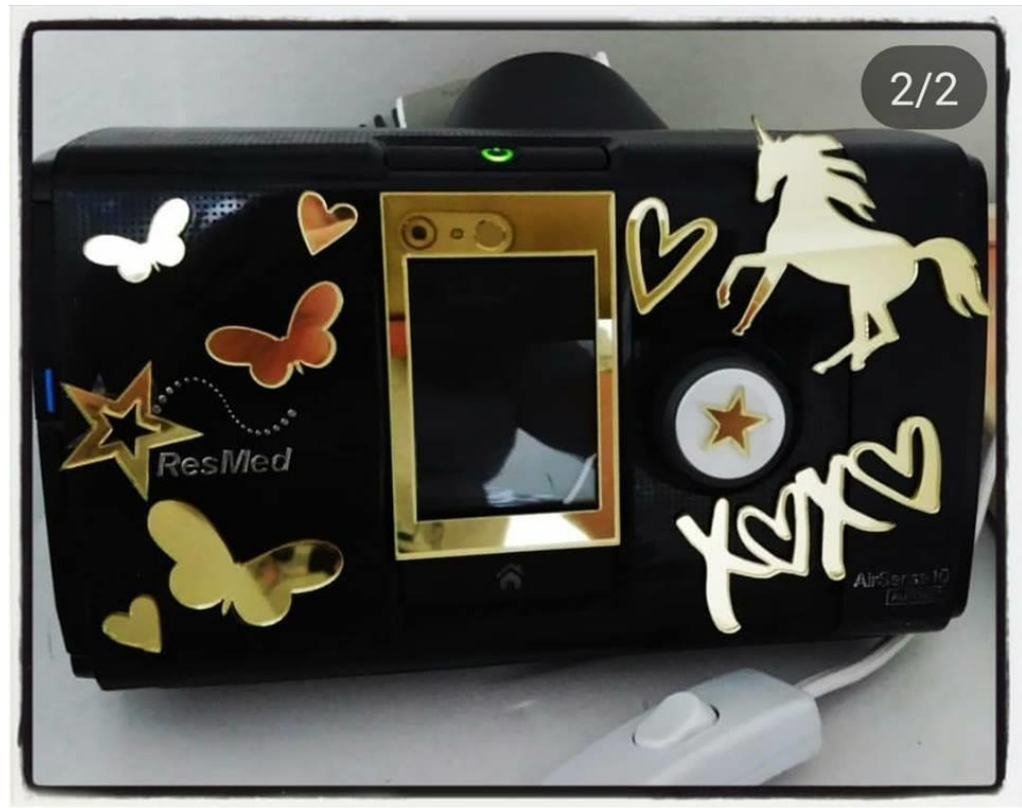
ADERENZA AL TRATTAMENTO

Patients generally make the decision to adhere to CPAP therapy early during the first week of therapy, usually by the second to fourth day. Those who adhere generally increase their duration of nightly use gradually.

As an example, one study demonstrated that patients who used CPAP for more than two years increased their duration of use approximately eight minutes per night during each year of therapy

Sawyer AM et al. Sleep Med Rev. 2011 Dec;15(6):343-56.


Home
My Options
Sleep Report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ResMed

When you got sleep apnea but still trying be sexy AF

PERCORSO per TITOLAZIONE/ADDESTRAMENTO alla ventilazione notturna a pressione positiva in regime di MAC 06

(almeno 3 figure professionali, per almeno 120 minuti di attività)

Pazienti presi in carico: soggetti con diagnosi di Disturbi Respiratori del Sonno (prevalentemente OSAS) reclutati in fase diagnostica nell'ambulatorio dei disturbi respiratori del Sonno.

L'indicazione al percorso MAC riguarda i pazienti con diagnosi di OSAS moderata/severa con indicazione all'avvio di trattamento con ventilazione a pressione positiva (CPAP/APAP/auto-BiPAP) domiciliare ed è finalizzato alla titolazione/adattamento della ventilazione notturna ed alla formazione/addestramento del paziente alla sua gestione domiciliare.

Numero di accessi: in media 5 in un periodo di tre settimane (gruppi di 2 pazienti)

Figure professionali coinvolte

- ✓Medico specialista pneumologo
- ✓Tecnico di fisiopatologia respiratoria
- ✓ Infermiere professionale
- ✓Tecnico di neurofisiopatologia
- ✓Psicologo

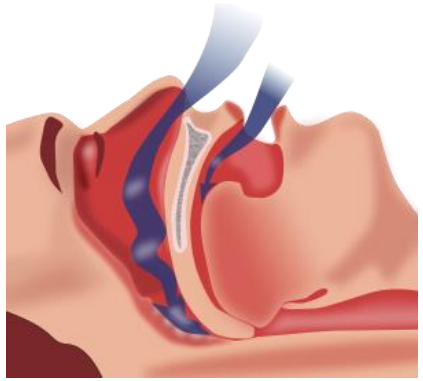
REQUISITO fondamentale è che tutte le figure professionali coinvolte abbiano comprovata esperienza nella gestione dei disturbi respiratori del sonno

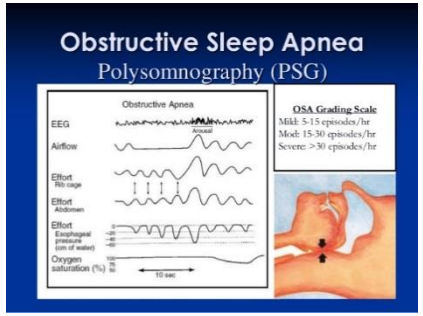
OBBIETTIVI DEL PERCORSO DI TITOLAZIONE/ADDESTRAMENTO alla ventilazione a pressione positiva:

- Identificare il livello di CPAP ottimale
- Normalizzare il quadro polisonnografico
- Migliorare i sintomi/qualità del sonno/qualità della vita
- Addestrare il paziente/caregiver all'utilizzo ed alla gestione/igiene domiciliare del ventilatore
- EDUCARE il paziente
- **RIUSCIRE AD OTTENERE LA MASSIMA COMPLIANCE/ADERENZA POSSIBILE**

EDUCAZIONE DEL PAZIENTE

- Risultati della polisonnografia
- Decorso dell'OSA e patologie correlate
- Conseguenze del mancato trattamento della patologia
- Identificazione e trattamento dei fattori di rischio
- Opzioni di trattamento
- Aspettative dal trattamento
- Il ruolo del paziente nel trattamento
- Preoccupazioni ed obbiettivi del paziente





Epstein LJ et al., *J Clin Sleep Med. 2009;5:263-276*

JCSM
Journal of Clinical Sleep Medicine

SCIENTIFIC INVESTIGATIONS

Patient-Reported Outcomes in Older Adults With Obstructive Sleep Apnea Treated With Continuous Positive Airway Pressure Therapy

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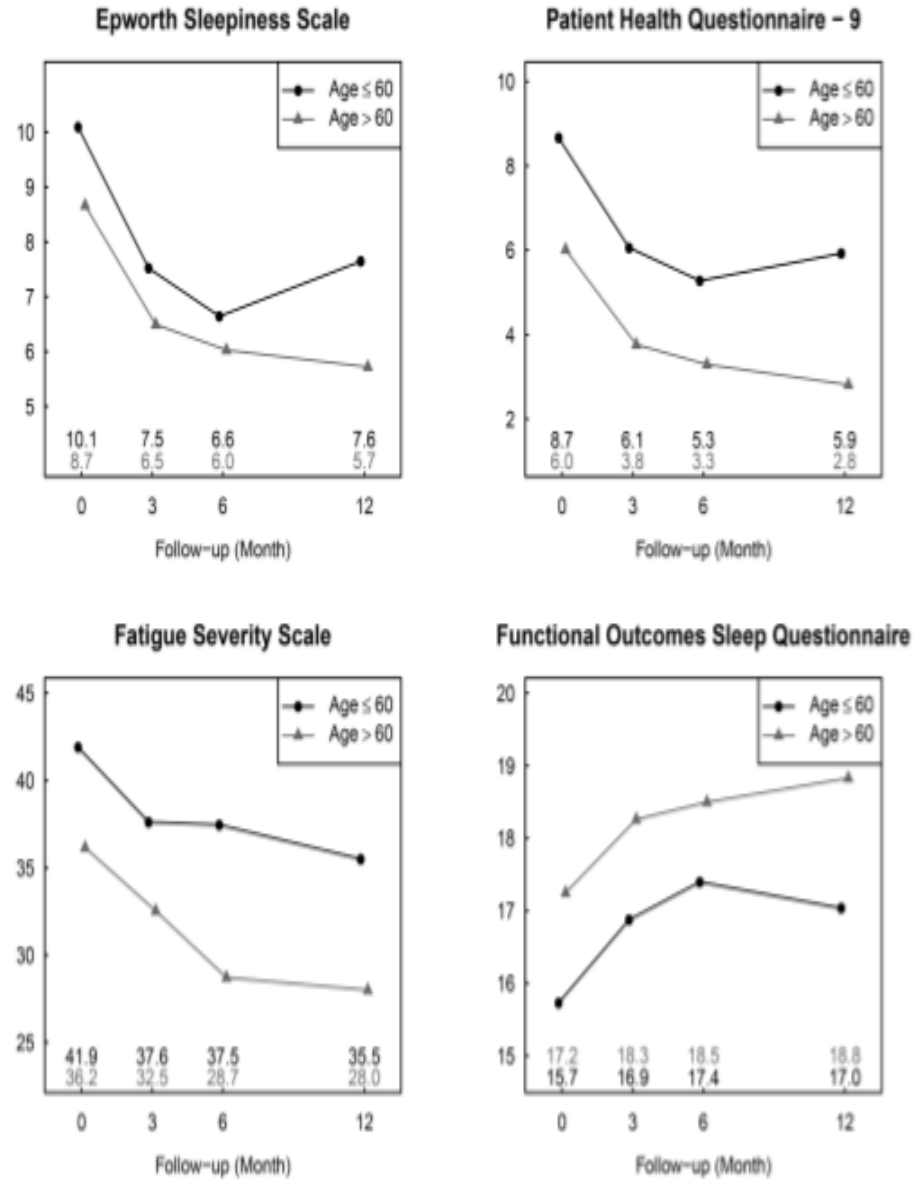
532 pazienti con OSA (26% >60 anni)

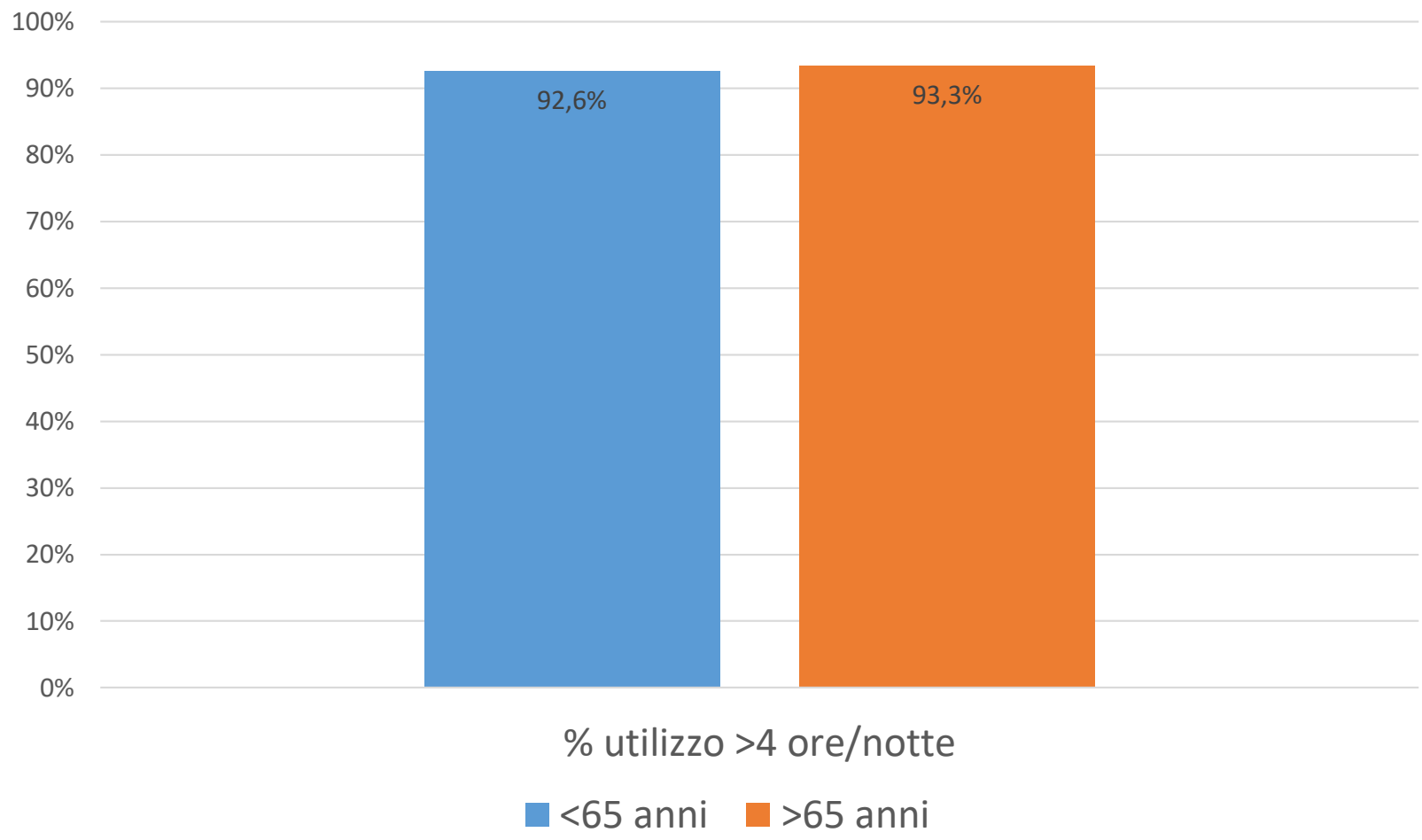
COMPLIANCE alla CPAP nei primi 3 mesi:
70% dei <60 anni vs 79.9% >60 anni

Figure 1—Changes from baseline in PROs between age groups.

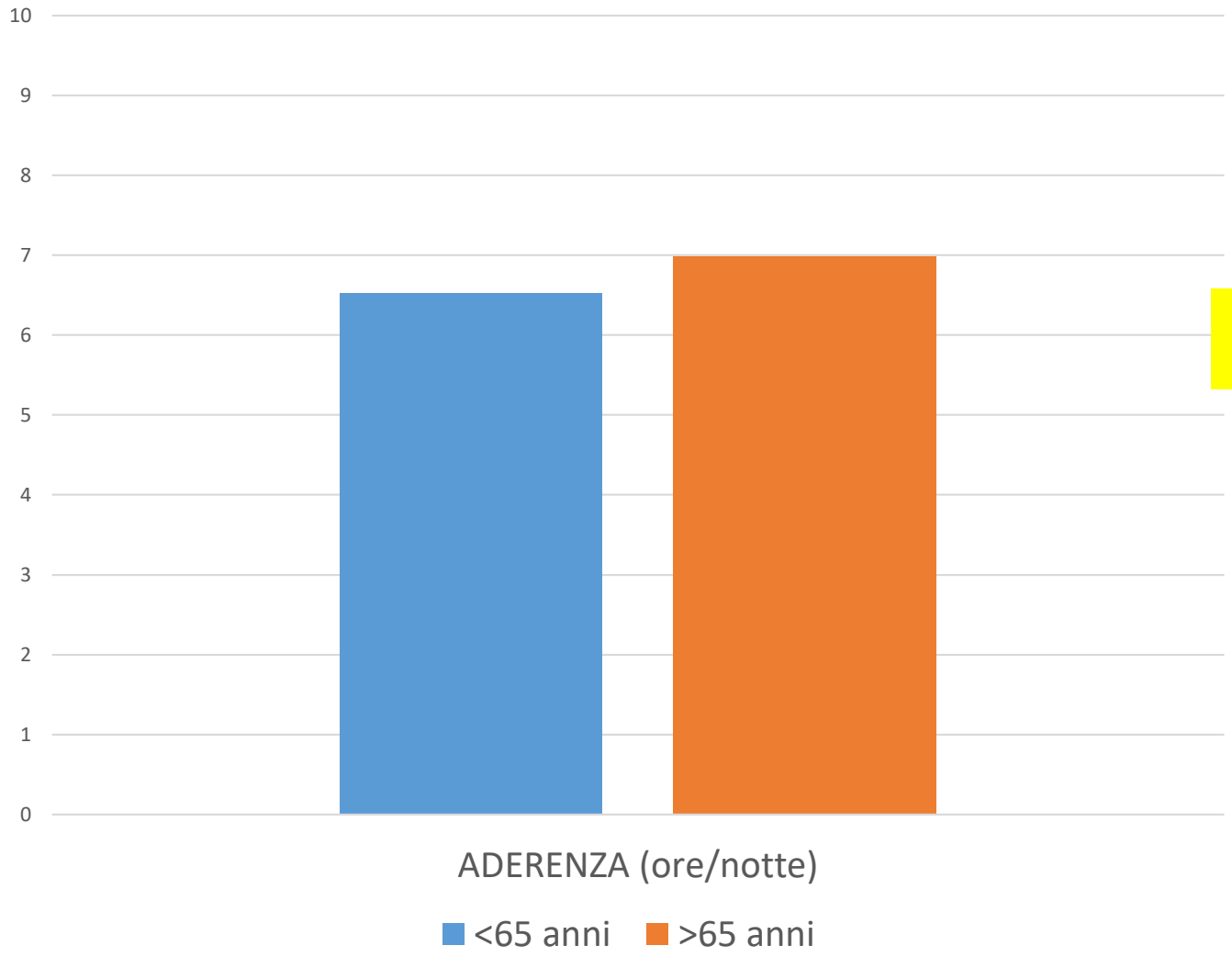


Sample sizes of younger and older group are: baseline 393, 139; 3-month 332, 121; 6-month 71, 48; and 12-month 75, 32, respectively.

COMPLIANCE alla terapia ventilatoria valutata al 1° controllo (40-60 giorni dopo la prescrizione)



ADERENZA TERAPEUTICA valutata al 1° controllo (40-60 giorni dopo la prescrizione)



Utilizzo medio: 6,7 ore/die

Figure professionali coinvolte nel trattamento di un paziente anziano affetto da DRS

- ✓ Medico specialista pneumologo
- ✓ Tecnico di fisiopatologia respiratoria
- ✓ Infermiere professionale
- ✓ Tecnico di neurofisiopatologia
- ✓ Psicologo

REQUISITO fondamentale è che tutte le figure professionali coinvolte abbiano comprovata esperienza nella gestione dei disturbi respiratori del sonno

Ruolo dello Psicologo

All’inizio del percorso:

- intervista semi-strutturata al fine di indagare il grado di conoscenza sulla patologia presentata e di consapevolezza degli effetti di quest’ultima sulla vita quotidiana
- somministrazione di scale valutative relative alla qualità del sonno percepita dal paziente (***Pittsburg Sleep Quality Index***) ed ai comportamenti di igiene del sonno (***Sleep Hgyene Index***)
- breve valutazione neuropsicologica condotta, utilizzando test di screening cognitivo (dapprima MMSE, attualmente MoCA)

Durante il percorso, in base al livello informativo e motivazionale del paziente nei confronti della patologia OSAS si effettua supporto educativo e supporto motivazionale al fine di implementarne la consapevolezza.

Al termine del percorso (prima della prescrizione):

- si rivalutano i livelli d’informazione riguardo la Sindrome delle Apnee Ostruttive del Sonno e si indagano i livelli di autoregolazione ed autoefficacia relativi al trattamento.
- si somministra ***CPAP Questionnaire***, volto a rilevare le impressioni soggettive che il paziente ha rispetto all’utilizzo della CPAP, (valore <20/60 è indice di un’adeguata predittiva aderenza al trattamento).

Precision medicine in obstructive sleep apnoea

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Lancet Respir Med 2019; 7: 456–64
Published Online April 12, 2019
http://dx.doi.org/10.1016/S2213-2600(19)30044-X

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Obstructive sleep apnoea (OSA) is a heterogeneous and complex disease; however, diagnosis and management still rely on a simple set of tools and few therapeutic options. Precision medicine has emerged as the next goal for clinical practice, with the objective being to offer individually tailored treatments. Ways of implementing precision medicine in clinical practice have emerged for various respiratory disorders, and such an approach could also be readily exported to OSA. Here, we propose a control panel tool that describes OSA in four domains: disease severity, biological activity, impact on the patient, and pathophysiological traits. We also propose a graphical instrument, the clinical fingerprint tool, to enable the tracking of patients over time. These tools can address the complexity of OSA and guide a physician's course of action on the basis of the treatable traits of an individual patient, thereby facilitating clinical implementation of precision medicine in the disorder.

Martinez-Garcia MA et al. Lancet Respir Med, April 12, 2019

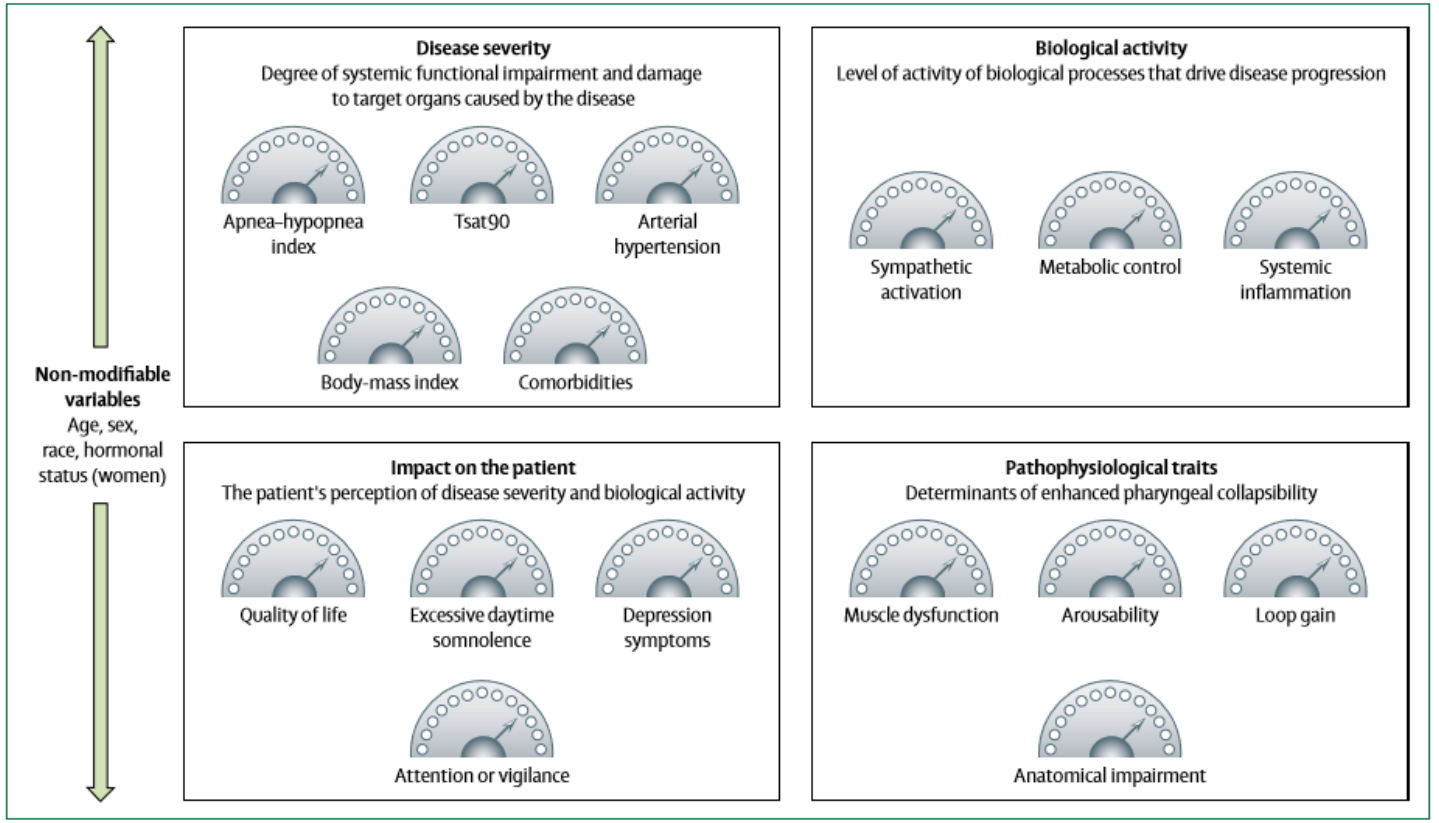

Figure 2: **Obstructive sleep apnoea control panel**

CENTRAL ILLUSTRATION: Domain Management Approach to HF in the Geriatric Patient

Medical

- Evaluate stage and etiology of HF
- Consider challenges in pharmacological treatment, focus on polypharmacy, consider deprescribing
- Consider impact of comorbidities: sleep apnea, kidney disease, diabetes
- Assess for malnutrition

Mind and Emotion

- Evaluate cognition; if impaired, evaluate impact on self-management skills
- Screen for depression; consider treatment

OSAS

Physical Function

- Screen for frailty: slowness, weakness, shrinking, inactivity, exhaustion
- Evaluate mobility; consider fall risk

Social Environment

- Inquire about extent of social support at home, consider engaging community-based care services
- Inquire about financial resources for prescription medications

Gorodeski, E.Z. et al. J Am Coll Cardiol. 2018;71(17):1921-36.

TAKE HOME MESSAGES

- Valutare i sintomi (soprattutto SONNOLENZA)
- Valutare la situazione sociale/medica/funzionale/farmacologica (COMPLESSITA' CLINICA)
- Valutare comorbilità neurologica/respiratoria/cardiologica (aritmica)
- Valutare Rapporto costo-beneficio e le aspettative

- AHIa/RDI>30/h ⇒ TRATTARE
- AHIa<15 ⇒ SCARSI DATI
- AHI tra 15 e 30 ⇒ IN BASE AI SINTOMI

- Valutare TERAPIE ALTERNATIVE…anche se la PRIMA SCELTA nell'anziano rimane SEMPRE la ventilazione

The good physician treats the disease;
the great physician treats the patient who has the disease.

William Osler

Vi ringrazio per l'attenzione