

Supplementary Table 1. Baseline characteristics of the merged sample according to included and excluded participants.

		Included sample (n=2702)	Excluded sample (n=534)	N	p-value
Age (years)		53.5 ± 19.1	47.7 ± 25.0	3236	<0.0001
BMI (kg/m ²)		25.8 ± 5.8	26.2 ± 5.5	3223	0.573
AHI		8.3. ± 15.1	5.7 ± 13.1	3236	<0.0001
Sex				3236	0.074
	<i>Men</i>	53.1% (1,435)	48.9% (261)		
	<i>Women</i>	46.9% (1,267)	51.1% (273)		
Cohort				3236	<0.0001
	<i>Episono</i>	26.4% (712)	67.8% (362)		
	<i>HypnoLaus</i>	73.6% (1990)	32.2% (172)		
MetS				3185	0.401
	<i>Yes</i>	28.6% (768)	30.5% (153)		
	<i>No</i>	71.4% (1,915)	69.5% (349)		
Education				3224	0.028
	<i>Low</i>	47.1% (1,269)	51.8% (274)*		
	<i>Middle</i>	30.5% (823)	30.8% (163)		
	<i>High</i>	22.4% (603)	17.4% (92)*		
Marital status				3191	0.001
	<i>Single</i>	19.5% (522)	26.1% (133)*		
	<i>Married</i>	61.6% (1651)	59.8% (305)		
	<i>Divorced/Separated</i>	15.3% (409)	10.4% (53)*		
	<i>Widowed</i>	3.7% (99)	3.7% (19)		

AHI: apnoea-hypopnoea index, BMI: body mass index, MetS: metabolic syndrome.

Results are expressed as percentage (number of participants) or as median ± interquartile interval. Between-group comparisons performed using Pearson's chi-square for categorical variables and Mann-Whitney test for continuous variables.

Supplementary Table 2. Demographic characteristics of HypnoLaus and Episono cohorts by incidence of metabolic syndrome.

	HypnoLaus				Episono			
	No-incident MetS (n=1292)	Incident MetS (n=109)	N	p-value	No-incident MetS (n=284)	Incident MetS (n=225)	N	p-value
Age (years)	54.2 ± 17.0	55.6 ± 15.0	1401	0.246	36.6 ± 20.2	41.0 ± 18.2	509	0.014
Follow-up time (years)	5.2 ± 0.3	5.1 ± 0.2	1401	0.46	8.0 ± 0.4	8.0 ± 0.3	509	0.497
Sex			1401	0.001			509	0.115
<i>Men</i>	42.3% (547)	58.7% (64)*			47.9% (136)	40.9% (92)		
<i>Women</i>	57.7% (745)	41.3% (45)			52.1% (148)	59.1% (133)		
BMI (kg/m ²)			1391	<0.0001			509	<0.0001
≤24.9	60.2% (772)	18.3% (20)			62.5% (177)	31.1% (70)		
<i>BMI 25-29.9</i>	35.0% (449)	64.2% (70)*			29.6% (84)	49.8% (112)*		
<i>BMI>29.9</i>	4.8% (61)	17.4% (19)*			8.1% (23)	19.1% (43)*		
Education			1400	0.009			505	0.069
<i>Low</i>	46.2% (597)	59.6% (65)*			30.6% (86)	37.1% (83)		
<i>Middle</i>	29.7% (383)	27.5% (30)			41.3% (116)	43.3% (97)		
<i>High</i>	24.1% (311)	12.8% (14)			28.1% (79)	19.6% (44)		
Marital status			1390	0.621			496	0.055
<i>Single</i>	16.0% (205)	13.0% (14)			38.8% (107)	27.7% (61)		
<i>Married</i>	58.2% (746)	60.2% (65)			54.3% (150)	66.4% (146)		
<i>Divorced/Separated</i>	21.2% (272)	24.1% (26)			4.0% (11)	3.6% (8)		
<i>Widowed</i>	4.6% (59)	2.8% (3)			2.9% (8)	2.3% (5)		

BMI: body mass index.

Results expressed as frequency in percentage (n) within each group or median ± interquartile interval and analyzed with bivariate tests (Pearson's chi-square or Mann-Whitney test).

Supplementary Table 3. Sleep predictors of metabolic syndrome according to sex in the merged sample.

	OR	95% CI	N	p-value
Men				
TST (min)	0.998	0.995 - 1.001	802	0.244
Sleep efficiency (%)	0.997	0.974 - 1.021	802	0.791
N3 (%)	1.014	0.986 - 1.043	802	0.318
REM sleep (%)	0.975	0.942 - 1.010	802	0.165
Arousal index	1.000	0.995 - 1.005	802	0.984
AHI	1.011	0.996 - 1.026	802	0.161
	<5 events/h		Reference	
	≥5 and <15 events/h			0.595
	≥15 events/h			0.010
Mean SpO ₂ (%)	0.993	0.935 - 1.054	802	0.811
Lowest SpO ₂ (%)	0.971	0.941 - 1.002	802	0.068
3% ODI	1.011	0.994 - 1.027	800	0.212
Time with SpO ₂ <90% (%)	0.995	0.975 - 1.016	797	0.658
Self-reported sleep duration (h)	0.945	0.803 - 1.112	775	0.495
ESS score	1.045	0.993 - 1.099	755	0.090
Women				
TST (min)	0.999	0.995 - 1.002	1028	0.427
Sleep efficiency (%)	0.988	0.965 - 1.012	1028	0.327
N3 (%)	0.994	0.966 - 1.022	1028	0.652
REM sleep (%)	1.001	0.967 - 1.036	1028	0.963
Arousal index	1.003	0.997 - 1.008	1028	0.322
AHI	1.003	0.980 - 1.026	1028	0.825
	<5 events/h		Reference	
	≥5 and <15 events/h			0.116
	≥15 events/h			0.028
Mean SpO ₂ (%)	0.838	0.719 - 0.977	1028	0.024
Lowest SpO ₂ (%)	1.023	0.975 - 1.074	1028	0.348
3% ODI	1.006	0.981 - 1.032	1027	0.629
Time with SpO ₂ <90% (%)	1.019	0.998 - 1.041	1012	0.070
Self-reported sleep duration (h)	1.047	0.895 - 1.224	995	0.567
ESS score	0.966	0.921 - 1.013	975	0.159

AHI: apnoea-hypopnoea index, ESS: Epworth sleepiness scale, ODI: oxygen desaturation index, N3: slow-wave sleep, REM: rapid eyes movement, SpO₂: oxygen saturation, TST: total sleep time.

Data analyzed using multivariable logistic regression with adjustment for cohort, age, body mass index and number of metabolic syndrome components at baseline.

Supplementary Table 4. Changes in sleep parameters from baseline to follow-up as predictors of metabolic syndrome in the Episoño cohort.

	OR	95% CI	N	p-value
TST (10-min increment)	0.990	0.970 - 1.020	464	0.683
Sleep efficiency (10% increment)	1.062	0.886 - 1.268	464	0.512
N3 (10% increment)	0.842	0.672 - 1.051	464	0.133
REM sleep (10% increment)	1.000	0.753 - 1.318	464	0.986
Arousal index (10 events/h increment)	1.149	0.932 - 1.411	464	0.184
AHI (10 events/h increment)	1.172	0.990 - 1.397	464	0.072
Mean SpO ₂ (1% increment)	0.882	0.762 - 1.038	464	0.093
Lowest SpO ₂ (1% increment)	0.960	0.916 - 1.037	464	0.084
3% ODI (10 events/h increment)	1.243	1.041 - 2.004	461	0.018
Time with SpO ₂ <90% (10% increment)	1.424	1.041 -1.949	459	0.028
Self-reported sleep duration (1h increment)	0.919	0.810 - 1.056	462	0.19
ESS score (1-unit increment)	1.016	0.971 - 1.027	463	0.494

Changes were computed as follow-up - baseline

AHI: apnoea-hypopnoea index, ESS: Epworth sleepiness scale, ODI: oxygen desaturation index, N3: slow-wave sleep, REM: rapid eyes movement, SpO₂: oxygen saturation, TST: total sleep time.

Data analyzed using multivariable logistic regression with adjustment for age, sex, body mass index, difference in body mass index from baseline to follow-up and number of metabolic syndrome components at baseline.

Supplementary Table 5. Metabolic syndrome as a risk factor for incident obstructive sleep apnoea in the Episono cohort.

	OR	95% CI	p-value
Model 1			
Constant	0.018	-	<0.0001
Age (years)	1.028	1.009 - 1.048	0.004
Sex (men)	2.166	1.345 - 3.486	0.001
Apnoea-hypopnoea index	1.300	1.210 - 1.395	<0.0001
Metabolic syndrome	1.915	1.130 - 3.245	0.016
Model 2			
Constant	0.005	-	<0.0001
Age (years)	1.030	1.010 - 1.050	0.003
Sex (men)	0.379	0.230 - 0.625	<0.0001
BMI (kg/m ²)	1.091	1.037 - 1.149	0.001
Apnoea-hypopnoea index	1.272	1.183 - 1.367	<0.0001
Metabolic syndrome	1.276	0.714 - 2.279	0.411

Data analyzed using multivariable logistic regression (N=476).

Adjustment for sex, age and baseline AHI (Model 1); + baseline BMI (Model 2).