Difereix el son segons el genere?

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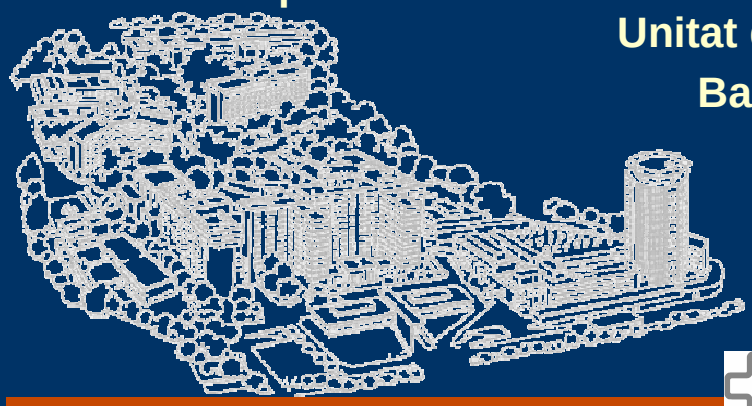
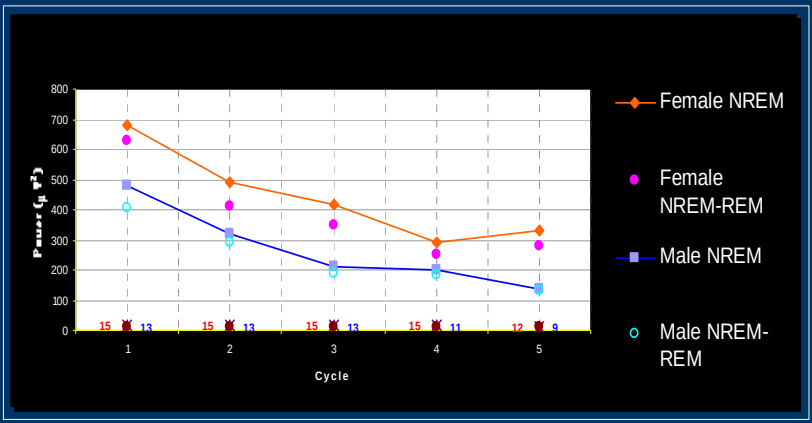


Vall d'Hebron Hospital

- Existeixen diferencies en el son segons el gènere?
  - Durant molt temps tan sols es va estudiar el son en l'home. Perquè no en la dona?
  - Si hi ha diferencies, es troben en totes les patologies del son?
  - A quina edat comencen?

Gender differences in polysomnographic features of sleep

Differences in EEG power



Extracted from: **D. J. Dijk et al.** ***Sleep, 1989;12:500-7***

Factores propios de la mujer que pueden jugar un papel en la incidencia de trastornos del sueño

- Ciclo menstrual
- Embarazo
- Menopausia
- Uso de preparados hormonales
  - Anticonceptivos
  - Terapéutica hormonal substitutiva

Ciclo menstrual

Menstrual cycle and sleep

Sleep pattern characteristics (mean ± SD) at two phases of the menstrual cycle (n=13)		
	Follicular	Luteal
Latency to		
Stage 1 (min)	6.9 ± 3.9	7.8 ± 4.2
Stage 2 (min)	14.4 ± 7.4	13.2 ± 5.5
REM (min)	**109.8 ± 38.5**	**93.5 ± 33.8[a]**
Time spent (% SPT) in		
Stage 0	5.3 ± 3.5	5.7 ± 4.9
Stage 1	12.2 ± 5.3	11.0 ± 4.1
Stage 2	52.6 ± 7.9	51.8 ± 7.9
Stage 3-4	10.0 ± 6.9	10.0 ± 6.8
REM	19.9 ± 4.0	20.6 ± 3.8
Total sleep time (min)	417.8 ± 44.3	417.7 ± 49.4
Sleep efficiency (%TST/TIB)	96.6 ± 0.5	94.0 ± 0.5

SPT, sleep period time; TST, total sleep time; TIB, time in bed
[a] Significantly different from follicular phase: Wilcoxon Z = 1.99, P<0.05.

Extracted from: **K. A. Lee et al.** ***Sleep,1990; 13:403-9***

- Significant effects are only visible in REM latency, although hormonal differences in the menstrual cycle are clearly visible.

Salivary progesterone (P_{sal}) levels and rhythm-adjusted mean rectal temperatures (T_r) at two phases of the menstrual cycle (n=13)		
	Follicular	Luteal
P_{sal} (pmol/L)		
Mean ± SD	**216.0 ± 70.57**	**526.4 ± 183.78[a]**
Median	201	457
Range	107-381	315-950
T_r (ºC)		
Mean ± SD	**36.93 ± 0.072**	**37.26 ± 0.141[a]**
Median	36.93	37.29
Range	36.80-37.04	37.00-37.46

[a] Significantly different from follicular phase: Wilcoxon Z = 3.18, p<0.001

Extracted from: **K. A. Lee et al.** ***Sleep, 1990;13:403-9***

Trastornos del sueño asociados al ciclo menstrual

- **Dificultad de conciliar el sueño**
- Dificultad de vencer la somnolencia diurna
- Suelen aparecer una semana antes de la menstruación
- Suelen durar más de 3 días consecutivos

Insomnio pre-menstrual

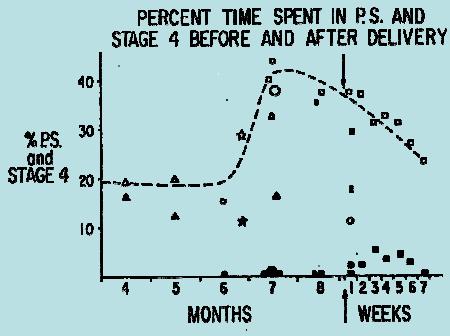
Datos Polisomnográficos:

- Cambios frecuentes de fase
- Alargamiento de las vigilias
- Disminución de la efectividad del sueño
- Distribución anormal de las fases
- Arquitectura normal

Embarazo

Pregnancy and sleep

- Early studies



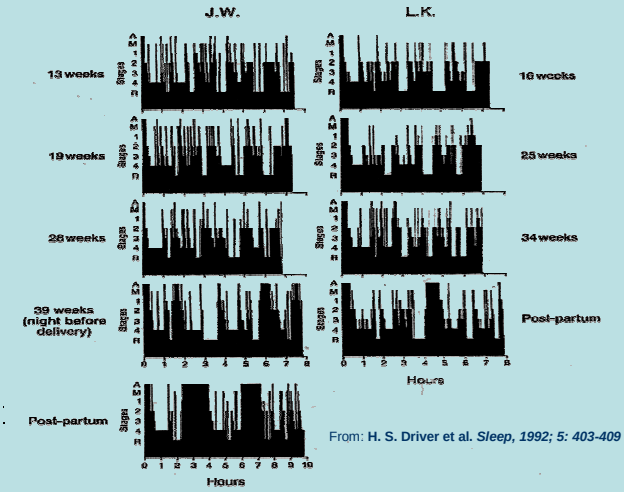
Changes in REM sleep and Stage 4 were detected along pregnancy and after delivery.

Percentage of REM and Stage-4 related to total sleep time before and after delivery. White symbols represent REM. Black symbols represent Stage-4. Other different symbols indicate different subjects. Delivery time is indicated by an arrow.

Extracted and translated from: **O. Petre-Quadens.1967. Abnormalities of sleep in man. Eds: Gasteaut, Lugaresi, Ceroni, Coccagna.**

Pregnancy and sleep

- Evolution of sleep during pregnancy



From: **H. S. Driver et al.** ***Sleep, 1992; 5: 403-409***

Sleep hypnograms of two pregnant women at different gestational weeks

Pregnancy and sleep

Evolution of sleep during pregnancy

Week of gestation	8-16	17-27	28-39	Postpartum One month
Stage 3 (%)	**6.8*** (5.0-18.1)	9.3 (5.4-15.9)	10.1 (6.9-12.3)	**6.8*** (5.7-18.3)
Stage 4 (%)	**20.7** (81.-23.8)	26.6 (9.0-31.5)	26.0 (11.7-35.0)	**26.4*** (5.9-37.2)
REM (%)	**27.0** (19.7-28.4)	19.6 (17.7-28.6)	**22.6**** (19.6-24.6)	**20.4**** (13.9-25.4)
SE (%)	95.1 (94.3-97.4)	95.2 (91.5-97.2)	94.9 (93.0-96.7)	83.0 (68.3-93.6)

Values are expressed in minutes or in percentage of total sleep time (TST), where TST is the total recording time less the sleep onset latency. Values that are significantly different are indicated by * $p<0.05$ for SWS, i.e. stages 3 and 4, 8-16 weeks gestation versus 1 month postpartum, and ** $p<0.05$, 1 month postpartum versus 28-39 weeks gestation.

Numerical data from 5 women

From: **H. S. Driver et al.** ***Sleep, 1992;5: 403-9***

Baseline Prepregnancy Follicular Phase and First-Trimester Sleep Characteristics for Night 2

Sleep Characteristic	**Prepregnancy follicular phase** (*n* = 33)	**Pregnancy 11–12 weeks** (*n* = 33)
Total sleep time (min)	**412 ± 60.6**	**446 ± 65.5***
Sleep efficiency (%)	**93 ± 6.7**	**91 ± 5.5***
Sleep onset latency to stage 2 (min)	14 ± 13.3	11 ± 8.2
REM onset latency (min)	83 ± 25.6	74 ± 25.8
Awake time (% sleep)	**6 ± 5.4**	**9±5.6 †**
Stage 1 (% sleep)	3 ± 2.0	3 ± 1.2
Stage 2 (% sleep)	54 ± 6.9	54 ± 6.1
Stage 3 + 4 (% sleep)	**13 ± 6.5**	**9± 3.2‡**
REM (% sleep)	25 ± 5.5	24 ± 4.6

mean ± standard deviation; * $t = 2.2$, $P = .03$; †$t = 3.5$, $P = .002$;‡ $t = 2.6$, $P = .015$

Lee K A, Zaffke ME, Mcnany G, Obstetrics& Gynecology 2000;95:14-18

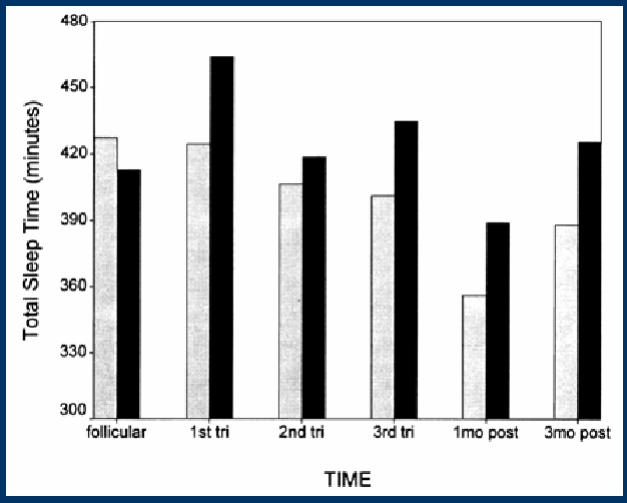
Third-Trimester and Postpartum Sleep Characteristics for Night 2

Sleep Characteristic	**Pregnancy 35–36 weeks (*n* = 29)**	**Postpartum 3–4 weeks (*n* = 29)**
Total sleep time (min)	**415 ± 64.5**	**379 ± 78.5***
Sleep efficiency (%)	**89 ± 5.8**	**81± 7.7**
Sleep onset latency to stage 2 (min)	13 ± 11.1	11 ± 10.7
REM onset latency (min)	**87 ± 42.9**	**69 ± 27.4***
Awake time (% sleep)	**11 ± 5.8**	**19 ± 7.7†**
Stage 1 (% sleep)	4 ± 1.2	4 ± 2.4
Stage 2 (% sleep)	**56 ± 5.7**	**44± 7.1†**
Stage 3 + 4 (% sleep)	**8 ± 3.8**	**12 ± 5.1†**
REM (% sleep)	21 ± 5.1	21 ± 4.3

mean ± standard deviation; * $t = 2.0$, $P < .05$; † $t = 4.2$, P .001

Lee K A, Zaffke ME, Mcnany G, Obstetrics& Gynecology 2000;95:14-18

Total SleepTime: comparation between nulliparous and multiparous from prepreganacy follicular phase to 3rd month postpartum

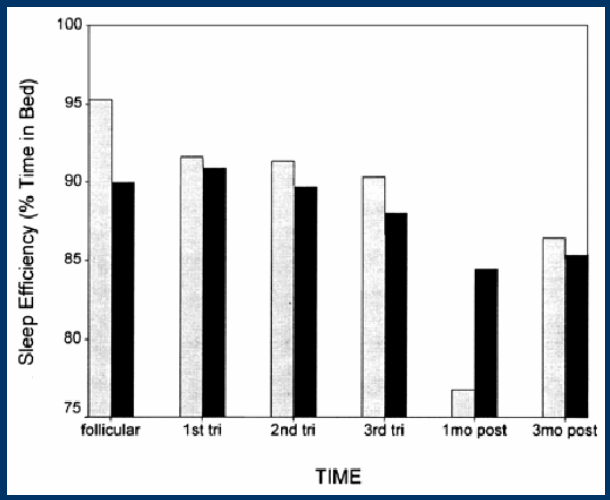


Mean Total Sleep Time decrease over time,mainly for nulliparous

Grey: nulliparous
Black: multiparous

Lee K A, Zaffke ME, Mcnany G, Obstetrics& Gynecology 2000;95:14-18

Sleep efficiency: comparation between nulliparous and multiparous from prepreganacy follicular phase to 3rd month postpartum

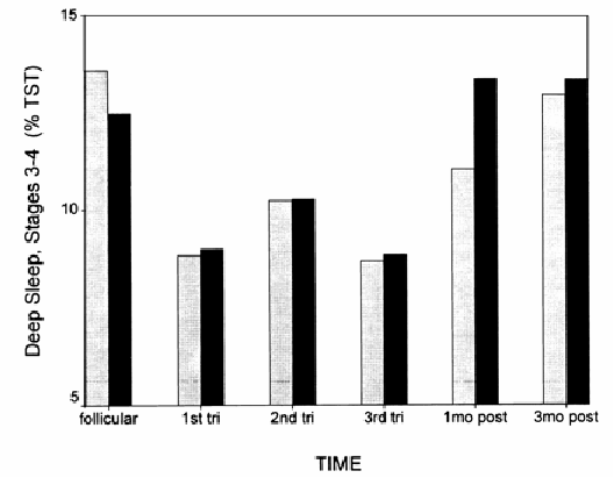


Lowest mean sleep efficiency at 1 month postpartum, particularly for nulliparous

Grey: nulliparous
Black: multiparous

Lee K A, Zaffke ME, Mcnany G, Obstetrics& Gynecology 2000;95:14-18

Mean deep Sleep (Stage 3 and 4) : comparation between nulliparous and multiparous from prepreganacy follicular phase to 3rd month postpartum



Decrease in mean deep sleep in all trimesters of pregnancy

Grey: nulliparous
Black: multiparous

Lee K A, Zaffke ME, Mcnany G, Obstetrics& Gynecology 2000;95:14-18

Trastornos del sueño relacionados con el embarazo.

Curso bifásico:

1er trimestre es:

- Frecuencia de somnolencia y cansancio
- Aumento del TST
- Siestas

2º trimestre:

- Normalización de los parámetros en relación al primer trimestre
- Son distintos de la mujer no gestante

Trastornos del sueño relacionados con el embarazo

Durante el tercer trimestre:

- Aumenta paulatinamente la frecuencia y duración de las vigilias
- Aumenta la latencia del sueño
- Falta de sueño

Probablemente relacionado con:

- Disminución de los niveles hemáticos de ferritina y hemoglobina
- Dificultad en encontrar una posición cómoda en cama
- Lumbalgia
- Poliuria nocturna
- Actividad fetal

Trastornos del sueño relacionados con el post - parto

Síntomas:

Persisten las alteraciones del último mes del embarazo más los debidos a la alimentación del bebé.

PSG:

Aumento de la vigilia durante la noche

Disminución marcada del sueño REM. Se normaliza a los 15 días

Aumento de fase 4 a los niveles anteriores

Disminución de la fase 2

Las fluctuaciones de las fases de sueño suelen desaparecer a las pocas semanas del parto. Ocasionalmente pueden perdurar.

Menopausia

Trastorno del sueño relacionado con la menopausia
Síndrome hipogonadal de la mujer

- **Son frecuentes los despertares o vigilias espontáneos** acompañados o no de sofocos y/o sudoraciones
- Etipatogenia: Reducción del nivel de estrógenos y progestágenos
- Se acompañan de trastornos relacionados con:
  - Menstruación
  - Ovariectomia
  - Alteraciones del eje hipotálamo-pituitario.
- La duración del cuadro debe ser superior a los 3 meses

Trastornos del sueño en la menopausia
Datos epidemiológicos - 1

Durante los días laborables duermen menos de 6 horas:

12% de las mujeres premenopáusicas no embarazadas
20% de las mujeres menopáusicas/postmenopáusicas

Durante el fin de semana duermen más de 6 horas:

50% de las mujeres premenopáusicas no embarazadas
40% de las mujeres menopáusicas/postmenopáusicas

National Sleep Foundation. Women and Sleep Poll, 1998

Trastornos del sueño en la menopausia
Datos epidemiológicos - 2

Describen frecuentes síntomas de insomnio:

49% de las mujeres premenopáusicas no embarazadas
56% de las mujeres menopáusicas/postmenopáusicas

Describen dificultad para dormirse:

18% de las mujeres premenopáusicas no embarazadas
29% de las mujeres menopáusicas/postmenopáusicas

National Sleep Foundation. Women and Sleep Poll, 1998

Problemas de sueño en relación con niveles hormonales en mujeres de edad media

Incidencia máxima de problemas: Al principio del ciclo

Frecuencia problemas de sueño: 29% más en peri-menopáusicas que en premenopáusicas

Kravitz et al Arch Intern Med. 2005;165: 2370-6

Women sleep and menopause

Correlations between subjective sleep quality and climateric symptoms

Symptoms	Median	Range	*r*	*P*
Vasomotor				
Hot flushes	1.0	0-4.3	.53	**<0.01**
Sweating	1.3	0-4.7	.58	**<0.01**
Sum score	2.6	0-8.9	.60	**<0.01**
Somatic				
Palpitations	0.1	0-3.8	.44	**<0.01**
Numbness	0.4	0-4.0	.30	.017
Muscular pain	1.5	0-5.0	.22	.079
Dizziness	0.0	0-4.3	.21	.100
Headache	0.6	0-3.1	.26	.038
Fatigue	0.5	0-4.0	.25	.047
Mental				
Anxiety	0.1	0-4.5	.44	**<0.01**
Depression	0.0	0-4.5	.51	**<0.01**
Mood instability	0.1	0-5.0	.41	**<0.01**
Memory problems	0.4	0-4.0	.44	**<0.01**
Lack of initiative	0.2	0-4.0	.44	**<0.01**

Extracted from: **Polo-Kantola et al. 1999;** *94: 219-224.*

- Clear correlation between self-reported vasomotor/mental symptoms and subjective sleep quality, but...

Uso de preparados hormonales

Tratamiento de la menopausia con estrógenos

Aumenta la calidad del sueño
Facilita el dormirse
Disminuye la inquietud nocturna y los despertares
Disminución de la fatiga diurna
Modificación de los síntomas vaso-motores
Mejoría de su insomnio

PSG:
Disminución de los despertares y los movimientos corporales
Disminución de la vigilia durante la noche
Disminución de los síntomas climatéricos y vaso-motores
No efecto sobre la arquitectura del sueño

Hormone therapy and sleep

Correlation between alleviation of hot flushes by estrogen replacement therapy and subjective variables of sleep.

- **Facilitation for falling sleep** **p=0.0006**
- **Diminished nocturnal restlessness** **p<0.0001**
- **Diminished awakenings** **p<0.001**
- **Less tiredness in the morning** **p=0.013**

Polo-Kantola et al., *Am J Obstet Gynecol, 1998;178:1002-9*

Otras trastornos del sueño en los que se detectan características diferenciales entre géneros

Insomnio

Síndrome de apnea del sueño

Edad avanzada

Insomnia in women: an overlooked epidemic?

Soares CN.
Arch Women Ment Health. 2005: 205-13

Factores de riesgo específicos para el insomnio en la mujer

- **Mayor prevalencia de depresión y ansiedad**
- **Factores ambientales y sociales**
- **Factores relacionados con la reprodución**

- Cuestión previa:

  ¿Existen diferencias de género en el sueño de los insomnes?

Epidemiologia

- 30-35% de la población presentan problemas de insomnio.
- 10-15% lo presenta como un problema importante.
- Después del dolor es el síntoma más importante.
- Más frecuente en la población anciana 25-35% de la población.
- **1.5 mujeres / 1 hombre.**

Hábitos de vida e incidencia de insomnio
Datos en la mujer

Mujeres de 41-55 años

Con insomnio crónico:	92
Sin problemas de insomnio:	29

Rasgos diferenciales más importantes en mujeres **sin insomnio**:

- ↓ cafeina
- ↓ alcohol
- ↓ irregularidad en ingesta alcohol

Cheek et al, Res Nurs Health, 2004

Síndrome de apnea del sueño

SAS en la mujer

Dificultades en la detección de síntomas con relación al varón

Se quejan menos o no saben reconocer los síntomas

- No suelen quejarse de apneas o crisis de ahogo
- Aquejan insuficiente descanso nocturno
- Tienen menos sintomatología
- Se quejan más de fatiga y cefaleas diurnas
- Las apneas son por término medio mas cortas, pero algunas son más largas
- Menos movimientos nocturnos
- **Mayor dificultad para conciliar el sueño**

SAS en la mujer

Dificultades en la detección de síntomas con relación al varón (continuación)

- Mayor dificultad para conciliar el sueño
- HTA: acompaña al cuadro en mayor proporción
- A igual IAH las mujeres tienen más ansiedad y depresión asociada que los hombre. Con el ronquido sucede lo mismo.
- Cambios en los espacios aéreos superiores
- Menos grasa en barbilla y cuello

- No todas las hipersomnias son SAS

- Laryngoscope. 2001 Sep;111(9):1501-5.

Preoperative differences between male and female patients with sleep apnea

- Walker RP, Durazo-Arvizu R, Wachter B, Gopalsami C.
- Department of Otolaryngology, Loyola University Medical Center, Maywood, Illinois 60153, USA. rwalker@Lumc.edu

- OBJECTIVES/HYPOTHESIS: To evaluate the differences between female and male patients with obstructive sleep apnea syndrome (OSAS) in the preoperative period. STUDY DESIGN: Nonrandomized cross-sectional study.
- METHODS: An analysis of 686 patients (111 women and 575 men) with OSAS was completed. Multivariate modeling techniques were employed to correlate gender with the preoperative respiratory disturbance index (RDI), apnea index (AI), hypopnea index (HI), body mass index (BMI), age, and initial symptoms.
- RESULTS: At presentation, the male patients were significantly younger and had a lower BMI and a higher RDI and AI than the female patients. For the entire OSAS population studied, the RDI increased as the BMI increased (correlation coefficient [r] = 0.35, P = <.001). For the female patients there was a weaker correlation (r = 0.21, P =.034), and in male patients there was a stronger correlation (r = 0.40, P <.001). For the entire population there was a negative correlation between age and RDI (r = -0.15, P <.001). In female patients there was a nonsignificant correlation (r = -0.09, P =.35), and in male patients the correlation was significant (r = -0.16, P <.001). There was no difference in the reporting of the number of symptoms based on gender (P =.355). Female patients noted headaches on awakening more commonly than male patients (P =.001), and male patients noted snoring (P =.014) and stopping breathing during sleep (P =.001) more often than female patients.
- CONCLUSIONS: The analysis demonstrated that within a surgical population sample, gender differences exist. The findings of this series were as follows: **1) Apnea severity in women was less weight-dependent than in men; (2) in men there was a significant negative correlation between age and apnea severity; and (3) female and male patients reported the same number of signs or symptoms on presentation, although certain signs and symptoms were more commonly reported based on gender.** Current clinical evaluation practices must take into account this gender disparity.

- Sleep. 2005 Mar 1;28(3):309-14.

Differences between men and women in the clinical presentation of patients diagnosed with obstructive sleep apnea syndrome.

- Shepertycky MR, Banno K, Kryger MH.
- Sleep Disorders Centre, St. Boniface General Hospital Research Centre, Section of Respiratory Diseases and Department of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada.

- STUDY OBJECTIVES: Obstructive sleep apnea syndrome (OSAS) results from recurrent episodes of breathing cessation during sleep. Epidemiologic studies have shown that OSAS is more prevalent in men than women (4% vs 2%). Previous studies have explored gender-related differences in upper airway anatomy and function, hormone physiology, and polysomnographic findings. The aim of this study is to assess differences in clinical presentation between women and men with OSAS.
- DESIGN: Retrospective chart review analysis.
- SETTING: Tertiary university-based medical center
- PARTICIPANTS: 130 randomly selected women with OSAS matched individually with 130 men with OSAS for age, body mass index, apnea-hypopnea index, and Epworth Sleepiness Scale score.
- INTERVENTIONS: N/A. MEASUREMENTS AND RESULTS: Data were obtained from questionnaires and in-laboratory polysomnographic studies. There were no differences between the genders for age (48.0 +/- 1.1 years [mean +/- SEM] for women vs 47.6 +/- 1.0 years for men), body mass index (40.4 +/- 0.7 kg/m2 for women vs 40.0 +/- 0.6 kg/m2 for men), apnea-hypopnea index (36.8 +/- 3.3/hour for women vs 36.0 +/- 3.0/hour for men), or Epworth Sleepiness Scale score (12.45 +/- 0.53 for women vs 12.84 +/- 0.47 for men). Although snoring and sleepiness were similarly common in women and men, women more often described their main presenting symptoms as insomnia (odds ratio: 4.20; 95% confidence interval: 1.54-14.26) and were much more likely to have a history of depression (odds ratio: 4.60; 95% confidence interval: 1.71-15.49) and hypothyroid disease (odds ratio: 5.60; 95% confidence interval: 2.14-18.57). Women presented less often with a primary complaint of witnessed apnea (odds ratio: 0.66; 95% confidence interval: 0.38-1.12), consumed less caffeine per day (3.3 cups in women vs 5.2 cups in men; P = .0001), and admitted to less alcohol consumption (odds ratio:
- 0.36; 95% confidence interval: 0.18-0.70).
- CONCLUSIONS: **At the time of OSAS diagnosis, women with OSAS are more likely to be treated for depression, to have insomnia, and to have hypothyroidism than are men with the same degree of OSAS.**

Edad avanzada

Do young adult men and women age differently?

Age 20-30: **Similar** percentages of slow-wave sleep (SWS) (% Stage *3* and 4) and mean EEG slow wave activity (quantified by spectral analysis).

Age 30-40: Significant **reductions in the percentage of SWS** and mean slow wave activity over the night occurred **in men** but not in the women.

Men in this sample were also found to have significant **increases in Stage 2 sleep, and decreases in REM sleep time, REM activity, REM density and REM intensity.**

No significant effects of age were found for women in any visually scored sleep variables

Both men and women had age related reductions in spectral power in the spindle frequencies.

C. L. Ehlers & D. J. Kupfer. *J. Sleep Res, 1997 ;6:211-215*

Nightmares, sleep and cardiac symptoms in the elderly

	Women (n=3692)	Men (n=2441)
Nightmares often	9.6%	6.9
Nightmares very often	2.3%	2.1%
Irregular heart beats	13.1%	11.8%

Asplund R, Neth J Med, 2004