



EGAT SLEEP PRESENTATION

พญ วิสาขสิริ ตันตระกูล

ผศ พญ ประภาพร พรสุริยะศักดิ์

หน่วยโรคระบบหายใจและเวชบำบัดวิกฤต

ภาควิชาอายุรศาสตร์ โรงพยาบาล รามาธิบดี

- OSA is Characterized by
 - Recurrent **collapse of pharyngeal airway** during **SLEEP**, resulting in **Apnea** or **hypopnea** despite **ongoing breathing efforts**.
 - Leading to **intermittent blood gas disturbances**, surge in **sympathetic activation**, brief awakening from sleep
(**arousals**)
 - **Cyclical breathing pattern** and **sleep fragmentation**

OBSTRUCTIVE SLEEP APNEA

- Repetitive partial or complete obstruction of upper airway during sleep
- OSA : Polysomnography
 - AHI of > 5 /hr plus symptom of excessive daytime sleepiness, unrefreshing sleep, or chronic fatigue

Jibkokwai 3/20/2009 x

Data type EEG

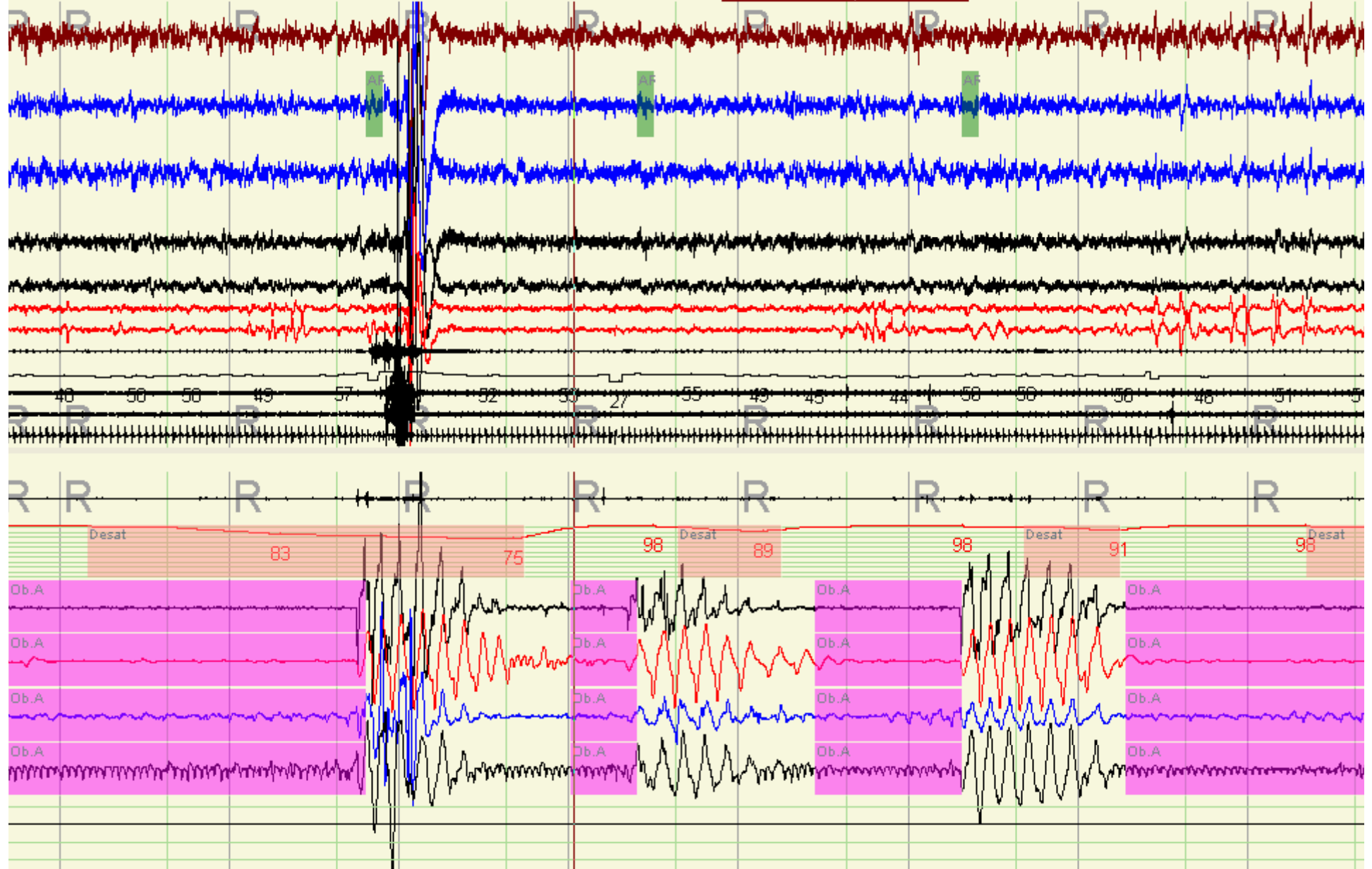
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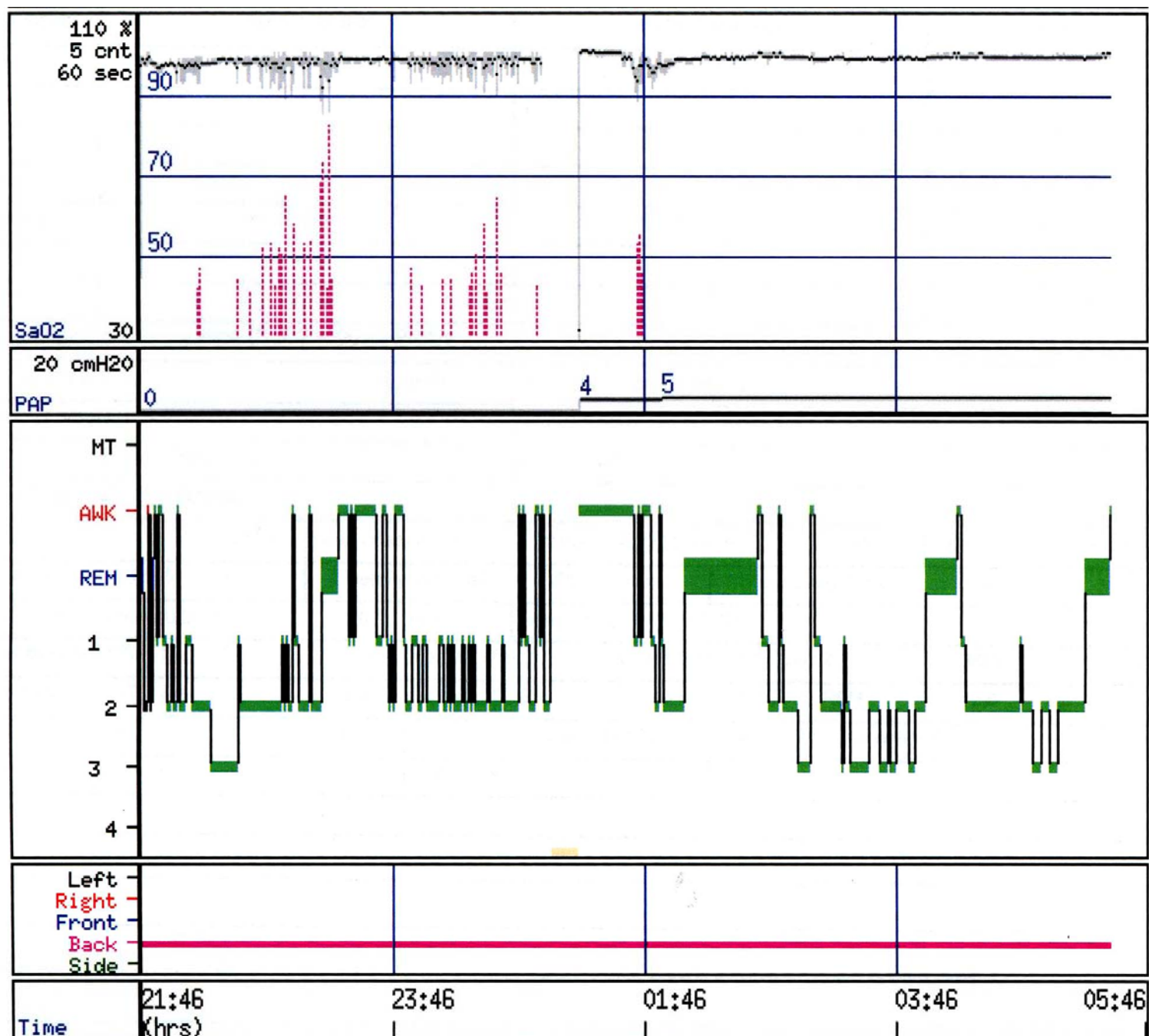
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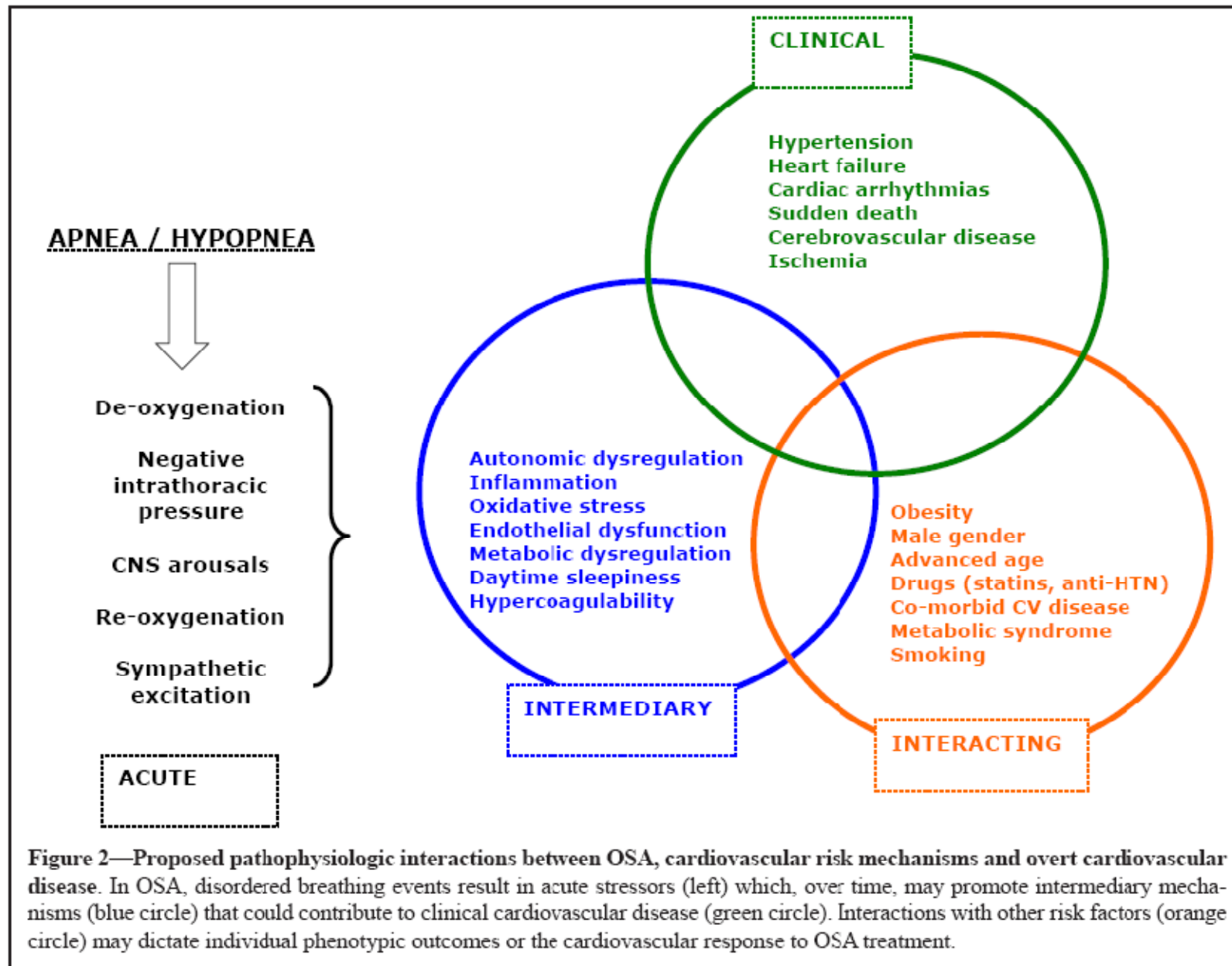
Transform

Cursor: 01:06:10, Epoch: 416 - REM

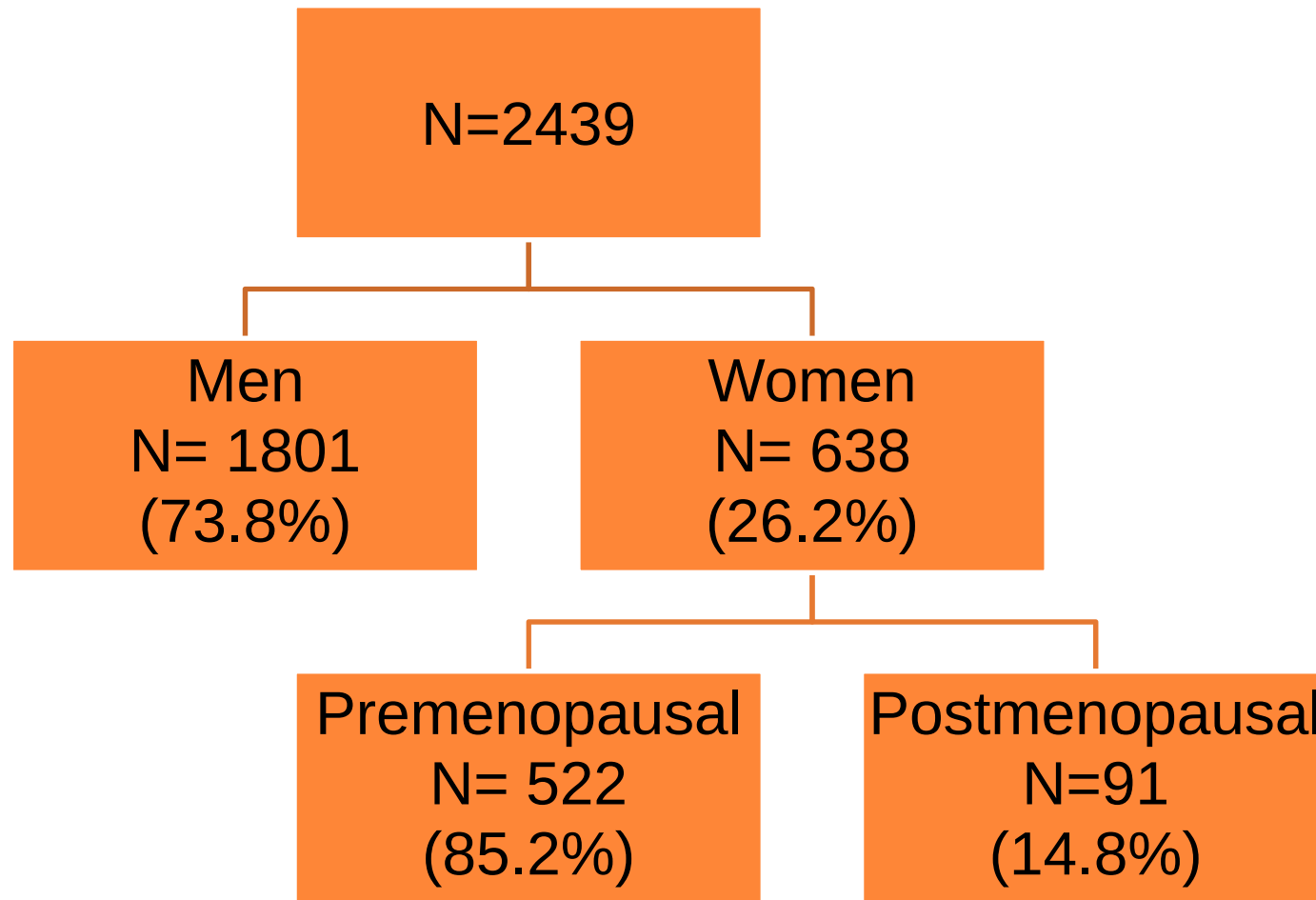




Sleep-disordered breathing and cardiovascular risk. Caples Sleep 2007



DEMOGRAPHIC DATA



Mean±SD (IQR)	Total	Men	Women
Age, yr	41.12± 7.2 (25-55)	41.35± 7.3 (25-55)	40.5± 6.7 (25-54)
BMI, kg/m2	24.0 ± 3.7 (15.2-47.6)	24.6 ± 3.4 (15.2-47.6)	22.4 ± 3.8 (15.3-40.2)
%Overweight	46.3%	53.3%	26.8%
Waist-hip ratio	0.88 ± 0.06 (0.6-1.2)	0.90 ± 0.05 (0.6-1.2)	0.82± 0.06 (0.7-1.0)
Neck Circumference , cm	36.5 ± 3.9 (21.1-49.0)	38.2± 2.7 (30.4-49.0)	31.9 ± 2.4 (21.1-40.1)
Menopause(%)			14.8%

SLEEP QUESTIONNAIRE

- “Obstructive Sleep Apnea (OSA)” was defined

if 1 of the following criteria were met

1. Frequent snoring (≥ 3 -4 /week) or
2. Loud snoring, or

Plus

at least 1 of the the following symptoms

1. Excessive daytime sleepiness
2. Fatigue
3. witnessed apnea



SLEEP QUESTIONNAIRE

○ “Habitual Snorer” was defined if the following criteria were met

1. Frequent snoring (≥ 3 -4 /week) or
2. Loud snoring, or

But did not meet the criteria for “OSA”



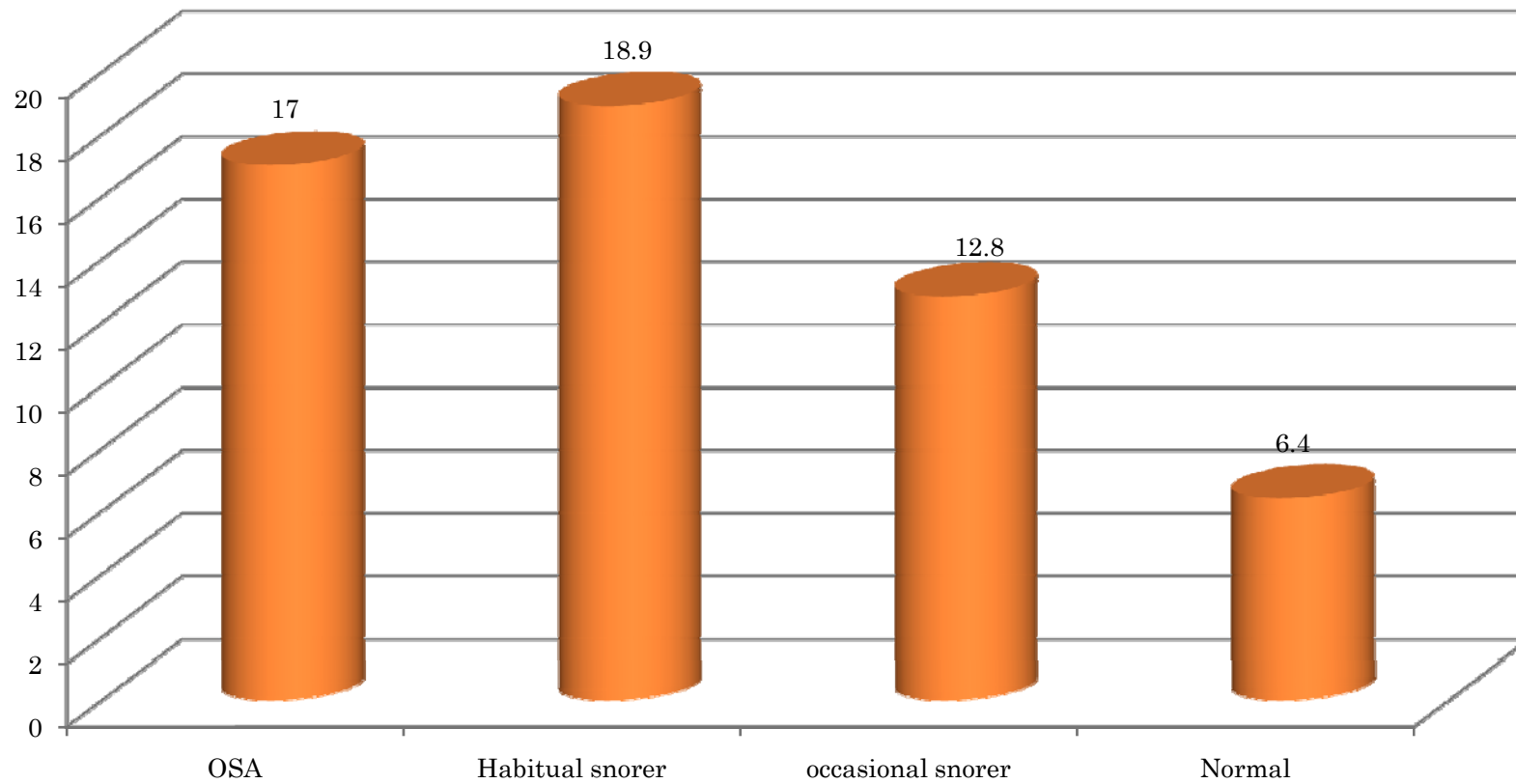
- “Normal” was defined if the subjects did not fullfill the criteria for “OSA” and “ **Habitual Snorer**”.



PREVALENCE OF SLEEP-DISORDERED BREATHING IN EGAT POPULATION

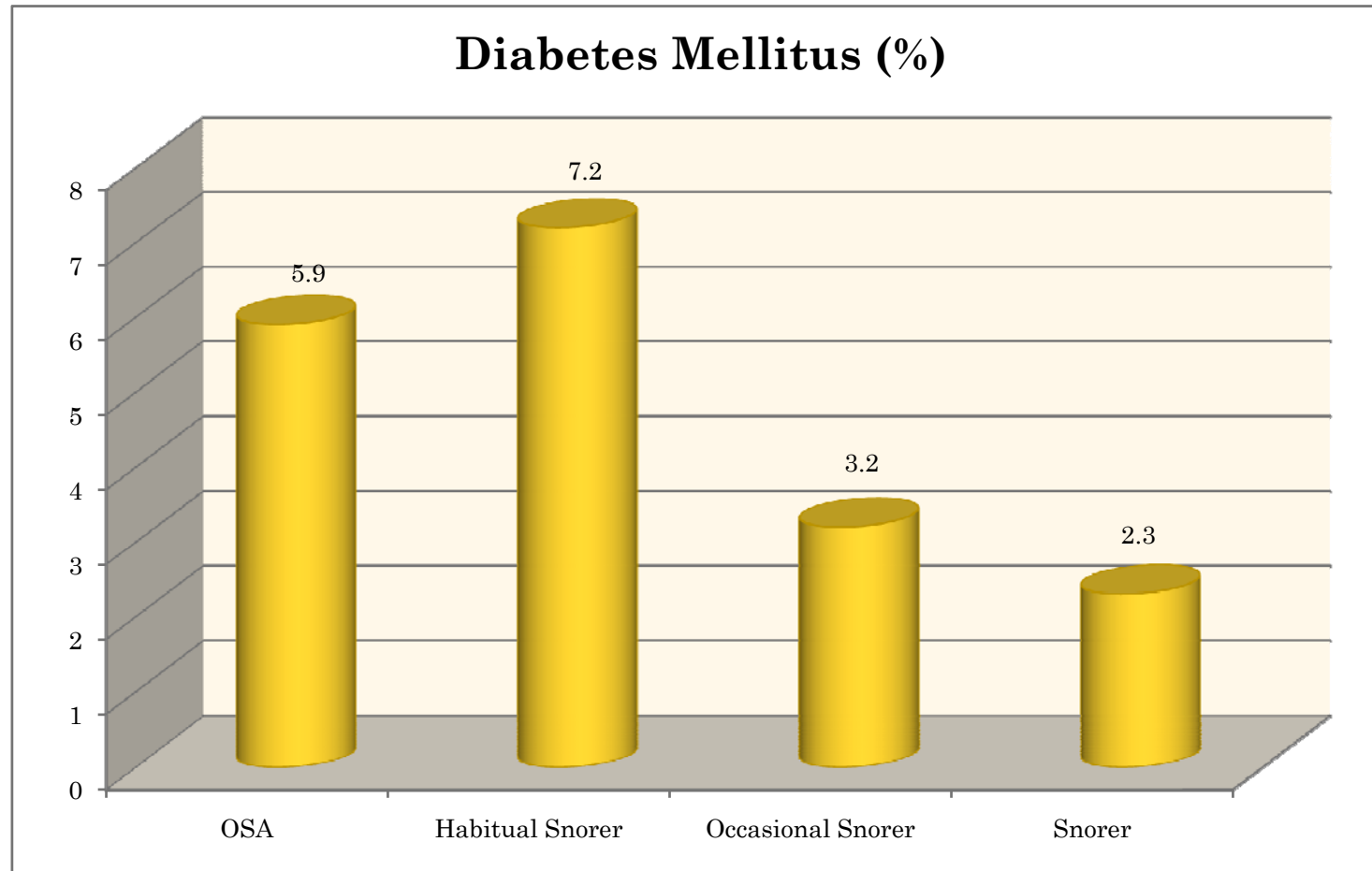
N= 2439	Total	Men (n=1801)	Women (n=638)
“OSA”	<u>11.1%</u> (n=271)	13.1% (n=236)	5.5% (n=35)
HABITUAL SNORERS	<u>29.7%</u> (n=725)	<u>34.8%</u> (n=627)	<u>15.4%</u> (n=98)
Occasional snorers	17.9% (436)	18.4% (331)	16.5% (105)
NORMAL	38.8% (947)	31.3% (564)	60.0% (383)

Hypertension (%)



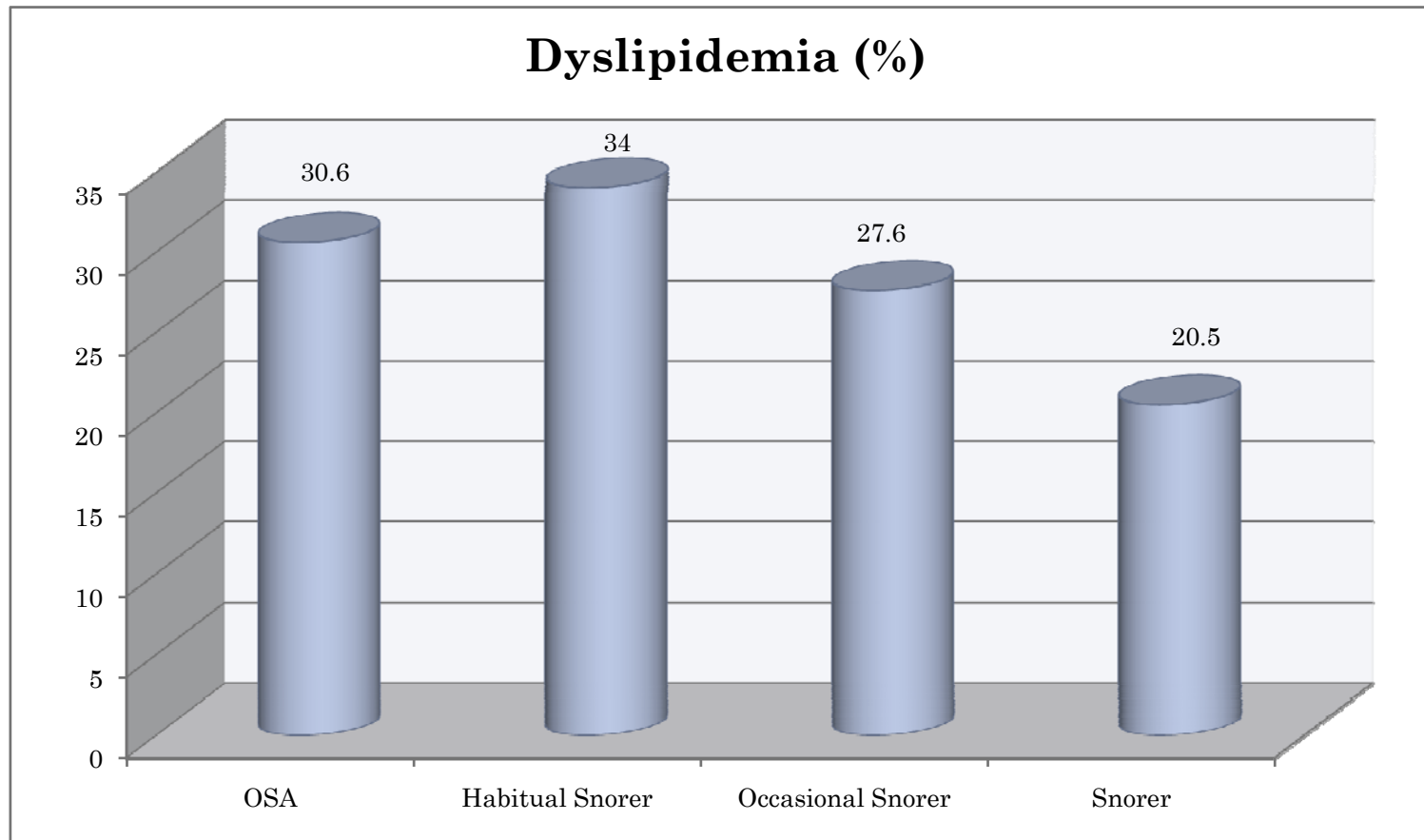
$p < 0.001$





$p < 0.001$

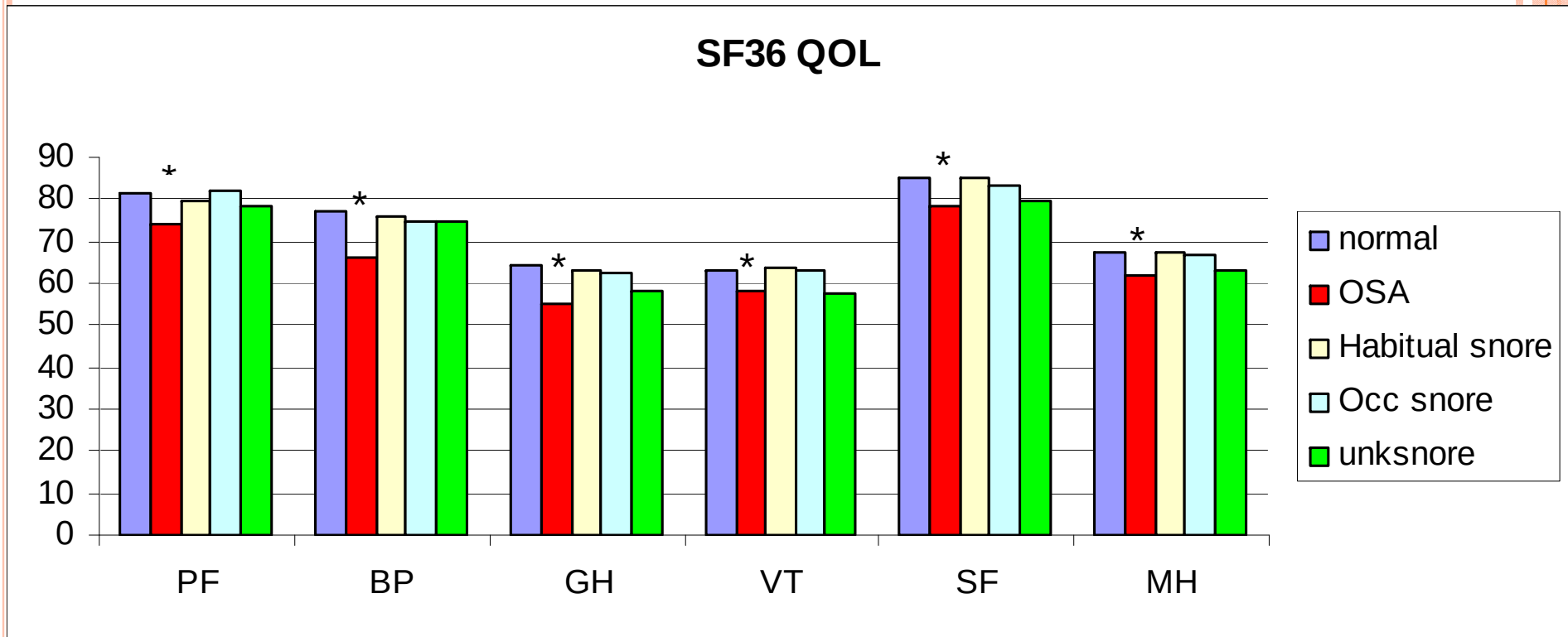




	OSA	HABITUAL SNORER	Occasional snorer	NORMAL	<i>p</i>
Age, yr	41.7± 7.0	42.8 ± 7.0	40.9 7.0	40.0 ± 7.2	$\leq$ <u>0.001</u>
BMI	<u>25.5± 3.6</u>	<u>25.6 ± 3.7</u>	<u>23.9 3.5</u>	<u>22.6± 3.3</u>	$\leq$ <u>0.001</u>
Neck circumfer ence, cm	38.2± 3.4	38.3 ± 3.4	36.6± 3.4	34.8 ± 3.7	< 0.001
Waist-hip ratio, cm	0.9 ± 0.05	0.9 ± 0.06	0.9 ±0.06	0.86± 0.06	< 0.001
Epworth Sleepine ss Scale	10.5 ± 4.4	7.7 ± 3.7	7.4 ±3.7	7.6 ± 4.0	< 0.001
Sleep duration	6.3 ±1.2	6.7 ±1.0	6.6± 1.0	6.7 ±1.1	< 0.001

(mg%)	OSA	HABITUAL SNORER	Occasional snorer	NORMAL	<i>p</i>
FBS	95.6±22.7	97.2 ±27.2	92.7± 25.7	91.3± 24.1	<u>< 0.001</u>
LDL	<u>152.7±36.1</u>	151.2 ±38.2	147.5 ±34.3	<u>145.5± 37.4</u>	<u>0.007</u>
HDL	49.0±10.8	48.2±11.5	51.8± 11.5	54.7±12.4	< 0.001
Triglyceride	142.7 ±81.7	149.4±96.1	132.5±108.2	111.1±76.5	< 0.001
Uric acid	5.9 ±1.4	6.0±1.4	5.5± 1.5	5.2 ±1.4	< 0.001
BUN	12.6±3.3	12.7±3.2	12.2±3.7	11.7±3.1	< 0.001
Creatinine	0.96 ±0.2	0.96±0.2	0.92±0.2	0.86± 0.19	< 0.001

SF 36 QOL



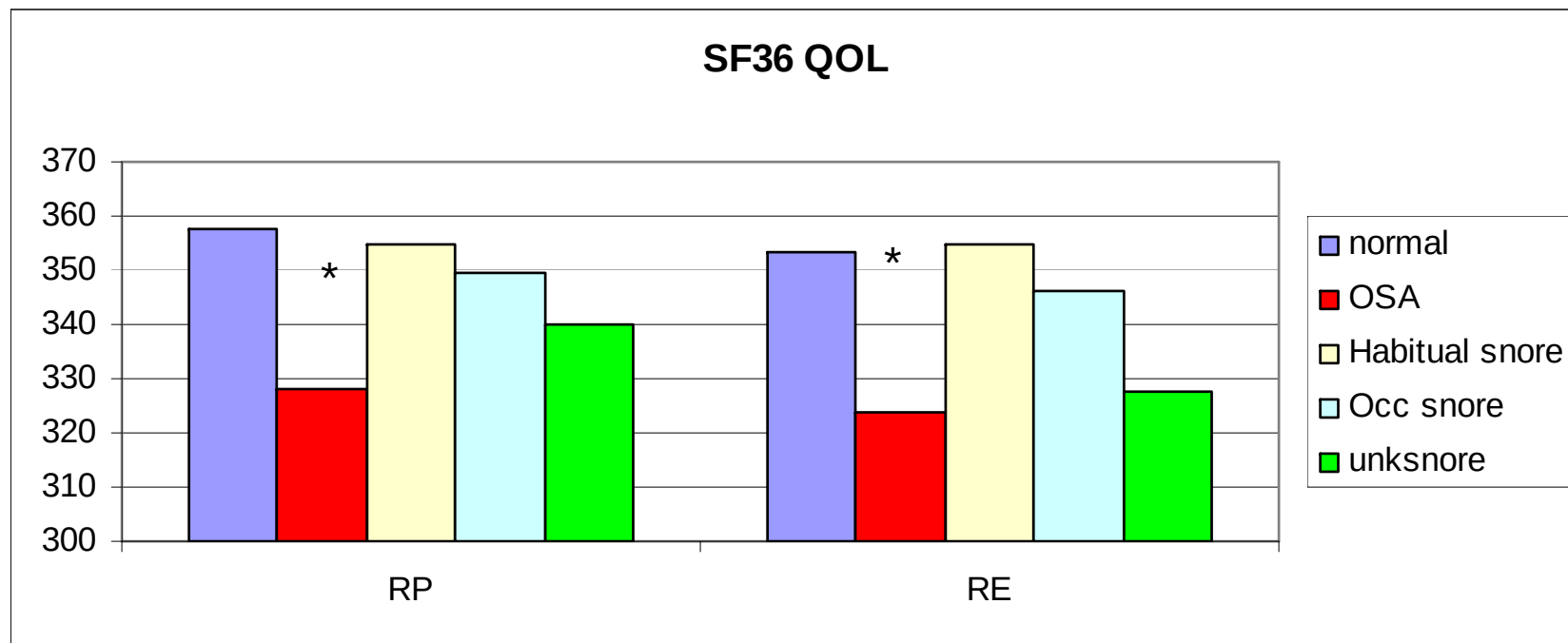
PF= physical functioning
 BP= bodily pain
 GH= general health

VT= vitality
 SF= social functioning
 MH= mental health

*p< 0.001 OSA vs normal
 OSA vs habit snore
 OSA vs occ snore

Courtesy of Dr. Prapaporn

SF36 QOL



RP= role physical
RE= role emotional

* $p < 0.001$ OSA vs normal
OSA vs habit snore
OSA vs occ snore

Courtesy of Dr. Prapaporn

ADJUSTED ODD RATIO OF HYPERTENSION

	Adjusted OR	<i>P value</i>	95% CI
Age	1.07	<0.001	1.05-1.08
Male	1.45	0.09	0.94-2.23
BMI	1.09	0.03	1.01-1.17
SDB	0.94	0.72	0.69-1.3
Neck circumference	1.09	0.004	1.03-1.16
Waist	1.03	0.02	1.01-1.06



ADJUSTED ODD RATIO OF SDB

	Adjusted OR	<i>P value</i>	95% CI
Age	1.00	0.83	0.98-1.02
Male	0.97	0.12	0.35-1.12
BMI	0.97	0.53	0.89-1.07
Neck circumference	1.02	0.60	0.95-1.10
Waist	1.05	0.005	1.01-1.09



ADJUSTED ODD RATIO OF SDB (NORMAL WEIGHT)

	Adjusted OR	<i>P value</i>	95% CI
Age	1.03	0.44	0.98-1.05
Male	1.00	1.00	0.43-2.3
BMI	1.06	0.61	0.86-1.30
Neck circumference	1.02	0.75	0.89-1.18
Waist	1.07	0.02	0.98-1.05



ADJUSTED ODD RATIO OF SDB (OBESE)

	Adjusted OR	<i>P value</i>	95% CI
Age	0.99	0.53	0.97-1.02
Male	0.42	0.06	0.17-1.04
BMI	0.97	0.62	0.85-1.10
Neck circumference	1.02	0.75	0.89-1.18
Waist	1.01	0.15	0.99-1.08



ADJUSTED ODD RATIO OF SDB (MEN)

	Adjusted OR	<i>P value</i>	95% CI
Age	1.00	0.83	0.98-1.02
BMI	1.02	0.81	0.89-1.10
Neck circumference	1.02	0.58	0.94-1.11
Waist	1.04	0.03	1.018-1.09

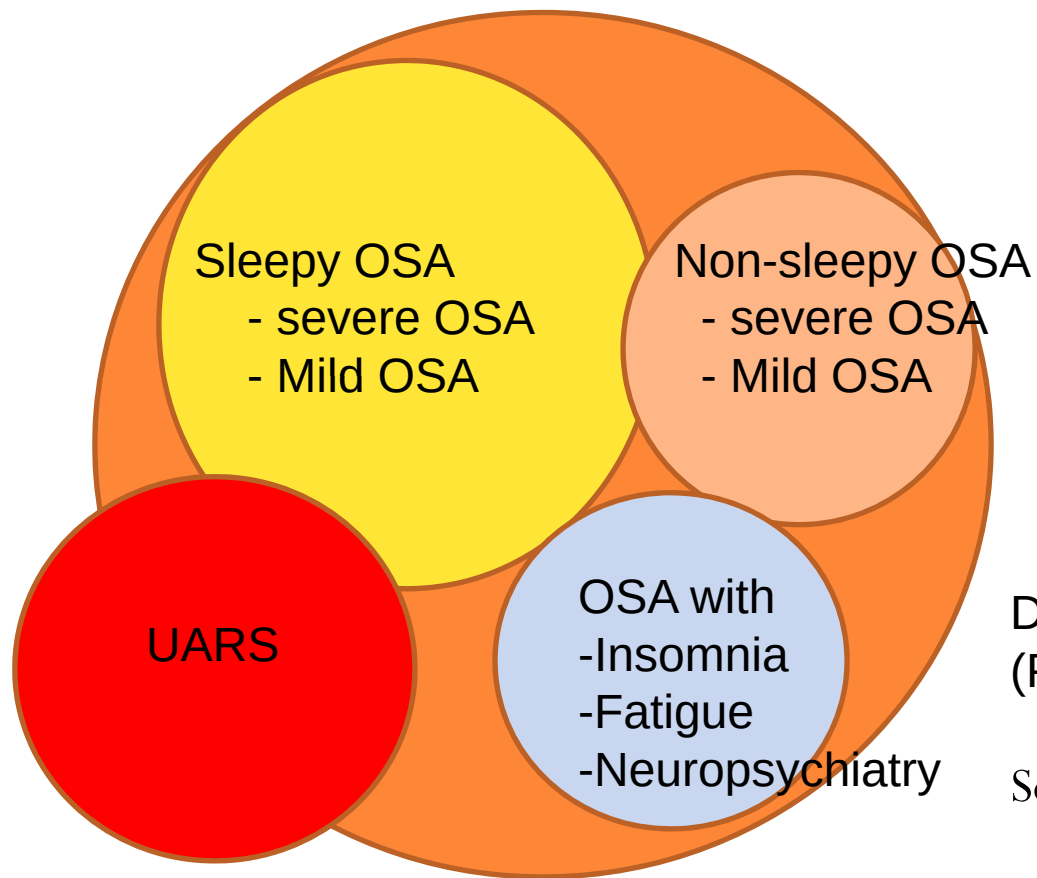


ADJUSTED ODD RATIO OF SDB (WOMEN)

	Adjusted OR	<i>P value</i>	95% CI
Age	1.00	0.98	0.93-1.07
BMI	1.04	0.69	0.86-1.26
Neck circumference	0.82	0.04	0.67-0.99
Waist	1.04	0.38	0.96-1.13
Menopause	0.70	0.54	0.26-2.19



PHENOTYPES OF SDB



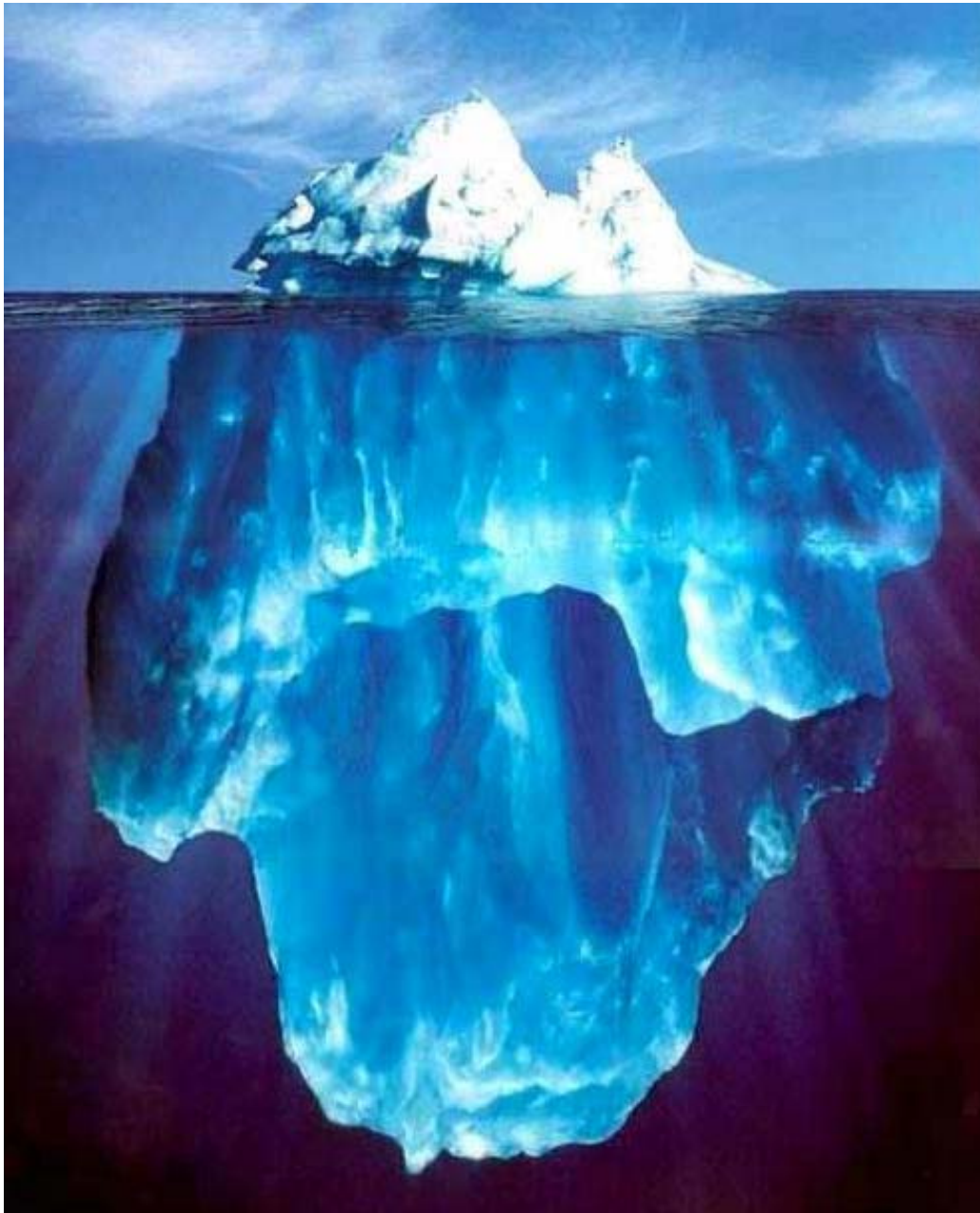
Diagnostic Gold standards for OSA (PSG)

- AHI ≥ 5 plus symptoms

Severity

Mild	: AHI	5-15	events/hour
Moderate	: AHI	15-30	events/hour
Severe	: AHI	≥ 30	events/hour





Sleepy OSA

- severe OSA
- Mild OSA

Non-sleepy OSA

- severe OSA
- Mild OSA

OSA with

- Insomnia
- Fatigue
- Neuropsychiatry

UARS

Habitual snore





Standard overnight polysomnography

PORTABLE MONITORING



THE NEEDS TO CONTINUE THIS STUDY

- To-date there is **no single** epidemiological study in Thailand to study obstructive sleep apnea by using standard polysomnography or cardiopulmonary monitoring (we need **AHI!!!!**)
- Correlation of cardiovascular consequence of OSA in Thai subjects needs to be demonstrated (Do we get the same extent of CVS consequence as do western subjects?)
- What is the cut-off point (AHI) for OSA in Thais?
- What are the risk of developing OSA in Thais??
(How obese we have to be before developing OSA??)



- To define “ phenotype” of OSA

- Sleepy vs non sleepy OSA
- Mild to moderate OSA
- Non-obese vs obese OSA

(What will happen to them??)

- In OSA subjects with other comorbid cardiovascular risk, what effect does OSA add on?
- In OSA subjects without other comorbid CVS risk, what is the sole effect of having OSA?



- To detect bio-marker for systematic follows of subjects to detect and predict CVS end-organ damage.



RANDOMIZATION OF POPULATION

	Normal	OSA	Habitual snorers	Occasional snorers
Bangkok	844	234	636	373
Central	33	12	32	23
North	32	10	27	15
South-east	12	4	14	9
South	6	4	3	6
East	4		3	2

