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## Quality of Life, Sleep Disorders and Serum Orexin in persons with Hemodialysis Treatment

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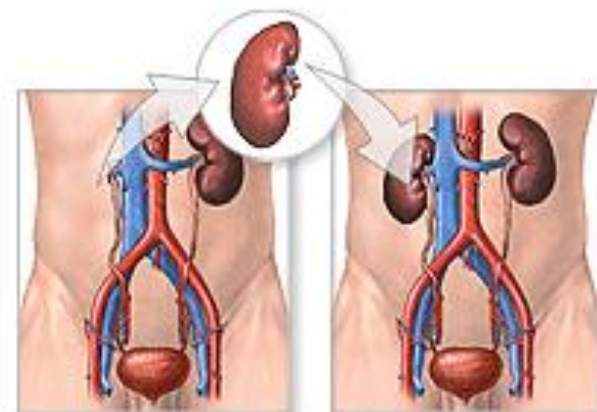
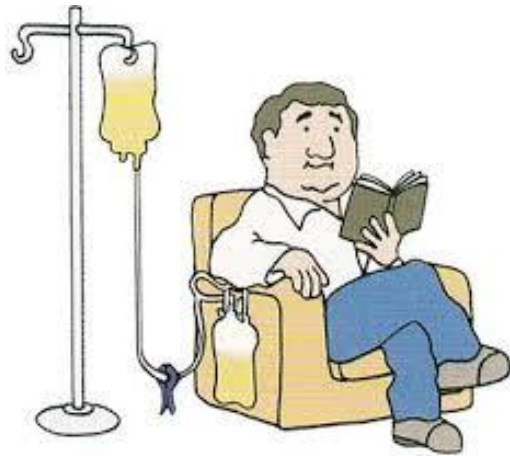
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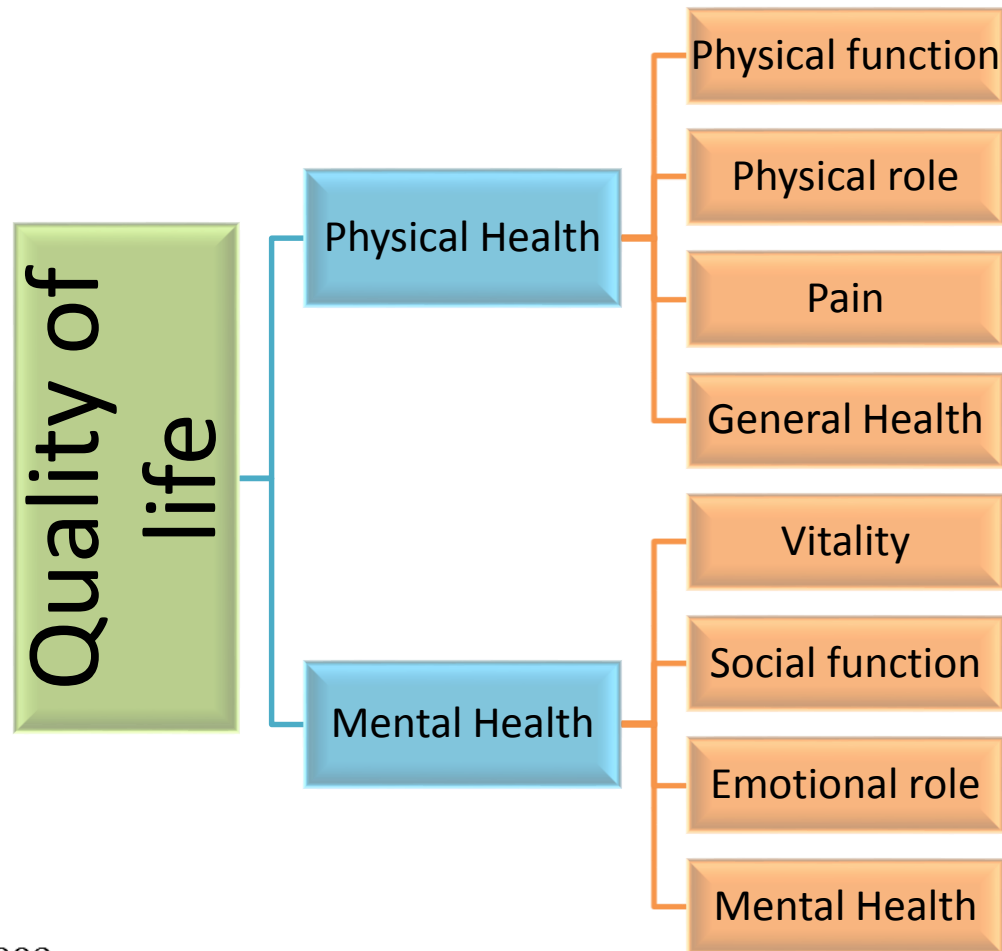
# Overview

- Constant changes in lifestyles have contributed to the chronic diseases constitute a major concern for health services. Lopez-Cervantes, 2012
- The World Health Organization estimates that there are over 347 million people with diabetes worldwide. (WHO, 2012)
- Every seven seconds someone dies from DM, wich means that approximately four million deaths occur worldwide each year. (International Diabetes Federation, 2011)
- Diabetic nephropathy is the complication that generates greater stress in people with diabetes, implies a terminal state of the person who has it, is the most common cause of chronic kidney disease.

# Modalities for Renal replacement therapy



# Quality of life



Ware, et al, 1993

# Quality of life

- QOL should be taken into consideration when results of different treatments in chronic patients like people with CKD are evaluated.
- Early studies showed that these people have a significant reduction in QOL when compared with the general population.
- The number of studies on CV in people with CKD on hemodialysis has increased lately, making possible to identify factors affecting QOL.

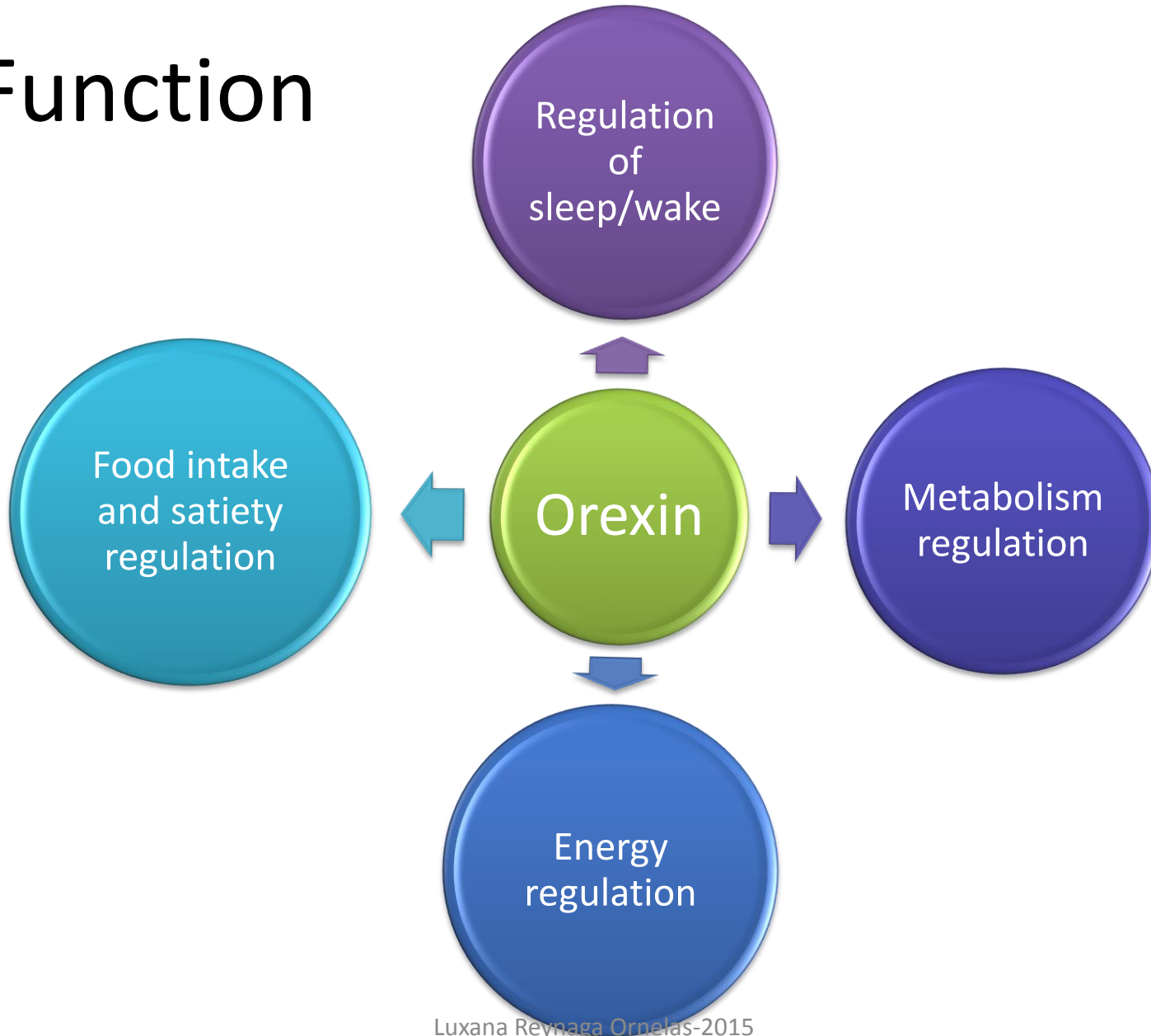
# Sleep Disorders

- In addition to significantly impact the QOL in people with CKD it has been reported a higher prevalence of sleep disturbances.
- The most common include insomnia, restless leg syndrome (RLS) , sleep apnea (OSA ) and excessive daytime sleepiness (EDS ).
- Patients with CKD on HD present a wide range of non-specific symptoms that significantly affect their QOL.
- Sabry et al. in 2010 conducted a study in 88 patients under hemodialysis treatment. Their results showed that the prevalence of sleep disorders was 79.5 %.
- The most common being insomnia.

# Orexin

- Neurotransmitter discovered in 1998
- Also known as hypocretin
- They are produced in the hypothalamus
- They are projected in most of the brain tissue
- There are two types: Orexin A and Orexin B

# Function





# PURPOSE

- The purpose of this study was to examine the relationship between health-related quality of life, sleep disorders and serum levels of orexin.
  - Analyze QOL scores reported by the group of people in HD.
  - To determine the prevalence of sleep disorders in the study sample.
  - Determine the relationship between sleep disturbances, serum orexin levels and the perception of QOL of the people studied.

# Methods

- Analytical
- Convenience sampling
- Socio-demographic questionnaire and medical history
- KDQOL SF-36 questionnaire
- SHHS questionnaire (Sleep Heart Health Study)
- PASW-Statistics 21 software
- Descriptive statistics and Pearson correlation

# Procedure

- The samples were stored in tubes impregnated with EDTA for plasma extraction.
- Determination of orexin levels was performed using the technique of enzyme immunoassay (EIA) using EK-003-30 kits with a sensitivity of 0.22 ng/ ml and a range or 0-100 ng /ml
- The absorbance was measured with a 2100 UTC reader (mcr)



# Results

- 39 patients on HD
- Age 18-76 years, mean 39 years
- 56% females
- 41% primary education
- 51% married
- 56% used to smoke
- 76% health insurance
- 59% still working
- 38% have no income
- 23% CKD derived from DM
- 59% had central venous catheter
- 97% spent 3-4 hours daily on HD

# Quality of life

QOL General Dimension	Mean	SD	QOL specific Dimention	Mean	SD
Physical Function	56.15*	33.18	Symptoms	74.57*	14.04
Physical Role	28.85*	42.74	CKD burden	38.46*	31.89
Pain	66.9*	28.24	CKD effects	58.01*	18.77
General Health	51.56*	22.17	Employment	39.74*	36.6
Vitality	60.38*	16.2	Cognitive Function	81.03*	20.03
Social Function	61.22*	23.08	Social Interaction	71.79*	19.85
Emocional Role	29.06*	44.71	Sleep	63.72*	19.78
Mental Health	61.64*	14.5	Social Support	83.33*	26.49
Health Transition	25.64*	32.69	Staff Motivation	89.74*	17.88
PCS	40.31*	9.69	Patient satisfaction	64.5*	20.3
MCS	42.09*	8.77			

\* Scores on a 0-100 scale, where higher values indicate a better quality of life , and lower ranks indicate a poorer quality of life in every dimension

# Sleep

## Characteristics

- 8% of the people working at night
- Average minutes to fall asleep is 41 min (  $\pm$  33 min )
- 49 % take nap times
- 36 % have considered light sleep ( very easily awaken )
- 33 % believe that the sleeping time is short ( feels like barely slept while they slept 8 hours )
- 28% restless sleep

## Disorders

- 56 % snoring
- 33 % tested positive for obstructive sleep apnea,
  - of these 13 % is attested
- 53 % of patients said they felt the urgency/urge to move their legs
- 33 % have felt uncomfortable or unpleasant feeling in your legs
- 23 % daytime sleepiness
- 31 % insomnia

# Orexin

Mean of serum orexin levels were  
0.67 ng/ml ( $\pm$  0.45 ng/ml)

# Correlations

Correlations between general perception of QOL in Physical Health (SF-36 PCS) and sleep disorders (SHHS)

SHHS indicators	Pearson r	p
Minutes to fall asleep	-.423**	,007
Sleep quality (0-10 )	.563**	,000
Quality of sleep ( deep)	.322*	,046
Difficulty falling asleep	-.482**	,002
Wakes up at night and can not go back to sleep	-.437**	,005
Tired during the day	-.525**	,001
insufficient sleep	-.370*	,021
He stopped breathing while sleeping	}-.578**	,000

\* Correlation is significant at the 0.05 level (bilateral).

\*\* Correlation is significant at the 0.01 level (bilateral).



## Correlations between general perception of QOL in mental health (SF-36 MCS)

SHHS indicators and sleep disorders (SHHS)	Pearson r	p
Minutes to fall asleep	-.418**	,008
Quality of sleep ( 0-10)	.497*	,001

## Correlations between orexin serum levels

Sleep Disorders	Pearson r	p
Minutes to fall asleep	.407*	,010
Sleep Quality (movement)	-.363*	,023

\* Correlation is significant at the 0.05 level (bilateral).

\*\* Correlation is significant at the 0.01 level (bilateral).

# Discusión

SF-36 Módulo genérico (todas las dimensiones)									Dimensiones globales	
n=123	Función física	Rol físico	Dolor corporal	Percepción de salud general	Salud mental	Rol emocional	Función social	Vitalidad	Escala física	Escala mental
Media	46.1	32.2	54.5	40.8	65.9	58.2	62.7	49.4	43.2	59.0
DE <sup>a</sup>	27.8	41.8	29.5	20.1	22.0	46.0	29.8	23.9	22.2	24.3

SF-36 Módulo específico											
n=123	Sintomatología	Efectos de la enfermedad en la vida diaria	Peso de la enfermedad renal	Estado laboral	Función cognoscitiva	Calidad de la interacción social	Función sexual	Calidad del sueño	Apoyo social	Apoyo del equipo de diálisis	Satisfacción del paciente con los cuidados recibidos del equipo de diálisis
Media	72.0	61.3	36.0	22.9	65.7	72.2	66.7	63.0	75.3	78.2	60.0
DE <sup>a</sup>	17.0	22.0	27.2	33.4	21.7	23.5	35.6	24.0	27.6	24.5	24.5

Morales-Jaimes et al., 2008

Sleep Disorders	Total (N=121)	CAPD (n=39)	APD (n=42)	HD (n=40)	<i>p</i> -value
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Obstructive sleep apnea	3 (2.7)	1 (2.8)	2 (5.1)	0	0.41
Witnessed apnea*	12 (10.0)	4 (10.3)	6 (14.3)	2 (5.1)	.038
Snoring*	23 (21.1)	7 (19.4)	10 (25.6)	6 (17.6)	.067
Insomnia	45 (37.2)	13 (33.3)	13 (30.9)	19 (47.5)	0.25
Excessive Tiredness	25 (20.7)	8 (20.5)	8 (19.0)	9 (22.5)	0.93
Unrefreshing sleep*	42 (34.7)	16 (41.0)	9 (21.4)	17 (42.5)	0.08
Insufficient sleep	34 (28.1)	10 (25.6)	12 (28.6)	12 (30.0)	0.90
Restless legs syndrome	23 (19.0)	9 (23.1)	7 (16.7)	7 (17.5)	0.73
EDS (Epworth >10)	25 (19.0)	10 (25.6)	5 (11.9)	10 (25.0)	0.22

Reynaga-Ornelas, 2011

# Study Limitations

- Sample size that does not allow to generalize the results.
- The study design does not allow causal relationships.
- The enzyme immunoassay technique despite being standardized has a margin of error when you run and could generate bias in the values found.

# Conclusions

- We found sleep problems that affect people with IRC and they affect a substantially their QOL related to mental and physical health of people in hemodialysis.
- Identifying these problems by health professionals (doctors, nurses, nutritionists , psychologists etc.) is essential to provide comprehensive treatment to help improve the QOL of these people.
- An important finding was that levels of orexin are below the controls that were measured , marking the starting point for future studies with this neuropeptide to really determine its role in patients with CRD and find a possible treatment for sleep problems.

**SOMOS**

