

# Sleep Symptoms and Comorbidity Risk Among Mexican Americans and Mexicans



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*‘El sueño es la mejor cura para las problemas de vigilia’  
(Sleep is the best cure for waking troubles)*

Miguel de Cervantes

- Background
  - Sleep Problems & Comorbid Conditions
  - Sleep Disparities among Hispanics
  - Study Intent
- Study Participants, Methods, Results
- Summary and Recommendations



# Sleep Problems & Comorbidities

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- Short and long sleep duration, snoring, apnea, insomnia symptoms, unrefreshing/insufficient sleep, interrupted sleep, poor sleep quality and restless legs are associated with
  - Obesity
  - Cardiovascular disease/hypertension (CVD)
  - Diabetes/impaired glucose tolerance (DM)
  - Pulmonary disease (PD)
  - Depression/anxiety
  - Poorer cognitive function
  - Reduced health-related quality of life
  - Disability and mortality (Baldwin, Ervin et al., 2010)

# Hispanic Sleep Disparities

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- Sleep disturbances are receiving greater recognition as a public health problem:
  - High prevalence (35%-41% among U.S. adults)
  - Impact on public safety (auto/work/home – related accidents)
  - Greater healthcare utilization
- Well-described for English-speaking Caucasians and African Americans
  - Little known about Hispanic sleep and health, particularly for Spanish-speaking Hispanics (Baldwin, Reynaga Ornelas et al., 2010)



# Purpose of Study

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- A majority of Arizona residents of Hispanic descent are of Mexican heritage as is a majority of U.S. Hispanics (67%)
- This comparative study is the first to assess sleep problems and morbidity risk of Mexican Americans and Mexicans that may inform evidence-based regionally responsive sleep health promotion and risk reduction strategies



# Methods

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- Mexican Americans (N=204; 56% women) and Mexicans (N=202; 53% women) provided demographics, sleep habits and provider to patient reported health histories
- Sleep data were derived from the Spanish-translated & validated NIH NHLBI Sleep Heart Health Study (SHHS) Sleep Habits Questionnaire (SHQ) (Baldwin et al., 2012)
- Relative Risk Ratios (RR) with 95% confidence intervals (CI) were used to determine presence of sleep disorders and risk for comorbid conditions (DM, CVD, PD, depression)
- Data were analyzed using frequencies, chi-squared tests and analysis of variance with PASWv20 with significance set at  $p < 0.05$ .



# Spanish-translated SHQ

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- Reliability
  - Cronbach's  $\alpha$  English and Spanish versions  $>.80$  for all scales
  - Spearman-Brown & Intra-class correlations  $\geq .90$  for all scales
- Convergent validity for snoring, apnea, sleep symptoms & disruptors, Epworth
- Four Factors (exploratory)
  - Sleep Duration; Snoring/Apnea; Sleep Symptoms; RLS all  $\geq .400$



ESTUDIO DEL SUEÑO, EL CORAZÓN, Y LA SALUD  
CUESTIONARIO SOBRE LOS HABITOS DEL SUEÑO

Por favor complete este cuestionario lo mas completamente posible y con su mejor conocimiento.

1. ¿Qué tan seguido ronca ahora? (Marque una.)

- 0 Ya no ronco.  
 1 Raramente—menos de una noche por semana.  
 2 A veces—1 o 2 noches por semana.  
 3 Frecuentemente—3 a 5 noches por semana.  
 4 Siempre o casi siempre—6 o 7 noches por semana.  
 9 No sé.

2. ¿Alguna vez le han dicho que lo vieron dejar de respirar mientras dormía?

- 1 Sí  0 NO

3. ¿Alguna vez le ha dicho un doctor que tiene apnea (una condición en la cual deja de respirar brevemente mientras duerme)?

- 1 Sí  0 NO  
 9 NO SÉ

4. Por favor indique que tan seguido le ocurren las siguientes cosas.  
(Marque sola una caja por cada pregunta de la a – c.)

- |                                                                                  | NUNCA<br>(0)               | RARAMENTE<br>(1x/mes<br>o menos) | A VECES<br>(2-4x/mes)      | A MENUDO<br>(5-15x/<br>mes) | CASI<br>SIEMPRE<br>(16-30x/<br>mes) |
|----------------------------------------------------------------------------------|----------------------------|----------------------------------|----------------------------|-----------------------------|-------------------------------------|
| a. Tiene dificultad en dormirse.                                                 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2       | <input type="checkbox"/> 3 | <input type="checkbox"/> 4  | <input type="checkbox"/> 5          |
| b. Se despierta durante la noche y después tiene dificultad en quedarse dormido. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2       | <input type="checkbox"/> 3 | <input type="checkbox"/> 4  | <input type="checkbox"/> 5          |
| c. Se despierta muy temprano en la mañana y no puede volver a dormir.            | <input type="checkbox"/> 1 | <input type="checkbox"/> 2       | <input type="checkbox"/> 3 | <input type="checkbox"/> 4  | <input type="checkbox"/> 5          |

5. ¿Le ha dicho un doctor que tiene el síndrome de las piernas inquietas?

- 1 Sí  0 NO  9 NO SÉ



# Demographics



	N=204	N=202
<b>Sex: n(%)</b>		
•Male	90 (44)	95 (47)
•Female	114 (56)	107 (53)
<b><u>Age</u> (mean ± SD)*</b>	<u>40.5 ± 13.5</u>	<u>36.9 ± 13.2</u>
•Range (years)	18 – 78	18 – 78
<b>Education (mean ± SD)</b>	10.0 ± 3.6	9.4 ± 4.8
•Range (in years)	0 – 19	0 – 21
<b>Marital Status: n(%)</b>		
•Married/Partnered	142 (70)	135 (67)
•Single/Divorced/Widowed	62 (30)	67 (33)
<b>Annual Income in USD: n(%)**</b>		
•< <u>\$5,000</u>	<u>53 (26)</u>	<u>201 (99)</u>
•\$5,000 - \$10,000	29 (14)	1 (1)
•\$10,000 - \$20,000	52 (26) (66%)	
•\$20,000 - \$40,000	54 (27)	
•>\$40,000	16 (7)	
<b>Insurance Status: n(%)**</b>		
• <u>Not insured</u>	<u>110 (54)</u>	<u>39 (19)</u>
•Insured	93 (46)	163 (81)
<b>Body Mass Index</b>	27.4 ± 4.7	27.2 ± 5.3
•Range	17 – 42	18 – 50

# Acculturation Categories for Mexican Americans (n=196)



76.50%

■ Traditional

■ Assimilated



■ Bicultural

2.90%

11.30%

# Prevalence Rates

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Sleep Variables	 N=204	 N=202
	%	%
Snoring	56 <sup>1</sup>	50 <sup>1</sup>
Insufficient sleep	33 <sup>2</sup>	34 <sup>4</sup>
Loud snoring	32 <sup>3</sup>	28 <sup>6</sup>
≤ 6 hours of sleep/night	29 <sup>4</sup>	36 <sup>2</sup>
Early AM awakening	28 <sup>5</sup>	20 <sup>7</sup>
RLS symptoms	25 <sup>6</sup>	35 <sup>3</sup>
Non-restorative sleep	23 <sup>7</sup>	31 <sup>5</sup>
Difficulty staying asleep	22 <sup>8</sup>	12 <sup>10</sup>
Difficulty falling asleep	18 <sup>9</sup>	16 <sup>9</sup>
Daytime sleepiness	11 <sup>10</sup>	17 <sup>8</sup>
Witnessed apnea	6 <sup>11</sup>	9 <sup>11</sup>

SUPERSCRIPT = HIGH TO LOW PREVALENCE

# Relative Risk: Sleep & Comorbidities

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N=204



N=202

## Sleep Variables

Sleep Variables	N=204				N=202			
	Yes	No	RR	CI	Yes	No	RR	CI
	%	%			%	%		
Daytime sleepiness	46	22	3.7	2.1-6.8	53	27	2.0	1.3-3.0
Difficulty falling asleep	38	11	3.5	1.9-6.4	50	27	1.8	1.2-2.8
Non-restorative sleep	33	11	3.0	1.6-5.6	42	26	1.6	1.1-2.4
Loud snoring	39	15	2.6	1.3-5.4	33	35	0.9	0.5-1.7
Difficulty staying asleep	30	12	2.5	1.3-4.6	39	31	1.3	0.7-2.2
Witnessed apnea	36	15	2.5	1.1-5.8	33	31	1.0	0.5-2.1
RLS Symptoms	27	12	2.2	1.2-4.2	53	29	1.8	1.1-3.1
<i>Insufficient sleep</i>	18	15	1.2	0.6-2.3	41	27	1.5	1.0-2.3

NOTE: OVERALL, GREATER NUMBERS OF MEXICANS REPORTED PROVIDER DIAGNOSED CONDITIONS, WHICH MAY REFLECT INSURANCE STATUS/ACCESS TO CARE COMPARED TO MEXICAN AMERICANS

RR = RELATIVE RISK; CI = CONFIDENCE INTERVALS

# Snoring and Metabolic Syndrome

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Sleep Variables	N=204				N=202			
	Yes	No	RR	CI	Yes	No	RR	CI
	n	n			n	n		
Loud snoring	8	7	2.5	1.0-6.2	7	5	3.6	1.3-10.6

RR = RELATIVE RISK; CI = CONFIDENCE INTERVALS

- SELF-REPORTED PROVIDER-DIAGNOSED HYPERTENSION, HIGH CHOLESTEROL AND A BMI >25 WERE COMBINED AS A PROXY FOR METABOLIC SYNDROME
- SELF-REPORTED LOUD SNORING WAS THE ONLY VARIABLE TO BE A RISK FACTOR FOR METABOLIC SYNDROME



# Conclusions

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- Greater numbers of Mexicans reported provider diagnosed health conditions compared to Mexican Americans, which could reflect health disparities/ access to care/acclimation issues for Mexican Americans
- Both groups report high rates of sleep problems, particularly loud/snoring, insufficient sleep, short sleep duration, and restless legs symptoms
  - Mexican Americans report higher rates of loud snoring and insomnia symptoms
  - Mexicans report higher rates for short sleep duration, restless legs symptoms, and non-restorative sleep
- Persons from both groups who report insomnia symptoms, unrefreshing sleep, witnessed apnea, or restless legs symptoms are at greater risk for developing DM, CVD, PD or depression compared to their respective cohorts without such sleep problems
- Risk ratios were higher for Mexican Americans compared to Mexicans
  - Loud snoring was not a risk factor for Mexicans
  - Insufficient sleep was not a risk factor for Mexican Americans
- Loud snoring for both groups also suggests greater risk for the metabolic syndrome, with 3½ times greater risk seen in Mexicans compared to 2½ times greater risk among Mexican Americans compared to their respective cohorts; snoring as a risk factor for this syndrome has been reported elsewhere (Troxel et al., 2010)

# Implications

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- Consistent with large cross-sectional studies, Mexican Americans and Mexicans with sleep symptoms are at greater risk for DM, CVD, PD or depression
- Future studies should examine the influence of ‘acculturation’ on sleep health of Mexican Americans and migrants to other countries
- Findings underscore the need for ‘immigration health’ training for providers and culturally relevant sleep education, interventions and policy in nursing research and practice and research bi-nationally to
  - Reduce and prevent comorbidities
  - Promote healthy lifestyles (sleep, diet, activity)
  - Reduce health care costs
  - Improve quality of life among respective populations in the U.S. and Mexico

# Outcome for Promotoras: Su Sueño/Su Vida

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# Family for Su Sueño/Su Vida

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- Para ayudar a comprender los trastornos del sueño más comunes, vamos a conocer a la familia Ramírez (de la NIH NHLBI *Su Corazón/Su Vida* en el E.U.). Después de leer acerca de cada miembro de la familia, estudiaremos cada trastorno del sueño, los síntomas, las causas y los problemas de salud y los comportamientos asociados a cada trastorno.



OSA



INSOMNIA



RLS



SHORT SLEEP



SNORING



# Session 13 Framework

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- One of 13 sessions for *Camino de la Salud* under the auspices of the World Diabetes Association for Juarez, Reynosa, Tijuana Health Ministries
- Sessions include diet, physical activity, diabetes, heart health, mental health
- Format for Su Sueno/Su Vida:
  - 1. ¿Cómo es su sueño? Complete la encuesta breve sobre su sueño
  - 2. Información sobre la importancia del sueño.
  - 3. Principales trastornos del sueño (la familia Ramírez)
  - 4. Enfermedades crónicas con trastornos del sueño
  - 5. Actividad sobre los factores de riesgo
    - Cuestionario sobre actividades para sueño insuficiente
    - El sueño, la dieta y el ejercicio juntos
  - 6. Actividades que promueven el sueño saludable
  - 7. Post-test sobre los trastornos del sueño

# Evaluation/Next Steps

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- Pre/post tests of promotoras in Juarez & Tijuana show significant learning on 10-item quiz ( $p < 0.001$ )
- Qualitative validation (using UNICEF & PAHO guidelines) shows positive feedback, learning outcomes with good understanding of concepts
- Pre/post tests of health providers in Guanajuato & PAHO personnel show significant learning ( $p < 0.0001$ )
- More detailed provider manual in process of completion with concomitant PPT

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# Estudio del Sueño

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# ¿Preguntas?

*¡Juntos podemos hacer la diferencia  
en promoción de la salud mundial!*