Sleep in diverse populations

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Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of The American Academy of Sleep Medicine and the Michigan Academy of Sleep Medicine. The American Academy of Sleep Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Conflict of Interest Disclosures for Speakers

Shelley Hershner, MD has no relevant financial relationships with ineligible companies to disclose.

Learning Objectives

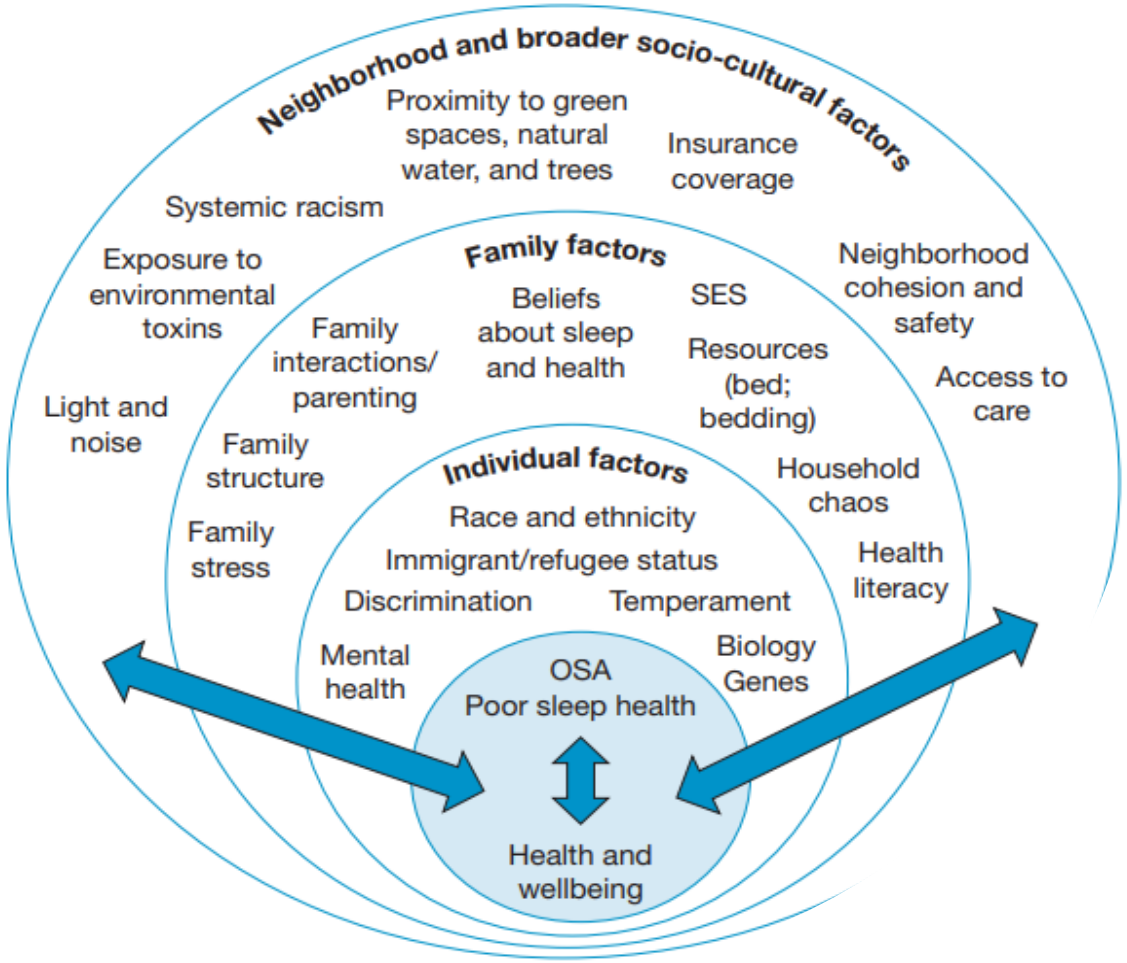
- Upon completion of this course, attendees should be able to:
  - **Identify sleep health disparities in specific populations.**
  - **Enhance clinic practices for inclusivity.**
  - **Effectively treat sleep disorders across diverse populations.**

What are sleep health disparities?

- **Health disparities**
- Inequitable and preventable differences in health outcomes due to historical, socioeconomic, and cultural or political contexts.

Why do sleep disparities occur?

- The sleep state is highly sensitive to external threats because a sleeping individual is vulnerable.



Race and ethnicity

- **BUT are we capturing the right data?**
- Black adults did not report difficulty falling asleep.
  - But
- Did report taking longer to fall asleep.

	Sleep duration	Sleep quality	Sleepiness	Sleep complaints
American Indian and Alaska Native	↑[45]	IE	IE	IE
Asian	↓[22,26,37,49]	↓[22,28]	↓[22]	↑[28]
Black	↓[22,32,37,43,53]	↓[22,33,36,44]	↑[22]	MR[22,57]
Hispanic/Latino	↓[22,26,32,37,43,64]	↓ MR[22,44,61]	MR[22]	↓[22,26,29,44,64]
Native Hawaiian and Pacific Islander	↓[66,114]	IE	IE	↑ IE[66]

Note: The direction of the arrow refers to the direction of the association (e.g. lower or higher).
Abbreviations: IE-insufficient evidence; MR-mixed results.

Example- Sleep apnea among black adults

Table 2. Obstructive sleep apnea severity and symptoms

	Men			Women			
	Black (n = 141, 15.8%)	White (n = 248, 27.9%)	P Value	Black (n = 309, 34.7%)	White (n = 192, 21.6%)	P Value	Global P Value
AHI, events/h (n = 890)	52.4 ± 39.4	39.0 ± 28.9	< 0.001	33.4 ± 32.3	26.2 ± 23.8	0.004	<0.001
Arousal index, events/h (n = 847)	39.7 ± 30.0	31.4 ± 20.7	0.005	24.6 ± 20.1	23.4 ± 15.4	0.47	<0.001
Minimum Sp_{O_2}, % (n = 859)	78 ± 11	82 ± 7	<0.001	81 ± 8	83 ± 7	0.01	<0.001
Total sleep time with Sp_{O_2} < 90%, % (n = 832)	14.8 ± 24.4	9.2 ± 16.7	0.02	6.3 ± 14.6	7.5 ± 16.7	0.44	<0.001
Epworth Sleepiness Scale score (n = 831)	12.2 ± 5.9	9.4 ± 5.2	<0.001	11.2 ± 5.9	9.8 ± 5.6	0.009	<0.001
Snores (n = 880)	125 (90.6%)	225 (92.2%)	0.58	279 (91.2%)	158 (82.3%)	0.003	0.004
Regular snoring (n = 737)	108 (87.1%)	174 (84.5%)	0.51	214 (82.3%)	120 (81.6%)	0.86	0.58
Witnessed apnea (n = 864)	93 (68.4%)	138 (57.3%)	0.03	143 (47.5%)	66 (35.5%)	0.009	<0.001
Unrefreshing sleep (n = 869)	97 (72.4%)	165 (67.9%)	0.37	218 (71.9%)	145 (76.7%)	0.24	0.25
Drowsy driving (n = 876)	49 (35.5%)	63 (26.0%)	0.05	63 (20.7%)	40 (20.9%)	0.94	0.005

Definition of abbreviations: AHI = apnea hypopnea index; SD = standard deviation; Sp_{O_2} = oxygen saturation as measured by pulse oximetry. Values provided as mean ± SD or number (percentage). P values presented both comparing values within each sex and for a global test of homogeneity.

Referral – for obstructive sleep apnea

- **9-fold increased if patient requested**
- **Black patients have a knowledge gap for OSA**
- **Only 38% of black patients arrived for sleep clinic appointment**

Sleep data

Table 2. Racial/ethnic differences in selected sleep disorders compared to non-Hispanic White adults.

	Insomnia	SDB	RLS	PLMS	Parasomnia	Hypersomnia
Asian	MR		IE	IE	IE	ND
Hispanic/Latino	MR				IE	ND
Non- Hispanic Black	MR				MR	ND

Note: The direction of the arrow indicates the association direction (e.g. lower or higher). **Abbreviations:** SDB-sleep-disordered breathing; RLS-restless legs syndrome; PLMS-periodic limb movements of sleep; MR-mixed results; IE-insufficient evidence; ND-no difference.

How this might impact your clinic practice: Race and ethnicity

Not a lot of guidance from the literature

- **What is your office like?**
- Do you provide multiple appointment reminders?
- Diverse staff
- Do you assume computer literacy or access to smart phones, computers, portal
- Social work availability?

How this might impact your clinic practice: Race and ethnicity

- Sleep interventions need **socio-contextual factors**
- **Research is needed, but in general**
  - *Individual factors*
  - *Interpersonal factors*
  - *Neighborhood and community factors*
  - *Organizational factors*
- Support
  - Peer-based sleep health education

- **Culturally adapted cognitive behavioral therapy** for insomnia (CBT-I)
    - No studies, but non-sleep related studies showed a large effect size
- More use of primary care providers -- higher proportion of **nonwhite providers versus sleep specialists**.

Transgender individuals

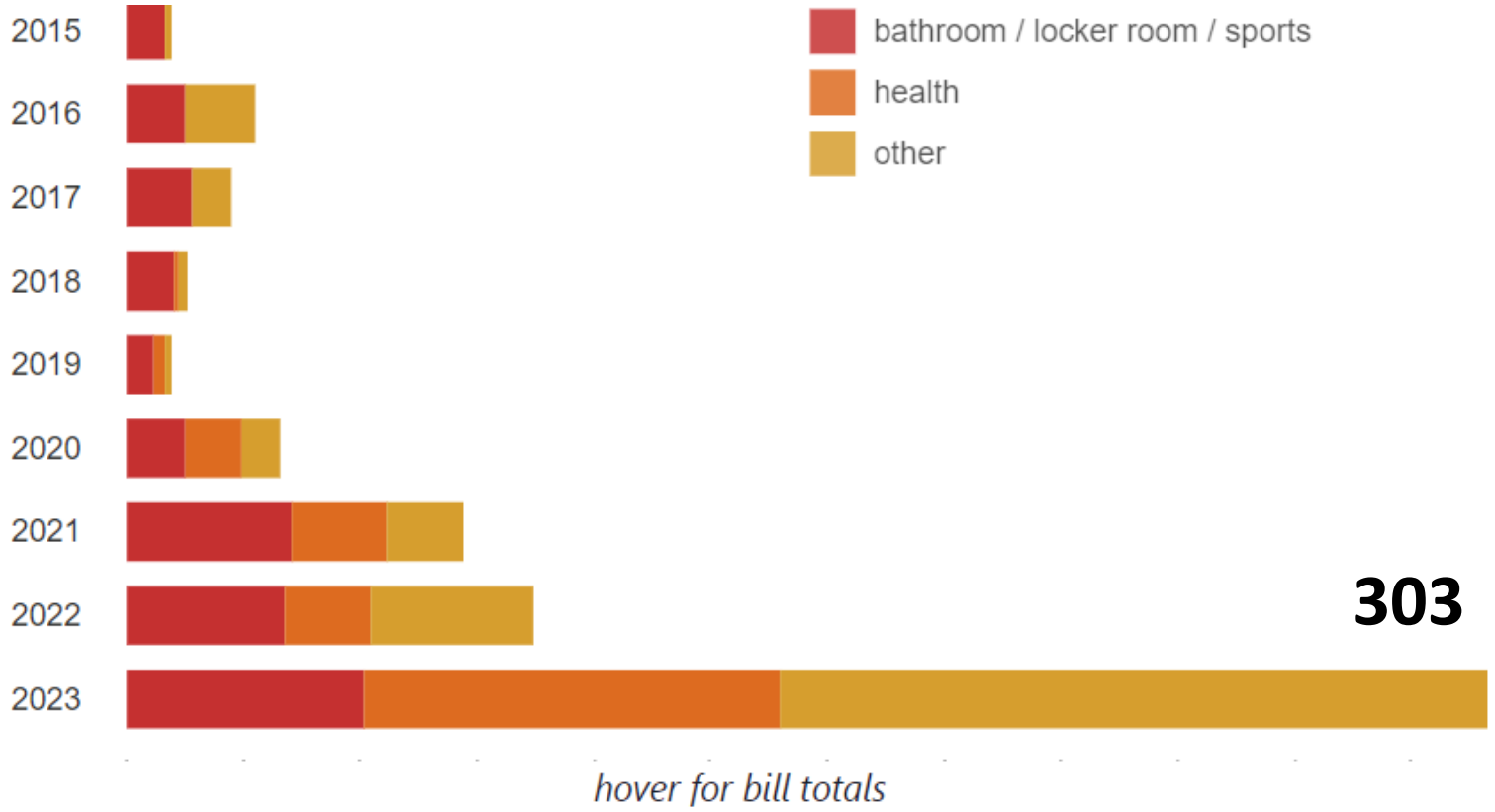
- **Sex** refers to **biological-** characteristics of male or female
- **Sexual orientation-** inherent attraction to people independent of gender identity.
- **Gender identity or gender expression-** how individuals perceive themselves: male, female, a blend of both or neither

Terminology	Definition	Sex assigned at birth	Pronouns, but ASK
Cisgender	Sex corresponds to sex assigned of birth		Male and female pronouns
Transgender	Does not correspond to sex assigned of birth		Ask
Non-binary	Neither male nor female		They/them
Transgender male Transmasculine	Self-identify as male	Female, AFAB	Him/his
Transfeminine Transgender woman	Self-identify as female	Male, AMAB	She/her

Tracking the rise of anti-trans bills in the U.S.

The United States has experienced a long rise in anti-trans legislation.

Now it's surging.



Transgender- delay in health care

Avoided or postponed care due to fear of discrimination

This was in 2010 and 2017– what is it now??

- 28-50% postponed medical care because of fear of discrimination.
- 19% reported being refused care due gender identity
- 28% reported verbal harassment
- 50% of respondents taught their medical provider about transgender care.

Sleep disorders among transgender individuals

Table 3—Associations between transgender or gender-nonconforming identity and sleep disorders in a US youth sample.

	TGNC (n = 2,652) % (n)	Cisgender (n = 1,213,392) % (n)	Unadjusted OR OR (95% CI)	*P*	Age adjusted OR OR (95% CI)	*P*
Any sleep disorder	297 (11.2)	32,649 (2.7)	4.6 (4.0, 5.2)	<.001	4.3 (3.8, 4.9)	<.001
Insomnia	221 (8.3)	18,570 (1.5)	5.9 (5.1, 6.7)	<.001	5.4 (4.7, 6.2)	<.001
Sleep apnea	48 (1.8)	6,958 (0.6)	3.2 (2.4, 4.3)	<.001	3.0 (2.3, 4.0)	<.001
Other sleep disorders†	76 (2.9)	11,195 (0.9)	3.0 (2.5, 4.0)	<.001	3.1 (2.5, 3.9)	<.001

†Other sleep disorders: hypersomnolence, parasomnia, circadian rhythm, and sleep movement disorders. CI = confidence interval, OR = odds ratio, TGNC = transgender or gender-nonconforming.

Gender affirming therapy might be protective- not confirmed by other study

	Prevalence n (%)	Unadjusted OR OR (95% CI)	*P*	Age adjusted OR OR (95% CI)	*P*
Any sleep disorder					
TGNC not on GAT (n = 1,216)	178 (14.6)	Reference		Reference	
TGNC on GAT (n = 1,387)	112 (8.1)	0.5 (0.4, 0.7)	<.001	0.5 (0.4, 0.7)	<.001
Insomnia					
TGNC not on GAT (n = 1,216)	135 (11.1)	Reference		Reference	
TGNC on GAT (n = 1,387)	80 (5.8)	0.5 (0.4, 0.7)	<.001	0.5 (0.4, 0.7)	<.001
Sleep apnea					
TGNC not on GAT (n = 1,216)	22 (1.8)	Reference		Reference	
TGNC on GAT (n = 1,387)	23 (1.7)	0.9 (0.5, 1.7)	.768	0.7 (0.4, 1.2)	.193
Other sleep disorders†					
TGNC not on GAT (n = 1,216)	51 (4.2)	Reference		Reference	
TGNC on GAT (n = 1,387)	24 (1.7)	0.4 (0.2, 0.7)	<.001	0.5 (0.3, 0.9)	.019

†Other sleep disorders: hypersomnolence, parasomnia, circadian rhythm, and sleep movement disorders. CI = confidence interval, GAT = gender-affirming therapy, OR = odds ratio, TGNC = transgender or gender-nonconforming.

Qualitative study sleep and transgender individuals

I still sleep with a stuffed animal … I used to do that, in part, because I was shielding my arms from my chest. I didn't want to touch my chest in my sleep and be aware of things that I didn't want to be reminded of. Whereas I've had top surgery, so I don't have anything to be hitting all night and worried about. (Transgender male, queer, White, age 24)

Anxiety that I have in my life stemming from my gender identity would be part of that. Then just having that kind of thought process in my head, having it be difficult to go to sleep. (Transgender male, queer, White, age 33)

Being trans, you always have a higher level of anxiety because you're constantly thinking about your gender. In general, that could cause you to have more trouble sleeping. (Transgender male and non-binary, queer, White, age 31)

I was diagnosed with depression. Before a month ago, I wasn't sleeping at all. There'll be days that I would stay up all day and then sleep all night, or sleep all day and be up all night, until I was prescribed antidepressants, and then that's what helped me go back into my sleep cycle. (Non-binary, gay/lesbian, Hispanic/Latino, age 31)

How this might impact your clinic practice: Transgender care

- Vital to use correct pronouns or use their name
- Correct pronouns in your **notes**
- Realize how a polysomnogram can be triggering for a patient
  - Top surgery- patients can be uncomfortable having them exposed
  - AFAB may wear a binder. These should be removed for sleep, but patient may be uncomfortable

LGB studies

	Sleep quality	Sleep efficiency	Sleep duration	Daytime sleepiness
LGB individuals	↓	↓	↓	↑

	Sleep problems
Heterosexual	40.4
Homosexual adults	49
• Woman	45
• Men	37.2
Bisexual	62.7

Higher stress levels may explain these findings as low family support was associated with sustained sleep difficulties among LBG individuals.

How this might impact your clinic practice: Inclusive language

Chosen name versus preferred name

Your EMR-

- Gender categories
- Sexual orientation
- Relationship status- NOT *marital status*

When an error occurs apologize sincerely but without fanfare

Inclusive language in patient education

Inclusive language from all staff- making appointments, nursing, sleep techs

Where is a single gender bathroom location. Is there a sign?

Biggest barrier is a perception that inclusive language is not necessary.

Your staff

- Biggest barrier is a perception that inclusive language is not necessary.
  - “A provider’s medical care skills for the LGBTQ+ population will be measured by the quality of care given by the least-trained staff person.”

How this might impact your clinic practice- LGBTQ

How do you ask about witnessed snoring, apneas, sleep related behaviors

Husband

Wife

Spouse

Partner

Significant other

Bed partner

Do not assume a gender for bedpartner. Terming or "bed partner or they" may be best

Cultural competence

Institutional Change

- **Many proposed models- few tested**
  - Cultural competency
  - Non- discrimination policies
  - Healthcare delivery system is diverse
  - Tracking LGBT health-related content in curricula and policies
  - Recruit LGBT students, faculty, and staff
  - Ongoing data collection and analysis of disparities related to sexual orientation and gender identity/expression
  - Community outreach and support
  - Safe zone training
  - Human Rights Campaign's Healthcare Equality Index (HEI).

Sleep health disparities: socioeconomic status

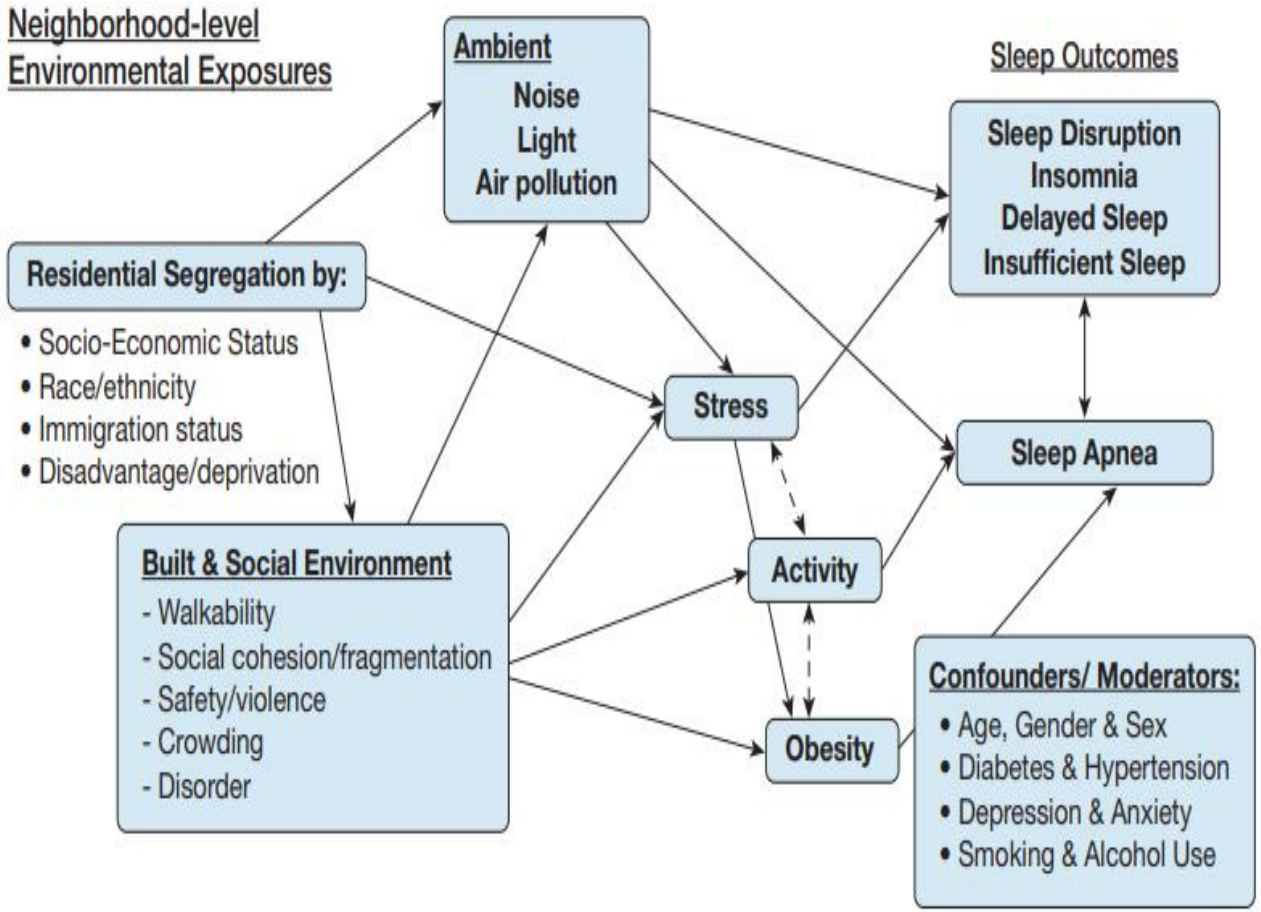
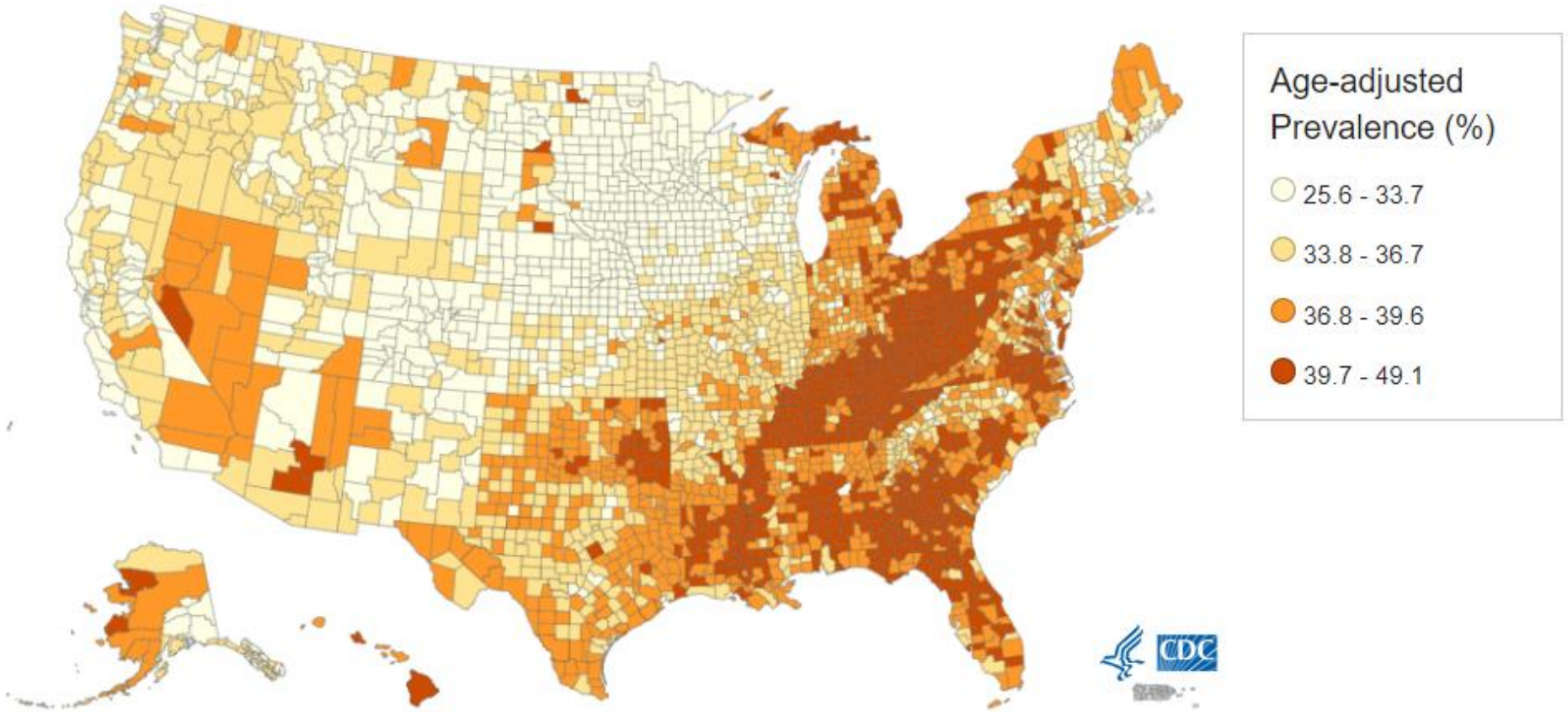


Figure 1 – *Sleep and the environment.*

Sleep health disparities: low socioeconomic status and short sleep duration (less than 7 hours)



Sleep health disparities: socioeconomic status

- **Adolescents go to sleep 30 min later and sleep for 39 min less on the night after a violent crime occurred within half a mile of their home.**

	Sleep quality	Sleep efficiency	Sleep duration	Sleep latency	Wake after sleep onset	OSA
Lower SES						

How this might impact your clinic social economic status

Religion

Religion may influence sleep

Sleep duration	**Some religious texts promote healthy behaviors. Shorter sleep duration may occur due to religious observations**
Sleep quality	**Improved to reduced arousal related to prayer**
Sleep timing	**Rise time and sleep time may change related to prayer timing or religious attendance**
Sleep position	**Some religions encourage specific sleep positions**
Sleep medications	**Decreased utilization**

Religion- how it might improve sleep

Sleep quality	Religious security associated: Higher sleep quality Religious insecurity associated: Lower sleep quality
Decreased psychological distress	Reduced Anger Depression Anxiety Nonspecific psychological distress
Substance use	Lower rates Smoking Heavy alcohol consumption Illicit substance use
Stress exposure	Improved Social engagement Social integration Social support Psychological resources Hope, optimism, and a sense of meaning
Allostatic load	Decreased physiological arousal Lower levels of blood pressure C-reactive protein, Interleukin-6 White blood cells Epstein-barr virus Epinephrine Cortisol

How this might impact your clinic practice

- Realize that religion may influence sleep patterns:
  - The timing of prayer may not be option.
  - Culturally sensitive questions must be used
  - Treatment may be challenging

way to work. Conversely, religious Jewish men are expected to pray three times a day in the synagogue and many said they wake up early to attend the morning prayer. Observant Muslim men and women pray five times per day and those who wish to pray on time must wake up very early for dawn prayer. Most prayed at home, but a few men prayed at the Mosque, especially on Fridays. Some religious Muslims stayed awake after the morning prayer, while others went back to sleep. Several respondents emphasized that attempts to go back to sleep are not always successful. As Aisha explained, "Praying doesn't take me a long time, but [switches to the third person] because the person wakes up, performs Wudu [a purification ritual before prayer], and feels alert, even though he intends to go back to sleep, he won't necessarily fall asleep."

Disability: Intellectual

	Sleep disturbances	Poor sleep quality	Short sleep duration	Diagnosed sleep disorder	Insomnia symptoms
Intellectual disability	23–47%	70-90%	38-70%	13-86%	20-88%

How this might impact your clinic practice: disabilities

A high threshold to evaluate for sleep disorder

Always keep in mind caregiver burden

A global perspective to improve sleep disparities

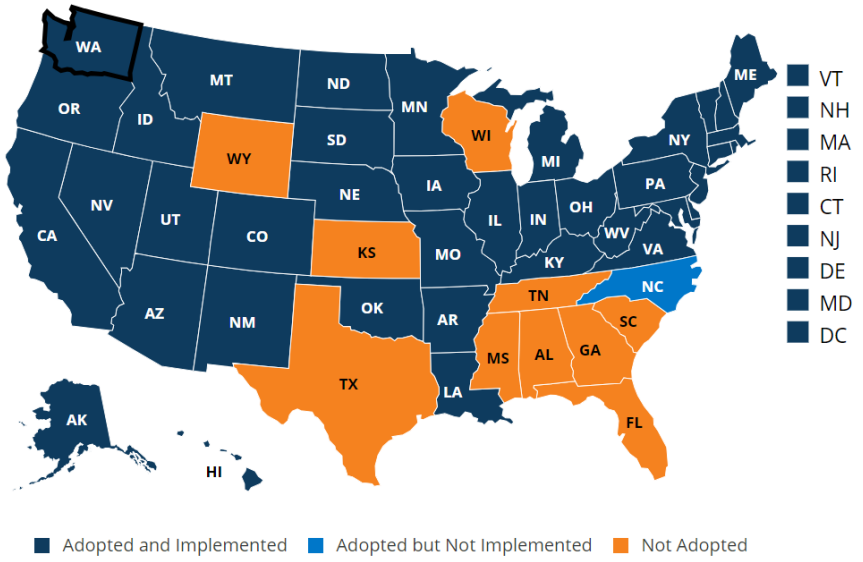
TABLE 1] Potential Solutions for Addressing Sleep Health Disparities

Ecological Level	Factor Contributing to Sleep Disparities	Proposed Solutions
Individual and family levels	Language and cultural barriers	Language-based educational modules, culturally appropriate materials
	Lack of sleep-specific resources	Provide beds and bedding, quiet, dark sleeping space for institutionalized and homeless individuals
	Beliefs about sleep and heath Health literacy	Targeted sleep promotion education in clinics, daycares, schools, lay press, social media Mobile phone apps to promote healthy sleep
	Perceived discrimination	Integrated cultural appropriateness and empowerment
	Racism and bias	Anti-racism education in medical training
Neighborhood and broader sociocultural factors	Proximity to green spaces Light and noise Neighborhood cohesion and safety	Improved urban planning • Increased green spaces • More recreational areas • Promote walkability • Reduce light, air, and noise pollution Optimize neighborhood safety
	Access to care: remote and rural locations, transportation barriers	Home sleep apnea testing (HSAT), Auto-PAP therapy, and remote PAP monitoring Electronic prescribing Telemedicine • Broaden provider workforce to provide sleep care • Provide direct care through teleconference and videoconferencing Integrated services within primary care practices, including behavioral health Proactive screening of high-risk patients
	Segregation and redlining	Revision of zoning laws and mortgage lending practices
	Access to care: insurance coverage for sleep-related services	Advocacy (position statements, policy work)

Auto-PAP therapy = auto-adjusting positive airway pressure therapy.

Global solutions

- Black, Latinx, and American Indian individuals are at disproportionately high risk of being uninsured or under insured.
- Expanding Medicaid
  - Insurance for 4 million poor uninsured adults
  - Nearly 60% are from racial minority groups
- Advocacy
  - School start times



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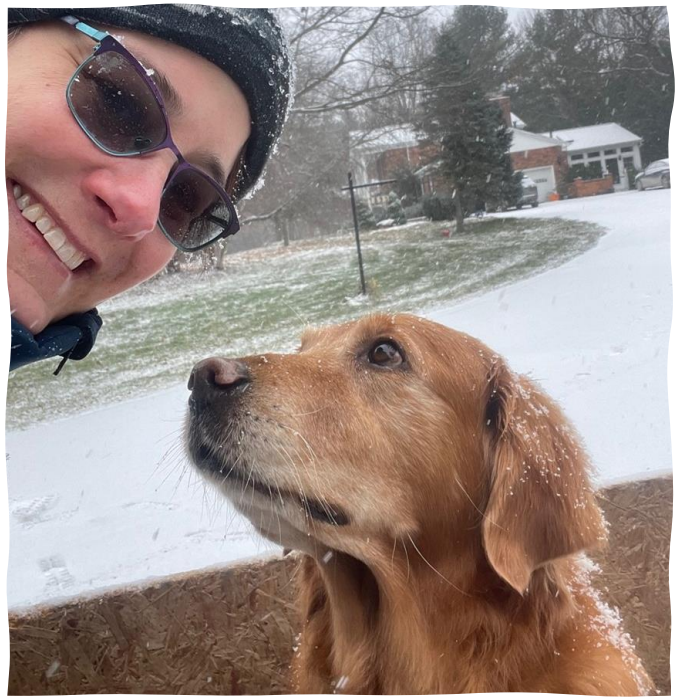

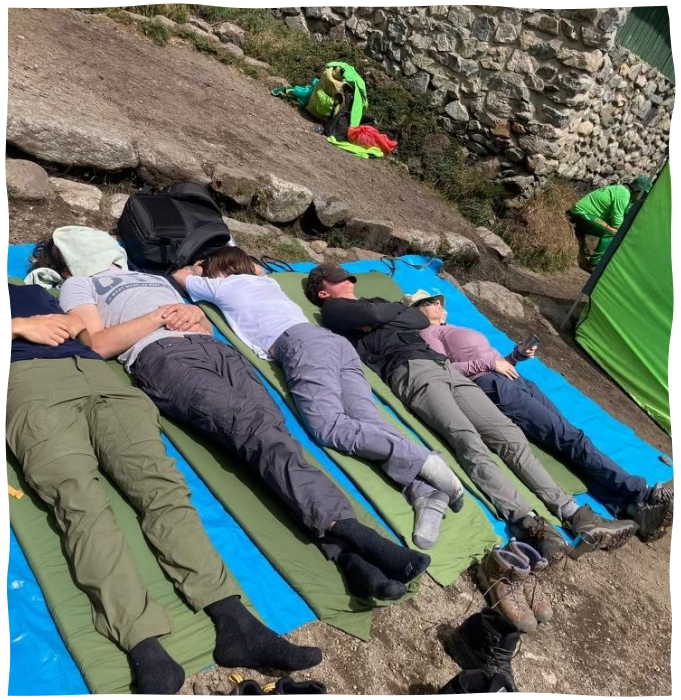

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