Enough Zzzs?: Sleep, Snoring, and Sleep Apnea Evaluation in Underinsured Overweight and Obese Children

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Disclosures

• We have no relevant disclosures to report

Learning Objectives

Identify the importance of assessing children for enough quality hours of sleep and sleep apnea.

Background

• Amount and quality of sleep is important for health and well-being

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Recommended Hours of Sleep per Day</th>
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<tbody>
<tr>
<td>Newborn</td>
<td>14–17 hours (National Sleep Foundation)(^1)</td>
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<tr>
<td>Infant 4–12 months</td>
<td>12–16 hours per 24 hours (including naps)(^2)</td>
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<td>Toddler 1–2 years</td>
<td>11–14 hours per 24 hours (including naps)(^2)</td>
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<td>Preschool 3–5 years</td>
<td>10–13 hours per 24 hours (including naps)(^2)</td>
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<td>School Age 6–12 years</td>
<td>9–12 hours per 24 hours(^2)</td>
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<td>Teen 13–18 years</td>
<td>8–10 hours per 24 hours(^2)</td>
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<tr>
<td>Adult 18–60 years</td>
<td>7 or more hours per night(^3)</td>
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<tr>
<td>61–64 years</td>
<td>7–9 hours(^1)</td>
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<td>65 years and older</td>
<td>7–8 hours(^1) (CDC, 2017)</td>
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Background

• Adequate sleep duration for age leads to:
  ➢ Improved attention
  ➢ Behavior learning
  ➢ Memory
  ➢ Emotional regulation
  ➢ Quality of life
  ➢ Mental and physical health (APP, 2018)

• Insufficient sleep each night is associated with:
  ➢ Increase in injuries
  ➢ Hypertension
  ➢ Obesity
  ➢ Depression (APP, 2018)
Background

• Insufficient sleep and sleep disorders frequently diagnosed in overweight and obese children

• Uninsured families are less likely to seek preventative medical care due to barriers

Objective

• To evaluate sleep quality, snoring, and frequency of referrals to specialists for sleep apnea in uninsured, primarily Hispanic, overweight and obese children.

Methods

• Children were recruited for the 1 month program because they were overweight or obese at well child check

• Paper survey was given to 45 parents whose children were enrolled in a lifestyle modification program on a mobile clinic

Results

• 45 overweight/obese uninsured children ages 8-18 (42% male) were surveyed

• 73% of families surveyed had an annual family income less than $40,000

• 4% reported that their child had been diagnosed previously with a chronic medical condition

• 91% Hispanic

• Spanish was the primary language spoken at home (73%)

Results

• No statistically significant differences between BMI and hours of sleep or frequency of snoring

• 46% of parents reported that their child snores

  – Only 6% had received formal evaluation for sleep apnea
Obstructive Sleep Apnea

- 1-3% of children suffer from OSA
- Peak age group is pre-school years
- Most common cause is enlarge tonsils and adenoids
- Obesity is a risk factor
- As obesity rates rise, rates of OSA are also expected to rise

Snoring and OSA

- Snoring and noisy breathing can be normal
- Snoring and noisy breathing can be a sign of OSA
  - Increased work of breathing (sleep)
  - Pauses in breathing (sleep)
  - Choking, gasping, or snorting (sleep)
  - Restless sleep
  - Sweating during sleep
  - Unusual sleep positions
  - Mouth breathing (day and sleep)
  - Neurobehavioral symptoms
  - Sleepiness

Snoring and OSA

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- Pauses in breathing (sleep)
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OSA Complications

- Difficulty paying attention and learning
- Behavior problems
- Failure to thrive
- Pulmonary hypertension
- Cor pulmonale

Recommendations for OSA

- AAP recommends that all children be screened for snoring
- Detailed history regarding labored breathing during sleep, observed apnea, restless sleep, diaphoresis, enuresis, cyanosis, excessive daytime sleepiness, and behavior or learning problems
- Referral to Pulmonology, otolaryngology, or sleep medicine specialist
  - Polysomnography (overnight sleep study)

Conclusion

- Uninsured children may not be sleeping enough quality hours at night
  - Understood risk factor for obesity
- Overweight/obese uninsured children who snore may not receive sleep evaluations due to barriers
  - High cost
  - Poor insurance access
  - Lack of established care
  - Transportation barriers

Conclusion

- Further studies are needed to understand how to reach uninsured children and provide recommended sleep counseling and evaluation for sleep disorders
References

Does the MCHAT-R Detect Similar Children at Risk for Developmental-Behavioral/Mental Health Problems as Broad-Band Screens like PEDS?
Patricia Gellasch, PhD, APN-C
Victoria Chen, MD
Frances Page Glascoe, PhD

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Disclosures
• Dr. Gellasch provides consulting services to PEDS Online (the online application that generated data for this research) but she does not receive consulting fees for research, presentations or publications.
• Dr. Chen has no conflicts of interest to disclose.
• Dr. Glascoe is the author of two screening tests used in this study, but she does not receive royalties from the online application that generated data for this research.

Learning Objective
• Describe the differences in detection of mental health, behavioral, & developmental disorders/delays when narrow-band versus broad-band developmental-behavioral screening tools are used.

Background
American Academy of Pediatrics (AAP) recommends administering both broad-band and narrow-band screening tools to detect children at risk for mental health, behavioral, and developmental disorders/delays (MBDD)

Examples of each include:

Broad-Band Screens
✓ Ages and Stages Questionnaire-3
✓ Parents Evaluation of Developmental Status (PEDS)
✓ PEDS: Developmental Milestones (PEDS-DM)

Narrow-Band Screens
✓ Modified Checklist of Autism in Toddlers (M-CHAT)/M-CHAT-Revised
✓ Communication and Symbolic Behavior Scales-Developmental Profile

2016 AAP Survey of Primary Care Pediatricians found:

Broad-Band Screens
✓ 48% use Ages and Stages Questionnaire-3 (ASQ)
✓ 18% use the Parents’ Evaluation of Developmental Status (PEDS)

Narrow-Band Screens
✓ 81% of pediatricians used a validated screening tool to detect Autism Spectrum Disorder
✓ 74% using the M-CHAT/R Revised
Objective

• To determine whether narrow-band screening tools (i.e., M-CHAT) can be used as a sole approach to early detection of children at-risk for mental health, behavioral, & developmental disorders/delays (MBDD)

Methods

• Naturalistic, retrospective cohort study of screening results from 197 general pediatric and family practice clinics
• Using PEDS Online from 2014-2016 in 24 US States
  ➢ Selected only the 16% (N = 37,064) of encounters with children in the birth to 8-year age range in which children were administered both broad- and narrow-band screening tools

Methods

• Broad Band Screening Tools
  ➢ Parents’ Evaluation of Developmental Status (Peds)
  ➢ Peds: Developmental Milestones (Peds:DM)
• Narrow Band Screening Tool
  ➢ Modified Checklist of Autism in Toddlers (MCHAT/MCHAT-Revised (MCHAT-R))
• Screen results categorized into “At Risk” for delays/disorders if
  ➢ High Risk on the Peds or Peds:DM or MCHAT
  ➢ Moderate Risk on both the Peds and Peds:DM
• All other results considered Low Risk

Results

• Sample Population similar to US Census Population
  ➢ Except the West and Midwest were under-represented and the South was over-represented in this sample
• Children had mean age of 24 months (SD 7)
• Of the 37,064 encounters, 12% (4611) of children were found to be “at-risk” for MBDD

Results

At Risk Children for MBDD (n=4611)

• Screening with only narrow-band screening tools OR only broad-band screening tools may not adequately identify many children at risk for MBDD.
• Primary care providers should use both broad-band and narrow-band screening tools as recommended in AAP guidelines

Conclusion
Limitations

• Development assessment outcome measures were not used in this study
  ➢ It is unclear what % of children identified at-risk for MBDD were incorrectly identified (i.e., false positive screen results)
  ➢ However, all screens used in this study were validated with diagnostic instruments and found to have a high sensitivity/specificity
• This analysis selected for children between 16 months and 48 months old.
  ➢ Results may not be generalizable to screening outside of this age range.

Next Steps

• Future studies should look at developmental outcomes in relation to narrow-band and broad-band screening tool results concurrently to better understand the differential diagnosis of children identified by 1 or more screening tools
What Keeps Pediatric Nurses Up at Night?: A National Delphi Study
Amy Ramick DNP, RN, ACNS-BC, NPD-BC
Nursing Research Specialist
Arkansas Children's Hospital Research Foundation

Learning Objectives
• Self-report an increase in knowledge about the results and application of What Keeps Pediatric Nurses Up at Night?: A National Delphi Study

Relevant Disclosures
• We have no relevant disclosures to report

Occupational Stress
• Common sources (Gomes Sda et al., 2013; Happell et al., 2013; Jenaro et al., 2011; McVicar, 2003)
  o High workloads and inadequate staffing
  o Relationships with doctors and other clinical staff
  o Unsupportive management
  o Human resource issues
  o Coping with emotional needs of patients and their families
  o Shift work
  o Lack of recognition and reward
• Adverse effect on physical and psychological health (Happell et al., 2013)
• Can lead to nurses “losing sleep” over troubling clinical and professional issues (Ota et al., 2009; Portela et al., 2015)
• May lead professionals to worry

Worry
• Common human experience
• When worry becomes excessive, professionals can lose that professional joy that gives meaning to their work (Malloy et al., 2015; McVay & Kautz, 2015)

Meaningful Work
• Characteristics of meaningful work
  o Ability to make a difference
  o Connections with patients and family members
  o Recognized for expertise, accomplishments and humane care
• Enhancing meaning in work may have a positive impact on nurse satisfaction and engagement, pride and enjoyment in nursing, productivity, and reduced burnout (Pavlish & Hunt, 2012)
Gap

- Occupational stress has been well studied in nurses
- Little or recent research exists regarding pediatric nurses and nurse leaders fears and worries
- A paucity of literature is available examining nurses’ perceptions of meaningful work and what keeps them engaged in nursing

Purpose

- To explore the top professional worries/concerns and the top professional satisfiers experienced by pediatric nurses in a variety of professional roles and practice settings
- Long-term aim is to develop innovative interventions can be developed to promote personal resiliency and to help organizations create healthier workplace environments

Research Questions

- What are the worries/concerns of frontline nurses, advanced practice nurses, nursing leaders, and chief nursing officers working in pediatric hospitals in the United States?
- What are the professional practice satisfiers of frontline nurses, advanced practice nurses, nursing leaders, and chief nursing officers working in pediatric hospitals in the United States?

Methods

- Descriptive study using the Delphi technique
- Delphi technique is a research method using a series of surveys to develop group consensus around a specific topic without interaction among respondents, thus avoiding the potential for group biases or any one participant from unduly influencing other participant responses

Delphi Round 1

- Participants responded to 2 broad questions:
  - In pediatric nursing practice, what are the top 3 professional satisfiers that get you up in the morning?
  - In pediatric nursing practice, what are the top 3 professional practice worries/concerns that keep you awake at night?
Delphi Round 2

- Responses from Round 1 were used to develop a more structured survey which asked participants to review the items identified in the first survey and:
  - Indicate their degree of agreement or disagreement with the items on a 5-point Likert scale
  - Provide a rationale for their judgments with items that they disagreed with
  - Add items that were missing
  - Rank-order the items according to their perceived priority

Delphi Round 3

- Responses from Round 2 were used to clarify or add items and to compute the mean degree of agreement and the ranking of each item
- Revised survey asked participants to review the mean rankings from the second survey and again:
  - Indicate their degree of agreement or disagreement on a 5-point Likert scale
  - Rank-order the items according to their perceived priority

Eligibility Criteria – Professional Organizations

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
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<tbody>
<tr>
<td>Licensed RN or advanced practice nurse (e.g. APRN, APN, etc.)</td>
<td>Currently practice outside of the United States</td>
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<tr>
<td>Currently employed in a dedicated pediatric inpatient/outpatient setting in the United States that cares exclusively for pediatric patients</td>
<td>Currently employed in a public or private school setting caring for children</td>
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<td>Active membership in respective organization</td>
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<tr>
<td>Provide direct nursing care or responsible for nurses who provide direct patient care</td>
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<td>Access to a computer to complete online surveys</td>
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Ethics

- Approval to conduct the study was obtained from ACH Nursing Research Council and the UAMS IRB
- Survey was voluntary
- Responses were confidential
- Survey data was de-identified

Study Design

- Descriptive, correlational
- Online survey using REDCap
- Study was announced through email invitations
- Email reminder 1 week later
- Open for 2 weeks (Exception: 3 weeks for ACH)
- Participants were asked to provide email addresses to participate in Rounds 2 & 3
- Total time for completion of all rounds was approximately 6 months

Top 10 Professional Worries by Professional Organization

<table>
<thead>
<tr>
<th>Professional Organization</th>
<th>NAPNAP</th>
<th>NANN/NANNP</th>
<th>SPN</th>
<th>ACH</th>
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<tbody>
<tr>
<td>Making a mistake</td>
<td>•</td>
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<td>Work-Life balance</td>
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<td>Workload</td>
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<tr>
<td>Patient needs not met</td>
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<td>Patient safety</td>
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<td>Unsupportive leadership</td>
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<tr>
<td>Staffing</td>
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<td>Patient harm</td>
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<td>Compensation</td>
<td>•</td>
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<tr>
<td>Ineffective communication</td>
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</table>
Top 10 Professional Satisfiers by Professional Organization

<table>
<thead>
<tr>
<th>Category</th>
<th>NAPNA P</th>
<th>MANN/NAHN P</th>
<th>SPN</th>
<th>ACH</th>
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</thead>
<tbody>
<tr>
<td>Caring for children and families</td>
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<tr>
<td>Making a difference</td>
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<td>Culture of safety</td>
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<td>Teamwork</td>
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<td>Positive working relationships with colleagues</td>
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<td>Personal calling</td>
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<tr>
<td>Nursing excellence</td>
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<tr>
<td>Teaching and mentoring nurses</td>
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<tr>
<td>Job satisfaction</td>
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<tr>
<td>Lifelong learning</td>
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Research Implications

- Future research is needed to develop innovative interventions to promote personal resiliency and to help organizations create healthier workplace environments.

Clinical Implications

- Help nurses find meaning in their work and in their ability to make a difference.
- Recognize nurses efforts to deliver quality care and improve the patient experience.
- Improve work flow processes so nurses have more time to connect with patients and family members.
- Help nurses navigate change that accompanies today’s complex healthcare environment.
- Develop and evaluate strategies to promote improved work-life balance.
- Develop innovative strategies to promote better communication and interprofessional teamwork.
- Continue to have a laser focus on patient and employee safety.

References

Learning Objectives

Describe the interaction and health risks related to preterm birth, poverty and toxic stress.

AIM:
The aim of this study was to apply the Eco-Bio Developmental (EBD) Model of Poverty and Preterm Birth to the cross sectional data of the 2016 National Survey of Children’s Health (NSCH) to evaluate the associations between poverty, toxic stress and prematurity on neurodevelopmental and educational outcomes.

METHOD:
A subset of data representing children 6 to 11 years old (N = 15,010) from the 2016 NSCH was utilized for multivariate analysis of demographic variables, and neurodevelopmental and educational outcome variables.

Pearson’s Chi-square, logistic regression and interaction effects explored the relationships between prematurity, toxic stress and poverty.
Conclusions:
The current analysis uses the EBD Model of Poverty and Preterm Birth to highlight the implications of poverty and toxic stress to the elementary school-aged child born preterm. Elementary education is a critical period for skill development and mastery which leaves children born preterm who experience toxic stress and poverty at risk and vulnerable.

Implications:
Health care providers must take an active role in breaking the cycle of poverty, toxic stress and preterm birth. To do this, recognition and intervention by primary care providers is essential.

Questions?