younger children may confer further risks of cardiovascular and neurocognitive complications associated with DS. However, there is paucity of studies examining SDB in infants with DS. The purpose of the study was to examine the prevalence of obstructive sleep apnea (OSA), sleep hypoventilation (SH) and hypoxemia in infants with DS.

Methods: Infants (≤12 months old) with DS who underwent first polysomnography (PSG) at Seattle Children's hospital over a 6-year period were included. Data collected included obstructive apnea hypopnea index (oAHI), central apnea hypopnea index (CAHI), time spent with CO2 levels > 50 mmHg, time (minutes) spent with saturations <88% (T88), and saturation nadir (minO2sat). Exclusion criteria: follow up studies, and studies post procedures. Data presented by descriptive statistics and comparison by unpaired t-test.

Results: A total of 526 children with DS underwent PSG during the collection time. Forty two fit criteria (Mean age 6.6 months, male 66%). Diagnostic (n=13), split to oxygen (n=29, 69%). Split studies were more severe when compared with full diagnostic AHI (Mean 44.7 vs. 14.8, p=0.0007), T88 (Mean 12.5 vs. 0.2 p=0.03) and minO2sat (77.6 vs. 85.8%, p=0.01). Overall mean oAHI was 33.7 (S.D. 30) CAI was 3.4 (S.D. 3.1). 5/31 with reliable capnography had SH (16.1%) with no difference in age vs. the non-SH group (6.0 [3.2] vs. 6.6 [3.1], p>0.05). Overall, oAHI was more severe in infants with hypoventilation (58.9 [23.6] vs. 29.3 [63],p>0.05). Ten infants spent >5 min with saturations <88% (21.4%). All infants with hypoxemia had OSA (oAHI Mean 66.5 SD 40). Infants with OSA and hypoxemia had worse oAHI than those without hypoxemia (p<0.05).

Conclusion: Our data shows that a large percent of infants with DS (69%) required a split study due to severe OSA (mean oAHI 66.5) or hypoxemia (21.4%). The overall mean AHI for this age group was 33.7. Hypoventilation was present in 16.1%. This study highlights the high prevalence of SDB in infants with DS and supports early PSG assessment in this patient population.

Support (If Any):

0536

ASSOCIATION OF A NOVEL EEG BIOMARKER OF SLEEP DEPTH WITH SLEEP DISORDERED BREATHING IN ADOLESCENTS

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Introduction: The odds ratio product (ORP) provides a standardized, continuous measure of sleep depth that ranges from 0 (deep sleep) to 2.5 (full wakefulness). ORP has been shown to increase during adolescence, representing the decline in sleep depth that occurs during this developmental period. In adults, higher ORP has been associated with sleep disordered breathing (SDB), including obstructive sleep apnea (OSA), while there have been no studies in youth. We aimed to determine the association of ORP with SDB in adolescents.

Methods: We extracted ORP from the sleep EEG of 261 typically developing adolescents aged 12-23y (median 16y) from the Penn State Child Cohort. Higher ORP during rapid eye movement (REM) and non-REM sleep indicates less deep sleep, while higher ORP-9 (i.e., average ORP in the 9-seconds following non-REM cortical arousals) indicates greater arousability. We used general linear models, adjusted for sex, age and race/ethnicity, to examine mean differences in ORP metrics among clinically meaningful groups of SDB based on the apnea/hypopnea index (AHI) consisting of no SDB (AHI<2 and no snoring, n=100), primary snoring (AHI<2 and snoring, n=75), 2≤AHI<5 (n=64), and AHI≥5 (n=22).

Results: Adolescents with primary snoring or 2≤AHI<5 did not significantly differ in ORP metrics from those without SDB (all p≥0.12). Adolescents with AHI≥5 had higher ORP-NREM compared to those without SDB, with primary snoring or with 2≤AHI<5 (all p≤0.01), while ORP-REM was significantly higher compared to those without SDB (p=0.02). ORP-9 was significantly greater in adolescents with AHI≥5 compared to those with no SDB (p<0.01) and those with primary snoring (p=0.02), but not when compared to those with 2≤AHI<5 (p=0.07).

Conclusion: Our data suggest that adolescents with OSA experience lower REM and non-REM sleep depth/intensity (higher ORP) compared to those without SDB. In addition, these adolescents experience a slower progression back to deep sleep following cortical arousals (higher ORP-9), which suggests they remain in a high arousability state and, thus, are more likely to repeat arousals. Commensurate with previous studies in adults, our data show that ORP is a useful sleep EEG biomarker able to capture decreased sleep depth in adolescents with OSA.

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0537

SYMPTOM IMPROVEMENT REPORTED WITH SOME PAP USE IN NON-ADHERENT PEDIATRIC PATIENTS WITH OSA

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Introduction: Positive airway pressure (PAP) is commonly used in children to treat obstructive sleep apnea (OSA) when surgery is not an option or is ineffective1-3, but adherence is often poor. Observational studies suggest utilization of PAP improves symptoms, signs, and polysomnogram indices of OSA in at least 85% of children4-9. The Agency for Healthcare Research and Quality released the report "Continuous Positive Airway Pressure Treatment for Obstructive Sleep Apnea"10. Conclusions of this report determined that the published evidence reviewed does not support that PAP affects long term outcomes. No pediatric studies were included in this report. Objectives of this study were to determine if pediatric patients with OSA who are non-adherent to PAP therapy report an improvement in symptoms with some use of PAP.

Methods: A retrospective chart review was performed on patients with OSA on PAP seen in the pediatric sleep clinic. Patients were considered adherent to PAP if usage was longer than 4 hours/night for 70% of nights or more. Follow up visits occurred around 3 months, 6 months, 1 year, and 18 months-2 years. Adherence data and reported improvement in symptoms were documented at each visit, and demographical information was obtained.

Results: 235 patients were included in the analysis (63.9% male, 32.3% female, 3.8% missing), with a mean age (SD) at PAP initiation of 12 years (4.5). The sample was predominately Caucasian (51.5%) or African American (38.3%), 85.9% were non-Hispanic, and 53.2% obese. The mean (SD) apnea-hypopnea index was 24.7(27.6)/hr. At first visit post-initiation, of the 138 patients that had adherence data available, 80.4% reported improvement in symptoms with PAP use. Of these patients, 55.86% were non-adherent but reported symptom improvement with some use of PAP. Visit 4 data was available for 74 patients. At visit 4, 91.9% reported improvement in symptoms. Of these, 48.53% were considered non-adherent but reported symptom improvement with some use of PAP.

Conclusion: Historically, PAP adherence in children has been relatively poor11. Utilizing PAP therapy to treat OSA may result in an improvement in symptoms when used in patients who are considered non-adherent to therapy.
Support (If Any):

0538

"SOMETHING IS WRONG!" A QUALITATIVE STUDY OF RACIAL DISPARITIES IN PARENTAL EXPERIENCES OF OSA DETECTION AMONG THEIR CHILDREN

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Introduction: Blacks are 4-6 times more likely to have obstructive sleep apnea (OSA) than white children. Yet disparities in detection, diagnosis and treatment persist. Our study objective was to examine parents' perceptions and experiences with OSA detection among their children.
Methods: Semi-structured phone interviews were conducted with 30 parents of children (ages 2-12 years) who were referred for overnight polysomnography due to OSA. Parents who identified as Black non-Hispanic (n=19) or White non-Hispanic (n=8) were included in the current analysis. Qualitative thematic analysis was conducted using a grounded theory approach, with themes organized in NVivo 12 software. Twenty-one themes falling into five categories were identified. To examine racial/ethnic disparity in parental experiences, themes were classified as convergent (presented by Black and White parents) or divergent (presented by one racial/ethnic group but not the other).
Results: Participating parents were primarily mothers (92.59%). Children were 51.90% female; aged range from 3 to14 years old (M=7.93 years, SD=3.08). Delayed OSA detection was observed among Black children (M=9.00 years), compared to white children (M=5.78 years). Analysis of themes by race/ethnicity identified both shared experiences and perspectives, as well as those that were specific to or more salient for parents of one race. Convergent themes that overlapped among both groups included "Wanting to Know, Worries, and Child Daytime Symptoms." Divergent themes experienced by White caregivers included "Low threshold for raising concerns with provider, Institutional delays, and Trust in provider." "Misplaced blame, Whatever it Takes, Something is wrong, OSA Awareness, and Missing the day-night connection," were divergent themes named by Black parents/caregivers.
Conclusion: Black and white parents experience different paths to detection and diagnosis for their child's OSA, which may be affected by individual awareness, education, patient-provider interactions and experience with the healthcare system.
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0539

OBSTRUCTIVE SLEEP APNEA SYMPTOMS AND THEIR IMPROVEMENT WITH PAP IN THE PEDIATRIC POPULATION: A RETROSPECTIVE STUDY IN A PEDIATRIC SLEEP DISORDERS CENTER

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Introduction: Obstructive sleep apnea (OSA) is estimated to occur in 1% to 5% of the pediatric population1. The Agency for Healthcare Research and Quality (2021) recently released a draft report titled, "Continuous Positive Airway Pressure Treatment for Obstructive Sleep Apnea."2 The conclusions of this report determined that the published evidence reviewed by the agency did not support that positive airway pressure (PAP) affects long term, clinically important outcomes. No pediatric studies were included in this report. Pediatric patients who require PAP are held to the same standards as adults regarding adherence and insurance requirements3. However, clinical symptoms to determine improvement of OSA symptoms in adults are not the same in children. Symptoms in the pediatric population such as decreased concentration, hyperactivity, memory impairment, learning disorders, nocturnal enuresis and growth impairment have improved with PAP and are important indicators in this population of improved clinical outcomes4.
Methods: Retrospective chart review was used to examine symptoms reported by pediatric patients initiated on PAP for OSA. Symptom information was extracted before and after initiation of PAP. A chi-Square test was used to determine if there was an association between PAP treatment and improved clinical symptoms.
Results: 235 patient records were reviewed. The distribution of sex was 150 (63.9%) males and 76 (32.3%) females. The mean age at PAP initiation was 12.0 (SD = 4.5), age range from 9 months to 19 years. Most frequent symptoms pre PAP initiation included excessive daytime sleepiness (51%), at least one of the daytime behaviors above (45%), and nocturnal enuresis (14%). Excluding patients with missing data, first and fourth visit post PAP initiation, 78% (221 patients; 66 missing) and 90% (90 patients; 12 missing), respectively, reported improvement in symptoms.
Conclusion: Results indicate that PAP is a beneficial treatment of OSA with improvement in symptoms specific to the pediatric population. Due to the clinically significant outcomes to growth and development that PAP provides to pediatric patients with OSA, we suggest that they should not be held to the same insurance requirements as adults and further studies should be conducted to validate these findings.
Support (If Any):

0540

FIRST YEAR PAP TRAJECTORIES AMONG TREATMENT-NAIVE YOUTH WITH SLEEP DISORDERED BREATHING

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Introduction: Little is known about the time course for youth adjusting to and achieving optimal PAP adherence.
Methods: This retrospective study identified 12-month PAP trajectories and treatment persistence following treatment initiation in youth. Participants were first-time PAP initiators receiving care at Cincinnati Children's Hospital from 07/2017-12/2019. Electronic downloads provided monthly PAP use. Adherence indicators were frequency (percentage of nights PAP used each month) and duration of use (average usage hours on nights used each month). Persistence of group-level adherence (frequency and duration) was measured via descriptive statistics in SPSS. Adherence sub-groups were identified using longitudinal mixed models in MPlus.