renal disease 20% (male 21%, female 18%), coronary artery disease 13% (male 14%, female 9%), and congestive heart failure 13% (male 15%, female 9%). Prevalence of lung disease was low 13% (male 9%, female 18%).

Conclusion: NHPIs evaluated for sleep-disordered breathing have high rates of obesity, severe OSA, and concerning comorbidities. PAP adherence in this group was poor compared to overall adherence for patients seen in University of Utah sleep clinics (~70%). Further research is required to assess the relationships between OSA, associated comorbidities, and disease outcomes. Addressing low rates of PAP adherence in this population may afford opportunities to improve health outcomes.

Support (if any): n/a

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THE EFFECT OF A PATIENT SURVEY IN THE EVALUATION OF OBSTRUCTIVE SLEEP APNEA IN A HIGH RISK CARDIOLOGY OUTPATIENT POPULATION

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Introduction: Obstructive sleep apnea (OSA) is the most common sleep-related breathing disorder. The estimated prevalence is approximately 15 to 30 percent in males and 10 to 15 percent in females. Patients with OSA have an increased propensity for cardiovascular diseases and obesity. Observational studies have demonstrated a consistent association between OSA and hypertension, coronary artery disease, cardiac arrhythmias, and heart failure. The purpose of this study is to evaluate if a patient survey can improve the diagnosis of OSA in a high-risk outpatient cardiac clinic.

Methods: In an outpatient cardiac clinic, a retrospective analysis of OSA evaluations was done before and after the use of patient surveys in a high-risk population. The high-risk patient group was defined by the presence of two or more of the following conditions: hypertension, heart failure, cardiac arrhythmias, atrial fibrillation, obesity with a BMI of 30 or more, coronary artery disease, diabetes mellitus, chronic lung disease, history of cerebrovascular accident (CVA), hypothyroidism and chronic renal insufficiency. The patient survey included questions on the presence of daytime sleepiness, presence of snoring, ESS score, choking in sleep, witness apnea, and frequent waking in sleep.

Results: During the four months of patient survey use, a total of 143 patients were evaluated as compared to 86 patients in the prior four months without the use of the survey. A significant increase (66.3%) of OSA evaluations was observed during the patient survey period.

Conclusion: The use of patient surveys showed a significant improvement in OSA diagnoses in the defined high-risk patient group. Patient surveys might be beneficial to improve the under diagnosis of sleep apnea in high-risk patient populations. Additional research needs to be done to establish the impact of such intervention on patient outcomes.

Support (if any):

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CLINICAL VALIDATION OF AI SCORING IN ADULT AND PEDIATRIC CLINICAL PSG SAMPLES COMPARED TO PROSPECTIVE, DOUBLE-BLIND SCORING PANEL

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Introduction: Despite an appreciable rise in sleep wellness and sleep medicine A.I. research publications, public data corpuses, institutional support, and health A.I. research funding opportunities, the availability of controlled-retrospective, hybrid-retrospective-prospective, and prospective-RCT quality clinical validation study evidence is limited with respect to their potential clinical impact. Furthermore, only a few practical examples of A.I. technologies are validated, in use today clinically, and widely adopted, to assist in sleep diagnoses and treatment. In this study, we contribute to this growing body of clinical A.I. validation evidence and experimental design methodologies with an interoperable A.I. scoring engine in Adult and Pediatric populations.

Methods: Stratified random sampling with proportionate allocation was applied to a database of N>10,000 retrospective diagnostic clinical polysomnography (PSG), selected by evidence grading standards, with controls applied for OSA severity, diagnoses; sleep, psychiatric, neurologic, neurodevelopmental, cardiac, pulmonary, metabolic disorders, medications; benzodiazepines, antidepressants, stimulants, opiates, sleep aids, demographic groups of interest; sex, adult age, pediatric age, BMI, weight, height, and patient-reported sleepiness, to establish representative N=100 Adult and N=100 Pediatric samples. Double Blinded scoring was prospectively collected for each sample by 3 experienced RPSGT certified sleep technologists randomized from a pool of 9 scorers. Sensitivity (PA), Specificity (NA), Accuracy (OA), Kappa (K), and 95% Bootstrap CI's are presented for sleep stages, OSA/CSA, hypopnea 3%/4%, arousals, limb movements, Cheyenne-Stokes respiration, periodic breathing, atrial fibrillation, and other events, and normative, mild, moderate, and severe OSA categories for global-AHI and REM-AHI. Results for Sleep Staging and OSA Severity Diagnostic Accuracy are summarized.

Results: A.I. scoring performance meet but in most cases exceeded initial clinical validation study (N=72 Adults, 2017) PA, NA, OA, K point-estimates and confidence-interval results for the 26 event types and 8 AHI-categories evaluated. The Adult sample showed 87%/94% Sensitivity/Specificity across all stages (Wake/N1/N2/N3/REM) and 94%/96% Sensitivity/Specificity for AHI>=15. The Pediatric sample showed 87%/93% Sensitivity/Specificity staging, 89%/98% Sensitivity/Specificity AHI>=15. Observed Accuracy was >90% for Adults and Pediatrics all 26 events and 7 AHI-categories analyzed, except REM-AHI>=5 (85%/82% Adults/Pediatrics).

Conclusion: We provide clinical validation evidence that demonstrates interoperable A.I. scoring performance in representative Adult and Pediatric patient clinical PSG samples when compared to prospective, double-blind scoring panel.

Support (if any):

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EXPLANATORY ANALYSIS OF POLYSOMNOGRAPHY FOR THE IDENTIFICATION OF SLEEP APNEA HYPOPNEA EVENTS USING DEEP LEARNING NEURAL NETWORK

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Introduction: Using deep learning algorithms, we investigated univariate and multivariate effects of four polysomnography features including heart rate (HR), electrocardiogram (ECG), oxygen saturation (SpO2) and nasal air flow (NAF) on the identification of sleep apnea and hypopnea events. This explanatory analysis that may clarify