



Article

Factors Impacting Screening Documentation for Obstructive Sleep-Disordered Breathing at Well-Child Visits

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Abstract

Background: The current literature suggests that screening for symptoms of pediatric obstructive sleep-disordered breathing (SDB) is low despite guidelines from the American Academy of Pediatrics to screen all children at well visits. Specific factors that affect screening rates for snoring have not been well delineated. **Materials and Methods:** This study is a retrospective chart review of children ages 2–12 who presented for well-child visits at an academic hospital network. Multivariable logistic regression was used to identify factors associated with documentation for SDB screening. **Results:** Of 1001 charts reviewed, 809 children met inclusion criteria (median age 5 IQR [3–8] years, 50.3% female). Less than half (45.4%) of the children were screened for snoring, and 16.1% of those screened had symptoms of SDB. Adjusted multivariable regression showed that screening was significantly higher in older children (OR: 2.19 [1.46–3.29]; $p < 0.001$ for 5- to less than 8-year-old children; OR: 2.37 [1.57–3.57]; $p < 0.001$ for 8- to less than 12-year-old children). Children of the Other race group were also found to have significantly lower screening rates than Black and White children (OR 0.44 [0.23–0.84]; $p = 0.014$). The odds of being screened were 94% lower in visits in which a medical trainee was involved ($p < 0.001$). The odds of being screened at a well-child visit were 3.7 times higher in encounters in which a templated note was used ($p < 0.001$). **Conclusions:** Less than half of the children presenting for well visits were screened for snoring in this cohort. Differences in screening were attenuated by trainee involvement and the use of templated notes, which presents further avenues to explore meeting guideline recommendations for SDB screening.

Keywords: disparities; pediatric; screening; sleep-disordered breathing; obstructive sleep apnea



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1. Introduction

Obstructive sleep-disordered breathing (SDB) is a condition that affects 11–17% of children [1,2]. SDB is caused by narrowing of the upper airway and can lead to decreased oxygen levels, hypercapnia, and disruption of sleep [3]. The most common site of obstruction in otherwise healthy children is at the level of the tonsils and adenoids. SDB can impact school performance and lead to behavioral problems, exacerbate attention-deficit hyperactivity disorder, and decrease cardiopulmonary function [4–8]. Treatment with

tonsillectomy is considered the first-line treatment for children with tonsillar hypertrophy and can lead to improvements in polysomnography parameters, sleep symptoms, behavior, and quality of life.

The American Academy of Pediatrics (AAP) clinical practice guidelines recommend that all children are screened for SDB at their yearly well-child visit with their primary care physician (PCP) [4]. Based on this recommendation, after a child is screened for snoring, those with suspected obstructive symptoms should undergo further evaluation with polysomnography or referral to a specialist. These guidelines state that screening for SDB is essential and should be documented in all well-child visit notes [4,9]. However, recent research reveals that screening for symptoms of SDB remains low in children [10,11].

Differences in the diagnosis and treatment of SDB in children have been well documented and have persisted for decades [12–16]. To complicate this matter, SDB is more common in children who are Black or from lower-resourced families—populations that are most impacted by barriers to healthcare [17–21]. Given the documented variations in tonsillectomy rates for children with SDB, it is important to investigate potential drivers of these inequities in the care continuum. Most of the literature to date focuses on differences in receipt of treatment, such as tonsillectomy. However, less is known regarding upstream variables that may impact screening for SDB at the primary care level. Therefore, the goal of this study was to evaluate factors associated with SDB screening per the AAP guidelines in the primary care setting.

2. Materials and Methods

2.1. Setting and Participants

A retrospective chart review was conducted for patients aged 2 to less than 12 years who had a well-child visit in August 2022. This age group was chosen because tonsillar hypertrophy is more commonly seen in younger children and because SDB in older children is likely due to obesity and other comorbidities [22,23].

The electronic medical record was reviewed for children who presented for their well-child visits at primary care clinics affiliated with our academic institution. This system serves a diverse pediatric population, with patients coming from a range of socioeconomic, racial, and ethnic backgrounds. Clinics from both urban and rural locations were included. Patient charts were excluded if the patient had been seen previously by an otolaryngologist or sleep medicine physician for any reason or if they already had a diagnosis of SDB. Children with serious medical complexities including a syndrome or a craniofacial anomaly were also excluded.

2.2. Data Collection and Analysis

Demographic information including age, race, ethnicity, sex, height, weight, insurance status and type, zip code, concomitant disorders, and sleep-related medications were extracted from patients' charts. Provider type, clinic location, otolaryngology or sleep medicine referrals and polysomnography referrals were recorded. Concomitant disorders such as attention-deficit hyperactivity disorder and learning disorders were identified through ICD-10 codes. The provider notes for each visit were read to identify whether screening for a sleep disorder occurred at each well-child visit. Screening was defined as provider documentation of the patient experiencing snoring (e.g., snoring identified) and/or symptoms of nighttime obstruction such as waking up gasping/choking/coughing or apneic events (e.g., SDB identified). Clinical features of SDB, defined as any sign or symptom outlined in the clinical practice guidelines [24], were also extracted. These signs and symptoms included labored breathing, gasping or snoring during sleep, enuresis, headaches on awakening, daytime somnolence, hyperactivity, and learning problems.

These data were collected and stored using REDCap. This review was approved by the organization's Institutional Review Board.

Chart abstraction procedures were performed by the coauthors. Prior to data collection, study personnel underwent training on eligibility criteria, operational definitions, and data abstraction procedures. A pilot review of a subset of charts was performed to standardize interpretation of clinical documentation and refine the REDCap abstraction form. Data were collected using prespecified definitions for all variables. Because demographic and clinical information were visible within the electronic health record, reviewers were not blinded to patient characteristics; however, determinations of SDB screening were based on predefined criteria requiring documentation of snoring and/or symptoms of nighttime upper-airway obstruction. Any uncertainties or discrepancies in abstraction were resolved through investigator consensus to promote consistency and reproducibility.

2.3. Definition of Variables

Race was categorized as White, Black, and Other. The Other category included Asian, American Indian, Alaska Native, Pacific Islander, multiracial, and unknown race. These groups were combined because of small cell sizes that precluded stable statistical estimation for individual categories. The categories for ethnicity included Non-Hispanic or Hispanic. The categories for insurance included public, private and self-pay. Public insurance was defined as any insurance type that was provided by the government (Medicaid, Tricare, etc.). Private insurance was defined as any insurance that was provided by a separate organization. Self-pay insurance included patients who paid for their own insurance. For the multivariable regression model, age was categorized into 3 groups: 2 to less than 5 years, 5 to less than 8 years, and 8 to less than 12 years. Comorbidity in this analysis was defined as asthma, attention-deficit hyperactivity disorder, allergic rhinitis, obesity, enuresis, learning difficulties, overweight or underweight, tonsillar hypertrophy, and hypertension. A templated note was defined as a note that was pre-formatted, with standardized sections for each component of the well-child checks. In this study, not all templated notes had screening questions for SDB.

2.4. Statistical Analysis

A power analysis was conducted to ensure that an appropriate number of charts were included. The results of our power analysis suggested that at least 800 charts needed to be included to detect a 10% difference in screening between groups. The overall study population was characterized using descriptive statistics. Normality was assessed using the Kolmogorov–Smirnov test and visually using a histogram. A chi-squared test was used for categorical variables. The only continuous variable was age, which was not normally distributed. Therefore, median, and interquartile range were used to describe age. Multivariable generalized linear mixed logistic regression models (GLMMs) were utilized to determine which factors were associated with the dependent variable (SDB screening). The GLMMs included random clinic effects to account for clustering within clinics. Odds ratios (ORs) and 95% confidence intervals (CIs) were employed to describe these relationships. Since we were interested in whether certain system-level factors were associated with differences in observed racial/ethnic patterns in SDB screening, we constructed 3 separate multivariable logistic models. Model 1 included demographics and a comorbidity indicator. Model 2 was identical to Model 1, with the exception of the addition of “Medical Trainee” present during exam. Model 3 was identical to Model 2, with the exception that “Template Use” was added as a covariate. p values < 0.05 were considered statistically significant. All analyses were performed using SPSS version 27 (IBM Corp. Released 2020. IBM SPSS

Statistics for Windows, Version 27.0. Armonk, NY, USA: IBM Corp) and SAS v9.4 (SAS Institute, Cary, NC, USA).

3. Results

A total of 1001 charts for children undergoing well-child checks during the month of August 2022 were screened. Of those, 809 met inclusion criteria. There were 402 (49.7%) male patients, and the median age was 5 years IQR [3–8]. Patient characteristics and their association with the assessment and identification of snoring in their charts are outlined in Table 1. This cohort was made up of 26.3% White, 42.9% Black, and 30.8% Other children. With respect to ethnicity, 73.9% of the population were non-Hispanic; 23.7% were Hispanic; and ethnicity was not reported for 2.3%.

Table 1. Demographics of the study population.

Variable	Total Patients, n (%)	Screened for SDB, n/N (%)	p-Value ^a	Identified with SDB Among Screened, n/N (%)	p-Value ^a
Total Screening Visits	809 (100)	367/809 (45.4)		59/367 (16.1)	
Age			$p < 0.001$		$p = 0.85$
2–<5	344 (42.5)	126/344 (36.6)		19/126 (15.1)	
5–<8	227 (28.1)	116/227 (51.1)		18/116 (15.5)	
8+	238 (29.4)	125/238 (52.5)		22/125 (17.6)	
Sex			$p = 0.85$		$p = 0.98$
Female	407 (50.3)	186/407 (45.7)		30/186 (16.1)	
Male	402 (49.7)	181/402 (45.0)		29/181 (16.0)	
Race			$p = 0.003$		$p = 0.053$
Black	347 (42.9)	139/347 (40.1)		28/139 (20.1)	
Other	249 (30.8)	111/249 (44.6)		20/111 (18.0)	
White	213 (26.3)	117/213 (54.9)		11/117 (9.4)	
Ethnicity			$p = 0.46$		$p = 0.15$
Hispanic	192 (23.7)	90/192 (46.9)		19/90 (21.1)	
Non-Hispanic or Latino	598 (73.9)	266/598 (44.5)		40/266 (15.0)	
Not reported	19 (2.3)	11/19 (57.9)		0/11 (0.0)	
Insurance			$p = 0.07$		$p = 0.029$
Other	84 (10.4)	41/84 (48.8)		11/41 (26.8)	
Public	603 (74.5)	260/603 (43.1)		43/260 (16.5)	
Private	122 (15.1)	66/122 (54.1)		5/66 (7.6)	
Screened at a Previous Visit [±]			$p = 0.95$		$p = 0.82$
Yes	212 (26.2)	96/212 (45.3)		16/96 (16.7)	
No	450 (55.6)	205/450 (45.6)		32/205 (15.6)	
Medical Trainee Involved in Visit			$p < 0.001$		$p < 0.001$
Yes	158 (19.5)	14/158 (8.9)		9/14 (64.3)	
No	651 (80.5)	353/651 (54.2)		50/353 (14.2)	
Provider Type			$p = 0.29$		$p = 0.74$
Pediatrician	656 (81.1)	299/656 (45.6)		47/299 (15.7)	
Family medicine physician	53 (6.6)	19/53 (35.9)		4/19 (21.1)	
Advanced practice provider	100 (12.4)	49/100 (49.0)		8/49 (16.3)	
Template Used			$p = 0.006$		$p = 0.45$
Yes	760 (93.9)	354/760 (46.6)		56/354 (15.8)	
No	49 (6.1)	13/49 (26.5)		3/13 (23.1)	
Comorbidity			$p = 0.05$		$p = 0.006$
Yes	386 (47.7)	189/386 (49.0)		40/189 (21.2)	
No	423 (52.3)	178/423 (42.1)		19/178 (10.7)	
BMI [±]			$p = 0.03$		$p = 0.28$
Obese (≥ 95 percentile)	176 (21.8)	99/176 (56.3)		21/99 (21.2)	
Overweight (85–<95 percentile)	134 (16.6)	65/134 (48.5)		9/65 (13.9)	
Normal weight (5–<85 percentile)	428 (52.9)	185/428 (43.2)		24/185 (13.0)	
Underweight (≤ 5 percentile)	36 (4.4)	15/36 (41.7)		3/15 (20.0)	

^a p values were calculated using chi-square tests or Fischer's exact test, as appropriate. [±] Missing data. Denominators differ by column. Percent screened for SDB is based on the total number of patients in each subgroup (n), whereas the proportion identified with SDB is based only on patients who were screened (N). For screening at a previous visit, data was not available for 147 patients. For BMI, data was not available for 35 patients. SDB = sleep-disordered breathing; BMI = body mass index.

Children with public insurance made up 74.5% of the cohort, while 15.1% of children had private insurance, and 10.4% of children had other types of insurance including self-

pay and uninsured. There were no significant differences in documentation for screening for SDB based on insurance type ($p = 0.07$). A medical trainee was involved in 19.5% of clinic visits, and there was a statistically significant decrease in likelihood of screening if a medical trainee was involved ($p < 0.001$). There was a significant increase in likelihood of screening for SDB if a templated note that screened for snoring or obstructive sleep symptoms was used during the well-child checks ($p = 0.006$). There was also an increase in SDB screening rates for children with SDB-related comorbidities ($p = 0.05$).

A total of 81.1% of providers were pediatricians; 6.6% were family medicine physicians; and 12.4% were advanced practice providers. There was no significant difference in screening rates for provider type ($p = 0.29$). Snoring was identified in 16.1% of patients. In this subset of children, 6.7% were referred to ENT; 1.7% were referred to sleep medicine; and 28.8% were prescribed an intranasal steroid. There were no differences in treatment plan when considering age ($p = 0.10$), sex ($p = 0.45$), race ($p = 0.67$), ethnicity ($p = 0.36$), insurance status ($p = 0.64$), medical trainee ($p = 0.42$) or use of a note template ($p = 0.64$).

Multivariable Analysis

Three multivariable generalized linear regression models (GLMMs) were used to analyze the relationship between snoring assessment and certain patient factors, medical trainee involvement, and a key process measure (i.e., use of a documentation template), while accounting for within-clinic clustering (Table 2). Generalized linear mixed models with a logit link and random clinic effects were used to account for within-clinic clustering. Provider type was evaluated in sensitivity analyses but was not included in the primary models because it was not significantly associated with screening in univariate analyses and did not materially change the study findings.

Table 2. Multivariable logistic regression model predicting screening for sleep-disordered breathing.

Variable	Model 1			Model 2			Model 3		
	Adjusted OR	95% CI	p-Value	Adjusted OR	95% CI	p-Value	Adjusted OR	95% CI	p-Value
Age (years)									
2–<5	Reference			Reference			Reference		
5–<8	1.72	1.18–2.50	0.005 *	2.04	1.37–3.05	<0.001 *	2.19	1.46–3.29	<0.001 *
8+	1.79	1.23–2.61	0.003 *	2.26	1.51–3.38	<0.001 *	2.37	1.57–3.57	<0.001 *
Sex									
Female	1.07	0.78–1.46	0.68	1.03	0.74–1.44	0.87	1.02	0.73–1.43	0.92
Male	Reference			Reference			Reference		
Race									
White	Reference			Reference			Reference		
Black	0.61	0.42–0.89	0.01 *	0.95	0.63–1.45	0.82	0.88	0.58–1.35	0.56
Other	0.54	0.29–0.99	0.049 *	0.47	0.24–0.89	0.02 *	0.44	0.23–0.84	0.014 *
Ethnicity									
Non-Hispanic	Reference			Reference			Reference		
Hispanic	1.43	0.75–2.69	0.27	1.39	0.72–2.68	0.33	1.34	0.69–2.60	0.39
Not reported	1.98	0.66–5.97	0.22	1.95	0.63–6.10	0.25	1.91	0.61–5.97	0.26
Comorbidity									
No	Reference			Reference			Reference		
Yes	1.21	0.88–1.66	0.25	1.16	0.83–1.63	0.40	1.09	0.77–1.53	0.63
Medical Trainee									
No	N/A	N/A	N/A	Reference			Reference		
Yes	N/A	N/A	N/A	0.06	0.03–0.12	<0.001 *	0.06	0.03–0.11	<0.001 *
Template Used									
No	N/A	N/A	N/A	N/A	N/A	N/A	Reference		
Yes	N/A	N/A	N/A	N/A	N/A	N/A	3.72	1.77–7.84	<0.001 *

* p values were obtained from generalized linear mixed regression models (see text for details), and p -values < 0.05 were considered statistically significant. N/A = not applicable.

The first model assessed screening rate when adjusting for demographics (i.e., age, sex, race, ethnicity) and comorbidity. When controlling for sex, race, ethnicity, and comorbidity presence, children aged 5 to less than 8 years and children aged 8 to less than 12 years had higher odds of being screened for SDB at a well-child visit than children aged 2 to less than 5 years (OR: 1.72 [1.18–2.50]; $p = 0.005$ for 5- to less than 8-year-old children; OR: 1.79 [1.23–2.61]; $p = 0.003$ for 8- to less than 12-year-old children). In this same model, Black children and children of Other race underwent screening for snoring at lower rates than their White counterparts (OR 0.61 [0.42–0.89]; $p = 0.01$ for Black children; OR 0.54 [0.29–0.99]; $p = 0.049$ for children of Other race). There were no differences in screening rates based on ethnicity and presence of a comorbidity when controlling for age, sex, and race.

Another regression model (Model 2) was used to further assess the nuances associated with SDB screening in children. This model, outlined in Table 2, controlled for age, sex, race, ethnicity, comorbidity, and the involvement of a medical trainee in the well-child visit. There was still a significant difference in the odds of screening among children from Other race compared with White children (OR 0.47 [0.24–0.89]; $p = 0.02$), but no difference in screening between Black and White children (OR 0.95 [0.63–1.45]; $p = 0.82$). In this same model, children were significantly less likely to be screened if a medical trainee was involved in the clinic visit (OR: 0.06 [0.03–0.12]; $p < 0.001$). Significant differences in screening based on age persisted in this model, with older children being more likely to be screened than younger children (OR: 2.04 [1.37–3.05]; $p < 0.001$ for 5- to less than 8-year-old children; OR: 2.26 [1.51–3.38]; $p < 0.001$ for 8- to less than 12-year-old children).

The final multivariable regression model (Model 3) evaluated in this study included the variables age, sex, race, ethnicity, comorbidity, medical trainee involvement and use of a templated note (Table 2). Differences in screening based on age continued to be significantly higher for older children (OR: 2.19 [1.46–3.29]; $p < 0.001$ for 5- to less than 8-year-old children; OR: 2.37 [1.57–3.57]; $p < 0.001$ for 8- to less than 12-year-old children). Children of Other race were also found to have significantly lower screening rates than White children (OR 0.44 [0.23–0.84]; $p = 0.014$). Odds of being screened were 94% lower in visits in which a medical trainee was involved (OR 0.06 [0.03–0.11]; $p < 0.001$). The odds of being screened at a well-child visit were 3.7 times higher in encounters in which a templated note was used (OR 3.72 [1.77–7.84]; $p < 0.001$).

Given that we observed significant effects due to involvement of medical trainees and template use, we sought to further examine their impact on screening documentation. Template use was similar when a trainee was involved compared with times when a trainee was not involved (95.6% vs. 93.6%). Trainee involvement was 22.1% among patients seen by pediatricians and 24.5% for family medicine providers, but 0% for advanced practice providers. Among patients with visits that included a medical trainee ($n = 158$), most (82.3%) were seen within a single clinic. Although patients seen by pediatricians and advanced practice providers in this sample were fairly spread out across the various clinics, 49 of 53 (92.5%) patients seen by family medicine providers were seen within a single clinic.

4. Discussion

Inequitable access to tonsillectomy for children has been well documented [25]; however, little is known about where in the care continuum these differences may arise. The most common indication for tonsillectomy is signs and symptoms of obstructive sleep apnea. AAP guidelines state that all children should be screened for snoring and that children with symptoms of SDB should be further evaluated with a polysomnogram or evaluation by a specialist. Therefore, identification in the primary care setting can act as a bottleneck to care by a sleep specialist or otolaryngologist for treatment. In our study cohort, less than

half of all children were screened for snoring, which supports prior works that cite low screening rates for obstructive sleep apnea. Of the children who were evaluated, 16.1% were identified to snore regularly, which is consistent with the reported prevalence of SDB in the literature [1,2]. We also found racial differences in documentation for SDB screening at well-child visits. Black children and children of Other race were less likely to be screened for snoring than their White counterparts. This finding is consistent with differences in tonsillectomy rates among Black children, who undergo lower rates of surgical intervention despite being disproportionately affected by obstructive sleep apnea [12,26].

Our aim was also to identify factors that may be influencing the differences in screening seen among different racial and ethnic groups. When accounting for use of a templated note in our regression model, these associations were no longer significant for Black children but persisted for children of Other race. Although not completely effective at eliminating racial differences in screening rates, we found that patients were 3.7 times more likely to be evaluated for SDB when a templated note incorporating a question on snoring was used. Prior research has indicated that improved screening can be achieved with the use of templated notes. A recent multicenter, retrospective study suggests that increased structured and standardized documentation using note templates is associated with higher-quality documentation [27]. For example, a study conducted in 2015 suggested that templated notes for well-child visits significantly improve the documentation of obesity in children [28]. These findings, when taken together with the results of our study, suggest that use of a note template was associated with higher odds of SDB screening and with smaller observed differences in screening across some demographic groups.

Interestingly, we also found that the involvement of a medical trainee was associated with decreased screening rates for SDB during well-child visits. To our knowledge, this is the first study to examine differences in screening practices for pediatric SDB based on level of clinician training. Our findings are consistent with prior research demonstrating lower rates of preventive screening among patients cared for by trainee physicians. For example, patients of internal medicine resident physicians were significantly less likely to receive age-appropriate cervical, breast, and colorectal cancer screening than patients of attending physicians [29]. Another study found that attending pediatricians had significantly better identification rates of mothers with depressive symptoms than those of pediatric trainees [30]. Joni et al. found that documentation of pediatric obesity increased with resident-physician training level [31]. Collectively, these findings suggest that providers' level of training may influence adherence to preventive screening recommendations, and our results are consistent with this broader body of literature.

The current findings identify several opportunities for prospective quality improvement initiatives. Future studies should evaluate whether standardized electronic health record templates and clinical decision-support tools improve adherence to pediatric SDB screening recommendations. Given the association between trainee involvement and lower screening rates, educational interventions targeting medical students, residents, and educators may improve recognition of SDB and increase consistency of screening. Additional training on cultural sensitivity and implicit biases is also essential for enhancing patient care. Finally, incorporation of validated parent-reported sleep questionnaires into routine well-child visits may complement clinician screening and improve identification of children who warrant further evaluation. Prospective implementation studies are needed to determine whether these interventions improve referral patterns, diagnostic evaluation, and clinical outcomes.

The primary objective of the present study was to evaluate screening practices for pediatric SDB during well-child visits and identify patient- and system-level factors associated with screening. Accordingly, longitudinal outcomes following a positive screen—including

referral completion, diagnostic evaluation, and treatment outcomes—were beyond the scope of this investigation and were not systematically collected. Importantly, our group has previously examined subsequent stages of the pediatric SDB care pathway. In prior studies, we demonstrated that children residing in rural communities experienced reduced access to surgical care for SDB, including longer travel distances and lower rates of tonsillectomy, highlighting geographic barriers to treatment [13]. We have also shown that neighborhood-level social vulnerability was associated with lower rates of specialty referral completion and reduced access to SDB evaluation and treatment [14]. These studies complement the present work by examining barriers that occur after SDB has been recognized and referral has been initiated, whereas the current study focuses on an earlier stage of the care continuum—screening during routine primary care well-child visits.

There are several limitations to this study. Our analysis is based on the documentation of well-child visits. Therefore, verbal screening that was not documented in the chart would not have been captured. This study was conducted within primary care and pediatric clinics affiliated with a single hospital network, which may limit the generalizability of the findings to other healthcare systems. However, the network includes both urban and rural outreach clinics and serves a socioeconomically, racially, and ethnically diverse pediatric population, enhancing the applicability of the findings across a range of clinical settings. Race and ethnicity are self-reported outcomes, making these conclusions prone to reporting bias. The “Other” race category combined several distinct populations, including Asian, American Indian, Alaska Native, Pacific Islander, multiracial, and patients with unknown race, because of limited sample sizes. Consequently, the observed associations should be interpreted cautiously and should not be assumed to reflect the experiences of any individual subgroup. Due to sample size limitations, we were unable to include trainee × template use interaction terms into our GLMMs; future work should address whether the impact of template use on SDB screening differs according to whether or not a trainee is present. Finally, this study was limited to well-child visits conducted during a single month (August 2022), which may not fully capture seasonal variation in clinic workflows, staffing patterns, or trainee involvement. For example, trainees would have been interns or experienced residents in their third year of training. Future studies spanning multiple time periods are needed to assess the consistency of these findings over time.

5. Conclusions

This study focused on upstream causes of observed differences in documentation for screening for obstructive sleep symptoms in the primary care setting. Use of templated notes was associated with reduced observed differences in screening for pediatric SDB among some groups. These findings pinpoint an actionable change that can be implemented during clinic visits. Our results also suggest that the involvement of a medical trainee was associated with significantly lower SDB screening rates. Therefore, education for resident physicians may allow for more-consistent practices that are congruent with national screening guidelines.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of MUSC (Pro00104956, 9/3/2021).

Informed Consent Statement: Patient consent was waived due to the retrospective nature of the study and the use of anonymized data.

Data Availability Statement: The data presented in this study are available on request from the corresponding authors. The data are not publicly available due to privacy and ethical restrictions regarding patient clinical histories.

Conflicts of Interest: The authors declare no conflicts of interest.

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