

Original Research

Identifying Risk Factors for Appointment No-Shows in a Pediatric Orthopaedic Surgery Clinic

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Received: March 23, 2023; Accepted: May 23, 2023; Published: August 1, 2023

DOI: 10.55275/JPOSNA-2023-695

Abstract

Background: Appointment nonadherence in pediatric orthopaedic clinics negatively affects patient outcomes. While previous studies have examined risk factors for missed appointments, there is a lack of such research in pediatric orthopaedics. This study tests the hypothesis that pediatric orthopaedic patients with greater socioeconomic risk are more likely to miss appointments. Our objective is to identify risk factors contributing to missed appointments.

Methods: A retrospective chart review was conducted of all visits in an outpatient pediatric orthopaedic clinic and affiliated Midwest level 1 academic hospital in 2019. Possible covariates with appointment attendance collected included sociodemographic information such as age, gender (male/female), race/ethnicity (non-Hispanic White, Black, Hispanic/Latinx, Other), and insurance (Commercial, Medicaid, Medicaid HMO, Other). The main study outcome was appointment status, defined as either “No-Show” or “Attended/Completed.” Using census data, the Area Deprivation Index (ADI) was determined for a matched case (“No-Show”) control sample to quantify socioeconomic risk. Factors associated with appointment nonadherence were analyzed with a logistic regression model.

Results: Out of 10,078 total encounters included in the study, there was a no-show rate of 6.61%. Significant predictors of no-show included race ($p < 0.001$), insurance type ($p < 0.001$), and lag days between appointment scheduling and completion ($p < 0.001$). In a matched case-control sub-study, ADI was positively associated with increased odds of no-show ($p < 0.001$), making this model unique from other studies.

Conclusions: This data informs pediatric orthopaedic providers of risk factors for appointment nonadherence in order to individualize patient care plans based on specific socioeconomic needs. Efforts to improve appointment adherence

may reduce the rate of poor health outcomes and health disparities in underserved areas. Next steps include qualitative assessments to articulate the experience of families who miss appointments to develop a greater standard for more accessible patient-centered care.

Level of Evidence: Retrospective chart review (Level III)

Key Concepts

- There appears to be a link between pediatric orthopaedic appointment adherence and socioeconomic factors.
- The Area Deprivation Index is a useful tool to quantify socioeconomic risk in the clinical setting.
- Further research is needed to understand the specific reasons patients miss appointments.

Introduction

Appointment nonadherence has historically been a burden on patient care. Missed appointments can disrupt a patient's treatment and recovery process, increase risk of complications, and result in missed opportunities for patient education and collaboration.^{1,2} While multiple studies examine risk factors for appointment nonadherence in general and adult medicine, there is a lack of such research within pediatric orthopaedic surgery.

Orthopaedic surgeons often have a highly specialized practice, treating a subset of patients for various musculoskeletal complaints. However, pediatric care often presents unique challenges, such as the requirement of a guardian to ensure appointment adherence, consent, and continuation of care. As a result, common reasons for missing appointments include caregiver transportation issues, trouble taking time off work and school, or lack of childcare for other children in the household.^{4,5}

Previous research has shown that social determinants of health (SDoH) may impact no-show and cancellation rates in pediatric outpatient clinics and can be predictors of poor health outcomes.^{2,4,6,7} The SDoH are nonmedical conditions in which people live, influenced by forces external to health like social norms and political policies.⁶ These include, but are not limited to household income, race, education, employment, insurance status, housing, and social support. In prior studies, the Area Deprivation Index (ADI) has demonstrated utility in

healthcare as a proxy measure for the SDoH to identify social risk factors that are not readily available in a patient's electronic medical record (EMR), providing means toward patient-centered care.⁸ The ADI is a composite index of various social data, including economic inequity, availability of resources, and infrastructure of a given "neighborhood," defined by the United States Census Block Group.^{9,13}

Insurance type has also been found to be a significant socioeconomic predictor of no-shows.^{5,10} Other studies have shown that non-white and socioeconomically underresourced patients are more likely to miss appointments; these barriers can be compounded by underlying financial stress, distance to clinic, and cultural differences among certain underresourced groups and neighborhoods.^{4,6,11} This suggests that some patient populations require more resources than others to achieve a desired clinical outcome due to socioeconomic factors out of the patient's control. Patients underrepresented in orthopaedic and sports medicine literature have a greater chance of experiencing health inequity, thus poorer health outcomes.^{2,9,12} Therefore, demonstrating patterns of appointment nonadherence and socioeconomic risk in specialties like orthopaedic surgery may help address health inequities, leading to improvements in health outcomes and public health.

This study seeks to determine if patients with greater socioeconomic risks are more likely to miss

appointments than more socioeconomically stable patients. Our objective is to utilize the electronic medical record to identify predictors of no-shows at outpatient pediatric orthopaedic clinics and to identify demographic and socioeconomic risk factors that may contribute to these patterns. With this information, we ultimately hope to find specific areas of intervention to establish more sustainable patient care plans for these at-risk groups.

Materials and Methods

Data Source and Study Sample

The study included de-identified patient data from a retrospective chart review of all outpatient pediatric orthopaedic clinic visits at a level one pediatric hospital in Milwaukee, WI, during the period January 1 through December 31, 2019. The study cohort consisted of 5,913 patients with 10,078 visits.

Study Outcome and Covariates

The main study outcome was appointment status, with appointment nonadherence defined as “No-Show” and completed visits defined as “Attended/Completed” in the EMR. Sociodemographic information included age at encounter, sex (male/female), race/ethnicity (non-Hispanic White, Black, Hispanic/Latinx, and Other), and insurance class (Commercial, Medicaid, Medicaid HMO, and other). Patients’ home and clinic addresses (street, city, state, and ZIP Code) were extracted and used to determine the distance in miles between the patients’ United States Census Block Group and the clinic. This distance was summarized by two variables: the indicator that the patient’s home and clinic addresses shared the same census tract (Distance (0 miles)) and if the tracts were different, the distance was log-transformed for data analysis. Clinical characteristics included type of visit (New Patient, Follow-Up, and Other) and lag days, defined as the number of days between the date of scheduling and the encounter. An additional variable indicating the number of appointments per patient was added to the matched sample model.

We derived each patient’s ADI from the Neighborhood Atlas, published by the University of Wisconsin-Madison

School of Medicine and Public Health, which maps census block groups by deprivation index (Figure 1).^{13,14} The current ADI available on Neighborhood Atlas includes census data from 2020, with “neighborhoods” defined within ZIP codes as the Census Block Group. With the home state, city, and ZIP codes, each patient’s ADI was determined to assess relative socioeconomic disadvantage and identify any correlation with appointment adherence patterns. An ADI of 1 represents the least disadvantaged block groups, while an ADI of 10 represents the most disadvantaged.

Statistical Analyses

Appointment nonadherence was modeled with a logistic regression fitted using Generalized Estimating Equations accounting for patient effect, as each patient could have multiple scheduled appointments. Logistic regression predictors were selected to minimize the quasi-likelihood information criterion. This model was used to calculate predictive probabilities of no-show for each appointment. The no-show appointments were matched with controls using greedy matching,¹⁵ and additional ADI data were collected for the matched sample patients. Since each patient could have multiple appointments, some matched case and control pairs of appointments link several patients into strata containing up to 12 patients. By analogy with Tables 1a and 1b, logistic regression was fitted on the matched data using GEE with logit link and the clusters as defined above.

Institutional Review Board

This project was approved after careful review by the Children’s Wisconsin Institutional Review Board.

Results

A total of 5,913 patients were included in the analyses, with 363 patients having at least 1 “No-Show” appointment (Table 2a). There were 10,078 total encounters included in the study from the orthopaedic appointments in 2019 (Table 2b). Out of the total encounters, there were 666 “No-Show” appointments and 9,412 completed appointments, yielding a no-show rate of 6.61%.

Wisconsin
ADI State Rankings
2020

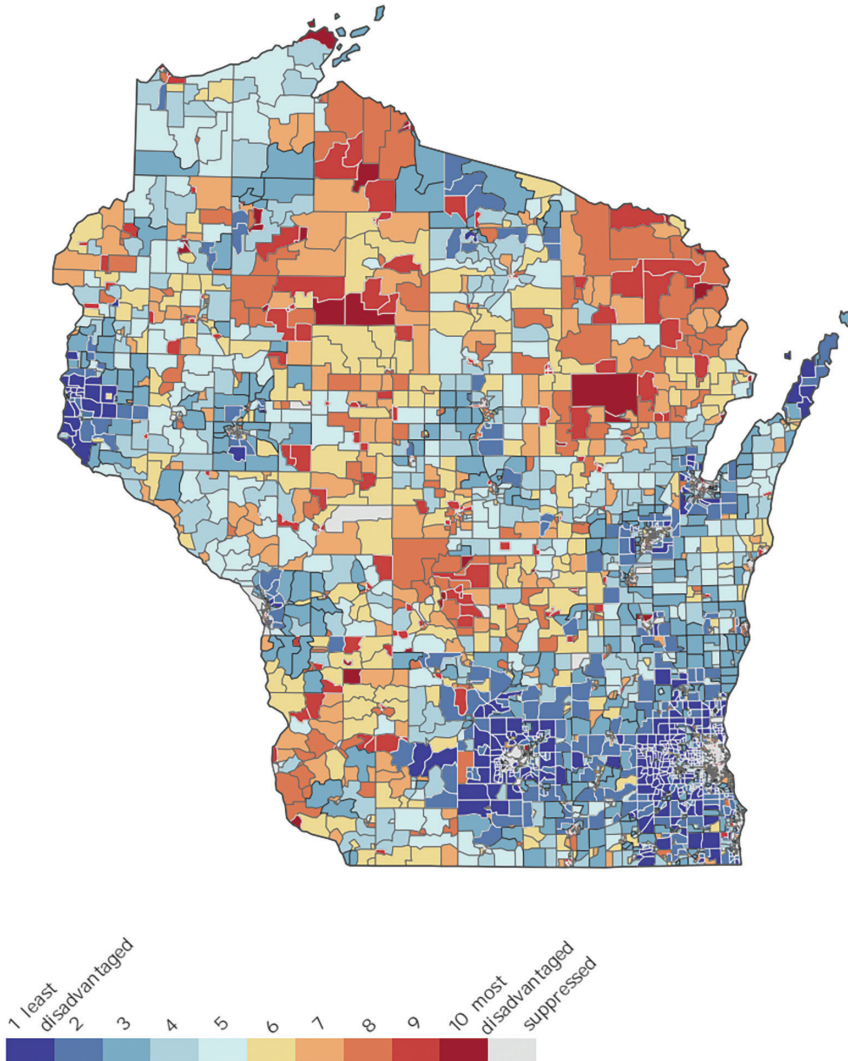


Figure 1. Wisconsin Area Deprivation Index (ADI) State Rankings, 2020 Census (University of Wisconsin-Madison Neighborhood Atlas).

Table 2a describes the sociodemographic characteristics among all patients at their first appointment. The median age of patients with at least 1 “No-Show” appointment was 12.1 (IQR 6.9-15.3) years, with equal proportion of both males and females. The majority of patients having at least 1 “No-Show” appointment identified as Black (53%), had Medicaid HMO insurance (45%), and lived a median of 6 (IQR 6- 19) miles from their retrospective clinics. Table 2b describes the sociodemographic and

clinical characteristics among all patient appointments (10,078 appointments). The majority of all “No-Show” visits had a median of 28 (IQR 14-54) lag days or the time between scheduling and completion of an appointment. Conversely, 63% of “Completed/Arrived” visits were among appointments belonging to non-Hispanic White patients and about 60% of total completed visits occurred in patients under commercial insurance, while only 38% relied on government insurance.

Table 1a. Descriptive Statistics for Patients *Among Matched Sample At First Appointment*

Characteristic	N	Arrived/Completed, N = 641 ¹	No Show, N = 319 ¹	p-value ²
Age at Encounter	960	11.8 (6.4, 15.1)	12.0 (7.0, 15.2)	0.4
Gender	960			0.8
Female		313 (49%)	159 (50%)	
Male		328 (51%)	160 (50%)	
Race/Ethnicity	960			0.03
NH White		190 (30%)	66 (21%)	
NH Black		126 (20%)	67 (21%)	
Hispanic/Latinx		295 (46%)	170 (53%)	
NH Other		30 (4.7%)	16 (5.0%)	
Insurance Type	960			0.004
Commercial		126 (20%)	51 (16%)	
Medicaid		187 (29%)	93 (29%)	
Medicaid HMO		311 (49%)	160 (50%)	
Missing		0 (0%)	7 (2.2%)	
Other		17 (2.7%)	8 (2.5%)	
Distance (miles)	960	8 (6, 23)	6 (6, 13)	0.047
Distance (0 miles)	960	82 (13%)	41 (13%)	>0.9
Log of distance > 0 miles	837	2.07 (1.72, 3.19)	2.07 (1.72, 3.04)	0.015
ADI	960	8 (5, 10)	9 (6, 10)	<0.001
Type of Visit	960			>0.9
New Patient		325 (51%)	160 (50%)	
Follow-Up		298 (46%)	150 (47%)	
Other		18 (2.8%)	9 (2.8%)	
Lag Days	960	18 (6, 47)	28 (13, 52)	<0.001

¹Median (IQR); n (%).

²Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test.

NH = non-Hispanic. All bold values indicate statistical significance, p - value <0.05.

Model 1 reports factors related to “No-Show” and presents estimated probability of no-show among all patient appointments with odds ratios. For every year of age, the odds of “No-Show” among all appointments increases by 1% (OR=1.02, CI=1.00-.04, p=0.015). Appointments for non-Hispanic Black and Hispanic/Latinx patients had a 4.21 (CI=3.20-5.55, p<0.001) and

1.69 (CI=1.23-2.32, p=0.001) greater odds of being “No-Show,” respectively, compared to non-Hispanic White patients. All appointments belonging to insurance type other than “Commercial” had significantly greater odds of “No-Show” (Medicaid OR=4.54, CI=3.31-6.25, p<0.001; Medicaid HMO OR=4.63, CI 3.49-6.15, p<0.001; Other OR= 5.48, CI=3.22-9.35, p<0.001).

Table 1b. Descriptive Statistics for All Patient Appointments Among Matched Sample

Characteristic	N	Arrived/Completed, N = 1,496 ¹	No Show, N = 597 ¹	p-value ²
Age at Encounter	2,093	11.8 (6.3, 14.8)	11.8 (6.5, 15.1)	0.63
Gender	2,093			
Female		703 (47%)	289 (48%)	
Male		793 (53%)	308 (52%)	0.58
Race/Ethnicity	2,093			
NH White		447 (30%)	141 (24%)	
NH Black		287 (19%)	119 (20%)	<0.001
Hispanic/Latinx		664 (44%)	313 (52%)	0.07
NH Other		98 (6.6%)	24 (4.0%)	0.33
Insurance Type	2,093			
Commercial		318 (21%)	90 (15%)	
Medicaid		471 (31%)	169 (28%)	0.12
Medicaid HMO		672 (45%)	291 (49%)	<0.001
Missing		0 (0%)	28 (4.7%)	<0.001
Other		35 (2.3%)	19 (3.2%)	0.04
Distance (miles)	2,093	8 (6, 21)	6 (6, 13)	0.87
ADI	2,093	8 (4, 10)	9 (6, 10)	<0.001
Distance (0 miles)	2,093	175 (12%)	79 (13%)	0.38
Log of distance > 0 miles	1,839	2.07 (1.72, 3.19)	2.07 (1.72, 3.04)	0.03
Type of Visit	2,093			
New Patient		405 (27%)	197 (33%)	
Follow-Up		1,058 (71%)	387 (65%)	0.01
Other		33 (2.2%)	13 (2.2%)	0.53
Lag Days	2,093	21 (8, 44)	28 (14, 56)	<0.001

¹Median (IQR); n (%).

²Single predictor Generalized Estimating Equation models with identity link.

All bold values indicate statistical significance, p - value <0.05.

Additionally, for every unit increase in lag day, the odds of appointment nonadherence increased by 1% (OR=1.01, CI=1.00, p<0.001).

Table 1a describes the sociodemographic and clinical characteristics of the matched sample at their first appointment (960 patients). The majority of “No-Show” patients in the matched sample identified as Hispanic/

Latinx (53%), had Medicaid HMO (50%), lived a median of 6 (IQR 6-13) miles from the clinic, and had a median ADI score of 9 (IQR 6-10). Table 1b describes the sociodemographic and clinical characteristics among all matched sample appointments (2,093). Most “No-Show” appointments were classified as “Follow-Up” type of visit (65%). Additionally, “No-Show” appointments had a median of 28 (IQR

Table 2a. Descriptive Statistics Among All Patients *At First Appointment*

Characteristic	N	Arrived/Completed, N = 5,550 ¹	No Show, N = 363 ¹	p-value ²
Age at Encounter	5,913	11.8 (6.7, 14.8)	12.1 (6.9, 15.3)	0.2
Gender	5,913			0.2
Female		2,967 (53%)	181 (50%)	
Male		2,583 (47%)	182 (50%)	
Race/Ethnicity	5,913			<0.001
NH White		3,547 (64%)	77 (21%)	
NH Black		809 (15%)	191 (53%)	
Hispanic/Latinx		821 (15%)	77 (21%)	
NH Other		373 (6.7%)	18 (5.0%)	
Insurance Type	5,913			<0.001
Commercial		3,327 (60%)	52 (14%)	
Medicaid		695 (13%)	94 (26%)	
Medicaid HMO		1,403 (25%)	162 (45%)	
Other		124 (2.2%)	8 (2.2%)	
Missing		1 (<0.1%)	47 (13%)	
Distance (miles)	5,913	11 (6, 31)	6 (6, 19)	<0.001
Distance (0 miles)	5,913	657 (12%)	46 (13%)	0.6
Log of distance > 0 miles	5,210	2.62 (2.07, 3.55)	2.07 (1.72, 3.17)	<0.001
Type of Visit	5,913			>0.9
New Patient		2,805 (51%)	185 (51%)	
Follow-Up		2,592 (47%)	167 (46%)	
Other		153 (2.8%)	11 (3.0%)	
Lag Days	5,913	17 (6, 42)	26 (10, 51)	<0.001

¹Median (IQR); n (%).

²Wilcoxon rank sum test; Pearson's Chi-squared test.

NH = non-Hispanic. All bold values indicate statistical significance, p - value <0.05.

14-56) lag days compared to 21 (IQR 8-44)) among “Arrived/Completed” appointments.

Model 2 reports associations between “No-Show” and potential risk factors and presents estimated probability of no-show among the matched case-control sub-study. Appointments for non-Hispanic/Other patients had a 0.57 lower odds of appointment nonadherence compared to appointments for non-Hispanic/White patients. For every

unit increase in ADI, odds of “No-Show” increased by approximately 11% (OR=1.11, CI=1.06-1.16), and of all 666 “No-Shows,” approximately two-thirds lived in neighborhoods with the highest ADI indices (ADI of 8, 9, or 10) representing the lowest socioeconomic statuses. Conversely, only 10.35% of “No-Show” patients resided in neighborhoods represented by the “least deprived” or most socioeconomically stable ADI indices (ADI of 1, 2, or 3).

Table 2b. Descriptive Statistics Among All Patient Appointments

Characteristic	N	Arrived/Completed, N = 9,412 ¹	No Show, N = 666 ¹	p-value ²
Age at Encounter	10,078	11.7 (6.7, 14.6)	11.8 (6.4, 15.2)	0.69
Gender	10,078			
Female		4,958 (53%)	321 (48%)	
Male		4,454 (47%)	345 (52%)	0.038
Race/Ethnicity	10,078			
NH White		5,958 (63%)	158 (24%)	
NH Black		1,424 (15%)	343 (52%)	<0.001
Hispanic/Latinx		1,384 (15%)	136 (20%)	<0.001
NH Other		646 (6.9%)	29 (4.4%)	0.012
Insurance Type	10,078			
Commercial		5,630 (60%)	91 (14%)	
Medicaid		1,264 (13%)	170 (26%)	<0.001
Medicaid HMO		2,336 (25%)	293 (44%)	<0.001
Other		181 (1.9%)	19 (2.9%)	<0.001
Missing		1 (<0.1%)	93 (14%)	<0.001
Distance (miles)	10,078	11 (6, 31)	6 (6, 13)	0.057
Distance (0 miles)	10,078	1,130 (12%)	86 (13%)	0.52
Log of distance > 0 miles	8,862	2.62 (2.07, 3.55)	2.07 (1.72, 3.17)	<0.001
Type of Visit	10,078			
New Patient		2,970 (32%)	224 (34%)	
Follow-Up		6,234 (66%)	427 (64%)	0.29
Other		208 (2.2%)	15 (2.3%)	0.88
Lag Days	10,078	21 (7, 47)	28 (14, 54)	<0.001

¹Median (IQR); n (%).

²Single predictor Generalized Estimating Equation models with logit link.

All bold values indicate statistical significance, p - value <0.05.

Discussion and Conclusion

The objective of this study was to identify patterns in “no-shows” at outpatient pediatric orthopaedic clinics and to identify demographic and socioeconomic risk factors that may contribute to these patterns. Over a 12-month period, 6.61% of pediatric orthopaedic patients at a major metropolitan medical center missed their scheduled appointments. After data analysis, four significant

predictors of no-show appointments were identified: insurance payer status, race, lag days, and ADI.

Analysis of insurance payer status found that the odds of no-show among patients using Medicaid or Medicaid HMO were approximately 5 times greater than patients using commercial insurance. This has substantial ramifications, as patients under government insurance already face barriers to care, including provider coverage

Model 1. Generalized Estimating Equation Model for All Patient Appointments Estimating Probability of No-Show

Characteristic	OR ¹	95% CI ¹	p-value
Age at Encounter	1.02	1.00, 1.04	0.015
Race / Ethnicity			
NH White	—	—	
NH Black	4.21	3.20, 5.55	<0.001
Hispanic / Latinx	1.69	1.23, 2.32	0.001
NH Other	1.04	0.65, 1.67	0.9
Financial Class			
Commercial	—	—	
Medicaid	4.54	3.31, 6.25	<0.001
Medicaid HMO	4.63	3.49, 6.15	<0.001
Other	5.48	3.22, 9.35	<0.001
Distance (0 miles)	0.75	0.49, 1.14	0.2
Log of distance > 0 miles	0.88	0.77, 1.00	0.047
Type of Visit			
New Patient	—	—	
Follow-Up	0.81	0.65, 1.00	0.050
Other	1.16	0.62, 2.16	0.6
Lag Days	1.01	1.00, 1.01	<0.001

¹OR = Odds Ratio, CI = Confidence Interval.
NH = non-Hispanic. All bold values indicate statistical significance, p - value <0.05.

and lack of clinic accessibility that ultimately may contribute to higher rates of no-shows.

Race appeared to be another significant predictor of no-show. The majority of missed appointments occurred among patients who identified as either Black or Hispanic/Latinx, while the majority of completed visits were among patients who identified as non-Hispanic White. Based on the unmatched model, the odds of a missed appointment for Black patients were 4.21 times greater than among appointments scheduled for patients identifying as non-Hispanic White. The odds of a no-show were approximately 2 times higher

Model 2. Generalized Estimating Equation Model for Matched Sample Patient Appointments Estimating Probability of No-Show

Characteristic	OR ¹	95% CI ¹	p-value
Age at Encounter	1.01	0.99, 1.03	0.3
Race/Ethnicity			
NH White	—	—	
Hispanic/Latinx	0.87	0.63, 1.22	0.4
NH Black	0.95	0.70, 1.27	0.7
NH Other	0.57	0.34, 0.97	0.040
Insurance Type			
Commercial	—	—	
Medicaid	0.86	0.63, 1.17	0.3
Medicaid HMO	1.04	0.77, 1.39	0.8
Other	1.62	0.90, 2.91	0.11
Distance (0 miles)	0.95	0.59, 1.52	0.8
Log of distance > 0 miles	0.91	0.79, 1.06	0.2
ADI	1.11	1.06, 1.16	<0.001
Type of Visit			
New Patient	—	—	
Follow-Up	0.62	0.49, 0.79	<0.001
Other	0.86	0.45, 1.64	0.6
Lag Days	1.01	1.00, 1.01	<0.001
Count	1.04	0.98, 1.11	0.2

¹OR = Odds Ratio, CI = Confidence Interval,
NH = non-Hispanic. All bold values indicate statistical significance, p - value <0.05.

among appointments scheduled for Hispanic/Latinx patients. These analyses provide additional context on the racial segregation that still exists in this country, with many non-white groups seemingly restricted to metropolitan areas correlated with lower socioeconomic status. It is important to note that race and ethnicity do not exist in silos; like insurance type, they are likely linked with other socioeconomic and environmental factors that increase the likelihood of health inequity and poorer health outcomes. For example, in the

United States, minority groups identifying as Black and Hispanic/Latinx are more likely to be uninsured or on government insurance than their non-Hispanic White and Asian counterparts.¹⁵ While these findings cannot be appropriately generalized to an entire racial or cultural group, they are an important indication of the effect that historical racial segregation and inequity have on healthcare today.

A third characteristic, lag days, appeared to be another important predictor of no-show. Many potential reasons exist for why a greater time leading up to an appointment is correlated with more no-shows, especially in pediatrics. Other studies have cited forgetfulness, issues taking off work and school, lack of childcare for siblings, and other conflicting events in the family as reasons for nonattendance.^{2,3} In orthopaedics specifically, pain may have resolved by the time the scheduled appointment occurs, or the condition may seem to have “healed” and parents or patients may not believe an appointment is necessary.² Strategies to mitigate this barrier could include more frequent reminder systems or a system to schedule closer follow-ups for patients deemed “at risk” of no-show.

Lastly, ADI was positively correlated with increased odds of missing an appointment. The matched control study proved useful in providing a comparison between patients who missed appointments and patients who attended visits with similar characteristics. The addition of the ADI to this model makes this study unique compared to previous attempts, especially within pediatric orthopaedics. The ADI can be a valuable standardized tool for providers to address socioeconomic inequity in their patient population because the socioeconomic differences between those who live in the city versus the suburbs, for example, may be taken into account.⁸ However, there is a need to determine the underlying reason for these inequities between census block groups for this approach to be worthwhile.

There are limitations to this study. As it is retrospective, the ability to control certain data is limited, such as specific reasons for why a family misses a clinic visit.^{2,3} Further, using an EMR may limit the ability to measure

certain indicators of socioeconomic status or barriers to care, such as cultural norms and immigration status. Future qualitative studies could address these limitations, such as phone interviews with patients or families that frequently no-show. Another limitation concerns the ADI and the geographical location of this study, which is limited to one center in the Midwest. While the ADI is useful in providing generalizable data among neighboring communities, results from this study are primarily limited to census block groups within Wisconsin, so they may not be generalizable to other states with different healthcare systems and policies.^{13,14} However, this study can be reproduced in different geographical locations to determine if results are specific to a given metropolitan area. The socioeconomic parameters in this study may also change based on geographic area and makeup of a healthcare system, such as in predominantly rural or urban states, which could account for different qualitative results to reflect other populations.

Efforts to improve appointment adherence can reduce the rate of poor health outcomes and have the potential to reduce health disparities in minority and underresourced groups. By identifying at-risk patients and families, care plans can be individualized based on specific socioeconomic risk factors, hopefully making care more accessible. In pediatric orthopaedic clinics, this patient-centered approach can help create sustainable longitudinal care plans for at-risk patients with chronic conditions or injuries that need to be monitored over time, preventing potentially treatable musculoskeletal pathologies in a critical development period. These individualized plans may involve enhanced electronic reminder systems, an increased presence of social work in specialty clinics, or providing additional resources to at-risk patients during their initial visits.

This study aims to inform pediatric orthopaedic providers of risk factors to be aware of in order to reduce appointment nonadherence in their clinics. While some of these predictors may seem obvious to orthopaedic surgeons in practice, this study adds data to the literature to support areas for future intervention.

Next steps include exploring the impact of virtual visits on appointment adherence, which have significantly increased in use since 2019. Additionally, pediatric orthopaedic surgery may be further broken down into subspecialty clinics (spine, fracture, sports, hand/upper extremity, etc.) to see if and how these patient populations differ. Finally, qualitative assessments should be conducted to articulate the experiences of families missing appointments, such as via surveys or phone interviews.⁶ By doing this, pediatric orthopaedic providers can receive guidance on how the clinic can meet the needs of the community. By connecting and supporting patients with better resources within and beyond the health system, more patients may be able to attend appointments and receive the best possible care. Providers may not be able to alter patients' socioeconomic background but can try to close that gap and meet them where they are.

Acknowledgements

This project would not be attainable without the generous support from the Department of Orthopaedic Surgery and the Institute for Health and Equity at the Medical College of Wisconsin. We also would like to acknowledge the University of Wisconsin School of Medicine and Public Health for the use of their publicly available data on the Neighborhood Atlas, supported by the NIH.

Disclaimer

The authors report no conflicts of interest related to this manuscript.

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