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Missed Appointments: Factors Contributing to High No-Show Rates in an Urban Pediatrics Primary Care Clinic

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Abstract

Background. Missed appointments complicate primary care services. *Objective*. To determine factors associated with missed pediatric appointments. *Design/Methods*. A convenience sample of 1537 patients who missed appointments were called and 386 (25%) families completed the 26-item survey. Those with high no-show rates were compared with the rest using χ^2 and Fisher's exact tests. Initial covariates with $P < .2$ were included in a multivariate logistic regression model. *Results*. Common reasons for missing appointments were the following: forgot (27%), transportation problems (21%), and time off of work (14%). The high no-show group had more African Americans ($P = .030$) and older patients ($P = .003$). Higher no-show rates correlated with well child visits ($P = .029$) and perception of "excellent health" ($P = .022$). In the logistic regression model, well child appointments (odds ratio = 2.56) and increasing age in years (odds ratio = 1.11) were associated with higher no-show rates. *Conclusions*. Efforts to decrease no-show rates should target older patients and well child visits.

Keywords

primary health care, pediatric care, missed appointments, appointments and schedules

Introduction

Missed appointments are a long-standing challenge in the health care industry with several decades of investigation into the reasons and consequences.[1] It is a widespread problem encountered both in the United States and abroad with rates ranging anywhere from 5% to 55%.[2] From the clinic perspective, missed visits have negative impacts including increased medical care costs, loss of revenue, wasteful use of health care manpower, decreased productivity, and disruption of patient care and physician–patient relationships.[3,4] Not showing up to scheduled appointments leads to reduced access for all other patients, which can result in patient dissatisfaction, staff dissatisfaction, and suboptimal (or disparate) health outcomes.[5,6] Furthermore, missed primary care appointments can lead to increased emergency department visits.[7]

Recognizing these consequences, much research has sought to understand the epidemiology behind no-show appointments in both primary care and subspecialty settings. Through analysis of existing patient information, several factors have been found to be associated with no-show visits in the United States including prior history of missed appointments,[1,8,9] waiting time between scheduling and the actual appointment,[8] low socioeconomic status,[1] insurance status and provider,[6,8] race/ethnicity,[9] primary language,[6] age,[8,9] living distance from health care center,[10] psychosocial factors,[1,4,9] less time in the practice,[6] lack of an established provider,[11] and a lower proportion of visits with the primary care provider.[6] However, the significance of these factors is sometimes conflicting among different studies reflecting the complexity of this problem.[1,8]

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While analysis of existing administrative data has been heavily utilized to try and understand this issue, limited research exists on specific reasons for nonattendance from the patients' or families' perspective. When solicited, patients in the United States and abroad state a mixture of clinical and situational reasons for missing visits, include forgetting,[10,12-15] transportation issues,[10,15,16] work-related issues,[10] worsened[14,16] or improved[13,14] clinical symptoms, emotional or motivational concerns,[16,17] negative treatment reactions,[16] and the visit not being scheduled with their doctor of choice.[14] Additionally, patients may perceive a disrespectful attitude from the health care system and may not be aware of the unintended consequences the clinics face when they do not show up to a scheduled appointment.[17]

Of these studies on patients' perceptions, however, very few focus on primary care,[14,15,17] and only one study descriptively examines a pediatric primary care setting more than a decade ago.[15] Before undertaking efforts to reduce nonattendance rates, our study aimed to determine factors associated with pediatric patients who miss many appointments in an urban, underserved primary care clinic through analyses of both existing patient information and follow-up patient telephone surveys.

Methods

Setting

This study was conducted at a large, urban academic pediatric medical center serving a diverse, primarily underresourced population. During the study period (July 1, 2011, to June 30, 2012), the clinic staff included 40 full-time and part-time physicians and nurse practitioners and 65 pediatric residents who provided primary care to more than 13 000 patients with 40 000 visits per year. The patient population was primarily publicly insured (67.1%) and consisted of minority groups (31.0% Hispanic, 45.5% African American) with a mean patient age of 7.6 years (standard deviation 5.4) (Table 1). The practice is open 7 days a week, including weeknights. To remind patients of their scheduled appointments, an automated phone message is made to all scheduled patients 48 hours in advance. Our hospital's institutional review board approved this study as exempt research that did not require written informed consent.

Data and Tools

Number of missed appointments, patient demographics, appointment details, and provider information were collected from existing administrative data from July 1, 2009, to June 30, 2010. Exploratory data analysis was first performed to identify potential risk factors for low compliance. Hispanic ethnicity, English as the main spoken language, public insurance, and a longer time interval to the scheduled appointment were identified as risk factors for the higher no-show population, while being scheduled more often to see the patient's primary care provider was a protective factor.

Table 1. Demographic Factors of Patient Population.

Patient Demographics	Clinic Population (n = 13 246), n (%)	No-Show Population (n = 5919), n (%)	Surveyed Population (n = 386), n (%)
Hispanic			
Yes	4105 (31.0)	1976 (33.4)	92 (23.8)
Race			
African American	6022 (45.5)	2778 (46.9)	221 (57.3)
White	982 (7.4)	331 (5.6)	14 (3.6)
Other	4705 (35.5)	2028 (34.3)	99 (25.6)
Unknown	1537 (11.6)	678 (11.5)	48 (12.4)
Age (years)			
Mean ± SD	7.6 ± 5.4	7.4 ± 5.4	6.1 ± 4.6
Primary payor			
Public	8409 (63.5)	4074 (68.8)	310 (80.3)
Commercial	4288 (32.4)	1393 (23.5)	69 (17.8)

Abbreviations: n, number of patients; SD, standard deviation.

To further assess these and other factors associated with nonattendance, a 26-item telephone survey was constructed after reviewing the literature with the help of an expert in survey development and culturally diverse populations. The survey was made available in both English and Spanish and tested in a brief pilot study. Introductory material asked caregivers about the child's primary care doctor, scheduled appointment, general health, and the family's spoken language (4 questions). Six domains were covered: clinical and personal reasons for missing the appointment (3 questions); ability to reschedule appointment (1 question); comfort with primary care provider and all practice providers (10 questions); overall quality of care provided by the practice (1 question); attitudes toward continuity of primary care provider and the missed appointment (4 questions); and actions taken after the missed appointment (1 question). One closing question solicited caregivers for feedback on how to make it easier for patients to come to appointments.

Study Sample

Between July 1, 2011, and June 30, 2012, 2 trained personnel called a convenience sample of 1537 English- or Spanish-speaking patients within 1 week of their missed

Table 2. Correlation of No-Show Rate With Patient Demographics and Survey Responses (n = 386).

Question	No-Show Rate	
	Spearman Correlation Coefficient	*P* Value
Patient age (years)	0.179	<.001
In the past 12 months, how many times has your child's primary doctor changed?	0.160	.002
In the past 12 months, how often did the doctors listen carefully to you? (1 = Never to 4 = Always)	−0.118	.027
How would you rate your child's health on the day of the scheduled appointment? (1 = Poor to 5 = Excellent)	0.109	.033
Payor (Commercial vs Public)	0.106	.040
Have you ever used interpreter services at the hospital? (No vs Yes)	−0.271	.043

appointment and asked if they would complete the telephone survey. The number of patients contacted each week varied depending on the time available to make calls. Phone numbers from the automated autodial system for appointment reminders were used, and if there was no answer, other phone numbers were called when available. If a call was not answered, a voicemail was left when possible with a working number to call back within 5 days; if unresponsive, they were called a second time 1 week later. Caregivers who completed the survey were compensated with a $10 gift card. A total of 443 surveys were completed (28.8% response rate). In order to include only active patients in the analysis, 57 patients (12.9%) with less than 3 scheduled visits prior to the index no-show appointment were excluded from the analysis, resulting in a final surveyed sample size of 386.

Statistical Analysis

Descriptive analysis of patient demographic characteristics (including race, ethnicity, and age) and payor type was completed for both the surveyed and for nonsurveyed patients who missed at least one visit over the study time frame. Overall clinic demographics were presented as well. Demographic characteristics were summarized using means and standard deviations for continuous variables and percentages for categorical variables.

Retrospective appointment data were collected a year prior to index no-show appointment for each patient in order to calculate no-show rates (patients must have had at least 3 scheduled visits within the year). We assessed correlations between no-show rate with selected surveyed variables and patient age at index no-show appointment using spearman coefficients.

In order to identify factors that may be associated with higher tendency for nonattendance, we dichotomized the surveyed sample into 2 groups based on the percent of visits missed in the 1 year prior to being surveyed (index no-show appointment). Patients that had a no-show rate in the 90th percentile were categorized into the high no-show group. The remaining patients were grouped into the low no-show rate group. For the bivariate analysis, we assessed the association of categorical factors on the 2 groups using χ^2 and Fisher's exact test where relevant. ANOVA and Kruskall–Wallis tests were used for assessing differences in mean and median patient age between the high no-show and low no-show groups.

Covariates with a P value ≤.2 in the bivariate analysis were retained in a multivariate logistic regression model to identify predictors of high no-show group. All analysis was performed using SAS version 9.3 (SAS Institute, Cary, NC). A 2-sided P value ≤.05 was considered statistically significant.

Results

During the study period, the no-show rate in the clinic was 20.4%, accounting for about 10 000 missed visits. Of the 1537 no-show patients we attempted to contact, 443 (29%) families successfully completed the telephone survey. After excluding patients with fewer than 3 scheduled visits in the year prior to the missed visit, 386 (25%) patients were used for analysis. When compared with either the clinic population or the nonsurveyed no-show patients, this group of surveyed patients consisted of fewer Hispanics and more African Americans, as well as fewer commercial payors and more public payors (Table 1).

The surveyed population had a median no-show rate of 33% (interquartile range [IQR] = 25-50) (Table 2). When no-show rate was treated as a continuous variable, it was found to be positively correlated with older patients ($P < .001$), public payors ($P = .040$), increased perception of "excellent health" ($P = .033$), more

frequent changes of the primary care doctor in the past 12 months ($P = .002$), and less careful listening by providers ($P = .027$). On the other hand, utilization of interpreters in the clinic was associated with lower no-show rates ($P = .043$).

To determine factors associated with frequent nonattendance, patients were divided into high and low no-show rate groups (Table 3). Sixty patients had no-show rates above the 90th percentile; for this group, the median rate was 66.7% (IQR = 66.7-77.5). The high no-show group had significantly more African American (70% vs 55%, $P = .030$) and older patients (mean age 7.7 years vs 5.8 years; $P = .003$). We found no statistically significant differences in Hispanic ethnicity, primary payor, or appointment type between the high and low no-show groups.

Out of the 26 questions we asked families, only 2 questions produced statistical significances between the 2 groups (Table 3). Based on caregiver responses, the most missed appointment type for both groups was well child care visits. In bivariate analysis, the high no-show patients were more likely to state that the missed visit was scheduled for regular well child care (55% vs 37%, $P = .029$). Caregivers' perception that their child was in "excellent health" on the day of the visit was also associated with being in the high no-show group (55% vs 38%, $P = .022$). No significant difference was detected between the 2 groups regarding comfort with providers, overall quality of care, attitudes toward providers and appointments, or actions taken after missed appointments (Table 3; some data not shown). Responses to 13 questions, including all 10 questions concerning comfort with providers, were all positively correlated with quality of care as expected (data not shown).

When surveyed for specific clinical or personal reasons for missing their scheduled appointment, a small number of reasons was responsible for most no-shows, with the top 3 reasons being forgetting (27%), transportation problems (20%), and trouble taking time off work (14%) (Table 4). The rank order of top reasons was largely the same for both groups, and the majority of reasons were personal instead of clinical.

In the multiple logistic regression model (Table 5), increasing age in years (odds ratio = 1.11, 95% confidence interval = 1.05, 1.18) and caregivers' report of scheduled well child care visits (odds ratio = 2.56, 95% confidence interval = 1.43, 4.58) were identified as significant predictors of no-show patients.

Discussion

In this study, we investigated high nonattendance rates of scheduled appointments for pediatric patients in an urban primary care clinic. Contrary to our expectations, we found that a sizeable portion (29%) of our no-show sample was reached with only 2 phone call attempts.

When caregivers were solicited reasons for missing their appointments, they gave explanations that reflected more personal issues, largely confirming prior studies.[10,12-16] Clinical issues were less important in this pediatric primary care practice than reported in other clinical settings, particularly adult care.[16,17] This holds important implications for effectively reducing nonattendance rates in our practice and similar practices. Patient understanding of their medical problems and the need to come in for specified visits are still likely important, as highlighted by the 9% of our surveyed population stating that they did not think their appointment was necessary. However, in our population, this is probably overshadowed by personal barriers, which we need to target to successfully improve attendance rates.

On the other hand, caregivers' reports of missing well child appointments and the child being in excellent perceived health leading up to the missed appointment also contributed to higher no-show rates. Missed opportunities for well care can hinder preventative care. However, patients may not perceive the importance of preventative care and instead associate going to see the doctor primarily with instances when their child is sick.

Intriguingly, we found little statistical significance between the high and low no-show rate groups on themes surrounding continuity and quality of care. Only one variable, more frequent changing of the child's primary care provider, was identified to be correlated with higher no-show rates. Some studies have shown that continuity of care with a primary care provider can be a contributing no-show factor.[6,11,14] As a large academic practice with many pediatric residents that are here only once per week as well as pediatricians who are frequently part-time, we had expected that quality of care and interactions with providers would be associated with higher no-show rates. However, our results indicated that this is a lower priority for our clinic to focus major efforts on to reduce no-show rates. Of note, our questions on continuity and comfort with providers did correlate with perceptions of quality of care. This is reassuring in helping give validity to our instrument and provides good reason to continue improving these areas.

While much was learned from this study, limitations were present. First, a reporter bias of who we could reach to complete the survey is possible. We spoke with a minority of patients who missed appointments, and those whom we were able to easily talk to may have very different perspectives and situations. In particular, Spanish-speaking families were undersampled due to limitations in the availability of our Spanish-speaking

Table 3. Comparison of Demographic Factors and Survey Responses Between High and Low No-Show Rate Patients[a].

	Overall	Low No-Show	High No-Show	*P* Value
Total N	386	326	60	
Median number visits (IQR)	6 (4-8)	6 (4-9)	3 (3-5)	<.001
Median no-show rate (IQR)	33% (25-50)	33% (25-50)	67% (67-77)	<.001
Demographics	n (%)	n (%)	n (%)	*P* Value
Hispanic	92 (23.8)	79 (24.2)	13 (21.7)	.668
African American race	221 (57.3)	179 (54.9)	42 (70.0)	.030
Mean age (years) ± SD	6.1 ± 4.6	5.8 ± 4.5	7.7 ± 4.7	.003
Public primary payor	310 (81.8)	260 (81.0)	50 (86.2)	.344
Urgent care appointment	46 (11.9)	42 (12.9)	4 (6.7)	.200
Well child care appointment	142 (36.8)	114 (35.0)	28 (46.7)	.084
Introduction	n (%)	n (%)	n (%)	*P* Value
Is there a particular doctor that you usually take your child to for well-child care? Responded "Yes"	365 (94.6)	308 (94.5)	57 (95.0)	1.000
Were you scheduled to see primary doctor on the date of missed appointment? Responded "Yes"	215 (57.5)	180 (57.0)	35 (60.3)	.632
How would you rate your child's health on the day of the scheduled appointment? Responded "Excellent"	157 (41.0)	124 (38.4)	33 (55.0)	.022
How would you rate your child's overall health during the last 30 days? Responded "Excellent"	130 (34.0)	103 (32.0)	27 (45.0)	.055
Why were you scheduled to bring your child in?				
Regular well-child visit	153 (39.9)	120 (37.2)	33 (55.0)	.029
My child was sick	78 (20.4)	73 (22.6)	5 (8.3)	
Some other reason	72 (18.8)	61 (18.9)	11 (18.3)	
Follow-up appointment	54 (14.1)	45 (13.9)	9 (15.0)	
Immunization/flu shots	26 (6.8)	24 (7.4)	2 (3.3)	
Appointment Management	n (%)	n (%)	n (%)	*P* Value
Have you tried to reschedule the appointment? Responded "Yes"	120 (31.2)	105 (32.3)	15 (25.0)	.262
Comfort/Fit With Primary Provider	n (%)	n (%)	n (%)	*P* Value
In the past 12 months, how often did PCP spend enough time with your child? Responded "Always"	274 (79.0)	235 (79.1)	39 (78.0)	.525
In the past 12 months, how often did PCP listen carefully to you? Responded "Always"	328 (94.5)	280 (94.3)	48 (96.0)	.236
When your child is seen by PCP, how often is she/he sensitive to your family's values and customs? Responded "Always"	322 (93.6)	277 (93.9)	45 (91.8)	.901
In the past 12 months, how often did you get the specific health info you needed from PCP? Responded "Always"	318 (91.6)	272 (91.6)	46 (92.0)	.774
In the past 12 months, how often did PCP help you feel like a partner in your child's care? Responded "Always"	326 (94.5)	279 (94.6)	47 (94.0)	.245
Overall Quality of Care	n (%)	n (%)	n (%)	*P* Value
Overall, how would you rate the care your child receives at this primary care clinic? Responded "Excellent"	233 (60.7)	194 (59.7)	39 (66.1)	.354
Attitudes Toward Provider and Appointments	n (%)	n (%)	n (%)	*P* Value
In the past 12 months, how often has your child seen the same doctor when you bring him/her to appointments? Responded "Every Visit"	105 (27.3)	85 (26.1)	20 (33.9)	.724
In the past 12 months, how many times has your child's primary doctor changed? Responded "PCP has remained the same"	241 (64.6)	206 (65.6)	35 (59.3)	.354
Action After the Missed Appointment	n (%)	n (%)	n (%)	*P* Value
What happened after you missed your child's appointment?				
We have rescheduled the appointment	93 (26.4)	81 (27.3)	12 (21.8)	.208
She/he felt better	39 (11.1)	37 (12.5)	2 (3.6)	
I took my child to the emergency department	10 (2.8)	9 (3.0)	1 (1.8)	
I took my child to see another doctor	8 (2.3)	7 (2.4)	1 (1.8)	
We will reschedule appointment	129 (36.6)	103 (34.7)	26 (47.3)	
Other	73 (20.7)	60 (20.2)	13 (23.6)	

Abbreviations: n, number of patients; SD, standard deviation; IQR, interquartile range.
[a]Reported survey questions include all of the significant results and a representative sample of some other results.

Table 4. Top Reasons for Why Appointment Was Missed[a].

Reason for Missing Appointment	Overall (n = 386)		Low No-Show Rate (n = 326)		High No-Show Rate (n = 60)	
	n (%)	Rank	n (%)	Rank	n (%)	Rank
Forgot about the appointment	105 (27.2)	1	85 (26.1)	1	20 (33.3)	1
We had problems with transportation getting to the office	79 (20.5)	2	65 (19.9)	2	14 (23.3)	2
I couldn't get time off work	52 (13.5)	3	46 (14.1)	3	6 (10.0)	3
I did not think the appointment was necessary	36 (9.3)	4	35 (10.7)	4	1 (1.7)	—
Have conflicting appointments/mixed schedule	30 (7.8)	5	24 (7.4)	6	6 (10.0)	3
Not feeling well	28 (7.3)	6	25 (7.7)	5	3 (5.0)	6
Conflict with school	22 (5.7)	7	20 (6.1)	7	2 (3.3)	9
I didn't have time or it took too long	16 (4.1)	8	15 (4.6)	8	1 (1.7)	—
Child got better	10 (2.6)	9	9 (2.8)	9	1 (1.7)	—
Our insurance company wouldn't approve, cover, or pay for care	10 (2.6)	9	6 (1.8)	—	4 (6.7)	5
Other reason	105 (27.2)	—	87 (26.7)	—	18 (30.0)	—
None of the above	20 (5.2)	—	18 (5.5)	—	2 (3.3)	—

[a]Top 10 reasons given by overall surveyed population. Respondents could list more than one reason; percentages displayed represent proportion of respondents, not proportion of total responses.

Table 5. Multivariate Logistic Regression Model to Identify Predictors of High No-Show Rate Group[a].

	Final Model	
	OR (95% CI)	*P* Value
Age in years		<.001
1 year increase	1.11 (1.05, 1.18)	
Why were you scheduled to bring your child in?		.002
Regular well child visit	2.56 (1.43, 4.58)	
Other	1.00	

Abbreviations: OR, odds ratio; CI, confidence interval.
[a]High no-show group n = 60; low no-show group n = 323.

research assistant. Second, our study did not include a comparison group of patients who did not miss appointments. Third, our academic inner-city population may not be generalized to other types of practices. This is reflected by the already complex and conflicting findings in the existing literature, particularly among the different disciplines in medicine.

In this study, we identified older patients, African Americans, well child care, excellent perceived patient health, and personal barriers to be associated factors with frequent nonattendance in pediatric primary care in an urban setting. Our improvement initiatives will continue to emphasize reminder phone calls, and text reminders are currently under consideration, though they have had limited success in other settings.[18,19] To improve access for our patients, we have already expanded our evening availability for well child care, and are proposing to extend our evening and weekend availability for both well child care and urgent care. Furthermore, our clinic has restructured its practice toward team-based care and a patient-centered medical home model to further enhance continuity of care. Our next planned intervention is to target older patients overdue for appointments and offer them appointments the following week to see if this will decrease no-show rates.

Declaration of Conflicting Interests

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