

Missed Appointments and Medicaid Managed Care

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Objectives: To compare the demographic characteristics of patients who miss appointments with those who do not and to identify subgroups who would benefit from specific interventions for improving attendance.

Design: Retrospective cohort study of an 18-month period.

Setting: An urban primary care practice.

Patients: A random sample (N=477) of patients who were seen at least twice during the study period.

Main Outcome Measures: Number of missed visits and kept visits, insurer, age, sex, race, ZIP code, and diagnoses.

Results: Of the established patients, 48% missed 1 or more visits. Patients in managed care programs, private

and Medicaid, were likely to have missed more visits during the study period than those not in managed care programs ($P < .001$). Medicaid managed care patients had also scheduled more visits. Significantly higher rates of missed appointments were found in patients aged 19 to 35 years ($P = .02$), blacks ($P < .001$), patients in Medicaid managed care programs ($P < .001$), and patients who scheduled more visits ($P < .001$). After adjusting for age, race, and sex, Medicaid managed care insurance remained a significant ($P < .01$) predictor of rate of missed appointments.

Conclusions: Patients in managed care programs missed more appointments. Patients in Medicaid managed care programs scheduled more appointments and had higher rates of missed appointments than their counterparts in other insurance groups.

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APPPOINTMENTS FOR physician services that are not kept or canceled result in decreased efficiency of office scheduling and use of physician time. Patient care suffers because of missed opportunities for preventive care and early intervention during disease processes. A study of children who missed appointments showed that a substantial portion of these children had problems warranting further medical attention.¹ Among adolescents, a correlation was reported between failure to keep appointments and low socioeconomic status.² In an urban practice, adults aged 16 years and older had a higher rate of appointment keeping if they were enrolled in a Medicaid managed care program or a private insurance program vs the standard Medicaid program.³ The same researchers found, through a logistic regression model, that type of insurance, race, age, and marital status predicted appointment-keeping behavior.

In our urban family care center, non-attendance has been a long-term problem. This study was undertaken to determine which patients were more likely to miss appointments and whether the problem was widespread, with most patients missing some appointments, or limited to a subgroup of patients who missed visits frequently. If the latter was the case, this group could be targeted for an intervention if defining features could be identified.

RESULTS

The sample consisted of the medical records of 477 patients, representing 2772 scheduled visits. The study population is described in **Table 1**. The demographic

*See Materials and Methods
on next page*

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MATERIALS AND METHODS

METHODS AND SETTING

This was a retrospective cohort study of an urban family care center that serves as a faculty practice and a residency training site. During the 18-month study period, 11 515 patient visits occurred. Care was provided by 8 faculty physicians, 10 residents, and 3 nurse practitioners. The majority of the patients were African American (66.8%) with the rest of the population comprising whites (27.6%), Asians (2.9%), Hispanics (2.4%), and Native Americans (0.3%). Of the registered patients, 33% were men and 67% were women.

SAMPLE

A random sample was selected by choosing every fifth medical record from an alphabetically filed medical record system. Patients were included if they had been seen at least twice in the 18-month study period.

DATA COLLECTION

Two student research assistants reviewed the medical records and recorded the age, race, sex, type of insurance, number of missed appointments, and number of kept appointments of the patients. These data were drawn from the problem list, the progress notes, and a demographic sheet in the medical record. Missed appointments that had not been canceled were noted in the medical record with a

stamp, indicating that a missed-appointment postcard had been sent. Kept appointments were indicated by a progress note.

The type of insurance was collected in 19 categories that were later combined into 5 groups: (1) standard Medicaid fee-for-service, (2) Medicaid managed care, (3) private fee-for-service, (4) private managed care, and (5) uninsured. Group 5 included medical records that were coded "patient responsibility" and those in the Hill-Burton program of indigent care. (The Hill-Burton program is a federally legislated mandate for hospitals to provide free care to the indigent.) Location of the patient's residence was considered near if it was located in the ZIP code of the practice or 1 adjacent to it.

ANALYSIS

A nonparametric analysis of variance (ANOVA) was used to compare the means of missed visits and the rate of missed visits between groups. This test was most appropriate because the missed appointments were not normally distributed. The majority (72%) of the sample missed 0 or 1 appointment. The rate of missed appointments (ie, the miss rate) was determined by dividing the number of missed appointments by the number of scheduled appointments (kept and missed). The patients in the "other" race category ($n=42$) were excluded from the multivariate analyses because several ethnic groups were combined into this category, making interpretation difficult. The explanatory variables in the final regression analysis included age, race, sex, type of insurance, distance from the practice, type of care received, and type of provider.

characteristics were similar to the overall population seen in the practice, except for sex; a higher proportion of men was in the study population vs the practice.

After excluding 1 patient who had missed 22 visits and who was considered an outlier, the range of missed visits was 0 to 10. Of 476 patients, 249 (52%) missed no visits, 93 (20%) missed 1 visit, and 134 (28%) missed 2 or more visits. Patients with higher numbers of scheduled appointments were more likely to have missed 2 or more appointments (**Table 2**). Table 2 shows this relationship among black and white patients ($n=433$).

MISS RATE DIFFERENCES AS A FUNCTION OF AGE, SEX, AND RACE

A nonparametric ANOVA using the percentage of missed visits (hereafter referred to as miss rates) as the dependent variable, with sex, race, and age as between-subject variables, showed significant differences ($P < .001$) as a function of age and race; no sex differences or interactions were noted. As shown in **Figure 1**, miss rates were higher for blacks than whites in almost every age group, except for those older than 75 years. For blacks and whites, the highest miss rates occurred in the 19- to 25-year-old group, while the lowest rates were associated with those younger than 18 years and those older than 55 years. The greatest disparity between these 2 racial groups occurred in young adults, aged 26 to 45 years.

Blacks had a miss rate approximately twice that of whites in this age group.

MISS RATES AS A FUNCTION OF REIMBURSEMENT

Insurance data were available for 462 patients. By comparing means, we found that patients in Medicaid managed care programs missed the most visits (1.9) compared with patients in private managed care programs (1.0), patients in fee-for-service Medicaid programs (0.8), patients in private fee-for-service programs (0.7), and patients who were uninsured (0.6) ($P < .001$, using Kruskal-Wallis 1-way analysis of variance). **Figure 2** shows a comparison of the number of missed visits in each insurance group.

As shown in **Figure 3**, private and Medicaid managed care groups had miss rates approximately twice that of any other group after adjusting for the covariates of sex, race, and age ($P < .001$).

MISS RATES AS A FUNCTION OF THE NUMBER OF APPOINTMENTS SCHEDULED

Patients in Medicaid managed care programs scheduled more visits. Patients who scheduled 6 to 10 appointments were 44% vs 12% more likely to miss more than 1 appointment than patients who scheduled 2 to 5 ap-

Table 1. Description of the Study Population (N=476)

Characteristics	No. (%) of Subjects
Sex	
Male	197 (41)
Female	279 (59)
Race	
Black	319 (67)
White	115 (24)
Other	42 (9)
Distance from practice*	
Near (adjacent ZIP code)	272 (60)
Far	182 (40)
Provider*	
Attending physician	126 (27)
Resident physician	266 (57)
Nurse practitioner	76 (16)
Insurance*	
Standard Medicaid	187 (40)
Medicaid managed care	157 (34)
Private fee-for-service	58 (13)
Private managed care	30 (6.5)
Uninsured	30 (6.5)
Mean (range)	
Age, y	30 (0-92)
No. of kept visits	4.6 (2-25)
No. of missed visits	1.2 (0-10)

*Data on these variables were not available for all patients.

pointments. The rate of missed appointments among patients who scheduled 11 to 28 appointments was higher (odds ratio, 25.56) than the rate among patients who scheduled 2 to 5 appointments (Table 2).

MULTIVARIATE ANALYSIS

Insurance groups differed significantly in race ($P < .001$), age ($P < .001$), proportion of patients with chronic conditions ($P < .001$), and number of kept appointments ($P = .02$). We believed these differences were likely to contribute to the difference in the number of missed visits. Regression analysis allowed us to control for these factors. By using miss rate as a continuous dependent variable, the factors entered were age, race, distance from practice, type of care, type of medical care provider, and insurance group. The notable associations that resulted from this analysis are given in **Table 3**. After adjusting for the differences in demographics, Medicaid managed care patients had significantly higher miss rates than those in other insurance groups ($P < .001$). Patients who were in private managed care programs had a high miss rate, but it did not reach statistical significance ($P = .11$).

COMMENT

The number of patients who missed no visits was encouraging. However, the overall rate of missed visits is underestimated because we only included established patients (ie, those who scheduled 2 or more visits). New patients who missed an initial visit were not included in the study. The secretarial staff at the center sent post-

Table 2. Odds of Missing Appointments as a Function of the Number of Visits Scheduled

Total No. of Appointments Scheduled	No. of Missed Appointments*	
	0-1	≥ 2
2-5	229 (88)	30 (12)
6-10	65 (56)	52 (44)
11-28	13 (23)	44 (77)

*The values represent the number (percentage) of patients who missed 0 to 1 or 2 or more appointments.

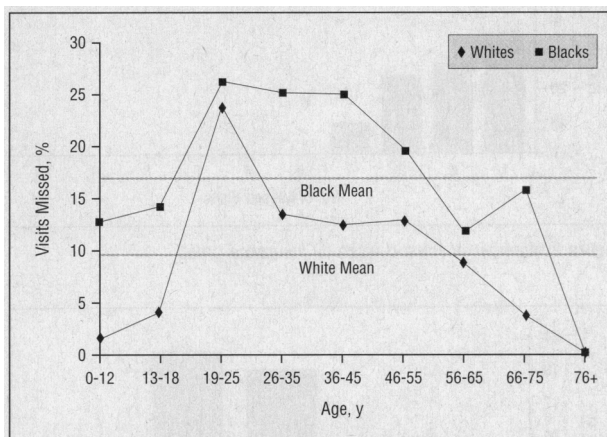


Figure 1. Percentage of missed visits (ie, the miss rate) as a function of age and race. No significant interactions were found between sex and race or age. The effects of age and race were significant ($P < .001$).

cards to patients who missed a visit, reminding them that they had missed an appointment and asking them to re-schedule. During the study period, no systematic telephone reminder system existed. Physicians called patients if they missed prenatal visits or if the physician believed it was appropriate. Since the study, we have initiated a system of calling patients the day before the appointment or on Friday for Monday appointments because this has been reported to be an effective intervention.⁴ A meta-analysis of strategies to improve patient compliance concluded that the net benefit of an intervention is greatly influenced by the baseline rate of appointment keeping.⁵

This practice was a pilot site for the Physician Case Management Program of capitated Medicaid in an inner-city population. We hoped that by educating patients when they enrolled in the program, we would increase compliance with care. The finding of such a high rate of missed visits in this population suggests that we have not succeeded. Murray^{6,7} reported that patients who receive care from physicians who are pre-paid tend to be less satisfied with their care than patients who see the same physicians on a fee-for-service basis; the less satisfied patients are, the more likely they are to miss visits.⁸ Scheduling appointments with the same practitioner is reported to increase compliance with appointment keeping⁹ and to increase patient satisfaction with care.¹⁰ We did not measure the level of continuity in this study.

The scheduling of more frequent appointments has

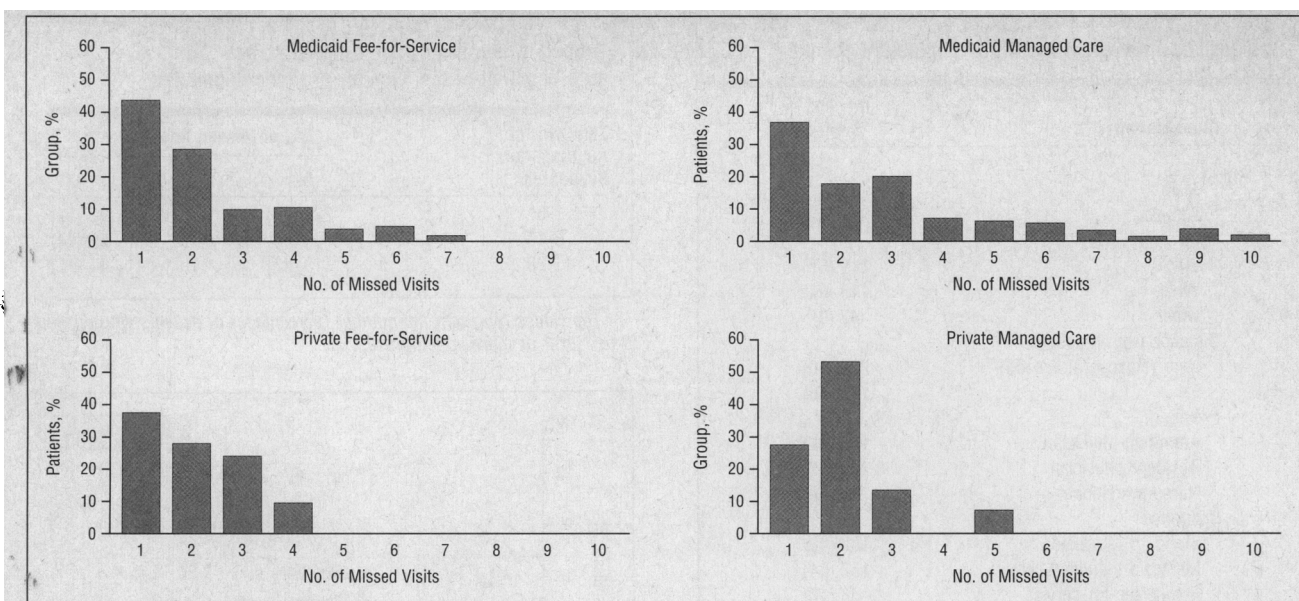


Figure 2. Number of missed visits by insurance group.

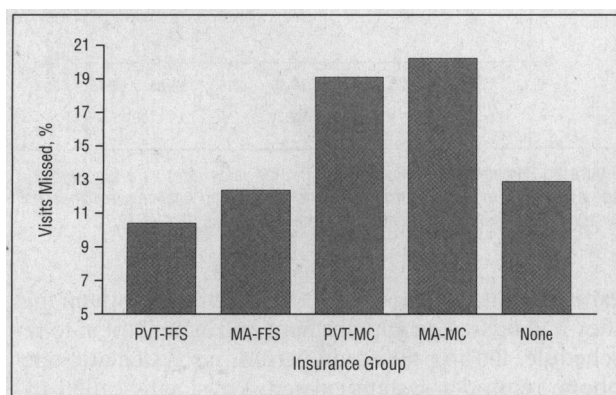


Figure 3. Percentage of missed visits (ie, the miss rate) by insurance group, adjusted for age, race, and sex. The effect of insurance group was significant ($P = .001$). PVT-FFS indicates private fee-for-service; MA-FFS, standard Medicaid fee-for-service; PVT-MC, private managed care; MA-MC, Medicaid managed care; and none, uninsured.

been associated with lower attendance rates.¹¹ This finding was similar in our population. Patients who had a higher number of scheduled visits (ie, kept and missed combined) had a notably higher risk of missing appointments.

Assignment to an insurance group is not a random process, and these findings may not be generalizable to other populations. Patients were actively recruited into the Physician Case Management Program by social workers when they enrolled for Medicaid or when they were in the Family Care Center waiting room when they came for appointments. They were given a brochure about the practice that included specific information about making appointments and the importance of calling to cancel if they could not come; this brochure was written in simple language with the hope that it would be understood by those with low reading levels. The resulting Physician Case Management Program population consisted of a higher proportion of blacks, women, and young adults. Combined with patients in

Variable	Rate of Missed Appointments, %	Attributable Risk, %†
Age, y		
0-18	12.6	...
19-35	23.3	10.7‡
36-60	17.1	4.5‡
61-92	9.1	-3.5
Race		
White	9.9	...
Black	17.8	7.9‡
Insurance		
Private fee-for-service or uninsured	10.8	...
Medicaid fee-for-service	12.9	2.1
Medicaid managed care	21.3	10.5‡
Private managed care	21.3	10.5‡

*Regression analysis included age, race, distance from practice, short-term vs preventive or long-term care, type of insurance, and type of provider. Only those items that remained significant in the final model are shown.

†Ellipses indicate reference values.

‡Significant ($P < .05$).

several other Medicaid managed care programs, which were administered by private insurance companies, these patients scheduled significantly ($P = .02$) more visits than their counterparts in other insurance groups. These results differ from those of Smith and Yawn,³ who found a higher rate of appointment keeping in Medicaid managed care patients. However, that population differed in that all Medicaid patients were in managed care programs unless they had specific exemptions, while in our population, Medicaid patients were almost evenly divided between managed care programs and the standard fee-for-service Medicaid program. Private managed care figures must be viewed with caution because of the small size of that group.

Further research is needed to identify individual

characteristics in this population that may contribute to the high rate of missed visits. Factors such as long waiting times,^{12,13} health beliefs,^{14,15} convenience of appointment times, and overall satisfaction with the practice have been associated with missed appointments. Psychosocial factors, environmental and social factors, characteristics of the therapeutic regimen, and properties of the physician-patient interaction are consistently related to noncompliance.¹⁶ We hope to compare patients who missed 3 or more appointments with those who did not miss any appointments, looking at differences in health beliefs and barriers to and motivators of attendance for medical care.

If the population of Medicaid patients who are moved into managed care programs has an excessive number of those groups who are at high risk for noncompliance with care, special consideration may need to be given when determining capitation rates for these groups. This consideration is important in view of the fact that a high no-show rate results in less efficient use of physician time and probably more emergent visits for problems that were not addressed because the patient was not seen. Meanwhile, the awareness that patients in managed care programs present a higher risk of noncompliance with appointment keeping suggests that interventions should be addressed in this group.

CONCLUSION

The Medicaid managed care population scheduled more visits and missed more visits than patients in other insurance groups. Higher-risk groups were overrepresented in the Medicaid managed care population. The reasons for this overrepresentation still need to be investigated.

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Clinical Pearls

Sucralfate (2 g twice daily) was better than placebo in preventing recurrent reflux esophagitis in those patients originally healed with antisecretory therapy. The endoscopic relapse rate was 31% in the sucralfate group and 65% in the placebo group ($P < .001$). (*Am J Gastroenterol.* 1995;90:1233-1237.)

Lidocaine-adrenaline-tetracaine was as effective and less expensive than tetracaine-adrenaline-cocaine topical anesthesia for suturing linear lacerations of the face or scalp, and does not contain a controlled substance. (*Am J Emerg Med.* 1995;13:151-154.)