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Visual Acuity Outcomes and Loss to Follow-up in the Treatment of Amblyopia in Children From Lower Socioeconomic Backgrounds

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Abstract

Purpose: To compare visual acuity outcomes and loss to follow-up after initiation of treatment for unilateral amblyopia in children from different socioeconomic backgrounds.

Methods: Medical records of children diagnosed as having unilateral amblyopia at an initial encounter between 2015 and 2018 were reviewed. Medicaid and private insurance were used as proxies for socioeconomic status (SES). Data points were collected at the patients' initial, follow-up, and final visits. Visual acuity improvement was the primary outcome variable in patients with at least one follow-up appointment. In a separate analysis, failure to attend a single follow-up appointment was examined for associations with SES, race, sex, and distance traveled to appointments.

Results: Seventy-three patients met the inclusion criteria; of these, 28 had Medicaid and 45 had private insurance. Visual acuity improved by 2.86 lines in the Medicaid group and 2.98 lines in the private insurance group ($P = .84$). Number of missed appointments and distance traveled did not correlate with visual acuity improvement. In the loss to follow-up subanalysis, 40 of 141 (28.4%) patients with Medicaid and 11 of 107 (10.3%) patients with private insurance failed to attend a

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single follow-up visit ($P = .001$). No association was found between loss to follow-up and race, sex, or distance traveled.

Conclusions: Visual acuity outcomes of treatment for amblyopia did not differ between patients with Medicaid and patients with private insurance who followed up. However, patients with Medicaid were much more likely to be immediately lost to follow-up. Measures should be taken by eye care providers and pediatricians to increase follow-up in patients from low SES populations.

INTRODUCTION

Amblyopia, the unilateral or bilateral loss of vision that cannot be attributed to structural abnormalities in the eye, is the leading cause of monocular visual impairment in children and adults.[1] The prevalence of amblyopia in children has been estimated to be between 0.2% and 5.4% worldwide[2] and between 2% and 4% in Western countries,[3] with significant variation in prevalence across ethnic groups and geographic location.[4]

Amblyopia is caused by an abnormal visual experience that disrupts the transmission of equal binocular input to the brain and interferes with cortical visual development. The course of amblyopia can potentially be reversed if detected and treated early during the critical period of visual development in childhood.[5] However, failure to treat amblyopia can lead to the deterioration of vision and permanent vision loss.[6,7] Treatment of unilateral amblyopia consists of refractive correction and occlusion of the “good” eye through patching or pharmacological penalization.[8] Success rates for treatment have been demonstrated to be 60% to 70% in Pediatric Eye Disease Investigator Group (PEDIG) randomized controlled trials.[1]

However, external factors may impact the success of treatment, which depends on successful early detection, compliance with treatment, and long periods of follow-up with providers. Lack of access to health care and low socioeconomic status (SES), especially in the context of poor and minority communities, may negatively impact treatment success.[9]

A 1997 study by Hudak and Magoon[10] found that poverty, as measured by Medicaid status, predicted poor final visual acuity following amblyopia treatment. Patients with Medicaid had a 26.8% likelihood of a final visual acuity of 20/30 or better compared to 58.4% in patients with private insurance. The authors also found a significant difference in number of missed visits and parental estimate of treatment compliance between the two groups. However, this study is from a single provider in a single area and is dated. To our knowledge, no follow-up research has been conducted on this subject in the United States since that date.

The purpose of the current study was to determine whether outcomes of amblyopia treatment differed between cohorts of children with Medicaid and private insurance seen by eight eye care providers at Washington University School of Medicine, and whether factors such as sex, ethnicity, distance traveled, and number of missed appointments impacted outcomes.

PATIENTS AND METHODS

Patients

Our study was approved by the institutional review board of Washington University School of Medicine in St. Louis, Missouri, and complied with the U.S. Health Insurance Portability and Accountability Act of 1996. A retrospective chart review was performed on 660 patients diagnosed as having unilateral amblyopia at a new patient visit between June 1, 2015, and May 31, 2018, by one of eight eye care providers at the outpatient eye clinic of the Washington University School of Medicine.

Inclusion criteria for the visual acuity outcomes analysis were: aged 3 to 7 years old at time of treatment initiation; visual acuity of worse than 20/40 and better than 20/400 in the amblyopic eye and better than 20/40 in the sound eye; inter-acuity difference of more than three logarithm of the minimum angle of resolution (logMAR) lines; no patching treatment within 6 months and no atropine therapy within 1 month of current treatment initiation; refractive error corrected for at least 4 weeks; amblyopia classified as strabismic, anisometropic, or deprivation; and attending at least one follow-up appointment. The age range and visual acuity criteria reflect those published in previous PEDIG prospective trials.[11–15]

Patients were excluded from the visual acuity outcomes analysis if they were not prescribed treatment, already had a treatment regimen at the time of presentation, or had presence of an ocular cause for reduced visual acuity, myopia greater than −6.00 diopters, prior intraocular surgery, Down syndrome, or a known allergic reaction to patching or atropine. Patients who were unable to have an optotype visual acuity measured or who had no follow-up appointments were also excluded from the visual acuity outcomes analysis.

A separate no-show analysis was conducted on all patients who were prescribed atropine or patching therapy at their initial visit. Patients were included in this no-show analysis if they were diagnosed as having unilateral amblyopia at a new patient visit between June 1, 2015, and May 31, 2018, and were prescribed atropine or patching therapy at that visit. Compliance with recommended follow-up visits was compared between the patients in the Medicaid and private insurance groups.

Methods

PubMed was searched on May 5, 2020, using combinations of the terms “amblyopia,” “amblyopia treatment outcomes,” “socioeconomic status,” “Medicaid,” and “poverty.” The results were reviewed and only one publication was found to describe associations between SES and amblyopia outcomes.[10]

Enrollment in Medicaid, as recorded at the first office visit, was used as a proxy for patients in lower SES populations. Previous studies in various specialties have used this approach.[16–18] Although its validity has not been confirmed, the provision for patients with Medicaid below the federal poverty level (except in certain medical conditions not applicable to our study) makes it a reasonable surrogate for SES status.[19]

The following data were recorded for each patient: age at first visit, sex, type of amblyopia as noted by the provider, refractive error in both eyes at initial presentation, treatment prescribed, number of missed visits, whether the patient underwent strabismus surgery while being treated for amblyopia, and race. The latter was self-reported by the caregiver. In addition, patients' zip codes were used to calculate an average distance traveled to the hospital. In some records, poor adherence with prescribed amblyopia therapy noted by the provider was recorded with a binary yes-no value. Due to the subjective nature of this metric, adherence with prescribed amblyopia therapy was not included in our analysis.

Visual acuity was measured by Snellen, HOTV, or Allen pictures in verbal children, and by fix-and-follow, Teller, or Cardiff preferential looking testing, or central, steady, maintained (CSM) in preverbal children. Some children progressed between optotypes from their first to last visit, but this did not preclude them from the visual acuity outcomes analysis. However, children who required testing via fix-and-follow or CSM at their initial visit were excluded from the visual acuity outcomes analysis but remained eligible for the no-show analysis.

Visual acuity data were taken from the initial visit in both amblyopic and sound eyes, and from each follow-up visit in the amblyopic eye only. In general, scheduling of follow-up visits occurred 3 to 4 months post-treatment with additional visits every 3 months. Follow-up regimens did not differ based on patching versus atropine or initial visual acuity. The patient's final visual acuity and the number of months after initial visit at which it was recorded were collected. Due to variability in the time points after the initial presentation at which the final follow-up visit occurred, only the difference in visual acuity between the initial and final visits was used in the analysis of visual acuity improvement. When patients missed scheduled appointments (no-show or cancellation), the office staff would attempt to contact the family to reschedule up to three times.

Statistical Analysis

A two-tailed *t* test was used to calculate statistical significance for visual acuity improvement between patients with Medicaid and patients with private insurance. A one-way analysis of variance test was used to calculate statistical significance for the associations of missed appointments and distance traveled with visual acuity improvement. Chi-squared tests were used to calculate statistical significance for the association of race, sex, and distance traveled with the likelihood of not attending a single follow-up appointment. For the no-show analysis, a *P* value of .0125 was considered statistically significant after Bonferroni correction for multiple comparisons.

RESULTS

Of the 660 patients, 73 met all criteria and were included in the analysis of visual acuity improvement. Of those 73 patients, 28 had Medicaid and 45 had private insurance. A demographic breakdown of the study population is as follows: 64 patients were White, 1 was Black, 1 was Hispanic, and 7 were unknown or not reported (Table 1). Overall, 42 patients had strabismic amblyopia, 22 had refractive amblyopia, and 9 had mixed amblyopia.

In our analysis of visual acuity improvement (Table 2), patients with Medicaid improved an average of 2.9 lines (n = 28, 95% CI: 0.19 to 0.38), and patients with private insurance improved an average of 3.0 lines (n = 45, 95% CI: 2.2 to 3.7). The difference between the two groups was not statistically significant ($P = .84$). These results are comparable to visual improvement gains in multiple PEDIG Amblyopia Treatment Studies.[11,13,14] There was no statistically significant difference in follow-up duration between the two groups.

Fifty-six patients who received patching only with or without glasses and strabismus surgery improved by a mean of 3.2 lines. Twelve patients who received atropine only with or without glasses and strabismus surgery improved by a mean of 2.0 lines. Five patients received both patching and atropine during the study period. Patients with worse visual acuity at initial visit tended to improve more lines. Twenty-nine patients with a visual acuity of 20/80 or worse improved a mean of 4.4 lines, whereas 44 patients with a visual acuity of 20/80 or better improved a mean of 2.0 lines.

A subanalysis of factors that may have influenced visual acuity (Table 3) revealed no statistically significant association between visual acuity improvement and number of missed appointments ($P = .908$). Distance traveled was separated into five groups to facilitate analysis. The mean distance traveled was 61 miles. The maximum and minimum distance were 333 and 1.5 miles, respectively. Overall, there was no association between distance traveled and visual acuity improvement ($P = .295$).

In our no-show analysis, a total of 248 patients were included. Two hundred three patients were White, 20 were Black, 1 was Hispanic, 3 were Asian, and 21 were unknown or not reported (Table 4). Overall, 162 patients had strabismic amblyopia, 58 had refractive amblyopia, 27 had mixed amblyopia, and 1 was had an unknown type of amblyopia.

Forty of 141 (28.4%) patients with Medicaid did not attend a single prescribed follow-up appointment, compared to 11 of 107 (10.3%) patients with private insurance (Table 5). The difference was statistically significant ($P = .001$). No associations were found between not attending a single follow-up appointment and either race or sex ($P = .899$, $P = .956$, respectively). Distance traveled was separated into ten groups of varying numbers of miles to facilitate comparisons. The mean distance traveled was 65 miles. The maximum and minimum distances were 333 and 1.5 miles, respectively. No association was found between distance traveled and not attending a single follow-up appointment ($P = .443$) for the combined Medicaid and private insurance groups.

The association between distance traveled and not attending a single follow-up appointment was then analyzed independently for the Medicaid (Table 6) and private insurance (Table 7) groups. No association was found for either the Medicaid ($P = .968$) or private insurance ($P = .432$) groups.

DISCUSSION

Visual acuity improvement in the amblyopic eye after atropine or patching therapy did not differ significantly between the Medicaid and private insurance groups. This finding suggests that children in these two groups who have received treatment and follow-up

for amblyopia as recommended may expect comparable visual acuity improvement. This contrasts with the findings of Hudak and Magoon,[10] who found that patients with Medicaid treated for amblyopia had lower chances of final visual acuity rates of 20/30 or better and higher chances of final visual acuity of 20/70 or worse. These different outcomes may reflect changes in amblyopia treatment practices in the past two decades that have been supported by PEDIG trials in particular, adoption of atropine penalization and less time-consuming patching regimens have afforded parents more options to improve adherence with recommended therapy.[11–15]

However, our analysis of visual acuity improvement may be confounded by the differences in rates of being lost to follow-up between the Medicaid and private insurance groups. Patients with Medicaid who were prescribed therapy at an initial visit were almost three times as likely to not attend a single follow-up appointment compared to patients with private insurance. Up to three attempts were made to reschedule patients who were no-shows. It is unknown whether those patients followed up at another institution. Studies have shown that failure to adhere to treatment of amblyopia correlates with visual acuity deterioration during childhood and adolescence.[6,7] It is likely that patients with Medicaid who were disproportionately lost to follow-up suffered adverse visual acuity outcomes. Indeed, a recent preschool-based study from Scotland demonstrated both decreased adherence to follow up in patients with low SES and worse outcomes in the group with poor adherence.[20]

The eye care center of this study provides pediatric ophthalmology services for a multi-state region. One potential explanation for loss to follow-up is distance needed to travel. The median distance traveled for the no-show analysis group was 65 miles, with a maximum of 333 miles and a minimum of 1.5 miles. We hypothesized that greater distances would correlate with greater rates of no-show. However, we found no correlation between distance traveled and percentage lost to follow-up in our study. The lack of association remained true when loss to follow-up was analyzed independently for the Medicare and private insurance groups, respectively. However, there appeared to be a rough trend toward increased loss to follow-up at distances of 30 miles or more. At distances of fewer than 30 miles, 13 of 92 (14%) were lost to follow-up, whereas at distances greater than 30 miles, 40 of 156 (26%) patients were lost to follow-up.

Our study had several limitations, including a small sample size, low racial diversity, and lack of a reliable metric for compliance. Of our 660 patients with a new diagnosis of amblyopia during our study period, a large number were excluded from analysis because optotype visual acuity was required. Therefore, children with behavioral visual acuity testing (fix/follow/maintain) were ineligible for analysis (105 patients). A qualitative study of this cohort may provide additional insight into the effectiveness of prescribed amblyopia therapy in the larger clinical population.

The low racial diversity in our study may reflect the care center’s location in a region with relatively small populations of Hispanics and Asians. However, the number of Black patients was disproportionately low compared to White patients in both the visual acuity and loss to follow-up cohorts. This was an unexpected difference given that census data show

roughly equal numbers of White and Black patients in the center's metropolitan region.[21] Because the prevalence of amblyopia has not been shown to vary significantly between White and Black children,[22] factors such as screening, diagnosis, and referral may be helpful in explaining this aspect of our study population. Future studies may also examine different sources of referral (pediatricians, screening programs, community optometrists, self-referral) for insight into whether certain patients are more likely to be lost to follow-up.

Another limitation was that there was no standardized procedure for estimating compliance. Poor compliance was recorded at some visits according to the provider's judgment. Because compliance with patching or atropine therapy influences visual acuity outcomes,[6] creation of a standardized assessment may assist future efforts to identify and counter poor compliance. Metrics may include glasses wear; appointment attendance, rescheduling, and cancellation; missed patching hours or atropine instillation by the parent; and patch removal by the child as observed by parents or teachers.

Our results demonstrate that amblyopia treatment results among patients who follow up do not differ based on SES, but that loss to follow-up is a barrier to successful amblyopia treatment. These results are in line with recently reported data on strabismus surgery outcomes that show equal overall success rates but greater loss to follow-up in patients in the low SES group.[23] Systemic solutions to address disparities in follow-up will likely have the greatest chance to reduce long-term vision loss from amblyopia. Surveys or longitudinal studies assessing reasons for lack of follow-up may guide potential interventions.

CONCLUSION

We present an analysis of the impact of SES on amblyopia outcomes. Of children who were prescribed treatment and attended at least one follow-up appointment, children with Medicaid showed no significant difference in visual acuity improvement compared to children with private insurance. However, patients with Medicaid were lost to follow-up approximately three times the rate of patients with private insurance. Efforts by eye care providers and pediatricians to prevent loss to follow-up may improve visual outcomes in this population.

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REFERENCES

1. Gunton KB. Advances in amblyopia: what have we learned from PEDIG trials? Pediatrics. 2013;131(3):540–547. doi:10.1542/peds.2012-1622 [PubMed: 23382445]
2. Kanonidou E Amblyopia: a mini review of the literature. Int Ophthalmol. 2011;31(3):249–256. doi:10.1007/s10792-011-9434-z [PubMed: 21424553]
3. Faghihi M The prevalence of refractive errors, strabismus and amblyopia in schoolboys of Varamin, Iran, in 2010. Iran J Ophthalmol. 2012;24(2):33.
4. Xiao O, Morgan IG, Ellwein LB, He M; Refractive Error Study in Children Study Group. Prevalence of amblyopia in school-aged children and variations by age, gender, and ethnicity

in a multicountry refractive error study. Ophthalmology. 2015;122(9):1924–1931. doi:10.1016/j.ophtha.2015.05.034 [PubMed: 26278861]

5. Daw NW. Critical periods and amblyopia. Arch Ophthalmol. 1998;116(4):502–505. doi:10.1001/archopht.116.4.502 [PubMed: 9565050]
6. Simons K, Preslan M. Natural history of amblyopia untreated owing to lack of compliance. Br J Ophthalmol. 1999;83(5):582–587. doi:10.1136/bjo.83.5.582 [PubMed: 10216059]
7. Hasse W The natural course of untreated functional amblyopia: does it progress between childhood and adulthood? Binocular Vision. 1997;12(1):17–24.
8. Stewart CE, Fielder AR, Stephens DA, Moseley MJ. Treatment of unilateral amblyopia: factors influencing visual outcome. Invest Ophthalmol Vis Sci. 2005;46(9):3152–3160. doi:10.1167/iovs.05-0357 [PubMed: 16123414]
9. Flores G, Olson L, Tomany-Korman SC. Racial and ethnic disparities in early childhood health and health care. Pediatrics. 2005;115(2):e183–e193. doi:10.1542/peds.2004-1474 [PubMed: 15687426]
10. Hudak DT, Magoon EH. Poverty predicts amblyopia treatment failure. J AAPOS. 1997;1(4):214–215. doi:10.1016/S1091-8531(97)90040-9 [PubMed: 10532766]
11. Glaser SR, Matazinski AM, Sclar DM, et al. ; Pediatric Eye Disease Investigator Group. A randomized trial of atropine vs. patching for treatment of moderate amblyopia in children. Arch Ophthalmol. 2002;120(3):268–278. doi:10.1001/archopht.120.3.268 [PubMed: 11879129]
12. Holmes JM, Kraker RT, Beck RW, et al. ; Pediatric Eye Disease Investigator Group. A randomized trial of prescribed patching regimens for treatment of severe amblyopia in children. Ophthalmology. 2003;110(11):2075–2087. doi:10.1016/j.ophtha.2003.08.001 [PubMed: 14597512]
13. Repka MX, Beck RW, Holmes JM, et al. A randomized trial of patching regimens for treatment of moderate amblyopia in children. Arch Ophthalmol. 2003;121(5):603–611. doi:10.1001/archopht.121.5.603 [PubMed: 12742836]
14. Repka MX, Cotter SA, Beck RW, et al. ; Pediatric Eye Disease Investigator Group. A randomized trial of atropine regimens for treatment of moderate amblyopia in children. Ophthalmology. 2004;111(11):2076–2085. doi:10.1016/j.ophtha.2004.04.032 [PubMed: 15522375]
15. Wallace DK, Edwards AR, Cotter SA, et al. ; Pediatric Eye Disease Investigator Group. A randomized trial to evaluate 2 hours of daily patching for strabismic and anisometropic amblyopia in children. Ophthalmology. 2006;113(6):904–912. doi:10.1016/j.ophtha.2006.01.069 [PubMed: 16751033]
16. Marcin JP, Schembri MS, He J, Romano PS. A population-based analysis of socioeconomic status and insurance status and their relationship with pediatric trauma hospitalization and mortality rates. Am J Public Health. 2003;93(3):461–466. doi:10.2105/AJPH.93.3.461 [PubMed: 12604496]
17. Shen JJ, Wan TT, Perlin JB. An exploration of the complex relationship of socioecologic factors in the treatment and outcomes of acute myocardial infarction in disadvantaged populations. Health Serv Res. 2001;36(4):711–732. [PubMed: 11508636]
18. Ayanian JZ, Kohler BA, Abe T, Epstein AM. The relation between health insurance coverage and clinical outcomes among women with breast cancer. N Engl J Med. 1993;329(5):326–331. doi:10.1056/NEJM199307293290507 [PubMed: 8321261]
19. Foraker RE, Rose KM, Whitsel EA, Suchindran CM, Wood JL, Rosamond WD. Neighborhood socioeconomic status, Medicaid coverage and medical management of myocardial infarction: atherosclerosis risk in communities (ARIC) community surveillance. BMC Public Health. 2010;10(1):632. doi:10.1186/1471-2458-10-632 [PubMed: 20964853]
20. O'Colmain U, Neo YN, Gilmour C, MacEwen CJ. Long-term visual and treatment outcomes of whole-population pre-school visual screening (PSVS) in children: a longitudinal, retrospective, population-based cohort study. Eye (Lond). 2020;34(12):2315–2321. doi:10.1038/s41433-020-0821-4 [PubMed: 32099079]
21. U.S. Census Bureau. QuickFacts, St. Louis City, Missouri. Published 2018. https://www.census.gov/quickfacts/stlouiscitymissouri
22. Friedman DS, Repka MX, Katz J, et al. Prevalence of amblyopia and strabismus in white and African American children aged 6 through 71 months the Baltimore Pediatric Eye

Disease Study. Ophthalmology. 2009;116(11):2128–2134.e1-e2. doi:10.1016/j.ophtha.2009.04.034 [PubMed: 19762084]

23. Dembinski RL, Collins ME, Kraus CL. Outcomes following surgery for horizontal strabismus in children of lower socioeconomic backgrounds. Strabismus. 2019;27(2):47–53. doi:10.1080/09273972.2019.1626451 [PubMed: 31184517]

TABLE 1

VA Improvement Demographics

Variable	Medicaid (n = 28)	Private Insurance (n = 45)
Age, y (mean ± SD)[a]	4.61 ± 1.40	4.13 ± 1.38
Sex (female), no. (%)	16 (57)	25 (56)
Race, no. (%)		
White	22 (79)	42 (93)
Black	1 (4)	0
Hispanic	1 (4)	0
Asian	0	0
Unknown/not reported	4 (14)	3 (7)
Amblyopia type, no. (%)		
Strabismic	19 (68)	23 (51)
Refractive	7 (25)	15 (33)
Mixed	2 (7)	7 (16)

VA = visual acuity; SD = standard deviation

[a]Age at the initial visit.

TABLE 2

VA Improvement (logMAR) of Patients With Medicaid and Patients With Private Insurance

Variable	Medicaid (n = 28)	Private Insurance (n = 45)	*P*
Mean VA improvement, mean ± SD	0.286 ± 0.243	0.298 ± 0.253	.843
Median VA improvement	0.25	0.30	N/A
Mean length of follow-up (months), mean ± SD	12.5 ± 8.760	14.96 ± 8.604	.249

VA = visual acuity; logMAR = logarithm of the minimum angle of resolution; SD = standard deviation; N/A = not applicable

TABLE 3

Association of Missed Appointments and Distance Traveled With VA Improvement (logMAR)

Variable	Sample Size (n)	VA Improvement (Mean ± SD)	Median VA Improvement	*P*
No. missed appointments				.908
0	30	0.316 ± 0.227	0.3	
1	34	0.282 ± 0.284	0.20	
2	6	0.266 ± 0.163	0.25	
3	3	0.233 ± 0.321	0.1	
Distance traveled, miles				.295
0 to 10	7	0.142 ± 0.161	0.1	
11 to 25	15	0.360 ± 0.284	0.3	
26 to 50	25	0.268 ± 0.226	0.2	
51 to 100	11	0.372 ± 0.283	0.3	
101+	15	0.280 ± 0.254	0.3	

VA = visual acuity; logMAR = logarithm of the minimum angle of resolution; SD = standard deviation

TABLE 4

No-Show Analysis Demographics

Variable	Medicaid (n = 141), No. (%)	Private Insurance (n = 107), No. (%)
Sex (Female)	77 (54.6)	51 (47.7)
Race		
White	105 (74.5)	98 (91.5)
Black	16 (11.3)	4 (3.7)
Hispanic	1 (0.7)	0
Asian	2 (1.4)	1 (1)
Unknown/not reported	17 (12.1)	4 (3.7)
Amblyopia type		
Strabismic	101 (71.6)	61 (57.0)
Refractive	24 (17.0)	34 (31.8)
Mixed	16 (11.3)	11 (10.3)
Unknown	0	1 (0.9)

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TABLE 5

Association of Medicaid Status, Race, Sex, and Distance Traveled With Likelihood of Not Attending a Single Follow-up Visit

Variable	Sample Size (n)	No Follow-up (n)	Percentage Lost to Follow-up	*P*
Insurance				.001[a]
Medicaid	141	40	28.4	
Private insurance	107	11	10.3	
Race				.899
White	203	39	19	
Black	20	3	15	
Hispanic	1	0	0	
Asian	3	0	0	
Unknown/not reported	21	9	43	
Sex				.959
Male	120	25	21	
Female	128	26	20	
Distance traveled (miles)				.443
0 to 10	27	4	14.8	
11 to 20	37	2	5.4	
21 to 30	28	5	17.9	
31 to 40	45	13	28.9	
41 to 50	9	3	33.3	
51 to 75	17	4	23.5	
76 to 100	12	3	25.0	
101 to 150	43	9	20.9	
151 to 200	22	7	31.8	
201+	8	1	12.5	

[a]Statistically significant.

TABLE 6

Patients With Medicaid Association of Distance Traveled With Likelihood of Not Attending a Single Follow-up Appointment

Distance Traveled (Miles)	Sample Size (n)	No Follow-up (n)	Percentage Lost to Follow-up	*P*
0 to 10	12	4	33.3	.968
11 to 20	20	2	10.0	
21 to 30	13	2	15.4	
31 to 40	22	10	45.5	
41 to 50	7	2	28.6	
51 to 75	14	3	21.4	
76 to 100	9	3	33.3	
101 to 150	24	7	29.2	
151 to 200	17	7	41.2	
201+	3	0	0	

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TABLE 7

Patients With Private Insurance Association of Distance Traveled With Likelihood of Not Attending a Single Follow-up Appointment

Distance Traveled (Miles)	Sample Size (n)	No Follow-up (n)	Percentage Lost to Follow-up	*P*
0 to 10	15	0	0	.432
11 to 20	17	0	0	
21 to 30	16	3	18.8	
31 to 40	22	3	13.6	
41 to 50	2	1	50.0	
51 to 75	3	1	33.3	
76 to 100	3	0	0	
101 to 150	19	2	10.5	
151 to 200	5	0	0	
201+	5	1	20.0	