Retrospective Study

Health Care Utilization for Chronic Low Back Pain Among Medicaid Patients Versus Privately Insured Patients – A Retrospective Study

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Disclaimer: There was no external funding in the preparation of this article.

Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

> Article received: 10-20-2024 Revised article received: 12-22-2024 Accepted for publication: 02-06-2024

Free full article: www.painphysicianjournal.com **Background:** Poor socioeconomic status and low access to care among patients have been identified as potential reasons for increased in disability associated with chronic low back pain.

Objectives: This study aims to explore health care utilization by patients who have chronic low back pain and come from poor socioeconomic backgrounds by comparing Medicaid patients to privately insured patients.

Study Design: Retrospective study.

Setting: A single-center academic hospital health system.

Methods: This study reviewed the charts of all patients who had primary diagnoses of low back pain, were between the ages of 22 and 60 years old, and had been seen by 4 physiatrists from 2019 to 2023. Several health care utilization data were collected.

Results: Of the 424 patients, 206 (49%) patients had Medicaid insurance, and 218 (51%) patients had private insurance. Individuals in the Medicaid group attended more physical therapy sessions (mean: 7.1, median: 2) than did those with private insurance (mean: 5.2, median: 0, P < 0.001). With respect to "no-show" appointments, the Medicaid group (mean: 8.6, median: 4) had a significantly higher number of missed appointments than did the private group (mean: 3.0, median: 1, P < 0.001). Further regression analyses showed that patients in the Medicaid group with high Charlson Comorbidity Index scores had statistically significant high no-show counts (P < 0.0001). The median number of behavioral health sessions was significantly higher in the Medicaid group (mean: 6.8, median: 4) than in the private group (mean: 5.6, median: 3, P = 0.030). The number of Physical Medicine & Rehabilitation sessions, magnetic resonance images, spine injections, and spine surgeries performed during the study period were similar for both groups.

Limitations: The retrospective nature of the study and small sample size limit the ability to establish causation among observed variables. The health care utilization of privately insured patients as compared to Medicaid patients could have been underreported in this study, since the former could have gone to outside private practices for the management of low back pain.

Conclusions: This study showed that Medicaid patients utilized health care to a similar if not greater extent than did privately insured patients. In addition, there was also a high "no-show" count in the Medicaid group.

Key words: Health care utilization, socioeconomic status, chronic low back pain, Medicaid, commercial private insurance

Pain Physician 2025: 28:E271-E280

hronic low back pain (LBP) is a very common condition and continues to be the leading cause of years lived with disability worldwide (1). Studies have shown that conservative measures like home exercise programs, physical therapy, and short courses of anti-inflammatories can manage chronic LBP in a majority of patients (2). However, chronic LBP continues to be more debilitating than many other diseases with higher mortality rates (1).

Several factors have been identified as potential reasons for increased disability associated with chronic LBP. A few are poor socioeconomic conditions, psychological factors, and job dissatisfaction (3). Socioeconomic status has traditionally been defined by education, income, and occupation (4,5). Although socioeconomic status is clearly linked to the morbidity and mortality of several diseases, the mechanisms responsible for the association are not well understood. That association could be due to a myriad of reasons, including but not limited to increased disease burden, poor mental health, inadequate social support, poor nutrition, and limited access to care. Access to care was studied in a population-based study in Canada (n = 113,229), which reported that the utilization of health services for chronic LBP was lower among individuals with lower education and income levels (6). This study aims to look at a much more in-depth review of health care utilization among chronic LBP patients from low socioeconomic backgrounds.

Medicaid is a public health insurance program for low-income individuals that is jointly funded by the federal and state governments of the United States. Although income limits vary from state to state, in the state of Connecticut, where this study was performed, an individual earning less than \$20,030 gross income was eligible for Medicaid coverage in year 2023 (7). All individuals under the age of 65 and above this income limit must obtain private health insurance to cover medical costs in the United States. One can better understand this income limit when comparing this number to the federal poverty limits set by the U.S. Department of Health and Human Services every year, which was \$14,580 for an individual during the year 2023 (8). This amount is significantly lower than the average individual U.S. annual salary of \$59,384 for the year of 2023, as reported by the U.S. Bureau of Labor (9). Hence, one can assume that the Medicaid population generally has a poor socioeconomic background. This study aims to explore health care utilization among chronic LBP patients from poor socioeconomic backgrounds by comparing Medicaid patients to privately insured patients.

METHODS

Approval from the institutional review board was obtained prior to the initiation of this study. No funding source was involved. Chart review was done on all patients in a tertiary academic institution who were between the ages of 22 and 60 years old and had been seen by 4 physiatrists/PM&R (Physical Medicine & Rehabilitation) physicians with fellowship training in spine care from 2019 to 2023. All patients with primary diagnoses of LBP on the first office visit between January 1, 2019, and December 31, 2021 were selected. Those criteria were established to ensure that at least 2 years' worth of data were available after the initial visit. The chosen patients were then sorted into 2 categories: Medicaid patients and private insurance holders. Patients with no insurance information were excluded. Several health care utilization data were collected, including number of "no-show" appointments, magnetic resonance images (MRIs) performed, physical therapy sessions, PM&R physician sessions, behavioral health sessions, opioid prescriptions, lumbar spine injections, and lumbar spine surgeries between January 1, 2018, and December 31, 2023. With respect to "no-show" appointments, lab and nurse visits were excluded. Age cut-offs of 22 and 60 years were chosen to exclude as many college students and Medicare patients as possible. Individual patient charts were then analyzed to verify the accuracy of the data.

Disease burden was measured by the age-adjusted Charlson Comorbidity Index (CCI). CCI was calculated by assigning numerical scores to age (> 50 years = 1-4 points) and for the following diagnoses: myocardial infarction (one point), congestive heart failure (one point), peripheral vascular disease (one point), cerebrovascular disease (one point), chronic obstructive pulmonary disease (one point), dementia (one point), peptic ulcer disease (one point), rheumatic disease (one point), diabetes (uncomplicated = one point, complicated = 2 points), moderate to severe renal disease (2 points), liver disease (mild = one point, moderate/severe = 3 points), paraplegia/hemiplegia (3 points), acquired immunodeficiency syndrome (6 points), and cancer (localized = 2 points, metastatic = 6 points). CCI score cut-offs were also used for data analysis, which was based on previous research into the prognostic value of the CCI, suggesting that patients with scores 0-4 were at lower risk of mortality or adverse outcomes. Patients

with scores \geq 7 represent a higher risk group, and the interval range of 5-6 represents intermediate risk (10).

Statistical Analysis

Patient characteristics were summarized using mean (SD) and median (range) for continuous variables, and frequency and percentage values were used for categorical variables. Between-group comparisons on all relevant characteristics were performed using either t-tests (non-parametric: Wilcoxon) for continuous variables or chi-square tests (Fisher's exact tests, in which cell-size limitations applied) for categorical variables. To model the dependent outcome variables, negative binomial regression models were used. Negative binomial modeling was deemed appropriate due to overdispersion in the "counts" data. To interpret the contribution of covariates in the statistical models, incidence rate ratios (IRR) were used. The following covariates were included in all models: pain severity, age, gender, race, and CCI. Statistical significance was established as P < 0.05. SAS version 9.4 was used for all analyses.

RESULTS

Table 1 provides a summary of the baseline patient characteristics. Of the 424 patients, 206 (49%) patients had Medicaid insurance, and 218 (51%) patients had private insurance. Distribution of age, gender, and pain severity was very similar across the groups. Significant differences were observed in racial and ethnic composition: a higher percentage of Medicaid participants were non-white (51.5%) and Hispanic (28.2%) compared to the private insurance group (35.8% non-white, 15.1% Hispanic), with *P*-values of 0.001 for both. BMI was significantly higher in the Medicaid group, with a mean of 32.3 compared to 29.1 in the private insurance group (*P* < 0.001), with 25% (n = 85) missing data.

Comorbidities were scored and categorized using the age-adjusted CCI. People in the Medicaid group had a significantly higher score on the scale (2.3 vs.1.7, P =0.007). There were imbalanced proportions of patients across the 3 CCI risk categories (high vs intermediate vs low), and those differences were statistically significant (P = 0.045). It is noteworthy that the vast majority of patients in both groups were in the low-risk CCI category (Medicaid at 84% and private at 92%). The number of MRIs, spine injections, and spine surgeries performed during the study period were similar in both groups.

Table 2 provides a comparison of medical utilization outcomes between the Medicaid and private insurance groups. Individuals in the Medicaid group attended more physical therapy sessions (mean: 7.1, median: 2) than did those with private insurance (mean: 5.2, median: 0, P < 0.001).

As for "no-show" appointments, the Medicaid group (mean: 8.6, median: 4) had a significantly higher number of missed appointments when compared to the private group (mean: 3.0, median: 1, P < 0.001).

There were no significant differences in the number of PM&R physician sessions attended between the Medicaid group (mean: 0.9, median: 0) and private group (mean: 0.7, median: 0, P = 0.93).

The median number of behavioral health sessions was significantly higher in the Medicaid group (mean: 6.8, median: 4) than in the private group (mean: 5.6, median: 3, P = 0.030).

The number of MRIs, spine injections, and spine surgeries performed during the study period were similar in both groups and did not differ significantly.

Negative binomial models, including individual factors associated with dependent variables calculated for physical therapy sessions, no-show appointments, behavioral health sessions, spine injections, PM&R physician sessions, MRIs performed, and spine surgery counts provided further insight into how between-patient characteristics might factor into the comparisons between insurance types.

Physical Therapy Sessions

When the covariates were included in the model, the difference between Medicaid-insured and privately insured patients' number of physical therapy sessions was not statistically significant (P = 0.10). There were no significant covariates in this model (Table 3).

"No-Show(s)"

With respect to counts of "no-show" appointments, the inclusion of covariates in the model still yielded a statistically significant difference between Medicaid-insured and privately insured patients (*P* < 0.0001). The incidence rate ratio (IRR) for the estimate of 0.8696 was 2.386. This finding indicates that Medicaid-insured individuals were 2.386 times more likely to have a no-show appointment than were the privately insured individuals in the sample (Table 4). Interestingly, the model also demonstrated that women, non-white individuals, and individuals with higher CCI scores had statistically significant proclivities for "noshow" appointments. Further analysis was done using the CCI risk categories, which showed individuals in the

Insurance Group								
	Medicaid (n = 206)	Private (n = 218)	Total (n = 424)	P-value				
Gender								
Missing	000 (00.00%)	000 (00.00%)	000 (00.00%)	0.67				
Female	127 (61.65%)	130 (59.63%)	257 (60.61%)					
Male	079 (38.35%)	088 (40.37%)	167 (39.39%)					
Age			_					
N (N Missing)	206 (0)	218 (0)	424 (0)					
Mean (SD)	43.57 (10.05)	42.94 (10.28)	43.25 (10.16)	0.52				
Median (Range)	45.0 (22.0 - 60.0)	43.0 (22.0 - 60.0)	44.0 (22.0 - 60.0)	0.55				
Race Binary								
Missing	000 (00.00%)	000 (00.00%)	000 (00.00%)	0.001				
Non-White	106 (51.46%)	078 (35.78%)	184 (43.40%)					
White	100 (48.54%)	140 (64.22%)	240 (56.60%)					
Hispanic Binary								
Missing	000 (00.00%)	000 (00.00%)	000 (00.00%)	0.001				
Hispanic	058 (28.16%)	033 (15.14%)	091 (21.46%)					
Not Hispanic	148 (71.84%)	185 (84.86%)	333 (78.54%)					
BMI		·						
N (N Missing)	162 (44)	177 (41)	339 (85)					
Mean (SD)	32.29 (8.04)	29.05 (6.19)	30.60 (7.30)	< 0.001				
Median (Range)	31.3 (17.0 – 57.1)	27.6 (17.7 – 50.9)	29.5 (17.0 - 57.1)	< 0.001				
Pain Severity								
N (N Missing)	206 (0)	218 (0)	424 (0)					
Mean (SD)	7.34 (0.96)	7.32 (0.95)	7.33 (0.96)	0.76				
Median (Range)	7.0 (5.0 – 10.0)	7.0 (5.0 – 10.0)	7.0 (5.0 – 10.0)	0.69				
Smoking Status								
Missing	000 (00.00%)	000 (00.00%)	000 (00.00%)	< 0.001				
Current	049 (23.79%)	018 (08.26%)	067 (15.80%)					
Former	063 (30.58%)	062 (28.44%)	125 (29.48%)					
Never	094 (45.63%)	138 (63.30%)	232 (54.72%)					
Number of Comorbidities								
N (N Missing)	206 (0)	218 (0)	424 (0)					
Mean (SD)	1.59 (1.90)	1.00 (1.36)	1.29 (1.67)	< 0.001				
Median (Range)	1.0 (0.0 – 9.0)	1.0 (0.0 – 7.0)	1.0 (0.0 – 9.0)	< 0.001				
Charlson Comorbidity Index								
N (N Missing)	206 (0)	218 (0)	424 (0)					
Mean (SD)	2.33 (2.77)	1.66 (2.27)	1.98 (2.54)	0.007				
Median (Range)	1.0 (0.0 – 16.0)	1.0 (0.0 - 14.0)	1.0 (0.0 – 16.0)	0.006				
Charlson Comorbidity Index	: Risk Category							
Missing	000 (00.00%)	000 (00.00%)	000 (00.00%)	0.045*				
<= 4: Low Risk	174 (84.47%)	201 (92.20%)	375 (88.44%)					
5 or 6: Intermediate Risk	011 (05.34%)	006 (02.75%)	017 (04.01%)					
>= 7: Higher Risk	021 (10.19%)	011 (05.05%)	032 (07.55%)					

Table 1. Patient characteristics.

BMI: Body mass index

	Insuran	ce Group		
	Medicaid (n = 206)	Private (n = 218)	Total (n = 424)	P-value
No-Show Appointments		·		
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	8.60 (12.84)	3.04 (5.80)	5.74 (10.24)	< 0.001
Median (Range)	4.0 (0.0 - 92.0)	1.0 (0.0 - 35.0)	2.0 (0.0 - 92.0)	< 0.001
MRI Orders				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	0.79 (0.83)	0.70 (0.74)	0.74 (0.79)	0.22
Median (Range)	1.0 (0.0 - 3.0)	1.0 (0.0 - 4.0)	1.0 (0.0 - 4.0)	0.37
Physical Therapy Sessions	• •			
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	7.09 (10.43)	5.20 (11.39)	6.12 (10.96)	0.08
Median (Range)	2.0 (0.0 - 56.0)	0.0 (0.0 - 61.0)	0.0 (0.0 - 61.0)	< 0.001
PM&R Physician Sessions				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	0.93 (2.75)	0.67 (1.19)	0.80 (2.10)	0.22
Median (Range)	0.0 (0.0 – 34.0)	0.0 (0.0 - 7.0)	0.0 (0.0 - 34.0)	0.93
Behavioral Health Sessions				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	6.82 (9.92)	5.59 (11.53)	6.18 (10.78)	0.24
Median (Range)	4.0 (0.0 - 105.0)	3.0 (0.0 - 155.0)	4.0 (0.0 - 155.0)	0.030
Opioid Prescriptions				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	9.49 (21.16)	4.13 (7.83)	6.74 (15.99)	< 0.001
Median (Range)	2.0 (0.0 – 206.0)	0.5 (0.0 - 45.0)	1.0 (0.0 – 206.0)	0.002
Spinal Injections				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	0.23 (0.99)	0.13 (0.75)	0.18 (0.88)	0.27
Median (Range)	0.0 (0.0 - 10.0)	0.0 (0.0 - 6.0)	0.0 (0.0 - 10.0)	0.06
Spinal Surgeries				
N (N Missing)	206 (0)	218 (0)	424 (0)	
Mean (SD)	0.03 (0.26)	0.04 (0.27)	0.03 (0.26)	0.77
Median (Range)	0.0 (0.0 - 3.0)	0.0 (0.0 – 3.0)	0.0 (0.0 - 3.0)	0.53

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low-risk CCI category to have statistically significantly lower "no-show" counts (Table 5).

Behavioral Health Sessions

In terms of behavioral health sessions, the inclusion of covariates in the model did not exert much impact on the overall difference between Medicaid-insured and privately insured patients (P = 0.42, Table 6). Of note, when the influence of covariates was considered in the model, age and gender were statistically significant (both P < 0.0001). An IRR of 1.02 suggested the number of behavioral health sessions increased by 2% for each one-year increase in age. Regarding gender, an IRR of 1.4501 suggested women were associated with a 45% greater number of behavioral health sessions than were men.

Spinal Injections

With the covariates included in the model, the difference in spinal injections between Medicaid-insured

Analysis of Maximum Likelihood Parameter Estimates									
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi- Square	Pr > ChiSq	
Intercept		1	2.3602	0.993	0.4141	4.3064	5.65	0.0175	
In summer of Casum	Medicaid	1	0.3771	0.2294	-0.0726	0.8268	2.7	0.1003	
Insurance Group	Private	0	0	0	0	0			
Pain Severity		1	-0.168	0.126	-0.4149	0.0789	1.78	0.1823	
Age		1	0.0011	0.013	-0.0243	0.0266	0.01	0.9304	
Candan	Female	1	0.111	0.2377	-0.3548	0.5768	0.22	0.6405	
Gender	Male	0	0	0	0	0			
	Non-White	1	0.3794	0.2245	-0.0606	0.8194	2.86	0.091	
Dese	White	0	0	0	0	0			
Race	Hispanic	1	0.4501	0.2756	-0.09	0.9903	2.67	0.1024	
	Not Hispanic	0	0	0	0	0			
CCI		1	0.0742	0.0586	-0.0406	0.189	1.6	0.2054	
Dispersion		1	4.8172	0.4357	4.0346	5.7515			

 Table 3. Regression analysis: Physical therapy sessions with CCI score.

CCI: Charlson Comorbidity Index; DF: degree of freedom.

Table 4.	Regression	analysis:	No-show	appointments	with	CCI	score.
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Analysis of Max	Analysis of Maximum Likelihood Parameter Estimates									
Parameter		DF	Estimate	Standard Error	rd Wald 95% Confidence r Limits		Wald Chi- Square	Pr > ChiSq		
Intercept		1	1.2449	0.5859	0.0964	2.3933	4.51	0.0336		
In summer of Casura	Medicaid	1	0.8696	0.1341	0.6069	1.1324	42.08	< 0.0001		
Insurance Group	Private	0	0	0	0	0				
Pain Severity		1	-0.131	0.0682	-0.2647	0.0027	3.69	0.0547		
Age		1	-0.0091	0.0073	-0.0235	0.0053	1.54	0.2151		
Cardan	Female	1	0.5431	0.1384	0.2718	0.8143	15.4	< 0.0001		
Gender	Male	0	0	0	0	0		•		
	Non-White	1	0.5832	0.1311	0.3263	0.8401	19.8	< 0.0001		
Dere	White	0	0	0	0	0				
Race	Hispanic	1	0.1357	0.1593	-0.1766	0.448	0.73	0.3944		
	Not Hispanic	0	0	0	0	0				
CCI		1	0.1351	0.0289	0.0785	0.1917	21.86	< 0.0001		
Dispersion		1	1.4452	0.1265	1.2174	1.7155				

CCI: Charlson Comorbidity Index; DF: degree of freedom.

and privately insured individuals was not statistically significant (P = 0.12, Table 7). Of note, when the influence of covariates was considered in the model, race (P = 0.03) and Hispanic ethnicity (P = 0.04) were statistically significant. This finding would indicate that non-white individuals received fewer spinal injections than did white patients (IRR 0.1975). Meanwhile (IRR 4.3640), the rate of spinal injections was over 3 times higher in Hispanic patients than in non-Hispanic individuals.

PM&R Physician Sessions, MRIs Performed, Spinal Surgeries

When the covariates were included in the model, the difference between Medicaid-insured and privately insured patients with respect to the number of PM&R physician sessions, MRIs performed, and spine surgeries was not statistically significant. There were no significant reliable covariates in these models (Supplement).

Analysis of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi- Square	Pr > ChiSq
Intercept		1	1.6951	0.6706	0.3808	3.0094	6.39	0.0115
Insurance Croun	Medicaid	1	0.8881	0.1356	0.6224	1.1538	42.91	< 0.0001
Insurance Group	Private	0	0	0	0	0		
	5 or 6: Intermediate Risk	1	0.0346	0.3912	-0.7322	0.8014	0.01	0.9295
CCI-Risk Category	<= 4: Low Risk	1	-0.8122	0.2523	-1.3067	-0.3178	10.37	0.0013
	>= 7: Higher Risk	0	0	0	0	0		
Dispersion		1	1.4794	0.1286	1.2476	1.7543		

Table 5. Regression analysis: No-show appointments with CCI-risk category.

CCI: Charlson Comorbidity Index; DF: degree of freedom.

Table 6.	Regression	analysis:	Behavioral	health	sessions	with	CCI	score.
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Analysis of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi- Square	Pr > ChiSq
Intercept		1	0.88	0.4771	-0.0551	1.8152	3.4	0.0651
Learning Course	Medicaid	1	0.0854	0.1067	-0.1236	0.2945	0.64	0.4231
Insurance Group	Private	0	0	0	0	0		
Pain Severity		1	-0.059	0.0557	-0.1682	0.0502	1.12	0.2899
Age		1	0.0212	0.0057	0.01	0.0324	13.84	0.0002
Cardan	Female	1	0.3838	0.1051	0.1778	0.5899	13.33	0.0003
Gender	Male	0	0	0	0	0		
	Non-White	1	0.0846	0.1041	-0.1195	0.2887	0.66	0.4167
Race	White	0	0	0	0	0		
	Hispanic	1	0.0031	0.1264	-0.2447	0.2509	0	0.9804
	Not Hispanic	0	0	0	0	0		
CCI		1	0.017	0.0251	-0.0322	0.0662	0.46	0.4992
Dispersion		1	0.8934	0.0715	0.7638	1.0451		

CCI: Charlson Comorbidity Index; DF: degree of freedom.

DISCUSSION

The study sheds light on several aspects of health care utilization among chronic LBP patients from higher and lower socioeconomic backgrounds.

There was increased utilization of physical therapy and behavioral health sessions among the Medicaid group compared to the private insurance group. However, it is noteworthy that in several other health care parameters, like number of PM&R physician sessions, MRIs, spinal injections, and spinal surgeries, there were no differences between the Medicaid and private insurance groups. Several previous studies have shown less health care utilization among chronic LBP patients from lower socioeconomic backgrounds (6,11,12). Although limits in health care utilization play a role in greater disability associated with chronic LBP in low socioeconomic populations, the present study does not support this hypothesis. A myriad of reasons have been proposed in other studies. A few of these hypotheses are isolation and lack of engagement in social networks, chronic stress, exposure to damaging agents in the environment, and behavioral/lifestyle factors like smoking, substance abuse, unhealthy diet, sedentary lifestyle and so on (5,13). It is also essential to understand the Medicaid landscape in the state of Connecticut, which adds complexity to this phenomenon. Among all insurances, Medicaid has the lowest reimbursement rates in Connecticut, which drives many private hospitals and private physician practices

Analysis of Maximum Likelihood Parameter Estimates								
Parameter		DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi- Square	Pr > ChiSq
Intercept		1	-6.2486	3.0508	-12.228	-0.2692	4.2	0.0405
Incurrence Croun	Medicaid	1	0.9666	0.6203	-0.2491	2.1824	2.43	0.1192
insurance Group	Private	0	0	0	0	0		
Pain Severity		1	0.248	0.3275	-0.3938	0.8898	0.57	0.4489
Age		1	0.0558	0.0417	-0.0259	0.1375	1.79	0.1804
Candan	Female	1	-0.3621	0.6345	-1.6057	0.8814	0.33	0.5682
Gender	Male	0	0	0	0	0		
	Non-White	1	-1.5105	0.6954	-2.8734	-0.1475	4.72	0.0298
Race	White	0	0	0	0	0		
	Hispanic	1	1.5307	0.7381	0.084	2.9774	4.3	0.0381
	Not Hispanic	0	0	0	0	0		
CCI		1	-0.0309	0.1712	-0.3664	0.3045	0.03	0.8566
Dispersion		1	20.7088	5.6868	12.0895	35.4734		

 Table 7. Regression analysis: Spine injections performed with CCI score.

CCI: Charlson Comorbidity Index; DF: degree of freedom.

away from the Medicaid population (14). Many private practices in Connecticut do not accept Medicaid insurance, and the state ranks in the lowest quartile among all U.S. states for physician acceptance of Medicaid patients (15). However, in public/academic hospitals, patients are given appointments irrespective of their insurance status, and physicians are not incentivized to treat private patients. As is evident from this study, nearly 50% of the patient population under the age of 65 in our health system has Medicaid coverage, since these patients cannot get appointments anywhere else. In this regard, access to care is difficult for the Medicaid population in Connecticut. In other words, health care "access" is not the same as health care "utilization," although the practices are interconnected in some ways.

Another important factor to consider in this analysis is the common misconception that patients with private insurance always have a higher socioeconomic status. Many individuals earning minimum wage do not meet the strict income guidelines set by Medicaid, forcing them to obtain private insurance (7). However, these persons still struggle to access care due to the high costs of copayments and deductibles (an up-front fee private insurance charges patients for any health care-related visits in the United States on top of the monthly premiums), or they may miss work to attend medical appointments.

Among all the findings in this study, the most interesting was the high number of no-show counts among the Medicaid population. Several hypotheses can be postulated for this phenomenon. One possibility this study suggests is the greater disease burden in the Medicaid group, as shown with CCI (Table 2). This hypothesis was further solidified in regression analyses after adjusting for CCI score and CCI risk category (low- vs. intermediate- vs. high-risk). Patients in the Medicaid group who had high CCI scores and fell into the high-risk category had statistically significantly high no-show counts (Tables 4,5). There may be several other reasons for high no-show counts in the Medicaid population. Authors have made several observations in clinical settings among the Medicaid population that may contribute to this phenomenon. The absence of penalty for missing an appointment and the nonissue of needing copayments or deductibles for office visits may play a role. In addition, these patients must often take public and/or state-funded transportation, which is frequently unreliable, to get to their appointments.

Older women appear to utilize behavioral health sessions most often (Table 6), which may be due to the higher incidence of anxiety among women, as shown in other studies (16).

Although this finding was not statistically significant, regression analysis showed a greatest number of spinal injections was administered to the white and Hispanic patients, while having equal access to PM&R physicians who performed those injections (Table 7). On the other hand, neither group showed a predilection toward spinal surgery, which could have been because not enough patients in either group had received spinal surgery for a difference to be detectable.

Limitations

There were several limitations to the study. The retrospective nature of the study and its small sample size limit the ability to establish causation among observed variables. Nevertheless, due to the aforementioned small sample size, it was possible to verify the accuracy of the data. For instance, we did not include smoking status and opioid prescription counts in our analysis, since we found those data to be inaccurate and noncomprehensive upon individual chart review. In addition, large database studies have the inherent flaw of reporting errors, since many providers add diagnoses to the chart for a variety of reasons, including but not limited to insurance approval and billing purposes, especially when the management of chronic LBP is involved. Almost all insurances in the United States, including Medicaid, have stringent guidelines on what can be approved in chronic LBP patients.

Fourteen diagnoses in the CCI were identified in the chart review, but patients could have had several other diagnoses. However, authors suspect this possibility to be extremely unlikely, since access to non-urgent care was extremely difficult across the state during the study period due to the COVID-19 pandemic. The health care landscape in Connecticut during the study period is also worth mentioning. This study was conducted at the only tertiary care hospital in the area that treated patients irrespective of insurance status. The vast majority of outpatient private practices in the area would accept only very few Medicaid-insured or non-insured patients, which left our hospital system as the only care option for those patients. In other words, the health care utilization of private insurance patients could have been underreported in this study, since they might have gone to outside private practices for the management of LBP.

CONCLUSION

Health care utilization for chronic LBP among the Medicaid-insured population is a multifaceted issue. Many prior large database studies have implied that the high disability rate among chronic LBP patients in low socioeconomic populations is due to less health care utilization, although this hypothesis is not supported in this study. On the contrary, this study showed similar if not greater health care utilization among Medicaid patients compared to privately insured patients. In addition, there was also a high "no-show" count among the Medicaid group. The study results should be interpreted with caution, given the above limitations. Authors recommend studies with more in-depth analysis of individual patients of lower socioeconomic status to illuminate this topic further.

Acknowledgments

The authors would like to thank Roberta Bruhn and Jillian Barron for their help with analysis and development of the article.

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