Association Between Telehealth Encounters and Subsequent Healthcare Utilization Among Louisiana Medicaid Beneficiaries

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INTRODUCTION

- Post-Pandemic Integration: Telehealth has become an integral component of healthcare delivery following its rapid expansion during the COVID-19 pandemic.
- Knowledge Gap: While increased adoption is well-documented, less is known about whether telehealth improves healthcare utilization and cost outcomes, particularly for Medicaid beneficiaries in safety-net settings.
- Role of FQHCs: Federally Qualified Health Centers provide comprehensive primary care to low-income and medically underserved populations who often face barriers to timely in-person care.
- Potential Benefits: By improving access to primary care, telehealth has the potential to prevent avoidable emergency department (ED) visits and hospitalizations while maintaining or reducing overall expenditures.
- Need for Evidence: Current evidence regarding its effectiveness in reducing downstream utilization among Medicaid populations remains limited. Understanding this impact is critical for informing reimbursement policies and guiding future investments in virtual care.

AIM

To evaluate the association between telehealth encounters and subsequent acute care utilization and healthcare expenditures among Louisiana Medicaid beneficiaries receiving care through FQHC.

METHOD

Study Design and Data Source

A retrospective encounter-level cohort study was conducted using Louisiana Medicaid claims data (2019–2023).

Study Population

The study included Medicaid beneficiaries receiving care through FQHCs. Telehealth encounters were compared with similar in-person encounters.

Matching Strategy

Telehealth encounters were matched 1:1 with comparable in-person encounters using diagnosis-based propensity score matching to reduce baseline differences between groups.

Outcomes

- Emergency department (ED) visits within 30 and 60 days
- Inpatient hospitalizations within 30 and 60 days
- Total healthcare expenditures
- Medical expenditures
- Pharmacy expenditures

following the index encounter.

Statistical Analysis

- Utilization Modeling: Generalized estimating equations (GEE) were used to estimate relative risks for healthcare utilization outcomes.
- Expenditure Modeling: Generalized linear models (GLMs) evaluated differences in healthcare expenditures.
- Reporting Metrics: Results are presented as relative risks (RRs), cost ratios, and 95% confidence intervals (CIs).

RESULTS

- Prior to matching, telehealth users were more likely to be female (67% vs. 58%) and to reside in urban areas (80% vs. 73%). Clinically, the telehealth cohort exhibited a significantly higher disease burden, with a mean CCI of 0.33 (SD: 0.82) compared to 0.22 (SD: 0.70) in the non-telehealth group.
- After propensity score matching, 71,939 telehealth encounters were matched to 71,939 comparable in-person encounters.

RESULTS

- Most demographic and clinical characteristics were balanced after matching, although anxiety remained more common among telehealth users (32% vs. 21%).

Table 1. Baseline Characteristics of Louisiana Medicaid FQHC Users (2019–2023)

Characteristic	Total Cohort		Unmatched Sample				Matched Sample (PSM)				
			Telehealth Users		Non-Telehealth Users		SMD	Telehealth Users		Non-Telehealth Users		SMD
	334790		161592		173198			71939		71939		
Sociodemographics												
Age at First Visit (Mean ± SD)	28.00	18.33	30.10	17.42	26.04	18.94	0.32	26.87	16.99	27.00	17.94	-0.14
<18	131928	39.41%	51901	32.12%	80027	46.21%	-0.34	28667	39.85%	29529	41.05%	-0.01
18-34	90093	26.91%	46466	28.76%	43627	25.19%	0.06	20700	28.77%	20605	28.64%	0.00
35-49	59000	17.62%	35521	21.98%	23479	13.56%	0.22	13137	18.26%	11479	15.96%	0.02
50-64	46893	14.01%	26734	16.54%	20159	11.64%	0.18	9118	12.67%	8715	12.11%	0.01
65+	6876	2.05%	970	0.60%	5906	3.41%	-0.06	317	0.44%	1611	2.24%	-0.02
Male	127600	38.11%	53664	33.21%	73936	42.69%	-0.20	26575	36.94%	26575	36.94%	0.00
Race/Ethnicity												
White	86578	25.86%	47985	29.70%	38593	22.28%	0.15	20306	28.23%	19992	27.79%	0.00
Black	142035	42.43%	63937	39.57%	78098	45.09%	-0.14	29292	40.72%	29534	41.05%	0.00
Hispanic	88417	26.41%	41593	25.74%	46824	27.03%	0.03	18760	26.08%	18915	26.29%	0.00
Asian	2139	0.64%	802	0.50%	1337	0.77%	-0.04	416	0.58%	392	0.54%	0.00
Other/Multiple/Unknown	15621	4.67%	7275	4.50%	8346	4.82%	-0.02	3165	4.40%	3106	4.32%	0.00
Residency: Rural	78801	23.54%	32199	19.93%	46602	26.91%	0.15	15750	21.89%	15750	21.89%	0.00
Clinical Characteristics												
CCI (Mean ± SD)	0.27	0.76	0.33	0.82	0.22	0.70	0.24	0.23	0.63	0.22	0.65	0.01
0	281134	83.97%	129762	80.30%	151372	87.40%	-0.27	61039	84.85%	62000	86.18%	-0.01
1-2	44005	13.14%	26310	16.28%	17695	10.22%	0.23	9645	13.41%	8485	11.79%	0.02
3-4	8071	2.41%	4643	2.87%	3428	1.98%	0.11	1115	1.55%	1291	1.79%	0.00
≥5	1580	0.47%	877	0.54%	703	0.41%	0.06	140	0.19%	163	0.23%	0.00
Comorbidity condition												
Obesity/Overweight	48469	14.48%	28564	17.68%	19905	11.49%	0.18	11311	15.72%	9290	12.91%	0.03
T2DM	33075	9.88%	20066	12.42%	13009	7.51%	0.22	7004	9.74%	5974	8.30%	0.01
Hypertension	87136	26.03%	50742	31.40%	36394	21.01%	0.31	18549	25.78%	16416	22.82%	0.03
Asthma/COPD	59695	17.83%	32507	20.12%	27188	15.70%	0.13	13967	19.42%	11715	16.28%	0.03
CKD	5844	1.75%	3228	2.00%	2616	1.51%	0.09	784	1.09%	904	1.26%	0.00
CVD	16414	4.90%	9386	5.81%	7028	4.06%	0.14	2900	4.03%	2910	4.05%	0.00
Malignancy	5864	1.75%	3487	2.16%	2377	1.37%	0.09	885	1.23%	933	1.30%	0.00
SUD/OUD	31273	9.34%	18730	11.59%	12543	7.24%	0.15	7892	10.97%	6322	8.79%	0.02
HIV/AIDS	4021	1.20%	2589	1.60%	1432	0.83%	0.08	927	1.29%	633	0.88%	0.00
Anxiety	81108	24.23%	51778	32.04%	29330	16.93%	0.38	22814	31.71%	14844	20.63%	0.11
Depression	78814	23.54%	49328	30.53%	29486	17.02%	0.34	21923	30.47%	14889	20.70%	0.10

*Age was calculated by the date minus birth date. For unmatched sample, date is first FQHC visit; for matched sample, date is first telehealth visit for telehealth users and matched in-person visit date for matched in-person users.
*SMD: Standardized Mean Differences
*Match by race, age, CCI, prior year total OP count, reason for visit by dx, sex, urban/rural (reason for visit by dx, sex, urban/rural exact match)
Abbreviation: T2DM – Type 2 Diabetes; COPD - Chronic Obstructive Pulmonary Disease; CKD – Chronic Kidney Disease; CVD – Cardiovascular Disease; SUD/OUD - Substance Use Disorder/ Opioid Use Disorder

Table 2. Multivariable Association of Telehealth Use with Healthcare Resource Utilization and Expenditures

Outcomes	Telehealth Visit vs In-person Visit			
	Rate Ratio	(95% CI)		p-value
Utilization Outcomes (Odds Ratios)				
Emergency Department Visits 30 days	0.96	0.95	0.98	<.0001
Inpatient Hospitalizations 30 days	1.00	0.97	1.03	0.833
Emergency Department Visits 60 days	0.98	0.97	0.99	<.0001
Inpatient Hospitalizations 60 days	0.96	0.94	0.99	0.0042
Cost Outcomes (Cost Ratios)				
Total Healthcare Cost 30 days	1.03	0.94	1.13	0.5409
Medical Cost 30 days	0.98	0.86	1.10	0.6898
Pharmacy Cost 30 days	1.03	0.99	1.07	0.1667
Total Healthcare Cost 60 days	1.04	0.93	1.16	0.4768
Medical Cost 60 days	0.98	0.86	1.12	0.7669
Pharmacy Cost 60 days	1.06	1.02	1.10	0.0069

Compared with in-person care, telehealth encounters were associated with lower downstream acute care utilization.

- ED visit within 30 days (RR 0.96, 95% CI 0.95–0.98) and 60 days (RR 0.98, 95% CI 0.97–0.99).
- Hospitalization within 60 days (RR 0.96, 95% CI 0.94–0.99).

Overall healthcare expenditures remained cost-neutral between telehealth and in-person care.

- Pharmacy expenditures increased modestly within 60 days (cost ratio 1.06, 95% CI 1.02–1.10),
- No increase in total healthcare spending following telehealth encounters.

CONCLUSIONS

Telehealth was associated with lower downstream acute care utilization without increasing overall healthcare expenditures among Louisiana Medicaid beneficiaries receiving safety-net care. These findings support the continued integration of telehealth into Medicaid primary care.

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