Telehealth Use among Adult Patients with Sickle Cell Disease Before and During the Covid-19 Pandemic

HSD65

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INTRODUCTION

- Individuals with sickle cell disease (SCD) frequently face barriers to accessing care, which are associated with negative health outcomes.[1]
- The COVID-19 pandemic further restricted patients' access to routine medical services.[2]
- **Telehealth** emerged as an innovative care delivery method during COVID-19, demonstrating improved access for many patients with chronic conditions.[3,4]
- Utilization patterns and factors associated with telehealth use among adult Medicaid beneficiaries with SCD remain unknown.

OBJECTIVES

Objective 1: To identify patient characteristics associated with telehealth utilization among adults with SCD enrolled in Texas Medicaid.

Objective 2: To examine the association between SCD-related telehealth visits and SCD-related Emergency Department (ED) utilization during the COVID-19 pandemic.

METHODS

Study design and data source: Retrospective cohort study using Texas Medicaid claims data from 03/01/2019 to 03/31/2022

Inclusion criteria

- Adults aged 18 ≤ age <62 years at the index date
- ≥1 inpatient or ≥2 outpatient visits with an SCD ICD-10 diagnosis code between 03/01/2017 and 03/31/2022 (5 years)
- Continuously enrolled in Texas Medicaid for the study period
- No cancer diagnosis
- Not dual eligible for Medicaid and Medicare

Study outcomes and analysis

Objective 1:

- **Outcome:** Individual patients' utilization of telehealth services **(any diagnosis)**
- **Independent variables (IVs):** Patient demographics (age, sex, residence in Texas metropolitan areas) and utilization characteristics (number of SCD-related outpatient visits 1 year before the pandemic)

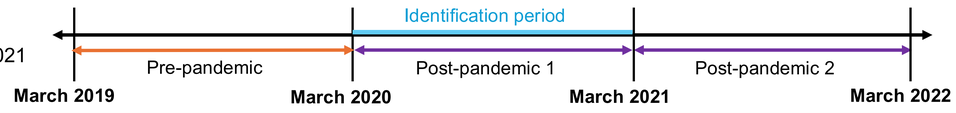
Objective2:

- **Outcome:** Whether or not a patient had an SCD-related ED visit during 12 months after index date
- **Main IVs:** Utilization of SCD-related telehealth services during the first pandemic year
- **Covariates:** Age, sex, residence in Texas metropolitan areas, and number of SCD-related outpatient visits 12 months before the pandemic
- **Analyses:** Bi-variate analysis, multivariable logistic regression

METHOD

Objective 2 index date

- **Telehealth users:** Date of first SCD-related telehealth visit between 03/01/2020 and 03/31/2021
- **Non-users:** Date of first SCD-related in-person visit between 03/01/2020 and 03/31/2021



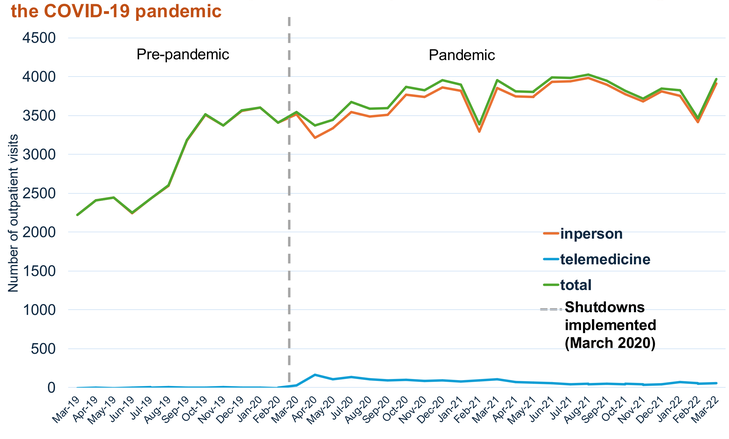
RESULTS

Table 1. Baseline characteristics of adults Texas Medicaid enrollees with SCD

Patient characteristics	Total N=546, N(%)	Telehealth users N=386, N(%)	Non-users N=160, N(%)	p-value
Age; Mean (SD)	34.3(11.48)	34.6 (11.40)	33.6 (11.67)	0.32
Age group (ref: 5-12 years old)				
18-26	167 (30.59)	115 (29.79)	52 (32.50)	0.86
27-34	138 (25.27)	96 (24.87)	42 (26.25)	
35-44	118 (21.61)	85 (22.02)	33 (20.63)	
45-54	88 (16.12)	66 (17.10)	22 (13.75)	
55-62	35 (6.41)	24 (6.22)	11 (6.88)	
Gender				
Females	336 (61.54)	239 (61.92)	97 (60.63)	0.78
Males	210 (38.46)	147 (38.08)	63 (39.38)	
Race/Ethnicity				
White	<11	<11	<11	**0.017**
Black	340 (62.27)	241 (62.44)	99 (61.88)	
Hispanic	17 (3.11)	14 (3.63)	3 (1.88)	
Asian	<11	<11	<11	
Unknown	182 (3.33)	130 (33.68)	52 (32.5)	
Region with SCD clinic				
Yes	292 (53.48)	221 (57.25)	71 (44.38)	**<.0001**
No	254 (46.52)	165 (42.75)	89 (55.63)	
Big City (Houston, Dallas, Fort Worth, Austin, San Antonio)				
Yes	277 (50.73)	213 (55.18)	64 (40.00)	**0.0012**
No	269 (49.27)	173 (44.82)	96 (60.00)	
SCD-related outpatient visits				
0-4	207 (37.91)	138 (35.75)	69 (43.13)	0.087
5-9	112 (20.51)	76 (19.59)	36 (22.50)	
≥10	227 (41.78)	172 (44.56)	55 (34.38)	

- Among 546 patients (mean [SD] age= 34.3 [11.5], 61.5% female), 386 (70.7%) had ≥ 1 telehealth visit during the study period.
- Higher proportions of telehealth users were found among patients living in regions with SCD clinics (p<.0001) and in major Texas metropolitan areas (p=0.0012).

Figure 1. Pattern of monthly number of outpatient visits before and during the COVID-19 pandemic



- Telehealth visits increased substantially after shutdown orders implemented in March 2020, then gradually decreased over time as the pandemic progressed.

Table 2. Multivariable logistic regression analysis of the likelihood of having a telehealth visits among adults with SCD (N=546)

Patient characteristics	Odds Ratio	95% CI	p-value
Age group (ref: 27-34 years old)			
18-26	0.937	(0.571, 1.536)	0.7954
35-44	1.32	(0.762, 2.289)	0.3211
45-54	1.691	(0.905, 3.158)	0.0995
55-64	1.112	(0.491, 2.520)	0.7990
Sex (ref: Male)			
Female	1.173	(0.792-1.739)	0.4258
Number of SCD-related outpatient visits (ref: 0-4)			
5-9	1.256	(0.751-2.100)	0.3854
≥10	2.165	(1.391-3.369)	**0.0006**
Big city (ref: No)			
Yes	2.135	(1.459, 3.124)	**<0.0001**

- Patients who had ≥10 SCD-related outpatient visits 1 year before the pandemic were 2.2 times more likely to use telehealth compared to those who had 0-4 visits (Odds Ratio [OR]: 2.165, 95% CI: 1.391-3.369, p=0.0006), while controlling for covariates.
- Residing in a major metropolitan area was significantly associated with a telehealth adoption, with these patients being 2.1 times more likely to use telehealth services (OR: 2.135, 95% CI: 1.459-3.124, p<0.0001) compared to those living outside major cities.

Table 3. Multivariable logistic regression analysis of the likelihood of having SCD-related ED visits during12 months after the first SCD-related telehealth visit among adults with SCD (N=488)

Patient characteristics	Odds Ratio	95% CI	p-value
SCD-related telehealth visits (ref: non-user)			
Telehealth user	1.315	(0.839, 2.062)	0.2318
Age group (ref: 27-34 years old)			
18-26	1.223	(0.676, 2.214)	0.5053
35-44	0.804	(0.432, 1.495)	0.4900
45-54	0.488	(0.240, 0.991)	**0.0471**
55-64	0.319	(0.102, 0.998)	**0.0495**
Sex (ref: Male)			
Female	1.011	(0.639, 1.599)	0.9624
Number of SCD-related outpatient visits in the pre-pandemic period			
continuous	1.383	(1.260, 1.519)	**<0.0001**
Big city (ref: No)			
Yes	0.769	(0.496, 1.193)	0.2405

- During the first year of the pandemic (03/2020-02/2021), 217 (44.5%) patients had ≥1 **SCD-related** telehealth visit, and among these telehealth users, 151 (69.5%) experienced SCD-related ED visits during the subsequent 12-month follow-up period.
- Baseline healthcare utilization was a strong predictor of subsequent ED visits, with each additional pre-pandemic outpatient visit being associated with 38.3% higher odds of ED utilization (OR: 1.383, 95% CI: 1.260-1.519, p<0.0001).

DISCUSSION

- Telehealth adoption among adult Medicaid beneficiaries with SCD in Texas increased substantially during the COVID-19 pandemic.
- Patients with more severe conditions—indicated by a higher number of SCD-related outpatient visits before the pandemic—were more likely to adopt telehealth services.
- Despite the expansion of telehealth services, disparities persisted, with those residing in metropolitan areas more likely to engage with telehealth, which highlights the need for targeted interventions to improve access for underserved populations.
- While telehealth use itself was not independently associated with subsequent ED utilization, age emerged as a significant factor—older individuals were less likely to use the ED compared to young adults (27-34 years old).
- These findings suggest that addressing underlying disparities in geographic access remains critical for optimizing telehealth's potential benefits among SCD population.

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