Comparative Analysis of Telemedicine Services Before and During Pandemic

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Abstract

- The goal of this study is to identify demographic groups of patients who received telemedicine services, and to analyze how telehealth usage patterns changed in different demographic groups throughout the course of the pandemic.
- There was significant increase in the middle age and older population using telehealth services.
- During the pandemic use of telemedicine services was increased among male patients and racial minority patients.

Introduction

Since the start of the COVID-19 pandemic, the number of telemedicine services increased significantly due to the 'stay at home' order in New York City. The goal of this study is to identify demographic groups of patients who received telemedicine services, and to analyze how different demographic groups' telehealth usage patterns change throughout the course of the pandemic.

Methodology

- Dataset was generated by querying electronic health records at the Mount Sinai Health System
- We identified patients who used telemedicine services
- Time range: 01/ 2019 – 12/ 2020
- Independent Variables:
    - Demographics: Age, gender and race
    - Diagnoses: Mapped billing diagnosis (ICD10 codes) to body systems
    - Comorbidity score: Derived from patients' medical history (ICD10 codes) and age
    - Specialty: Practitioners' area of specialty
- Dependent variable:
    - Prior to the pandemic: 2019/1/2 – 2020/2/28
    - During the pandemic: 2020/3/1 – 2020/12/31
- We performed separate analyses for adults and children
- All analyses were performed in Python (Python version 3.7)
- We performed T-Tests for numerical variables and Pearson Chi-square tests for categorical variables. All statistical tests were two-sided, with $p<0.05$ being considered statistically significant

Results

There were 263,051 telemedicine sessions and 169,178 unique patients in the dataset. There was a drastic increase in telemedicine service starting 03/2020 and reached the peak in 05/2020 (Figure 1). The number of daily telemedicine sessions reached a stable but high level in 07/2020.

According to Table 1, prior to the pandemic, there were significantly more young patients and female patients using telemedicine services. However, these differences only reflected in adult patients, but not in children. In addition, there were significantly more male and African American adult telemedicine users during the pandemic. However, there were significantly more White telemedicine users than African American users. Furthermore, the average adult patients' comorbidity scores also increased significantly (prior: 0.7, post: 1.4) during the pandemic.

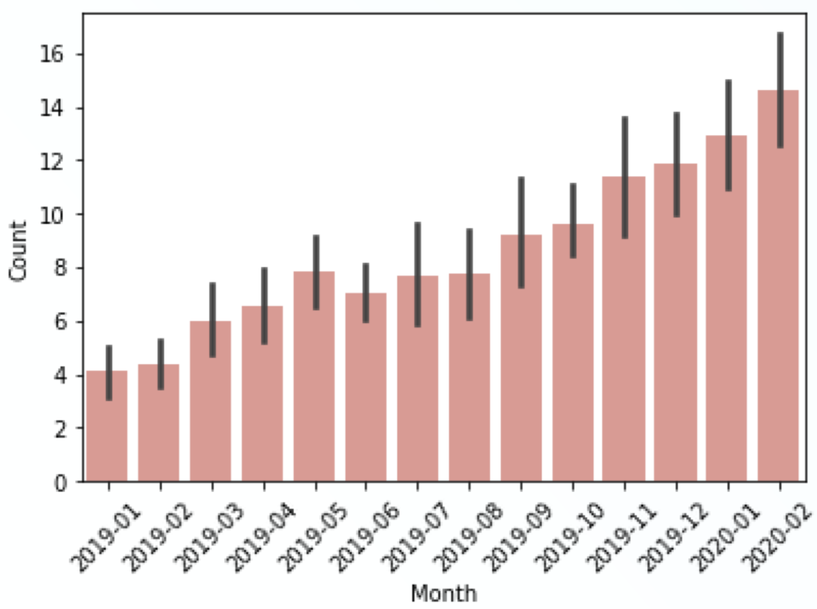

Figure 1. Average number of daily telemedicine session by month
Prior to the Pandemic

Results

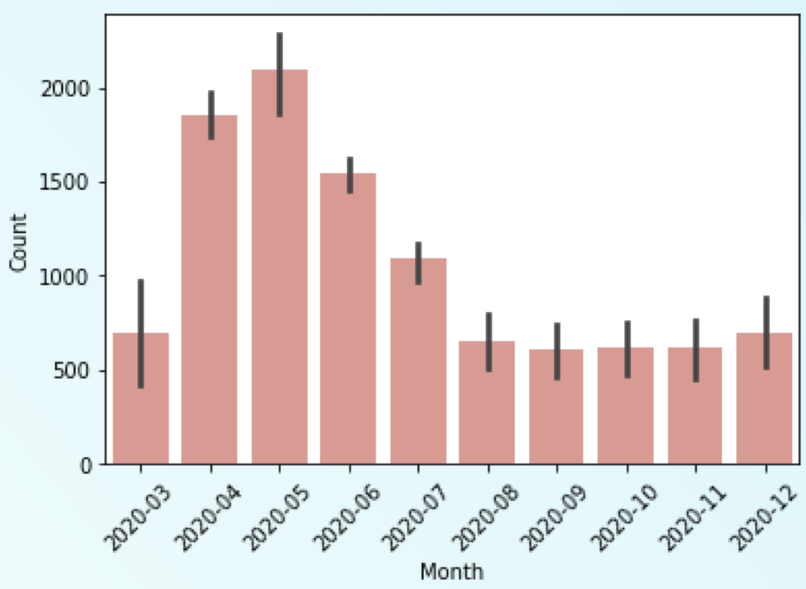

Figure 2. Average number of daily telemedicine session by month
During the Pandemic

	Adult (age >= 18 years old)	
	Prior (n= 1,536)	During (n= 157,503)
Age	41.96±13.87	49.87±17.40
Comorbidity	0.66±1.14	1.42±1.78
Sex		
Female	66.93%	60.70%
Male	33.07%	39.30%
Race		
Black	9.38%	15.00%
White	66.02%	54.78%
	Children (age < 18 years old)	
	Prior (n= 87)	During (n= 10,052)
Age	7.94±5.78	7.74±5.63
Comorbidity	0.09±0.36	0.11±0.35
Sex		
Female	47.13%	45.13%
Male	52.87%	54.87%
Race		
Black	17.24%	13.45%
White	55.17%	48.94%

Table 1. Variables distribution prior and during the pandemic

Conclusion

The COVID-19 pandemic changed the landscape of telemedicine drastically. The average age of patients increased since the pandemic. There were more significant increase in male patients using telemedicine services. Although the proportion of adult African American telemedicine users increased, there were significantly more White patients using the service than African American patients.

In future studies, we plan to study the accessibility of telemedicine to older adults and the disparities of telemedicine usage between different races. Thus, future analyses of telemedicine are warranted.

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