Telehealth Uptake into Primary Care During the COVID-19 Pandemic

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Abstract

Telehealth is designed to provide health services through the use of electronic information and telecommunication technologies. It has quickly become an important tool to ensure continued care in response to the COVID-19 pandemic while mitigating the risk of viral exposure for patients and providers. This study compared the number of monthly telehealth visits in primary care settings at a large academic medical center from 2019 and 2020. To investigate what health conditions are suitable for telehealth visits, we report on the ten ICD-10 codes with the largest number of telehealth visits.

Keywords:

Primary care, telehealth, COVID-19, prioritizing, visit type.

Introduction

The novel coronavirus disease 2019 (COVID-19) was characterized as a pandemic by the World Health Organization in January 2020. [1] In response to the COVID-19 pandemic, the Centers for Disease Control and Prevention (CDC) has encouraged telehealth use in hospitals. [2] As a result, telehealth has become an important virtual tool that provides necessary care to patients while minimizing the viral transmission risk, preserving personal protective equipment (PPE), and reducing the impact of patient surges in healthcare systems. [3]

Primary care is considered the patient's first entry point into the health care system and the continuing focal point for all needed health care services. [4] These services include health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis, and treatment of acute and chronic illnesses in various healthcare settings (e.g., office, inpatient, critical care, long-term care, and home care). Over 50% of patient visits are made to primary care, which serves as the cornerstone of a strong healthcare system. Therefore, it is crucial to investigate how primary care responded to the COVID-19 pandemic and what role telehealth plays in primary care settings.

This study compares the number of primary care visits (at a large academic medical center for two years (2019 and 2020) and ranks ordered health conditions according to their frequency in telehealth visits.

Methods

There are 19 locations (e.g., Clarksville, Franklin, and Brentwood) at Vanderbilt University Medical Center (VUMC) that provide primary care for metropolitan Nashville and surrounding areas. We extract two entire years of data (2019 and 2020)

for all these locations from the Epic electronic health record (EHR), which serves as the central source of documentation for patient care. Specifically, all outpatient visits in primary care are pulled. Each visit contains patient ID, visit date, in-person or telehealth visit, health condition, and service location.

Table 1 compares the number of patients, visits, visits per patient, telehealth visits in 2019 and 2020. The last column (**Change**) is defined as $\frac{b-a}{a}$, where a is the number from 2019 while b is from 2020. It can be seen that both the number of patients and visits expanded from 2019 to 2020, with a 4.8% and 2.7% increase, respectively. In addition, the number of telehealth visits surged by 1551 times in 2020. However, the number of visits per patient decreased slightly (0.4%) from 2019 to 2020.

Table 1. Summary of visits in this study

	2019	**2020**	**Change**
Number of patients	86,182	90,327	4.8%
Number of visits	176,541	181,222	2.7%
Number of telehealth visits	16	24,832	×1551
Number of visits per patient	2.05	2.01	-0.4%

To study how primary care responded to the COVID-19 pandemic, we conduct a monthly comparison regarding the number of routine visits and telehealth visits between 2019 and 2020. Furthermore, to explore what health conditions in primary care are suitable for telehealth, we rank the 10 health conditions with the highest number of telehealth visits.

Result

The number of Primary care visits

Figure 1 shows the monthly numbers of visits in primary care in 2019 and 2020. There are several observations worth noting. First, the VUMC initiated the use of telehealth for primary care in March 2020. The number of telehealth visits in March was 2,010 and it increased by 240% to 6,887 in April 2020, although the total number of visits decreased by one-third when compared to the same time period of 2019. Second, the number of visits in May 2020, grew by 11%, while the proportion of telehealth visits decreased when compared to the previous month.

Third, the number of visits in primary care bounced back to their highest volume after the early stage of the COVID-19 pandemic (March through May). However, the number of

telehealth visits reduced until October 2020 and then made a comeback in the last two months of 2020 when the COVID-19
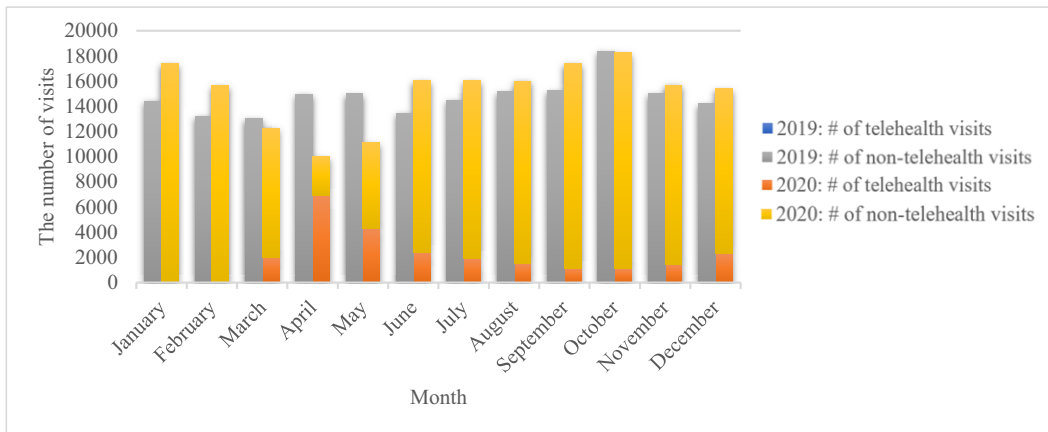
winter surge had been coming.

Figure 1. The number of primary care visits (telehealth vs. non-telehealth) in 2019 and 2020 (Noting: since the number of non-telehealth visits (blue) in 2019 is 16 and the total number of visits in each month is over 12,000, blue bars can barely be seen.)

Top 10 health conditions affiliated with telehealth visits

Figure 2 summarizes the top 10 health conditions (based on ICD-10 codes). We categorize these conditions into several groups: 1) chronic conditions (e.g., essential hypertension and type 2 diabetes mellitus), 2) mental health problems (e.g., depressive disorder and anxiety disorders), 3) metabolic disor-

ders (e.g., hypothyroidism, GERD, and disorders of lipoprotein metabolism), 4) sleep disorders, and 5) pain. The health conditions in these groups may have the highest priorities for telehealth visits.
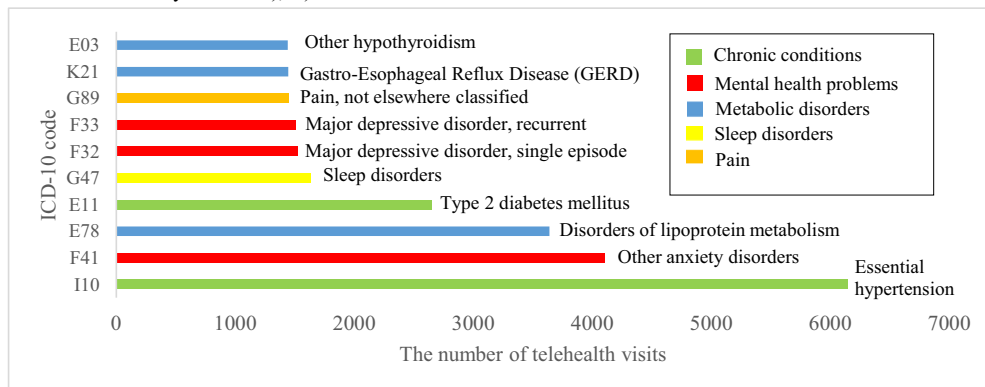

Figure 2. Top 10 ICD-10 codes in telehealth visits

Discussion and Conclusions

This study used two years of data to assess the impact of COVID-19 in primary care settings in terms of visit volume and telehealth utilization. We ranked the health conditions with the largest number of telehealth visits, which provides evidence supporting prioritizing visits that may benefit from specialized telehealth. However, our preliminary analysis of telehealth in primary care has several limitations that need to be addressed as this line of research moves forward.

First, the reasons for the decrease in the number of telehealth visits after the early stage of the pandemic are unclear. One of many potential reasons is reimbursement policy changes for primary care. Although steps have been taken to make providing and receiving care through telehealth easier, these policies are usually temporary, subject to change, and require renewal for future use. Second, this study was conducted in a single academic medical center. While VUMC draws patients

from across a large metropolitan region, our findings may not generalize for other healthcare institutes.

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