Impact of COVID-19 Pandemic on the Use of Telemedicine in Academic Medical Center in New York City

Oral Presentations – COVID In and Among Patients

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#IS21

Disclosure

I and my spouse/partner have no relevant relationships with commercial interests to disclose.

Learning Objectives

After participating in this session the learner should be better able to:

- Identify demographic groups of patients who have used telemedicine service before and after the start of the pandemic

- Understand how different demographic groups' telehealth usage patterns change throughout the course of the pandemic

Introduction

- Telemedicine has been gaining popularity in recent years

- Some studies had successfully incorporated telemedicine in their treatment and management plans [1-2]

- Some cities and regions had issued 'stay at home' orders, since the start of the COVID-19 pandemic

- More and more patients are seeking medical advice through telemedicine service

[1] Sirintrapun SJ, Lopez AM. Telemedicine in Cancer Care. Am Soc Clin Oncol Educ Book. 2018 May; 38:540-545

[2] Williams, A. M., Bhatti, U. F., Alam, H. B., & Nikolian, V. C. The role of telemedicine in postoperative care. mHealth 2018 May; 4, 11.

Introduction

Aim to:

- Develop telemedicine service that's accessible towards all population groups
- Expand these services to more medical disciplines

New York State COVID-19 Timeline

| Date	Event
March 1, 2020	**First COVID-19 case in New York State**
March 14, 2020	First two COVID-19 deaths in NYS
March 16, 2020	NYC public schools close
March 17, 2020	NYC bars and restaurants close, except for delivery
March 22, 2020	**NYS on Pause Program begins, all non-essential workers must stay home**
March 28, 2020	Governor Cuomo halts all nonessential construction sites in NYS
June 8, 2020	**NYC begins Phase 1 reopening**
June 22, 2020	**NYC begins phase 2 of reopening**
June 24, 2020	NY, NJ and CT require travelers to self-quarantine for 14 days if traveling from hot spots
July 6, 2020	U.S. COVID-19 deaths surpass 130,000
July 6, 2020	**NYC begins Phase 3 of reopening, without indoor dining**
July 19, 2020	**NYC begins Phase 4 reopening, excluding malls, museums and indoor dining/bars**

Dataset

- Extracted from electronic medical records (EMR) at Mount Sinai System

- All patients who used telemedicine services
  - Telehealth
  - Video Visit
  - Telephone Visit
  - Non Face to Face
  - Telemedicine Visit

- De-identified Data

- Time: 01/2019 – 07/2020

Dataset

- Variables:
  - Patients' demographics (Age, Sex, Race)
  - Diagnoses with ICD10 codes
  - Medical history with ICD10 codes
  - Care providers' primary specialty
  - Calculated Charlson comorbidity score
  - Mapped primary diagnoses into body systems

- Inclusion Criteria:
 - 18 years and older
  - No missing Variables

Result

- Number of patients: 136,497

- Number of telemedicine sessions: 225,136

- Average number of sessions per month
  - In 2019: 245.17
  - In 2020: 27774.25

- Number of telemedicine sessions by Month
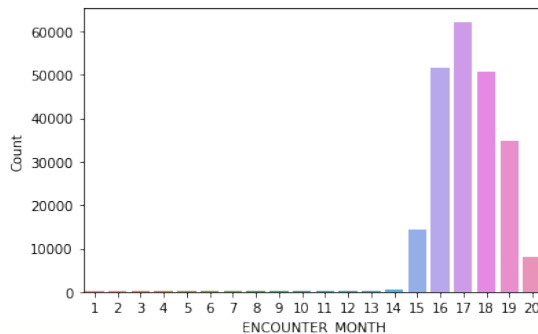
Result

	Prior	During
Count	1727	135,604
Age		
mean	40.70	49.46
std	14.23	17.67
Comorbidities		
mean	0.50	1.24
std	1.04	1.60

Sex		
Female	65.43%	60.65%
Male	34.57%	39.35%
Race		
Asian	6.89%	5.80%
Black	6.66%	11.18%
Others	30.40%	36.58%
White	56.05%	46.43%

Result
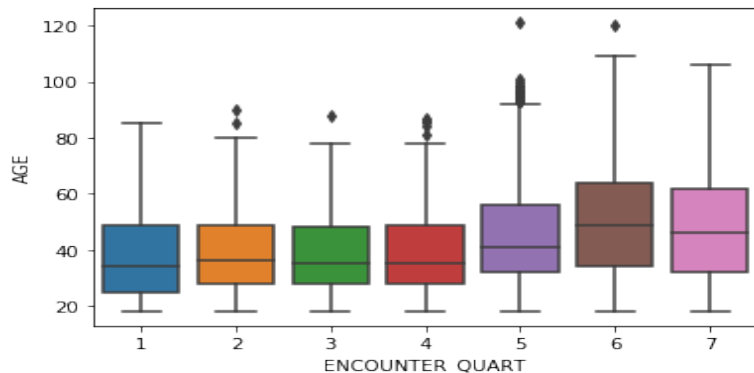
Primary Specialty

Encounter Quarter	1	2	3	4	5	6	7
CARDIOLOGY	0.15%	0.66%	0.37%	0.48%	2.52%	5.32%	2.78%
DERMATOLOGY	0.45%	0.40%	0.00%	0.00%	1.14%	3.78%	3.92%
ENDOCRINOLOGY	0.60%	3.30%	2.70%	4.03%	3.63%	5.13%	5.75%
Emergency Medicine	20.48%	19.42%	15.95%	17.68%	9.05%	2.03%	1.71%
FAMILY MEDICINE	4.48%	7.93%	12.15%	8.74%	9.71%	4.81%	5.29%
GASTROENTEROLOGY	8.07%	1.45%	1.10%	0.58%	3.44%	4.20%	4.61%
HEMATOLOGY/ONCOLOGY	0.60%	0.00%	0.00%	0.00%	0.21%	0.21%	0.11%
INTERNAL MEDICINE	14.65%	18.10%	13.37%	10.37%	24.97%	22.18%	15.26%
INTERNAL MEDICINE & PEDIATRICS, GENERAL	0.30%	0.53%	0.74%	0.19%	1.05%	0.60%	0.40%
MEDICAL GENETICS	0.00%	0.00%	0.00%	1.06%	0.61%	0.33%	0.53%
MEDICAL ONCOLOGY	0.00%	0.00%	0.00%	0.19%	1.44%	1.92%	1.95%
NEUROLOGY	0.00%	1.59%	4.79%	4.80%	2.47%	4.59%	6.52%
NUCLEAR CARDIOLOGY	0.00%	1.59%	3.80%	1.83%	0.24%	0.09%	0.09%
NUTRITION	6.28%	4.62%	0.00%	6.82%	0.72%	0.31%	0.52%
Nurse Practitioner	0.00%	0.00%	0.00%	1.25%	1.58%	1.75%	2.72%
OBSTETRICS & GYNECOLOGY	0.00%	0.00%	0.00%	0.00%	1.81%	2.82%	2.11%
OTHERS	4.78%	5.42%	8.59%	12.68%	19.02%	22.96%	24.61%
OTOLARYNGOLOGY	0.00%	0.53%	1.23%	0.86%	1.81%	1.80%	1.28%
PCA Anesthesia	3.29%	3.30%	4.42%	2.40%	0.45%	0.19%	0.24%
PEDIATRICS GENERAL	0.00%	0.00%	0.25%	0.86%	0.97%	2.28%	2.22%
PHYSICAL MEDICINE AND REHABILITATION	0.15%	0.40%	1.47%	0.96%	0.68%	0.61%	1.11%
PSYCHIATRY	9.87%	5.55%	5.03%	2.11%	3.91%	3.81%	6.36%
PSYCHOLOGY	13.75%	13.87%	10.92%	9.13%	3.01%	2.62%	4.06%
PULMONARY MEDICINE	0.30%	0.13%	0.00%	0.19%	1.60%	2.18%	2.04%
SOCIAL WORKER	6.28%	5.15%	4.79%	7.01%	0.96%	0.19%	0.57%
UNKNOWN PHYSICIAN SPECIALTY	5.53%	6.08%	8.34%	5.76%	0.49%	0.26%	0.56%
UROLOGY, GENERAL	0.00%	0.00%	0.00%	0.00%	2.52%	3.01%	2.67%

Result

Table 1. Mapped body systems based on patients' primary diagnoses.

Body System	Quarter of Encounter						
	1	2	3	4	5	6	7
1. Infectious and parasitic disease	5.99%	4.73%	3.19%	2.28%	11.21%	2.54%	1.65%
2. Neoplasms	0.73%	0.16%	0.73%	0.98%	3.45%	5.45%	5.14%
3. Endocrine, nutritional, and metabolic diseases and immunity disorders	2.36%	5.22%	4.50%	6.62%	5.72%	9.52%	9.80%
4. Diseases of blood and blood-forming organs	0.18%	0.00%	0.15%	0.00%	0.70%	0.98%	0.90%
5. Mental disorders	28.31%	22.35%	24.67%	18.55%	12.91%	11.76%	17.37%
6. Diseases of the nervous system and sense	5.44%	7.50%	9.43%	8.89%	5.66%	8.28%	9.85%
7. Diseases of the circulatory system	1.27%	2.45%	3.19%	1.08%	4.08%	8.62%	5.97%
8. Diseases of the respiratory system	10.16%	6.04%	3.63%	6.29%	15.27%	5.58%	4.21%
9. Diseases of the digestive system	31.40%	27.90%	26.71%	34.60%	7.28%	5.48%	5.88%
10. Diseases of the genitourinary system	0.73%	2.61%	2.76%	2.39%	3.14%	5.01%	4.46%
11. Complications of pregnancy, childbirth, and the puerperium	0.18%	0.16%	0.29%	0.11%	0.81%	0.96%	0.83%
12. Diseases of the skin and subcutaneous tissue	1.09%	2.28%	1.74%	1.74%	1.90%	5.15%	4.98%
13. Diseases of the musculoskeletal system	1.81%	3.43%	3.05%	2.71%	5.09%	8.16%	7.35%
14. Congenital anomalies	0.18%	0.00%	0.00%	0.54%	0.20%	0.32%	0.32%
15. Certain conditions originating in the	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.01%
16. Symptoms, signs, and ill-defined conditions	7.62%	8.48%	10.45%	8.35%	16.62%	14.35%	12.30%
17. Injury and poisoning	0.73%	1.63%	1.45%	1.52%	1.08%	1.76%	1.31%
18. Factors influencing health status and contact with health services	1.63%	4.57%	3.77%	3.15%	4.83%	5.90%	7.47%
Body System None	0.18%	0.49%	0.29%	0.22%	0.05%	0.17%	0.18%

Discussion

- Number of telehealth sessions increased drastically at the start of the pandemic

- Increase in middle age and older population

- Increase in male patients and non-white patients

- Results are periodic

- In future study:
    - Expand the time period, age groups
    - Monitor the trend of telemedicine usage
    - Identify characteristics of frequent and non-frequent telehealth users
    - Study the accessibility of telemedicine to older adults and the disparities of telemedicine usage between different races

Conclusion

- The COVID-19 pandemic changed the landscape of telemedicine drastically

- Demand for the service increased significantly

- Has reached a wider range of patients

- Average age of patients increased

- Significantly more white patients using the telemedicine services than African American patients

Thank you!

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