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Stimulant, Antidepressant, and Opioid Telehealth Prescription Trends Between 2019 and 2022

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Introduction

The COVID-19 pandemic accelerated telehealth expansion, including telehealth prescribing of controlled substances under temporary public health emergency (PHE) policies, which began in March 2020 and are set to run until December 2024.[1] While existing research has explored aspects of this shift, such as rising stimulant prescriptions[2,3] or opioid e-prescribing,[4,5] a comprehensive understanding of national trends across medication classes is needed. Additionally, examining differences across demographic characteristics, such as sex and rurality, could highlight how these factors interact with increased access. Our study aims to characterize in-person and telehealth prescribing patterns for stimulants, antidepressants, and opioids from 2019 to 2022.

Methods

This cross-sectional study utilized the Trilliant Health national all-payer claims database,[6] including quarterly medical and pharmacy claims from January 2019 to December 2022 for all 50 states and the District of Columbia. Data focused on pharmacy fills with an associated medical visit filed through insurance claims. We identified the quarterly number of prescriptions for stimulants, antidepressants, and opioids and categorized them as prescribed via in-person or telehealth visit (eAppendix in Supplement 1). We then examined variations in prescribing patterns by sex and rurality. Per the National Human Research Protections Advisory Committee Guidelines, this study was exempt from review and the requirement for informed consent because data were deidentified. We followed the STROBE reporting guideline.

Results

This analysis included 55.3 million unique individuals with a mean (SD) age of 45.6 (20.3) years, of whom 61.1% were female individuals. From 2019 to 2022, prescriptions filled for stimulants increased by 37.5%, with the proportion prescribed from a telehealth visit growing from 1.4% in 2019 to 38.1% in 2022. In Q2 of 2020, telehealth prescriptions accounted for 51.8% of stimulant prescriptions (**Figure**). Although in-person stimulant prescribing rebounded to 62.0% in 2022, it remained below the pre-PHE average of 97.6%.

Antidepressant prescriptions increased by 20.9% during this period, with telehealth's share growing from 1.5% to 31.4%. Telehealth prescriptions reached their peak in Q2 of 2020, accounting for 46.7% of antidepressant prescription volume.

Opioid prescriptions declined before Q2 of 2020 and continued to decrease by 17.2% from 2019 to 2022. In-person visits accounted for most opioid prescriptions, with telehealth prescriptions reaching 24.1% in Q2 of 2020 and leveling off at 8.4% in 2022, an increase from 0% in 2019.

Telehealth prescribing for all 3 prescription types rose among both female and male individuals; however, female individuals exhibited a higher rate of increase across all 3 drug types. Specifically,

+ Supplemental content

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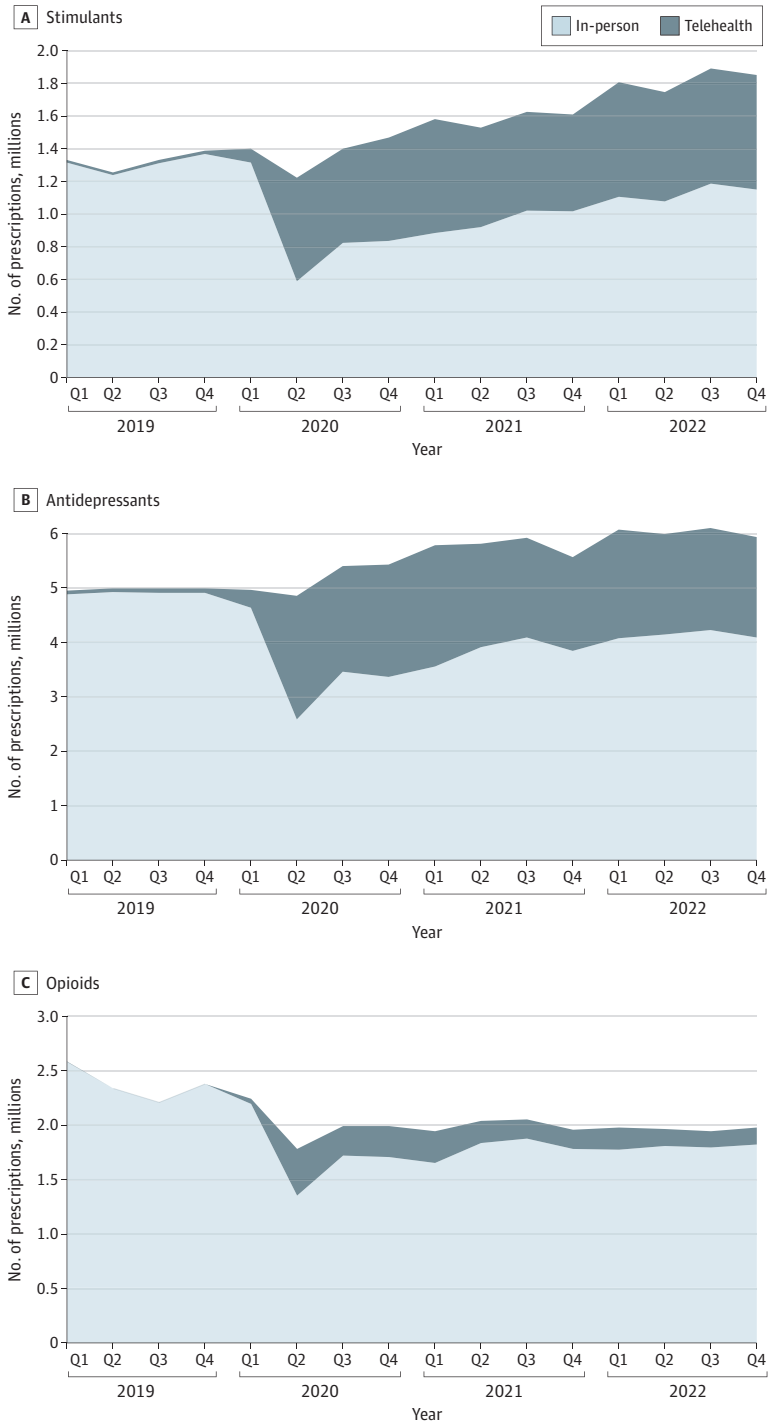
stimulant prescriptions increased by 47.0% among female individuals compared with 28.1% among male individuals (**Table**). Additionally, although rural telehealth prescriptions climbed, their share of the overall telehealth market decreased over time.

Figure. Number of Prescriptions Filled by Visit Type for Stimulants, Antidepressants, and Opioids, 2019 to 2022



Q indicates quarter.

Table. Prescription Volume and Percent Change via Telehealth, by Sex and Rurality, 2019-2022

Characteristic	2019	2020	2021	2022	% Change (2019-2022)
Stimulants (n = 7 279 496)[a]					
Total individuals, No. (row %)	74 723 (1.0)	1 924 966 (26.4)	2 502 941 (34.4)	2 776 866 (38.1)	NA
Sex, No. (column %)					
Female	31 804 (42.6)	962 312 (50.0)	1 324 579 (52.9)	1 527 098 (55.0)	47.0
Male	42 919 (57.4)	962 654 (50.0)	1 178 362 (47.1)	1 249 768 (45.0)	28.1
Rurality, No. (column %)					
Rural	5214 (7.0)	56 206 (2.9)	66 241 (2.6)	68 659 (2.5)	12.2
Nonrural	69 509 (93.0)	1 868 760 (97.1)	2 436 700 (97.4)	2 708 207 (97.5)	38.0
Antidepressants (n = 22 127 451)					
Total individuals, No. (row %)	293 360 (1.3)	6 570 252 (29.7)	7 699 750 (34.8)	7 564 089 (34.2)	NA
Sex, No. (column %)					
Female	189 343 (64.5)	4 522 136 (68.8)	5 305 477 (68.9)	5 220 449 (69.0)	26.6
Male	104 017 (35.5)	2 048 116 (31.2)	2 394 273 (31.1)	2 343 640 (31.0)	21.5
Rurality, No. (column %)					
Rural	24 512 (8.4)	206 393 (3.1)	218 707 (2.8)	202 766 (2.7)	7.3
Nonrural	268 848 (91.6)	6 363 859 (96.9)	7 481 043 (97.2)	7 361 323 (97.3)	26.4
Opioids (n = 2 553 255)					
Total individuals, No. (row %)	4229 (0.2)	1 034 662 (40.5)	853 668 (33.4)	660 696 (25.9)	NA
Sex, No. (column %)					
Female	2635 (62.3)	638 851 (61.7)	534 247 (62.6)	420 051 (63.6)	158.4
Male	1594 (37.7)	395 811 (38.3)	319 421 (37.4)	240 645 (36.4)	150.0
Rurality, No. (column %)					
Rural	229 (5.4)	32 460 (3.1)	25 107 (2.9)	18 411 (2.8)	79.5
Nonrural	4000 (94.6)	1 002 202 (96.9)	828 561 (97.1)	642 285 (97.2)	159.6

Abbreviation: NA, not applicable

[a]Number of pharmacy fills for which an associated telehealth medical visit filed though insurance claims could be identified.

Discussion

From 2019 to 2022, overall prescription volumes for stimulant and antidepressant medications increased, while prescription volume for opioids decreased. Concurrently, the proportion of telehealth prescriptions climbed across medications, increasing by a factor of 188 in opioids and more than 20 for antidepressants. These findings align with existing research highlighting the shift toward telehealth and the rise in stimulant and opioid telehealth prescribing during the pandemic.[2-5] While in-person prescribing remains the most common, increasing telehealth utilization across medications suggests a growing acceptance, need, or preference for remote services. Female individuals demonstrated a growing reliance on telehealth compared with male individuals, especially for stimulants, possibly reflecting sex differences in prescription needs or access preferences. Moreover, while more prescriptions were being written via telehealth, rural areas were not keeping pace with the growth seen in nonrural areas.

This study has limitations, as prescriptions issued by direct-to-consumer companies and those paid for with out-of-pocket spending were not captured, potentially underrepresenting the overall prescription volume and telehealth-based prescribing in the United States. Findings should be interpreted through the lens of a descriptive study using aggregate data.

As telehealth policies continue to evolve post-PHE, balancing access to prescriptions with mitigating potential risks, such as misuse, is crucial. Future research should compare telehealth-based and in-person prescribing appropriateness.

ARTICLE INFORMATION

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SUPPLEMENT 1.

eAppendix. List of Stimulants, Antidepressants, and Opioids Used in the Study

SUPPLEMENT 2.

Data Sharing Statement