Annals of Pharmacy Practice and Pharmacotherapy
ISSN: 3062-4436
2024, Volume 4, Page No: 207-214

Available online at: www.galaxypub.co/page/journals

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National Trends in Primary Care Prescribing of Psychotropic Compared with Selected Physical Health Medications during the COVID-19 Pandemic in England

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Received: 16 August 2024; **Revised:** 05 December 2024; **Accepted:** 05 December 2024

ABSTRACT

The COVID-19 pandemic had a widespread effect on healthcare delivery across the world. Alterations in the dispensing of frequently used medicines can serve as an indicator of emerging diagnoses. This study examines the influence of the pandemic on the dispensing of particular psychotropic drugs. Data on primary care dispensing for various drug categories in England from March 2017 to February 2022 were analysed. To assess effects during times of limited healthcare access for new or ongoing conditions, both ongoing and occasional dispensing were incorporated, adjusting for prior patterns. Pre-pandemic monthly dispensing figures from March 2018 to February 2020 were projected linearly to estimate anticipated yearly increases (EAG). These were then averaged for the pandemic phase (March 2020–February 2022) and contrasted with observed values. Dispensing of medicines for physical conditions generally declined during the pandemic, particularly antibiotics at −12.5% (EAG −1.3%). In contrast, bronchodilator dispensing rose sharply in the initial pandemic phase starting March 2020 by 5% (EAG 0.1%). For mental health drugs, hypnotics and anxiolytics rose slightly above projected trends by 0.2% (EAG −2.3%), antidepressants declined marginally by −0.2% (EAG 5.0%), and antipsychotics showed no overall shift (EAG 2.8%), though with a transient rise early in the pandemic. Across the five most commonly dispensed antidepressants in England (Sertraline, Mirtazapine, Venlafaxine, Fluoxetine, and Citalopram), actual dispensing fell below historical projections during the core pandemic phase. The modest rise in hypnotic and anxiolytic dispensing beyond expectations may relate to heightened anxiety and concern induced by the pandemic. Conversely, the subtle reduction in major antidepressant dispensing, amid challenging conditions, implies that barriers to healthcare access likely hindered prompt evaluations.

Keywords: Psychotropic, Prescribing, Trend, COVID-19, Pandemic

How to Cite This Article: Müller S, Weber LF. National Trends in Primary Care Prescribing of Psychotropic Compared with Selected Physical Health Medications during the COVID-19 Pandemic in England. Ann Pharm Pract Pharmacother. 2024;4:207-14. https://doi.org/10.51847/spUNr3UPkA

Introduction

SARS-CoV-2, the virus responsible for COVID-19, emerged in late 2019 and triggered a worldwide pandemic [1]. Though debates surround its precise origins, researchers like Cheng CC *et al*. in 2007 cautioned that "the large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb" [2]. The World Health Organization estimated around 14.9 million excess fatalities linked to this event [3]. Varied national strategies for containment were adopted [4], but widespread lockdowns profoundly disrupted both physical and mental healthcare services [5, 6], with ongoing global repercussions.

This research sought to evaluate changes in primary care psychotropic dispensing across England due to the COVID-19 pandemic, while also contrasting these with selected drug groups for physical illnesses. Shifts in common medicine dispensing can reflect new patient diagnoses or ongoing care levels in primary settings [7, 8].

Numerous studies have documented pandemic-related rises in depression and other mental conditions [9], yet fewer have investigated specific effects on psychotropic drug dispensing amid drastic shifts in patient-general practitioner interactions in advanced health systems.

Here, national dispensing records for England spanning pre-, peak-, and post-main pandemic phases are analysed. The apparent mental health challenges stemming from the crisis—whether from direct viral effects or secondary factors like bereavement and social isolation [4]—add urgency to this inquiry. That said, Bourmistrova *et al*. noted that while short-term mental deterioration followed SARS-CoV-2 infection, longer-term rates of conditions such as anxiety, depression, PTSD, and insomnia did not markedly exceed general population levels [10].

Materials and Methods

Prescription Cost Analysis (PCA) provides national statistics on community-dispensed prescription volumes and costs in England. Data covering 2017–2022 (six years) were retrieved by British National Formulary (BNF) section. Drugs were categorised per BNF into 15 chapters and 105 sections, with Chapter 4 (central nervous system) encompassing three psychotropic sections: 4.01 (hypnotics and anxiolytics), 4.02 (drugs for psychoses and related disorders), and 4.03 (antidepressants) [11].

Both ongoing and intermittent dispensing patterns were examined. Year-to-year percentage shifts indicated psychotropic performance relative to overall medicines.

Given varying growth/decline rates across drug classes, adjustments accounted for differing baseline trends between psychotropic and physical health medicines, isolating pandemic restrictions' effects on access for new or established conditions.

Selected BNF classes for physical and mental health drugs were chosen, with monthly primary care prescription counts sourced from the English Prescribing Dataset [12]. Twelve-month rolling totals smoothed short-term variability.

Rolling annual totals from March 2018 to February 2020 (pre-pandemic) were linearly projected to derive expected annual growth (EAG) and pandemic-phase projections. Actual monthly averages for March 2020–February 2022 were then compared to these expectations.

For deeper insight into antidepressants, the top six most dispensed agents underwent identical analysis.

No ethics review was required, as only publicly aggregated data were used.

Results and Discussion

Prescription Cost Analysis (PCA) data revealed that, in 2022, Primary Care in England dispensed a total of 1.12 billion prescriptions, with a net ingredient cost of £8.83 billion. Over the five years from 2017, this represented a rise of 5.0% in prescription volume and 7.5 percent in costs. The three psychotropic categories combined accounted for 112 million prescriptions, comprising 10.1% of all dispensed medicines.

Table 1 presents the 25 leading BNF classes ranked by prescription volume, highlighting that antidepressants rose by 26% to rank as the highest-prescribed class in 2022.

Table 1. Top 25 BNF Sections by Number of Prescription Items (2022)

Rank	BNF Section	BNF Chapter	Prescription Items 2022	Prescription Items 2017	% of Total (2022)	Growth 2017–2022
1	4.03** Antidepressant drugs	4 Central Nervous System	85,404,864	67,530,457	8%	26%
2	2.12* Lipid-regulating drugs	2 Cardiovascular System	82,961,403	72,612,421	7%	14%
3	2.05* Hypertension and heart failure	2 Cardiovascular System	74,707,763	71,531,001	7%	4%
4	1.03 Antisecretory drugs and mucosal protectants	1 Gastro-Intestinal System	74,241,142	64,699,342	7%	15%
5	6.01 Drugs used in diabetes	6 Endocrine System	62,740,737	53,009,892	6%	18%
6	4.07 Analgesics	4 Central Nervous System	60,153,130	65,812,796	5%	−9%

7	2.06 Nitrates, calcium-channel blockers and other antianginal drugs	2 Cardiovascular System	54,724,021	49,365,164	5%	11%
8	2.04* Beta-adrenoceptor blocking drugs	2 Cardiovascular System	41,569,315	37,816,699	4%	10%
9	5.01* Antibacterial drugs	5 Infections	35,786,987	37,060,004	3%	−3%
10	6.02 Thyroid and antithyroid drugs	6 Endocrine System	34,210,414	32,170,037	3%	6%
11	9.06 Vitamins	9 Nutrition and Blood	32,501,986	30,701,877	3%	6%
12	2.09 Antiplatelet drugs	2 Cardiovascular System	32,203,313	35,082,373	3%	−8%
13	4.08 Antiepileptic drugs	4 Central Nervous System	31,218,324	26,649,294	3%	17%
14	3.01* Bronchodilators	3 Respiratory System	30,381,115	31,228,824	3%	−3%
15	2.02 Diuretics	2 Cardiovascular System	29,764,341	33,353,502	3%	−11%
16	3.02 Corticosteroids (respiratory)	3 Respiratory System	22,183,293	20,838,731	2%	6%
17	9.01 Anaemias and some other blood disorders	9 Nutrition and Blood	22,064,737	18,787,441	2%	17%
18	10.01 Drugs in rheumatic diseases and gout	10 Musculoskeletal and Joint Diseases	22,047,747	22,805,192	2%	−3%
19	7.04 Drugs for genito-urinary disorders	7 Obstetrics, Gynaecology and Urinary-Tract Disorders	21,753,878	19,131,927	2%	14%
20	2.08 Anticoagulants and protamine	2 Cardiovascular System	20,378,949	16,999,802	2%	20%
21	1.06 Laxatives	1 Gastro-Intestinal System	18,802,212	18,512,759	2%	2%
22	3.04 Antihistamines and allergic emergencies	3 Respiratory System	14,608,098	14,359,226	1%	2%
23	4.01** Hypnotics and anxiolytics	4 Central Nervous System	13,815,713	15,391,217	1%	−10%
24	4.02** Drugs used in psychoses and related disorders	4 Central Nervous System	13,315,874	11,803,257	1%	13%
25	14.04 Vaccines and antisera	14 Immunological and Vaccines	11,855,596	13,315,581	1%	−11%
	Top 25 Subtotal		857,990,088	813,038,359	84.8%	6%
	Total All Sections		1,112,920,677	1,060,112,747	100%	5%
	Total Psychotropic**		112,536,451	94,724,931	10.1%	19%
	Total Comparators*		265,406,583	250,248,949	23.8%	6.1%

**Psychotropic sections, *Comparator groups

Figure 1 illustrates month-by-month rolling patterns for key mental and physical health prescribing categories, where the numerical labels correspond to BNF classes and the 100% reference line denotes the mean monthly prescribing volume during the first 12 months, serving as a proxy for the treated patient population; the shaded colour bands indicate intervals of COVID-19–related social restriction, including times when in-person access to Primary Care services was limited.

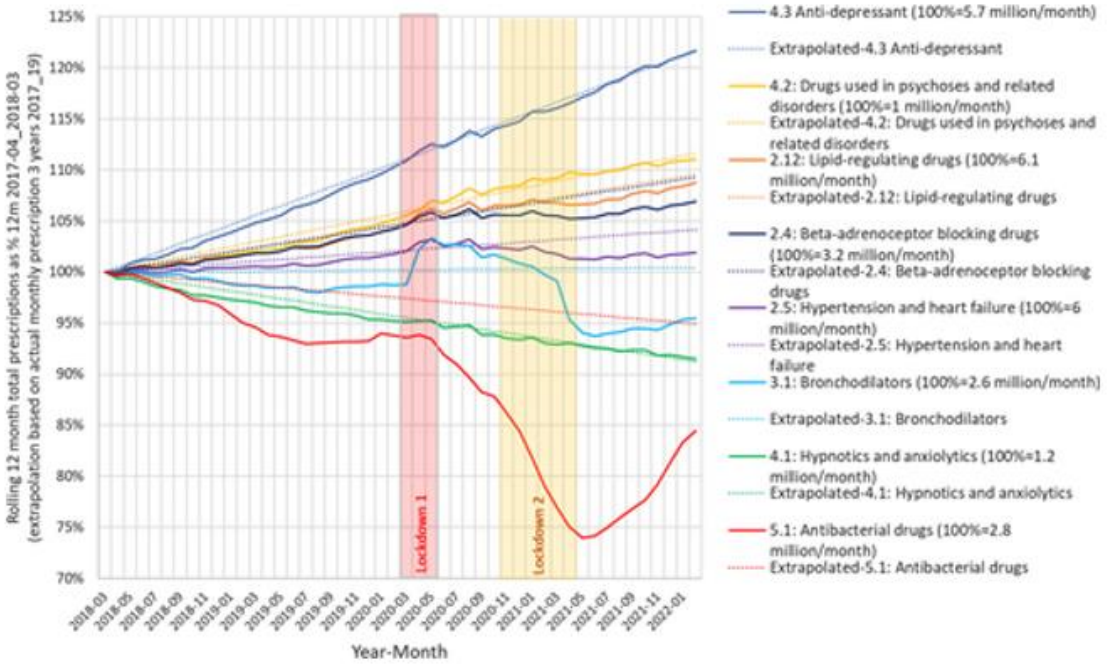

Figure 1. Relative changes in primary care prescriptions for medications related to mental and physical health conditions prior to and throughout the COVID-19 pandemic. It presents a rolling 12-month total of prescriptions by therapeutic class for each month, compared against a linear projection derived from the pre-pandemic period of 2017–2019. All data are normalised to the baseline values from April 2017 to March 2018. The primary periods of national lockdowns in England are highlighted on the timeline.

The prescribing patterns for the selected BNF classes are interpreted under the premise that patients with chronic conditions typically receive one prescription per month:

- Antidepressants began with approximately 5.7 million patients receiving treatment and exhibited a modest decline during the peak pandemic phase.
- Medications for psychoses and related conditions started at around 1 million patients, showed a minor rise during periods of social restrictions, but subsequently reverted to the pre-existing trend.
- Hypnotics and anxiolytics commenced with about 1.2 million patients (on a gradually declining trajectory), experienced a small increase during lockdowns, and have since realigned with the original trend.
- Lipid-regulating agents started with roughly 6.1 million patients, rose slightly during lockdown periods, but later returned to the baseline trajectory.
- Beta-blockers began with approximately 3.2 million patients, increased notably during the initial lockdown, and have shown no further growth thereafter.
- ACE inhibitors and angiotensin receptor blockers (used for hypertension and heart failure) involved around 6 million patients, demonstrated an upward trend across the lockdown phases, followed by a subsequent decrease.
- Bronchodilators started with about 2.6 million patients, surged markedly during the first lockdown, and then declined sharply during the second.
- Antibiotics commenced with approximately 2.8 million patients (on a downward path due to national efforts to curb inappropriate use), dropped substantially throughout the pandemic, but are currently showing signs of recovery.

Table 2 provides a comparison between observed prescribing volumes for mental and physical health medications and the projected volumes based on extrapolation of pre-pandemic trends, indicating what levels might have occurred absent the pandemic. It also quantifies the deviation in actual average prescribing over the principal 24-month pandemic period as a percentage of the anticipated figures.

Table 2. A comparison of the actual average monthly prescriptions during the main pandemic period (2020–2021) with the levels that would have been expected if pre-pandemic trends from 2017–2019 had continued, including the projected annual growth rate (EAG) for each therapeutic class.

Therapeutic class	Expected annual growth (EAG) %	Expected average prescriptions/month	Actual average prescriptions/month	Difference in number of patients on medication	% Difference
4.1: Hypnotics and anxiolytics	−2.3	1,156,294	1,158,535	+2,242	+0.2
4.2: Drugs used in psychoses and related disorders	+2.8	1,061,061	1,061,492	+431	0.0
4.3: Antidepressants	+5.0	6,747,420	6,733,576	−13,844	−0.2
2.12: Lipid-regulating drugs	+2.3	6,608,557	6,575,227	−33,330	−0.5
2.5: Hypertension and heart failure	+1.0	6,204,487	6,098,043	−106,444	−1.7
3.1: Bronchodilators	+0.1	2,597,517	2,540,615	−56,902	−2.2
5.1: Antibacterial drugs	−1.3	2,616,588	2,288,535	−328,053	−12.5

In contrast to the declines seen in physical health prescribing, mental health prescriptions for hypnotics and anxiolytics rose by 0.2 percent above the expected trend in 2020 and 2021. During the same period, antidepressant prescribing showed a minor decrease (−0.2%). Overall, antipsychotic prescribing remained in line with the expected trend.

Prescriptions for physical health medications generally fell below expected levels during the pandemic, with the most significant drop in antibiotics (−12.5%, compared to an expected annual growth of −1.3%). In contrast, bronchodilator prescriptions surged markedly in the early pandemic period starting March 2020, increasing by 5% (versus an expected 0.1%).

The six primary antidepressant medications, which together account for 88% of all antidepressant prescriptions, were analyzed in detail, with the findings presented in **Figure 2**.

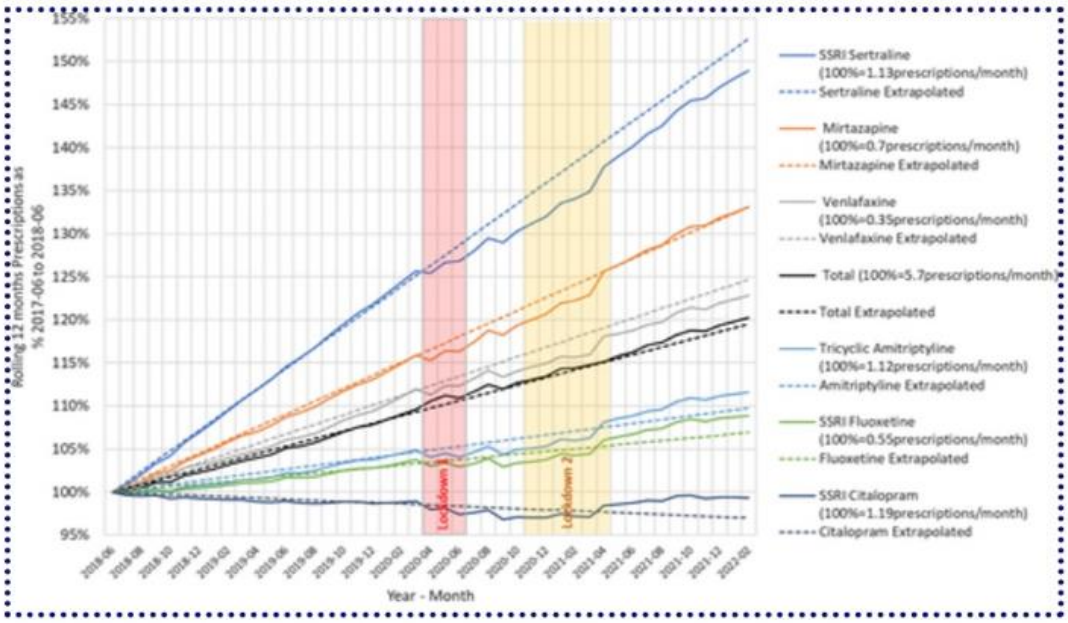

Figure 2. Relative changes in prescribing patterns for the six most commonly used antidepressant medications across the pandemic timeframe are illustrated. All values were normalised to the baseline period

of June 2017–May 2018, and the timing of the principal national lockdowns in England is indicated. The interpretation of drug-specific trends assumes an average of one prescription issued per patient each month.

Before the pandemic, sertraline (an SSRI) showed the most rapid expansion in use, with approximately 1.1 million individuals receiving treatment; however, its rate of increase slowed markedly during lockdown and has not returned to the trajectory predicted from pre-pandemic trends. Mirtazapine, prescribed to around 700,000 patients, also experienced a downturn in growth during restrictions but subsequently rebounded to the level anticipated prior to COVID-19. Venlafaxine, used by roughly 350,000 individuals, demonstrated a similar reduction in growth during lockdown, with no subsequent recovery to expected levels. In contrast, amitriptyline (a tricyclic antidepressant), which was prescribed to approximately 1.1 million patients, showed suppressed growth during lockdown followed by a post-pandemic rise exceeding projected levels. Fluoxetine (SSRI), taken by about 550,000 people, displayed only a modest decline during lockdown and later exceeded expected growth. Citalopram (SSRI), used by approximately 1.2 million individuals, had already been in decline prior to the pandemic, fell slightly during lockdown, and then rebounded to levels higher than forecast.

Overall, for the principal antidepressants prescribed in England—sertraline, mirtazapine, venlafaxine, fluoxetine, and citalopram—prescribing volumes during the core pandemic period were lower than would have been predicted from historical trends. When examining absolute changes over the study interval, sertraline prescriptions increased by 21%, with its proportion of total antidepressant use rising from 22.7% to 24.6% (+8%); mirtazapine increased by 16%, raising its share from 13.0% to 13.6% (+5%); venlafaxine increased by 11%, although its relative share remained unchanged at 6.3% (0%).

The rise in prescribing of anxiolytic and hypnotic medications observed previously **(Table 1 and Figure 1)** is likely indicative of heightened anxiety and distress associated with the COVID-19 pandemic. This interpretation aligns with findings by Jacob *et al*. [13], who documented an increase in newly diagnosed anxiety disorders, and by Estela *et al*. [8], who reported sustained growth in prescriptions for anxiolytics, sedatives, and hypnotics throughout the pandemic. Collectively, these findings likely reflect the widespread psychological burden experienced during this period.

Although the disproportionate impact of the pandemic on mental health relative to physical health outcomes has been well established [9], antidepressant prescribing did not increase beyond expected trends. Indeed, there was a modest reduction in the prescribing of commonly used antidepressants during much of the pandemic **(Figure 2)**. Given the broader social and psychological context, this pattern suggests that restricted access to clinical assessment—particularly during periods of reduced service availability—may have limited timely diagnosis and treatment initiation [4]. Supporting this interpretation, Goyal *et al*. reported that individuals seeking care for symptoms such as breathlessness were often provided with automated advice rather than direct clinical assessment [14].

The additional decline in antibiotic prescribing beyond historical trends is likely attributable to several factors, including reduced healthcare access [15], fewer face-to-face consultations in general practice, decreased episodic prescribing, and the widespread use of face coverings [10], which may have curtailed the transmission of respiratory infections. Meanwhile, the sharp rise in bronchodilator prescriptions at the onset of the pandemic probably reflects population-level anxiety about the risk of severe illness from acute COVID-19, particularly during the first national lockdown in England [11].

An early-pandemic increase in antipsychotic prescribing was also observed, potentially linked to their use in managing behavioural and psychological symptoms among individuals with cognitive impairment residing in care homes [12]. The authors of the present study have previously shown that the proportion of patients with dementia receiving antipsychotics rose substantially during 2020 compared with preceding years, when prescribing rates had been relatively stable. Comparable findings were reported by Yan *et al*. who identified increased antipsychotic use among nursing home residents in the United States, especially among individuals from minority backgrounds [16].

The longer-term rise in prescribing of sertraline and mirtazapine may largely reflect prescriber preference, as neither BNF nor NICE guidance favours these agents over alternatives [13]. Notably, the prescribing pattern observed here diverges from NICE recommendations regarding venlafaxine, which remains a third-line option in both current and previous guidance. Amitriptyline prescribing is most plausibly explained by its frequent use in chronic pain management rather than for depressive disorders [17]. The relatively high use of mirtazapine is unexpected given its sedative properties and association with weight gain; however, general practitioners may

preferentially select it for patients with comorbid psychiatric symptoms and insomnia because of these sedative effects [18].

Future work should focus on patient- and clinician-centred evaluations of how pandemic-related disruptions to general practice access influenced prescribing decisions for antidepressants and anxiolytics. Such analyses may help clarify the mechanisms underlying the trends observed in this study.

Strengths and limitations

This analysis benefits from the use of nationally aggregated prescribing data, enabling the assessment of population-level trends. Nevertheless, the data do not capture variability between individual general practices in service accessibility, nor do they account for demographic differences affecting healthcare access or the incidence of mental health conditions during the pandemic. Additionally, the dataset does not allow differentiation between newly initiated and repeat prescriptions.

Conclusion

Prescribing of anxiolytic and hypnotic medications increased beyond expected trends, consistent with the psychological impact of the COVID-19 pandemic. In contrast, prescribing of the most commonly used antidepressants showed a slight reduction relative to historical expectations, suggesting that restricted access to timely clinical assessment may have played a role. The early-pandemic surge in bronchodilator prescriptions likely reflects heightened concern among individuals with asthma regarding the potential consequences of COVID-19 infection.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

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