

Protocol

Changes in opioid prescribing during the COVID-19 pandemic in England: a cohort study in OpenSAFELY-TPP

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Date: 3 October 2022

Background

The COVID-19 pandemic and related public health measures have led to disruptions to the healthcare system, including prescribing behaviour. In the UK, changes in prescribing have been observed during COVID-19 for different classes of medicines such as antibiotics¹ and respiratory medicines,² but there are no population data on changes to opioid prescribing. Internationally, increases in opioid prescribing have been observed during COVID-19 that are not consistent with best practice, such as increased prescribing in aged care facilities³ and a shift away from non-pharmacological treatment for people with pain,⁴ and in the UK there are reports of increases in opioid use in people on outpatient procedure waiting lists.⁵ More generally, there are concerns about prescribing rates and opioid-related harms in the UK,⁶ especially for non-cancer pain (where opioids are not recommended)⁷ and in areas of greater social deprivation.^{8,9} Thus it is important to understand if and how prescribing behaviour has changed during the COVID-19 pandemic, and how this varies by sociodemographic factors.

We will use OpenSAFELY-TPP data to determine: 1) how opioid prescribing has changed during COVID-19 compared with the prior to the pandemic; 2) whether this varies by socio-demographics (age, sex, IMD, region); and 3) if particular changes were observed in high-risk populations (people in care homes, people treated for non-cancer pain).

Methods

Study design and study population

A retrospective cohort study will be carried out within OpenSAFELY, a data analytics platform in England created to address urgent COVID-19-related questions. All data will be linked, stored and analysed securely within the OpenSAFELY platform:

<https://opensafely.org/>.

From 1 Jan 2018 to 1 Mar 2022, 51 monthly cohorts will be extracted of individuals aged ≥ 18 years registered with a TPP practice on the 1st of every month. We will exclude people with missing data on age, sex, or IMD, since these are likely to indicate poor data quality.

Outcomes

The primary outcome of interest is the number of people prescribed any opioid. Opioids will be defined as all those falling under the British National Formulary (BNF) paragraphs 4.7.2 (Opioid Analgesics), as well as opioid-containing combination drugs from paragraphs 4.7.1 (Non-Opioid Analgesics and Compound Preps). Opioids used to treat opioid use disorder are not included.

In addition to any opioid, we will also identify prescribing of high-dose, long-acting opioids which are meant to be used for long-term, severe pain (rather than acute pain). Among long-acting opioids, high dose opioids will be defined as those with ≥ 120 mg morphine equivalents per day based on the typical total daily dose, a definition used previously.⁹ A full list of long-acting and high-dose opioids are provided in an Appendix.

We will also identify incident users of opioids, defined as people with a new prescription for an opioid without any prior prescription in the previous two years. This will apply overall and for high-dose opioids as well.

For all outcomes we will calculate the rate per 1000 registered patients. For the outcome of new use, the denominator will be people without an opioid prescription in the previous two years.

Covariates

We will stratify opioid prescribing by several key covariates. This includes:

- Sex;
- Age (5-17, 18-39, 40-49, 50-59, 60-69, 70-79, 80-89, 90+ years);
- Index of multiple deprivation (deciles);
- Region (North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East, London, South East, South West);
- Ethnicity.

We will also focus on groups previously identified as being at high risk of non-evidence-based prescribing of opioids. The first group is people who live in care or nursing homes, who will be identified based on a combination of primis codelists and address linkage, as described by Schultze et al.¹⁰

Also, given the concerns about over-prescribing of opioids to people with non-cancer pain, we will perform analyses overall and in people without a diagnosis of cancer in the past year.

Missing data

Missing data will arise in ethnicity. People with missing data on age, sex will be excluded.

Statistical methods

Descriptive statistics

We will describe the characteristics of people, prescribed opioids in the 3 months at the end of the study period. We will also plot time series of monthly opioid prescribing to visualise any changes and trends over time, as well as the presence of seasonal effects.

Estimating change in prescribing during the COVID-19 pandemic

The start of the COVID-19 pandemic period will be considered to be March 2020 to coincide with when the UK first introduced restrictions (26 Mar 2020). The period Mar 2020-Mar 2021 (inclusive) will be considered the “lockdown period” while Apr 2021-Mar 2022 will be considered the “recovery period.”

We will use segmented linear regression to model changes in prescribing over time. We will include changepoints at March 2020, the start of the COVID-19 pandemic, and April 2021, the start of the easing of restrictions. We will also construct pulse functions immediately after the start of the 3 lockdown periods (Mar 2020, Nov 2020, and Jan 2021), to represent any temporary, short-lived changes in prescribing due to anticipation of lockdowns; and pulse functions representing the following months (Apr 2020, Dec 2020 and Feb 2021) to account for any reductions following on from earlier increases (if observed). To account for seasonality, we will include monthly dummy variables. We will also check the model residuals for presence of autocorrelation; if present after adjusting for trend/seasonality, we will use an autoregressive (AR) model as appropriate.

We will construct separate models within each subgroup of interest, to determine if changes varied by characteristics of interest.

References

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