

CLINICAL INVESTIGATION

Association of opioid prescribing practices with chronic pain and benzodiazepine co-prescription: a primary care data linkage study

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Abstract

Background: Opioid prescribing is increasing worldwide with associated increases in misuse and other harms. We studied variations in national opioid prescription rates, indicators of prescribing quality, co-prescribing of benzodiazepines and relationship with pain severity in Scotland.

Methods: Electronic linkages of opioid prescribing in Scotland were determined from: (i) national data from Information Services Division, NHS Scotland (2003–2012); and (ii) individual data from Generation Scotland: Scottish Family Health Study. Descriptive analyses were conducted on national data, multilevel modelling to examine factors associated with variations in prescribing rates. χ^2 tests examined associations between individual pain severity and opioid prescriptions.

Results: The number of strong opioid prescriptions more than doubled from 474 385 in 2003 to 1 036 446 in 2012, and weak opioid prescribing increased from 3 261 547 to 4 852 583. In Scotland, 938 674 individuals were prescribed an opioid in 2012 (18% of the population). Patients in the most deprived areas were 3.5 times more likely to receive a strong opioid than patients in the least deprived. There was significant variation in prescribing rates between geographical areas, with much of this explained by deprivation. Of women aged 25–40 yr prescribed a strong opioid, 40% were also prescribed a benzodiazepine. There was significant association between pain severity and receipt of opioid prescription. Over 50% of people reporting severe pain were not prescribed an opioid analgesic.

Editorial decision: February 19, 2018; **Accepted:** February 19, 2018

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Conclusions: We found opioid prescribing in primary care to be common and increasing in Scotland, particularly for severe pain. Co-prescribing of opioids and benzodiazepines, was common.

Keywords: benzodiazepines; chronic pain; data linkage; general practice; opioids

Editor's key points

- Opioid prescribing has been increasing with an alarming increase in misuse and negative outcomes.
- National data from Scotland were analysed to determine overall opioid prescribing patterns and associations with sociodemographics, pain, and benzodiazepine use.
- From 2003 to 2012, strong opioid prescriptions doubled, with 18% of the population prescribed an opioid in 2012.
- There were significant associations between opioid prescribing with pain and regional and sociodemographic factors, although many patients with severe pain did not receive opioid prescriptions.
- Co-prescription of an opioid with a benzodiazepine was common despite potentially dangerous drug interactions.

There is good evidence for the efficacy of opioids in acute and cancer pain, and variable evidence of short-to medium-term efficacy in chronic non-cancer pain.^{1,2} There are no good long-term studies of the efficacy of opioids for patients with chronic pain.³ Despite this, in many regions, most notably North America, western and central Europe, Australia and New Zealand, there is evidence of increasing prescribing of opioids,^{3–9} although with significant variation between countries. Concerns have been raised about a worldwide 'opioid epidemic' and about the potential and actual risks.^{10–13} The reasons for greatly increased prescribing are complex, and might include the wider range of opioids and routes of administration available, changes in social and cultural factors that encourage prescribing, and an aging population with a higher incidence of pain. Much of the published opioid prescribing data originate in North America, where there have been parallel increases in serious adverse outcomes. These include increasing rates of opioid misuse and dependence and unintentional fatal overdose. In the USA, ~63% of overdose deaths in 2015 involved a prescription opioid.^{10,14–18} It is unclear how this translates to the UK and Europe, where healthcare systems differ.

Reservations have been expressed about the effectiveness of opioid drugs for long-term management of persistent painful conditions, such as low back pain¹⁶ and fibromyalgia,¹⁹ especially in situations in which dose-related harms might outweigh benefits.^{20,21} The most recent European guidelines specifically recommended against their use for fibromyalgia.¹⁹ Systematic reviews find minor adverse events (such as nausea, constipation, and headache) are common,²² although other serious adverse events associated with longer-term use (especially high doses) can occur, including prescription opioid dependence,²² impaired cognitive function,²³ endocrine dysfunction,²⁴ and opioid-induced hyperalgesia.^{25,26}

These serious adverse outcomes, or harms, are also associated with co-prescription of opioids with benzodiazepines, as both are central nervous system and respiratory depressants and can decrease respiratory drive. Concurrent use is likely to put patients at greater risk of potentially fatal overdose and dependence, and clinicians are advised to avoid co-prescribing.^{3,27}

In primary care, prescribing of weak opioids is relatively common, with 8% of the Norwegian population being prescribed codeine in a single year.²⁸ In a 3 yr study of new users of weak opioids, 7% received a prescription at least once per year, although only 0.3% and 0.08% developed prescription patterns indicating 'persistent' and 'problematic' opioid use, respectively.²⁹ These findings suggest that, despite the high and increasing use of weak opioids in the population, the majority of patients are able to stop opioid treatment when their acute pain condition resolves, and challenges the perception of a high risk of misuse.^{29,30} There is also evidence that many patients with severe pain are not prescribed opioid analgesics and in those with persistent opioid use, strong or very strong pain is reported despite this treatment.³⁰ In the context of increasing rates of opioid prescribing, there is therefore conflicting evidence about the safety and appropriateness of prescribing for chronic pain.

We aimed to describe national opioid prescription rates in Scotland, seeking sociodemographic factors associated with variations in prescribing and indicators of quality of prescribing, specifically co-prescribing of benzodiazepines. To explain these at an individual level, we examined the association between receipt of opioid prescriptions and the presence and severity of chronic pain.

Methods

Data sources

National level data

The National Health Service (NHS) in Scotland is a publicly-funded healthcare system that is universally used by the 5.3 million residents. It is administered through 14 geographical NHS Boards. In 2009, the Prescribing Information System was developed as a national individual level dataset of prescriptions issued, dispensed and reimbursed within the community in Scotland.³¹ All prescribing data are stored securely by the Information Services Division (ISD), part of NHS National Services Scotland (<http://www.isdscotland.org/>). Data held on each prescription include the date, strength, formulation and quantity of both generic and proprietary drugs issued. Data on reimbursed prescription items were used in this study. A full history of all prescription items for an individual patient are grouped using a unique NHS person identifier [Community Health Index (CHI) number]. The CHI number can also be linked to other datasets and provides basic demographic information including sex, year of birth and postcode.³¹

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