

organs are restored back to a physiological non-inflammatory homeostasis in order to prevent tissue degradation and pain.

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### Changes in opioid prescribing behaviour in Denmark, Sweden and Norway – 2006–2014



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**Aims:** A country's use of opioids is frequently debated in the public, usually based on rough figures from prescription databases made for consumption registration purposes. However, these databases hold much more detailed information that can be processed to increase knowledge and insight into nationally opioid prescribing-behaviour. This study aims to provide a more detailed picture of opioid prescribing and its changes in Denmark, Sweden and Norway during 2006–2014.

**Methods:** Data on opioid-use (ATC; N02A) were downloaded from each country's publically assessable prescription-databases. Consumption-data were converted from defined daily doses (DDD) to mg oral morphine equivalents (omeqs). Changes in choice of opioid-types, use and number of users were presented using descriptive statistics and compared.

**Results:** *Opioid users:* During the whole period, Norway had the highest, and Denmark the lowest, number of opioid users/1000 inhabitants. In 2006, Norway, Sweden and Denmark had 98, 79, 66 users/1000 inhabitants. In 2014 the numbers were 105, 78, 75 users/1000 inhabitants, respectively. *Opioid use/user:* During the whole period, Norway had the lowest, and Denmark the highest use/user. In 2006, the mean use/user was 1979, 3615, 6025 mg omeq/user in Norway, Sweden and Denmark respectively. In 2014 the corresponding use was 2426, 3473, 6361 mg omeq/user. The preferred choices of opioid-types changed during the period for all three countries. The balance between use of weak or strong opioids showed more prominent changes for Norway and Sweden compared to Denmark.

**Conclusions:** Three nations, closely related in culture and geographically, showed significant differences and changes in opioid prescribing behaviour. This knowledge can easily be overlooked using the traditional way of presenting opioid consumption statistics. More detailed and clinically relevant presentation can increase the knowledge of doctors' opioid prescribing behaviour, that can be related to changes in the society or health care system, like demography, legislation and guidelines from authorities.

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### Opioid usage in Denmark, Norway and Sweden – 2006–2014 and regulatory factors in the society that might influence it



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**Aims:** To relate changes in the number of opioid users in Denmark, Norway and Sweden during 2006–2014 to changes in national regulatory and economic incentive factors.

**Methods:** The material consists of data drawn from the national prescription databases in Denmark, Norway and Sweden. Data on the number of opioid users per 1000 inhabitants were collected for all ages, both sexes and for the period 2006–2014. Concomitant changes in regulatory or economic incentives were identified and related to the drug statistics.

**Results:** For all opioids in the period 2006–2014 Denmark had the lowest number of users but the largest increase in users. Norway had the highest number of users but a lower increase. The number of users in Sweden was very stable showing no change in number of users.

The number of morphine users in Denmark increased from 2009 to 2014. The number of users of oxycodone decreased from 2010 to 2014. The Danish health authorities recommended using morphine as first drug of choice in 2010 and warned about potential drug dependency of oxycodone in 2011.

In Sweden the number of users of oxycodone increased over the period with the largest increase from 2012 to 2013. The number of tramadol users decreased from 2011. Prior to these changes tramadol was declared to be classified as an addictive drug 2011.

**Conclusions:** Changes in the countries' opioid use appeared in the public prescription-databases in a timely manner after introduction of national recommendations not to use oxycodone and prefer morphine as first choice, or classify tramadol as an addictive drug. National drug statistics show the end-result of the doctors' prescribing behavior and the population's use of opioids. Thorough investigation of prescription-data can help to detect and explain the interplay between culture, society and medical reasons for prescribing opioids.

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