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Introduction

A country's use of opioids is often subject to public debate and concern – and often compared with other countries - usually based on rough figures from public assessable prescription-databases. However, a more thorough exploration of the detailed information frequently enclosed in these databases can provide more accurate and valid pictures – that sometimes change previous conclusions.

Method

Data on opioid use (ATC-code; N02A) were downloaded from each country's public assessable prescription-database. Descriptive statistics were used to evaluate and compare changes in the numbers of users, and in use (consumption). Consumption-data were converted from defined daily doses (DDDs) to oral morphine equivalents (omeqs), using published conversion factors (Table 1).

color code (Fig.1)	Opioid-type (N2A)	mg/DDO*	potency in relation to oral morphine**	conversion factor	color code (Fig.1)	Opioid-type (N2A)	mg/DDO*	potency in relation to oral morphine**	conversion factor
	N2A0A0 Tramadol	300	0.2	60		N2A0A0 Fentanyl†	0.6	100	60
	N2A0A0 123.5 tramadol+325 mg paracetamol	150	0.2	50	75	N2A0A1 Buprenorphine	1.2	100	75
	N2A0A0 Codeine comb.	120	0.1	10		N2A0A1 Ketobemidone	50	1	50
	N2A0A0 Dihydrocodeine	150	0.1	15		N2A0A2 Ketorolacomb. comb.	25	1	25
	N2A0C04 Dextropropoxyphene	300	0.15	45		N2A0A0 Hydromorphone	4	7.5	30
	N2A0A0 Morphine comb.	300	0.15	45		N2A0A0 Naloxomorphine	30	1	30
	N2A0A0 Morphine	1	1	1		N2A0A0 Pethidine	400	0.1	40
	N2A0A0 Morphine comb. (only for injection)	10	3	30		N2A0A1 pentaecione	200	0.17	34
	N2A0A0 Oxycodone	75	1.5	112.5		N2A0A0 Tapentadol	400	0.33	132
	N2A0A0 Oxycodone comb.	75	1.5	112.5					

Prescribing behavior – choice of opioids

The preferred choices of opioids changed between 2006 and 2014 in each country (Fig 3). The changes were most prominent in Sweden and Norway.

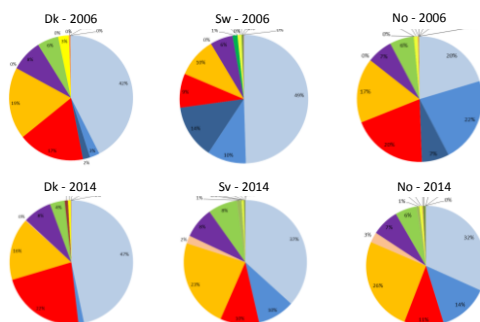


Fig 3: Choices of opioids in 2006 and 2014 in Denmark, Sweden and Norway. The proportions are based on the yearly consumption, measured in mg omeqs

Opioid-use/user/year

Large differences between the countries appeared when the mean use of opioids/user/year was calculated (Fig 4)

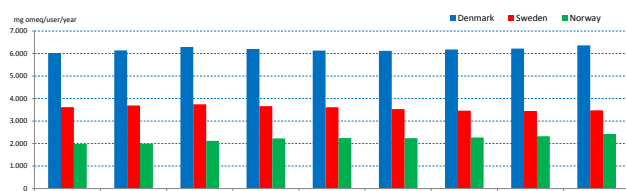


Fig 4: Mean amount of opioid consumed pr user pr year, shown in mg omeq

Study Aim

To provide a more detailed picture of opioid prescribing and its changes during 2006 to 2014 in three Scandinavian countries; Denmark, Sweden and Norway.

Results

Opioid-users/1000 inhabitants

Norway had the highest number of opioid-users in the population, and Denmark the lowest, throughout the period (Fig. 1). The numbers increased slightly in both Norway and Denmark, but appeared stable in Sweden.

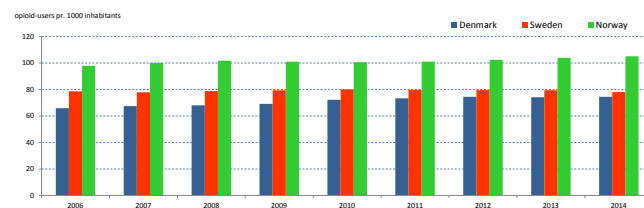


Fig 1: The number of opioid users pr. 1000 inhabitants during 2006 - 2014

Opioid-use/1000 inhabitants

Shown in DDDs, the 3 populations' opioid consumption appeared rather similar (Fig 2, upper graph). A small reduction in Sweden and a stable use in Denmark during 2010-2014 were seen. When the consumption was shown in mg oral morphine equivalents (omeqs), large differences appeared (Fig 2, lower graph), owing to different prescribing behaviour in the 3 countries with regard to choice of opioids.



Fig 2: Opioid-consumption pr 1000 inhabitants, in DDD (upper) and in mg omeq (lower), during 2006 - 2014

Conclusions

Within each country, the figures for opioid use remained remarkably stable – showing no signs of an ongoing ‘opioid-epidemic’ during 2006 to 2014.

Between countries, distinct differences were seen, both with regard to frequency of prescribing (Fig 1), selection of opioid-type (Fig 3), and amount prescribed (Fig 4). This is interpreted as major differences in 'prescribing-culture', even though these three Scandinavian countries in other settings are regarded as 'culturally alike'.

When opioid prescribing behaviour is compared between countries, the opioid consumption should be presented as morphine equivalents (Fig 2).

The authors have no conflicts of interest to declare



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