



Changes Over Time of Prescription and Nonprescription Analgesics for Headache With or Without Other Somatic Pain: Effects of Prescription Regulatory Changes

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Abstract: The aim of this study was to examine the association and changes over time between headaches with or without somatic pain and the self-reported use of pain medication. The study further examined whether the law amendment in 2003 in Norway releasing the sale of nonprescription drugs to shops has changed these relationships. The study is on the basis of repeated self-report cross-sectional studies from 1998 to 2012 in Norway. A total of 27,247 adults were included. As expected, there was a strong association between headache, especially headache with comorbid somatic pain and consumption of prescription versus nonprescription analgesics, although the overall consumption decreased slightly after 2003. We conclude that the strong association between especially headache, whether complicated by somatic pain or not, and the consumption of prescription-free analgesics did not seem to be negatively affected by the prescription regulatory changes. The very high use of nonprescription medication among headache patients suggests the need for continued observation and information regarding the risk of medication-overuse headache.

Perspective: In Norway, headache was strongly associated with use of over-the-counter analgesics, for other somatic pain prescription analgesics were equally common. Between 1998 and 2012 headache and related analgesic consumption was reduced and other somatic pain increased. Making over-the-counter analgesics available outside pharmacies in 2003 did not increase the self-reported intake.

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Key words: Headaches, somatic pain, pain medication, adults, analgesics.

Headaches are common health problems with a global prevalence of 47%.¹³ Headaches have been classified according to the International Classification of Headache Disorders-II.¹¹ The new classification, International Classification of Headache Disorders-III, also exists in a beta version which was not available when the present study was performed.¹² The

most common headaches are primary headaches, especially migraine and tension type headache.^{15,21} These headaches are subdivided, on the basis of frequency, into episodic and chronic forms. A much debated chronic headache entity is medication overuse headache (MOH).⁵ This is a chronic headache (headache frequency > 15 days per month), which has developed in parallel with overuse of headache medication.¹¹ It is well known that removal of the overuse leads to headache improvement in most cases, thus illustrating the partly causative association between medication intake and headache frequency.⁴ MOH prevalence is estimated at approximately 1 to 2% of the general population with higher prevalence among women than among men.¹ Several studies show that medication overuse occurs in

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17 to 62% of those with chronic headache.¹ In Norway, paracetamol and ibuprofen, which are available as prescription-free over-the-counter medications, are the most common medications associated with MOH in the general population.⁷

In 2003, a law amendment was enacted in Norway that released the sale of selected nonprescription drugs, including commonly used analgesics, from pharmacies to general food stores. The purpose of the amendment was to increase availability, providing Norway with one of the most liberalized regulations in the European Union on the sale of prescription-free medication. Criticism was voiced against this decision, because increased availability may increase overuse and intoxication. A recent report reveals that the percentage of medication sold outside pharmacies has increased from 25% in 2004 to 50% in 2012.¹⁸ Analgesics are among the most used prescription-free medications¹⁸ and a study performed in Denmark showed that 27% of the women and 18% of the men had a regular monthly use of pain medication.¹⁰

The aims of the present study were to evaluate the effects of the law amendment of 2003 on consumption of prescription-free analgesics and whether the change has affected the prevalence of headaches with or without somatic pain and their inter-relations in the population. A hypothesis was that the regulatory change may have led to higher consumption of prescription-free analgesics.

Methods

Design, Participants, and Procedures

This study is on the basis of data retrieved from a series of cross-sectional health surveys conducted in Norway under the name Norway Living Conditions Surveys. These surveys are performed approximately every 3 years and data from 1998, 2002, 2005, 2008, and 2012 were used. The data are representative for age, gender, and regional distribution in Norway. The samples were randomly drawn from Statistics Norway (SSB) demographic/population base. Two separate samples (main and auxiliary selection), each with 5,000 people aged 16 years and older were selected for each year. SSB's 2-stage selection scheme was used.²³ The sampling plan divided the whole country into a set of sampling areas; these were again grouped into 109 strata. In the first stage a sample of each stratum was drawn and in the second step the samples were drawn randomly from all 109 strata. The studies included an interview and a postal questionnaire. Everyone who participated in the interview was assigned a postal questionnaire after the interview.

Measures

Pain Assessments

To assess headache as a dependent variable, the headache item from the Hopkins Symptom Checklist (HSCL)-25 was used,^{3,24} asking: "Have you during the past 14 days had any of the following problems?" with

headache as one of the available choices. The reply options were on a scale of 1 to 4 where 1 = not bothered, 2 = little bothered, 3 = quite troubled, and 4 = very troubled. For association with somatic pain, the subjects answered the following question: "Have you during the past 3 months had any of these problems?" with somatic pain as one of the listed problems. Dichotomous responses were given ("no" and "yes"). We also computed a combined variable for headache and somatic pain with 4 response categories. The categories were defined as "none," "headache alone," "headache with somatic pain," and "somatic pain alone." Headache severity was assessed using the headache question from the HSCL-25 battery and the cutoff was defined as "not or little bothered" as opposed to "quite and very troubled."

Use of Analgesics

To assess the use of analgesics we used the question "During the past 4 weeks, how often have you used the following drugs?" Pain medication with and without prescription were possible options. In Norway, analgesics not requiring prescriptions are mainly paracetamol and ibuprofen, whereas stronger nonsteroidal anti-inflammatory drugs, all opioids, including codeine, and triptans require prescriptions. Responses were given on a 4-point scale ("not used over the past four weeks," "weekly but not daily," "at least every week," and "daily").

Demographic Characteristics

Finally, we used demographic variables such as gender, age, and education. Age was treated as a continuous variable. Education was categorized into 3 groups. Low educational level (up to 9 years of education), medium educational level (10–12 years of education), and high educational level (completed a college or university degree).

Ethical Issues

The Living Conditions Surveys was conducted after approval from the Regional Ethics Committee. Participation was voluntary and all questionnaires were anonymous. For this particular study we were permitted to withdraw data from Statistics Norway Living Conditions Surveys 1998–2012 from the Norwegian Social Science Data Service (NSD) before analyses. (The data used here are taken from Living Conditions Surveys, 1998, 2002, 2005, 2008, and 2012 cross-sectional themes: health. SSB conducts the surveys. Data are organized and made available in anonymous form of the NSD. Neither SSB nor NSD are responsible for the analyses of the data sets or the interpretations made here.) The author and supervisor signed separate disclosure agreements. The assistant supervisor had separate access via the National Institute of Public Health.

Statistical Analyses

Logistic regression analyses were performed to investigate associations between the dependent

variable (headache, somatic pain) and the explanatory variables (analgesics with and without prescription).¹⁷ We controlled for gender, age, and education. The data sets were divided into 2 periods; before and after 2003. Multicollinearity was tested using variance inflation factors and tolerance and the values were satisfactory.¹⁷ Pseudo R² indicated good fit for the model. Odds ratio (with 95% confidence interval) were used to estimate outcome. The data sets were weighted to adjust for gradually decreasing response rates for each year, with weights that were separately developed for each year. This means that we allow individuals with characteristics who are under-represented count more, and individuals with characteristics that are over-represented count less. The weighting takes into account information on gender, age, education level, and family size of dropouts, information provided in public registers. These were weighed against the total sample. The module Complex Samples was used to adjust the resulting standard errors and effect sizes to account for the original nonweighted sample size.^{14,16} The Statistical Package for the Social

Sciences (SPSS for Windows, version 20.0; IBM Corp, Armonk, NY) was used for the data analyses.

Results

Population and Prevalence

The total population consisted of 27,247 participants. The response rate decreased gradually from 72.7% in 1998 to 58% in 2012. Table 1 shows the unweighted prevalence of the dependent and the independent variables for each year included in the analysis. The percent of people not bothered by headache (50.9–59%) increased, and percentage without somatic pain decreased (80.7–77%). The proportion reporting being a little bothered by headache decreased systematically over the time period (38.2–32.4%). The most troubled groups decreased less. The percentages that reported neither headache nor somatic pain in the combined variable showed a small decline (74–72.1%). The reported use of analgesics with and without prescription had decreased slightly from 2002 to 2012. Table 2 shows us that the

Table 1. Unweighted Prevalence (%) for Each Year for Demographic, Dependent, and Independent Variables

VARIABLE	DATA COLLECTION YEAR				
	1998	2002	2005	2008	2012
	COLUMN N %	COLUMN N %	COLUMN N %	COLUMN N %	COLUMN N %
Sex					
Male	48.2	49.9	50.1	49.0	49.6
Female	51.8	50.1	49.9	51.0	50.4
Age	45	46	45	47	48
Education					
Low	21.2	17.4	15.7	26.3	22.1
Medium	65.5	56.6	57.3	43.2	43.0
High	13.3	26.0	27.0	30.6	34.9
Headache					
Not bothered	50.9	56.1	54.7	56.6	59.0
Bothered a little	38.2	34.4	35.7	33.7	32.4
Quite troubled	7.9	7.0	7.1	7.3	6.5
Very troubled	3.0	2.5	2.5	2.4	2.1
Somatic pain					
No	80.7	82.2	76.0	74.7	77.0
Yes	19.3	17.8	24.0	25.3	23.0
Headache or pain					
None	74.0	76.8	71.3	68.9	72.1
Headache alone	7.4	6.3	5.6	5.4	4.6
Headache and somatic pain	3.5	3.2	4.0	4.2	3.9
Somatic pain alone	15.1	13.7	19.2	21.5	19.3
Pain medication without prescription					
Not used the past 4 wks		55.3	55.7	55.7	52.9
Less than every wk		31.3	33.6	31.9	35.2
Weekly		10.8	8.6	10.2	9.7
Daily		2.7	2.1	2.2	2.2
Pain medication with prescription					
Not used the past 4 wks		84.9	87.3	87.2	85.9
Less than every wk		5.9	5.5	5.0	6.2
Weekly		4.0	3.2	3.2	3.9
Daily		5.3	4.1	4.5	4.0

NOTE. Mean value is given for age. Weighted N varies from 26,549 to 54,985.

Table 2. Unweighted Prevalence (%) for Each Headache/Pain Category, and Dependent and Independent Variables (N = 30,141)

VARIABLE	NONE	HEADACHE ALONE	HEADACHE AND COMORBID SOMATIC PAIN	SOMATIC PAIN ALONE
	COLUMN N %	COLUMN N %	COLUMN N %	COLUMN N %
Pain medication without prescription				
Not the past 4 wks	61.20	45.90	17.80	21.00
Less than every wk	33.40	35.00	25.70	37.60
Weekly	4.70	14.70	42.90	35.80
Daily	0.70	4.30	13.60	5.60
Pain medication with prescription				
Not the past 4 wks	93.30	73.30	50.40	74.70
Less than every wk	3.80	9.50	13.80	11.30
Weekly	1.30	6.70	16.90	9.80
Daily	1.60	10.50	18.90	4.20

use of such medication, without and with prescription, was particularly high among individuals troubled by headache who also had a comorbidity of other somatic pain.

The Role of Analgesics

There was a significant association between the use of analgesics and troubling headache with high odds ratios (ORs) for weekly and daily use of nonprescription medication (Table 3). The association of headache with prescription medication was clearly weaker (Table 4). Comorbidity with somatic pain increased OR for use of analgesics especially with prescription. In this case, the difference between prescription and nonprescription analgesics was not significant (Tables 3 and 4). In general, the difference in consumption of prescription and nonprescription analgesics was greatest for pure headache where nonprescription medication clearly dominated (Fig 1). For somatic pain alone, nonprescription medication also dominated, but to a lesser extent.

Changes Over Time

Fig 1 shows that the consumption of analgesics with and without prescription decreased slightly after 2003. The consumption of pain medication without prescription was higher with headache alone than with somatic pain alone. Consumption was highest for subjects with headache and comorbid somatic pain.

The prevalence of weekly or daily use of medication without prescription in the entire population varied from 10.7% (in 2005) to 13.5% (in 2002; Fig 2). In Fig 2 we can see that there was a decrease in use between 2002 and 2005 followed by a slight increase in the use of analgesics without prescription in all groups after 2005.

The prevalence of weekly or daily use of pain medication with prescription varied from 7.0% (in 2005) to 9.6% (in 2002) in the entire population. Again, as shown in Fig 2, between 2002 and 2005 there was a decrease in prevalence followed by only a slight increase after 2005.

Examining the changes over time for each pain category (Fig 3), we see that there is a similar decrease in use of pain medication with and without prescription that is especially noticeable in the group with headache and comorbid somatic pain.

Examining the changes in medication use in headache patients over time as related to headache severity, a different pattern emerges (Fig 4). The most severely affected patients ("very much bothered" by their headache) had no significant reduction in analgesics use, whether or not by prescription. The only exception was a reduction in medication without prescription between 2008 and 2012 (ie, well after the change in 2003). The less severely affected groups decreased medication intake (prescription and nonprescription) between 2002 and 2005 and those who were "not bothered" by headache had a very low medication intake which remained stable over time. Because the demographic

Table 3. Logistic Regression Analyses (Using Weighted Data and Complex Samples Analyses) Examining the Association Between Headache, Somatic Pain, or Both, With Use of Pain Medication Without Prescription During the Time Period From 1998 to 2012 and Before Versus After 2003

VARIABLE	HEADACHE ALONE	HEADACHE AND SOMATIC PAIN	SOMATIC PAIN ALONE	BEFORE VERSUS AFTER 2003	R ² NAGELKERKE
Pain medication used					
Less than every wk	5.24 (4.24–6.40)	6.01 (4.81–7.52)	1.89 (1.72–2.21)	1.15 (1.04–1.28)	.132
Weekly	12.31 (10.14–14.94)	20.75 (17.04–25.27)	3.68 (3.18–4.25)	1.32 (1.14–1.52)	.247
Daily	11.38 (7.23–17.90)	24.39 (16.69–35.65)	5.95 (4.12–8.59)	Not significant	.194

NOTE. Not used in the past 4 weeks used as reference category. Values represent odds ratio with 95% confidence interval. N = 28,711. Adjusted for gender, age, and education. The 4-item measure was dichotomized according to: quite and very troubled versus not or bothered a little, as reference. All odds ratios for disease categories were statistically significantly different from the reference at $P < .001$, and for before versus after at $P < .01$ if not otherwise specified.

Table 4. Logistic Regression Analyses (Using Weighted Data and Complex Samples Analyses) Examining the Association Between Headache, Somatic Pain, or Both With Use of Pain Medication With Prescription During the Time Period 1998 to 2012 and Before Versus After 2003

VARIABLE	HEADACHE ALONE	HEADACHE AND SOMATIC PAIN	SOMATIC PAIN ALONE	BEFORE VERSUS AFTER 2003	NAGELKERKE R ²
Pain medication used					
Less than every wk	5.48 (4.40–6.82)	12.08 (9.99–14.61)	4.29 (3.72–8.65)	1.34 (1.17–1.53)	.212
Weekly	7.29 (5.58–9.51)	19.02 (15.21–23.78)	5.91 (5.00–6.99)	1.34 (1.14–1.58)	.248
Daily	4.31 (2.79–6.64)	15.88 (11.90–21.19)	5.90 (4.74–7.34)	1.35 (1.10–1.66)	.229

NOTE. Not used in the past 4 weeks used as reference category. Values represent odds ratio with 95% confidence interval. N = 28,654. Adjusted for gender, age, and education. The 4-item measure was dichotomized according to quite and very troubled versus not or bothered a little, as reference. All odds ratios for disease categories were statistically significantly different from the reference at $P < .001$, and for before versus after at $P < .01$ if not otherwise specified.

characteristics (educational level) changes over the time period, we also performed analyses splitting the 3 educational groups (low, medium, and high). Although there was a higher intake of pain medication in the low educational group compared with the high educational group, the time trend was similar (not shown). Interestingly, this difference between the groups was only applicable with prescription analgesics.

Discussion

This study examined the use of medication for headache and somatic pain over a time period during which nonprescription medications were released for sale outside pharmacies. The strong association between daily consumption of analgesics and severe headache was verified, especially for nonprescription medication. There was no increase in the use of pain medication without prescription in any of the groups after the prescription policy related changes in 2003.

Strengths and Limitations

A major strength of this study is the large sample size because of the use of several surveys from 1998 to 2012

and a high response rate in all of the surveys. The consequences of varying participation were addressed by weighting data sets for each year. The surveys cover a large and diverse demographic area and are representative for the Norwegian population.

The study is limited by the constraints of a cross-sectional study design, which excludes any determination regarding the direction of the relationships. Although we studied changes over time, it is important to remember that these are repeated cross-sectional surveys. The outcome variables “headache” and “other somatic pain” were on the basis of self-report and was therefore not clinically validated and we had no clinical information on the specific headache and pain disorders.

Population and Prevalence

The unweighted prevalence of troublesome headache declined over the observational period. The percentage of those who are very troubled with headache went from 3% in 1998 to 2.1% in 2012. A mean prevalence of 2 to 3% is quite similar to the reported prevalence of chronic daily headache in the general population, which suggests that the “very troubled” group in this group may to a large extent represent the chronic headache group (2.4%).²⁰

Several studies indicate that somatic pain is common in the general population.^{8,22} The prevalence is often greater among women and elderly individuals. Our study found the unweighted prevalence of somatic pain to be 19.3% in 1998 and 23% in 2012. We thus found an increase in perceived somatic pain in the population over the observation period.

A large-scale epidemiological study covering Europe found that the prevalence of pain in the past 6 months was 19%.²¹ Our results are quite similar.

Association Between Use of Analgesics and Pain

The consumption of analgesics was high for those with headache especially with a comorbidity of somatic pain. Our results show a remarkably higher OR for use of pain medication without prescription for headache than for pain medication with prescription. For somatic pain other than headache, the same dominance of prescription-free medication was not seen. We found a

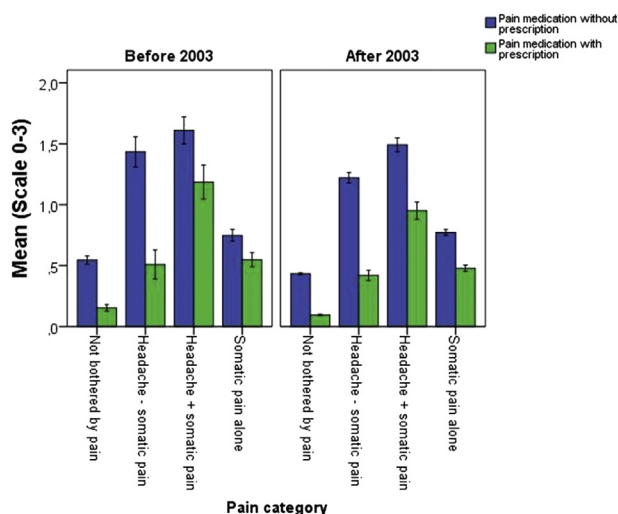


Figure 1. Mean reports of consumption of pain medication with and without prescription among those who report headache with (+) or without (–) somatic pain or somatic pain alone, before and after 2003. Mean percentages with 95% confidence intervals are shown.

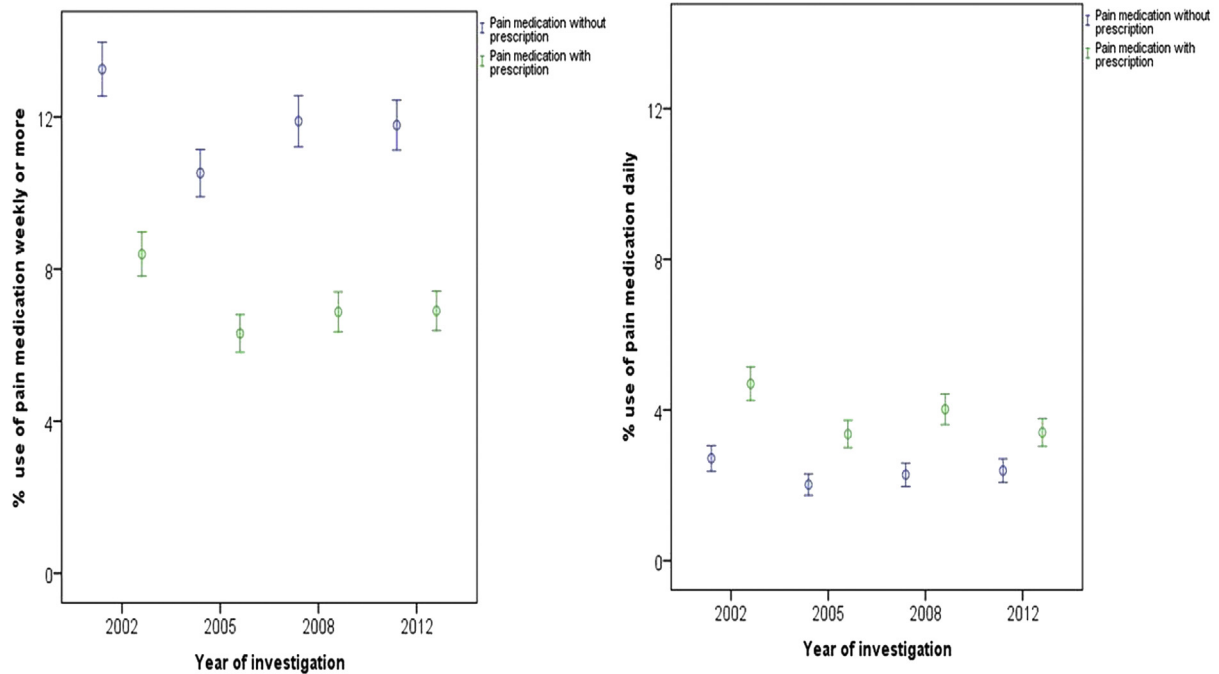


Figure 2. Percent reporting consumption of pain medication with and without prescription in the entire population per investigation year, on the left weekly and on the right daily. Mean percentages with 95% confidence intervals are shown.

comparably low use of prescription analgesics use for somatic pain other than headache. Although it is difficult to directly compare our self-reported medication data with data from prescription registration-based data it is clear that there are different practices regarding pre-

scription of analgesics between the Scandinavian countries.⁹ These practices may be partly related to prescription rules such as the use of specially regulated and monitored prescription forms for strong analgesics in some countries such as Norway. Our data do not allow

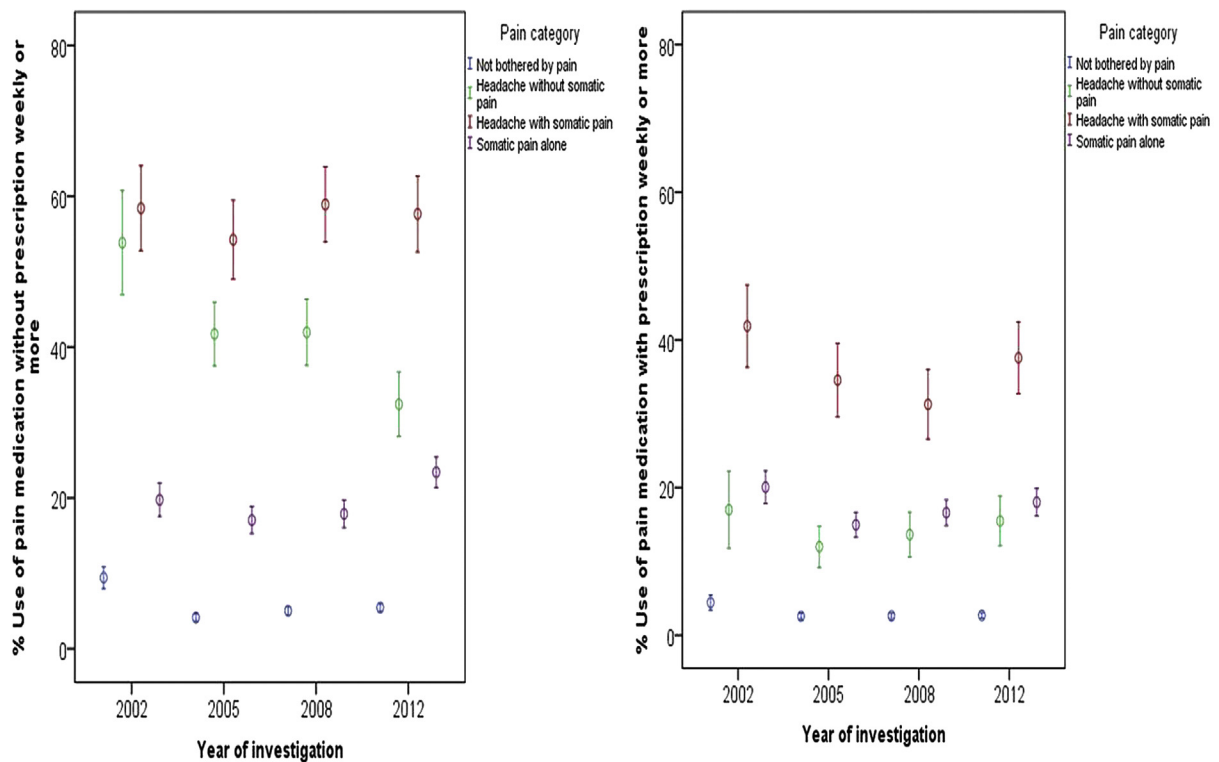


Figure 3. Percent reporting consumption of pain medication both with and without prescription by pain category per investigation year. Mean percentages with 95% confidence intervals are shown.

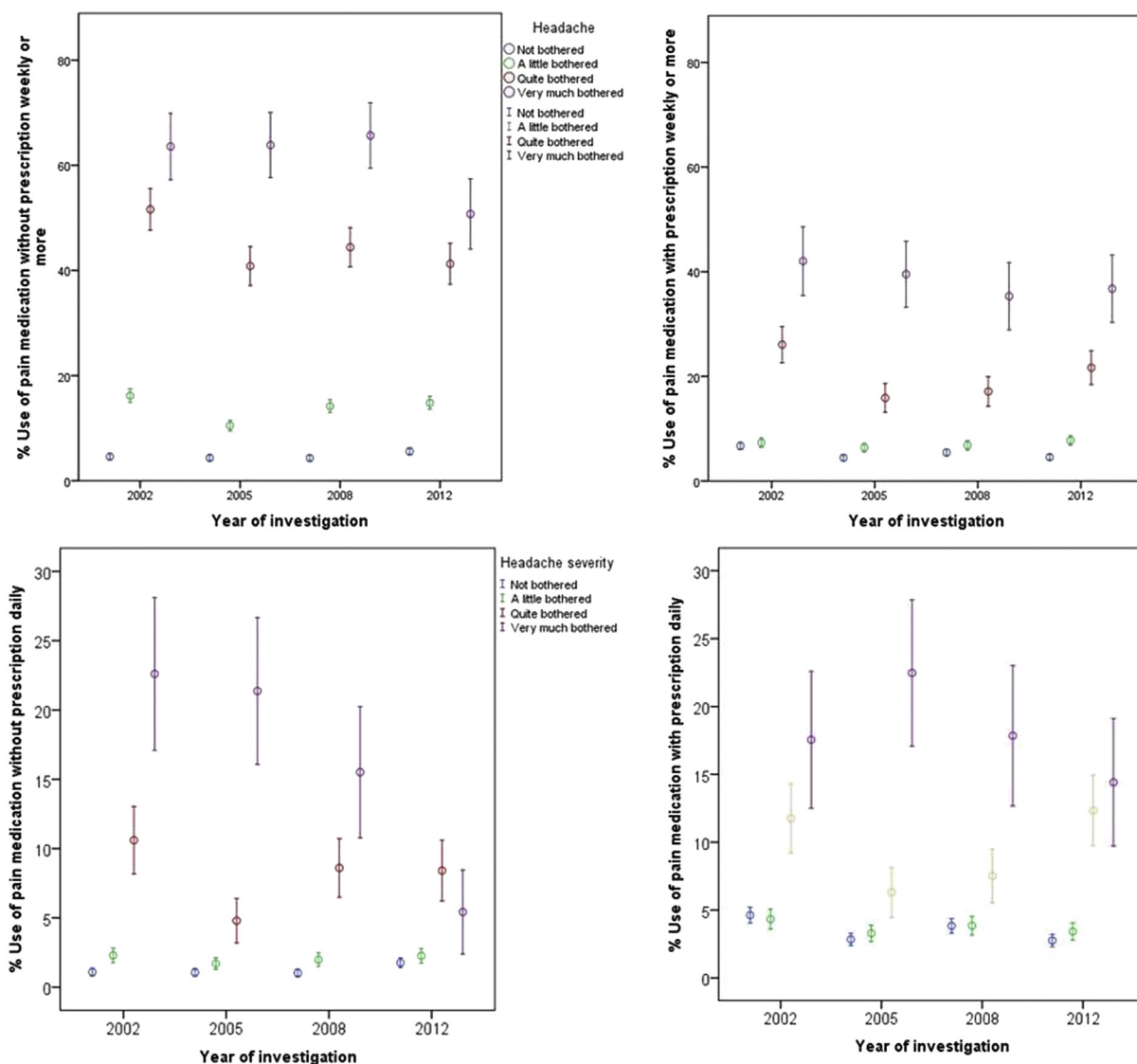


Figure 4. Percent reporting consumption of pain medication with and without prescription according to headache severity per investigation year. Mean percentages with 95% confidence intervals are shown.

for the specific analyses of the use of different specified prescription medications.

The pattern for headache fits with earlier data that indicate that analgesics without prescription are more common in MOH. The study by Grande et al⁶ confirmed that paracetamol and ibuprofen were the most frequently used analgesics among MOH patients in the Norwegian general population. In addition, the study showed that 44% of those who suffered from chronic headache overused medication. Prescription-free drugs are most common in MOH in primary care⁴ and >4% of the population overuse analgesics because of pain conditions.² A recent report confirmed that the most sold drugs outside pharmacies were paracetamol and ibuprofen.¹⁹

Analgesics and Changes Over Time

In this study, there was a general decrease in use of analgesics with and without prescription over the

measured time frame. We do not, however, have information on the amounts of pain medication used, only the self-reported frequency. However, during the time period we also saw a decrease in the prevalence of headaches while there was an increase in prevalence of somatic pain. The consumption of analgesics was highest in people with headache together with somatic pain, but the overall consumption was slightly less frequent after 2003. This simultaneous decrease in the use of pain medication and the prevalence of headaches, may be an indication of an increased awareness of MOH by the medical personnel and the general public, resulting in less tendency for headache to progress in severity as medication use is curtailed. The sharp decline in prescription medication in those with more moderate as opposed to the most severe headache reported, may also underline this. The non-decrease of the medication intake of the most severely afflicted headache group may indicate that these are unable to reduce their medication intake either

because they have a firmly established MOH with medication-related behavior, which is difficult to change, or that they find it impossible to manage a severe headache of other causes, without taking a lot of headache medication.

A recent report shows that the sale of prescription-free analgesics sold outside pharmacies has increased after 2003,¹⁹ which may indicate that people have changed where they buy their medication. The discrepancy compared with the decrease reported here, especially for more severe pain, may indicate that the increase in analgesics is a general phenomenon on the basis of those with less frequent pain, which is not perceived as bothersome, but who naturally represent a larger part of the population. It is necessary to point out that the law amendment opening for sale of pain medication in stores was preceded by a major public debate. It is not inconceivable that this debate was a primary stimulus to an increased information flow concerning the danger associated with overuse of analgesics. This may be especially relevant for MOH. This increased information flow may have resulted in less consumption, despite increased availability. This is strengthened by the similarity in the decreased use seen in use of prescription medication

(not released for sale in stores) as opposed to nonprescription medication. Even though our results show a slight decrease in use of pain medication during the time period, it is difficult to say anything about the total consumption, lacking information about the amounts taken.

Conclusion

The consumption of analgesics decreased from 2002 to 2012, which contradicts our hypothesis that increased availability led to increased consumption. The simultaneous decline in the prevalence of headaches seems to indicate that decreasing the use of pain medication may have reduced the prevalence of MOH. However, there remains a substantially greater use of nonprescription pain medication than prescription medication in those most bothered by headaches.

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References

1. Aseth K, Grande R, Kvaerner K, Gulbrandsen P, Lundqvist C, Russell M: Prevalence of secondary chronic headaches in a population-based sample of 30–44-year-old persons. The Akershus study of chronic headache. *Cephalalgia* 28:705-713, 2008
2. Abrams BM: Medication overuse headaches. *Med Clin North Am* 97:337-352, 2013
3. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L: The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behav Sci* 19:1-15, 1974
4. Diener HC, Limmroth V: Medication-overuse headache: A worldwide problem. *Lancet Neurol* 3:475-483, 2004
5. Evers S, Marziniak M: Clinical features, pathophysiology, and treatment of medication-overuse headache. *Lancet Neurol* 9:391-401, 2010
6. Grande RB, Aseth K, Benth JŠ, Gulbrandsen P, Russell MB, Lundqvist C: The severity of dependence scale detects people with medication overuse: The Akershus study of chronic headache. *J Neurol Neurosurg Psychiatry* 80:784-789, 2009
7. Grande RB, Aseth K, Gulbrandsen P, Lundqvist C, Russell MB: Prevalence of primary chronic headache in a population-based sample of 30-to 44-year-old persons. *Neuroepidemiology* 30:76-83, 2008
8. Gureje O, Von Korff M, Kola L, Demyttenaere K, He Y, Posada-Villa J, Lepine JP, Angermeyer MC, Levinson D, de Girolamo G: The relation between multiple pains and mental disorders: Results from the world mental health surveys. *Pain* 135:82-91, 2008
9. Hamunen K, Paakkari P, Kalso E: Trends in opioid consumption in the Nordic countries 2002–2006. *Eur J Pain* 13:954-962, 2009
10. Hargreave M, Andersen TV, Nielsen A, Munk C, Liaw KL, Kjaer SK: Factors associated with a continuous regular analgesic use—a population-based study of more than 45 000 Danish women and men 18–45 years of age. *Pharmacoepidemiol Drug Saf* 19:65-74, 2010
11. Headache Classification Subcommittee of the International Headache Society: The international classification of headache disorders. *Cephalalgia* 24:9, 2004
12. Headache Classification Committee of the International Headache Society (IHS): The international classification of headache disorders (beta version). *Cephalalgia* 33:629-808, 2013
13. Jensen R, Stovner LJ: Epidemiology and comorbidity of headache. *Lancet Neurol* 7:354-361, 2008
14. Lillegård M: Dropout analysis of the Norwegian living conditions survey of 2008. Notes 2009/62, Statistics Norway [Norwegian]. Available at: http://www.ssb.no/a/publikasjoner/pdf/notat_200962/notat_200962.pdf Accessed June, 2015
15. Marmura MJ, Young WB: Interictal pain in primary headache syndromes. *Curr Pain Headache Rep* 16:170-174, 2012
16. Osborne JW: Best practices in using large, complex samples: The importance of using appropriate weights and design effect compensation. *Pract Assess Res Eval* 16:2, 2011
17. Pallant J: SPSS survival manual: A step by step guide to data analysis using SPSS. London, McGraw-Hill International, 2010
18. Sakshaug S, Strøm H, Berg C, Blix HS, Litlekare I, Granum T: Drug consumption in Norway 2008–2012. Oslo, Nasjonalt folkehelseinstitutt, 2013
19. Sakshaug S, Strøm H, Berg C, Blix HS, Litlekare I, Granum T: Drug consumption in Norway 2009–2013. Oslo, Nasjonalt folkehelseinstitutt, 2014

20. Silberstein SD, Welch K: Painkiller headache. *Neurology* 59:972-974, 2002
21. Stovner LJ, Zwart JA, Hagen K, Terwindt G, Pascual J: Epidemiology of headache in Europe. *Eur J Neurology* 13: 333-345, 2006
22. Tsang A, Von Korff M, Lee S, Alonso J, Karam E, Angermeyer MC, Borges GL, Bromet EJ, de Girolamo G, de Graaf R: Common chronic pain conditions in developed and developing countries: Gender and age differences and comorbidity with depression-anxiety disorders. *J Pain* 9: 883-891, 2008
23. Wilhelmsen M: Samordnet levekårsundersøkelse 2008 – tverrsnittundersøkelsen. Dokumentasjonsrapport Oslo, Statistisk Sentralbyrå, 2009
24. Winokur A, Winokur DF, Rickels K, Cox DS: Symptoms of emotional distress in a family planning service: Stability over a four-week period. *Br J Psychiatry* 144:395-399, 1984