


Scottish Burden of Disease Study, 2015

Medication overuse headache technical overview



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Background

The Scottish Burden of Disease (SBoD) study team have published comprehensive estimates of the burden of disease and injury in Scotland for 2015 [1]. The purpose of this technical overview is to provide background information on the data and methodology used, noting any caveats associated with estimating the burden of medication overuse headache (MOH) in SBoD.

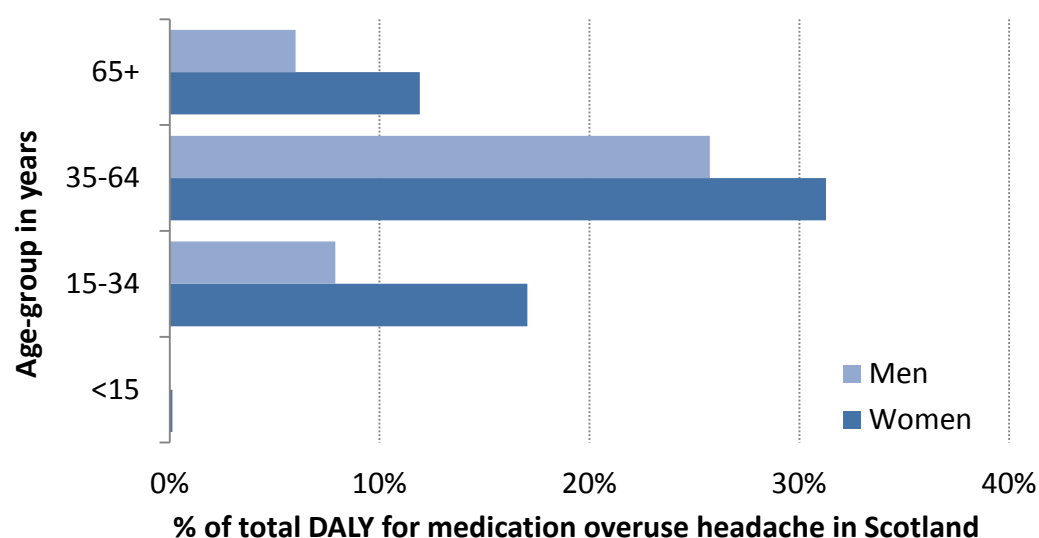
Burden of disease studies aim to estimate the difference between ideal and actual health in a country or region at a specific point in time. Individuals can suffer non-fatal health loss due to suffering disability attributable to a disease, condition or injury, or suffer fatal health loss which is early death due to a disease, condition or injury. To quantify the total burden, non-fatal and fatal health loss are combined to produce a single metric called the Disability-Adjusted Life Year (DALY).

Further information about the SBoD study, including a more thorough explanation of the methodology used, overview reports, detailed results and other specific disease briefings, can be found on the website of the Scottish Public Health Observatory (ScotPHO) [1].

Estimated burden due to medication overuse headache

Medication overuse headache (MOH) was the 22nd most common cause of disease burden in Scotland in 2015, resulting in around 17,800 DALYs.

Figure 1 Percentage of total DALYs by gender and age-group for MOH



Overall, women contributed a higher proportion of the burden (60%) than men (40%). Women aged 35 to 64 years accounted for the largest proportion (31%) of this burden, followed by men aged 35 to 64 years (26%). Women aged 15 to 34 years contributed the third highest proportion (17%) to the MOH burden in Scotland. In those aged 65 years and over, women accounted for 12% of the MOH DALY compared to 6% of men [Figure 1]. Note that the burden we are describing is the absolute burden and has not been adjusted for the age/gender case-mix.

How did we produce these estimates?

DALYs attributed to a disease, condition or injury are calculated by combining estimates from two individual metrics: Years of Life Lost (YLL) due to premature mortality and Years Lived with Disability (YLD).

Years of life lost (YLL) to medication overuse headache

Each single death contributes to the total YLL through calculating the difference between the age at death and the life expectancy at that age. MOH is not regarded in itself as a valid clinical cause of death in burden of disease studies. There is, therefore, no YLL component in the DALY for this condition;

the entire burden estimated comes from non-fatal consequences of health loss due to MOH [2].

Years lived with disability (YLD) due to medication overuse headache

Years lived with disability (YLD) are estimated using

- disease and injury prevalence estimates
- levels of severity
- disability weights

Our sources of information for these three components are as follows:

Estimating the prevalence

To estimate prevalent cases of MOH in Scotland in 2015, data from the Eurolight study was used as this was one of the few studies to report on all 3 headache disorders included in the SBoD disease classification; migraine, tension-type headache and medication overuse headache [3]. In addition, we used published research because we assumed that not all individuals would be in contact with health services for MOH.

The Eurolight study was a collaborative data-collection exercise in ten countries of Europe: Austria, France, Germany, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Spain and UK. Its purpose was to estimate the prevalence and impact of headache disorders. The project took the form of population surveys by structured questionnaire conducted from November 2008 to August 2009. The targeted population in the UK were patients of 12 general practices in 11 towns or cities: Aberdeen, Brighton, Cambridge, Cuddington, Eastbourne, Exeter, Grantham, Guildford, Norwich, Tenterden and Weymouth. The structured questionnaire included diagnostic questions based on the International Classification of Headache Disorders classification (ICHD-II) [4].

Of a total sample of 8,271 individuals aged 18-65 years, the estimated prevalence of medication overuse headache across Europe was 3.3% (4.3% for women and 1.8% for men) [3]. Based on this, we estimated that there were around 112,800 individuals suffering from MOH in Scotland in 2015. This estimate was arrived at by taking the Eurolight survey prevalence of MOH and using it in conjunction with NRS age specific population estimates to make an inference nationally on the number of individuals in Scotland that suffer from MOH. The total prevalent estimate was later redistributed to different age groups and gender based on the proportions we obtained from the Practice Team Information dataset (PTI) [5]. This dataset was collected by ISD Scotland from April 2003 to September 2013. It includes information from a nationally representative 5% sample of Scottish General Practices regarding face-to-face consultations between individuals and a member of the practice team (GPs, nurses and clinical assistants). The presence of a unique patient-identifier on the dataset allows for the grouping of consultations for each individual. The reason for each consultation was coded using Read codes. The number of individuals that had a Read code specific to MOH between 1 April 2003 and 31 September 2013 were used to estimate the age groups and gender proportions. The list of Read codes we used to identify MOH consultations can be found on the ScotPHO website [1].

Severity distribution and disability weights

The levels of severity and disability for MOH in Scotland are based on the specifications of the Global Burden of Disease (GBD) 2015 study [6]. This allowed prevalent cases to be disaggregated by levels of severity and the associated disability at each level of severity. The disability weights have been developed by the global burden of disease study through surveys of the general public and take into account the consequences of each disease and injury [7]. The severity distributions and disability weights for MOH are shown Table 1. GBD 2015 estimated that 24% of people who suffer from MOH (i.e. the total number of prevalent cases) had symptoms at any one time, reflecting

the episodic nature of the condition¹. The remaining 76% of people do not therefore have an associated disability weight and do not count towards the overall DALY total.

These severity distributions and disability weights were applied to the estimated number of people suffering from MOH, resulting in approximately 17,800 YLD due to MOH in Scotland in 2015.

Table 1: MOH severity levels and disability weights

Severity level	Description	% of individuals	Disability weight
Asymptomatic	Experiences no symptoms by virtue of, for instance being on treatment or because of the natural course of the condition.	24	Nil
Symptomatic	Has daily headaches, felt as dull pain and often lasting all day, with poor sleep, nausea and fatigue. The person takes medicine for the headaches, which provides little relief but is needed to avoid having worse symptoms	76	0.217

Data quality

In order to provide a measure of the degree of accuracy² and relevance³ of the estimated disease DALYs to users, a measure of data quality has been developed for the SBoD study. This measure assigns a RAG (Red; Amber; Green) status to each disease or injury indicative of the accuracy and relevance of the estimates. Interpretation of the RAG status can be defined as follows:

¹ GBD 2015 estimated the proportion of time spent over a year spent in an episode of migraine headache was 23 days [5]

² How precise, unbiased or certain the estimate is.

³ Do we measure the thing we want to measure?

Highly accurate and relevant

Estimates have been derived using relevant and robust data sources with only a small degree of adjustments performed to the input data. These estimates can be considered a highly accurate depiction of the burden incurred from the disease, condition or injury.

Moderately accurate and relevant

Estimates have been derived using reasonably relevant and robust data sources with only a moderate degree of adjustments performed to the input data. These estimates can be considered a moderately accurate depiction of the burden incurred from the disease, condition or injury.

Uncertainties over accuracy and relevance

Estimates have been derived using less comprehensive or relevant data sources with a high degree of adjustments performed to the input data. These estimates contain substantial uncertainties and should be used with some caution.

The data quality has been assessed using three main criteria:

- Relevance and accuracy of the data source used to measuring the population of interest
- Likelihood that the implemented disease model captured the overall burden of disease or injury
- The relative contribution of ill-defined deaths to YLL, and YLL to DALY.

These criteria are subjectively assessed and each criterion is scored on a scale of 1 to 5. Further details on these data quality measures are available on the ScotPHO website [1].

Based on above criteria, the estimated of the burden of MOH in Scotland should be regarded as having **uncertainties over accuracy and relevance**



We have used data from a cross sectional survey (Eurolight) conducted across ten countries (including the United Kingdom) in Europe to estimate MOH prevalence, as primary and secondary care electronic health records do not adequately capture the overall prevalence in Scotland.

Although Eurolight was not intended or designed to be used as a primary source of prevalence on headache types [3], it is one of the few headache' studies to report on prevalence of the three major headache types (MOH, migraine, tension type headache) included in the SBoD disease classification, and to adopt the same diagnostic criteria for headache (based on ICDH-II) used in GBD 2015.

Eurolight reported a prevalence of 3.3% for medication overuse headache compared to other country specific studies which have reported prevalence rates of between 1% and 2% for the general population affected by medication overuse headache [8]. A non-responder survey, conducted as part of the Eurolight study, suggested that interest bias, (that is people affected by headache and, particularly, people who perceived themselves to be badly affected, had more interest in participating in the study and were therefore over-represented), had contributed to the higher prevalence rates reported in Eurolight [3]. It should be noted that studies reporting prevalence rates of 1% to 2% only reported on prevalence of MOH and not other headache types. Our estimated prevalence of MOH of 112,800 in Scotland in 2015 is higher than that in GBD 2015 (61,600, approximately 1% of the general population) [9]. Applying this lower prevalence rate in SBoD would result in MOH dropping from the 23rd to 39th in the disease ranking.

What next to improve estimates for MOH?

Future work on the SBoD study will attempt to refine the estimates of MOH prevalence. The development of the Scottish Primary Care Information Resource (SPIRE) may help us to improve our estimates of the burden of disease in Scotland [10]. Further to this, work will be carried out to attempt to

derive estimates of severity levels that are dependent on age and that are specific to the Scottish population.

These improvements are partly dependant on exploring other data sources and reviewing evidence from high quality research that it is relevant to Scotland. Please contact the SBoD project team (nhs.healthscotland-sbod-team@nhs.net) for enquiries and suggestions on how to improve our estimates.

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