

This is a pre-copy-editing, author-produced PDF of an article accepted for publication in Nordisk alkohol- & narkotikatidskrift with the title: Hard drug use in Norway following peer review. The definitive publisher-authenticated version Nordisk alkohol- & narkotikatidskrift 27(1) (2010) 1455-0725 is available online at:
<http://nat.stakes.fi/SV/arkivet/arkivet.htm>

Hard drug use in Norway

Ellen J. Amundsen¹, Anne Line Bretteville-Jensen¹

¹Norwegian Institute for Alcohol and Drug Research, PO Box 565 Sentrum, N-0105 Oslo,
Norway

Corresponding author:

Ellen J. Amundsen
Norwegian Institute for Alcohol and Drug Research
PO Box 565 Sentrum
N-0105 Oslo
Norway
e-mail: eja@sirus.no
Phone: +47 22 34 04 32
Fax: +47 22 34 04 01

Abstract

Background: Hard drug use has a variety of heavy personal, social and economic costs.

Knowing the size of the hard drug use population, the types of drugs consumed and modes of consumption can help policy makers design better policies and facilitate decision making.

Intravenous drug users constitute one subgroup of hard drug users. The aim of this article is to describe 1) how the prevalence of intravenous drug use is estimated in Norway and 2) how available data sources give insight about other types of hard drug use even though we can not estimate the true extent of such use. Some policy consequences are outlined.

Methods/Materials: Overdose deaths and the mortality multiplier method were used to estimate the prevalence of intravenous drug users. Other materials were used to supply the picture of hard drug use in Norway.

Results/Findings: The prevalence of intravenous drug users in Norway increased steadily from the early 1980s, peaked in 2001, decreased until 2003 and then stabilized. Heroin is the substance of choice of most hard drug users in Norway and injection is the preferred means of intake. Amphetamines are also injected or consumed in other ways, while heavy use of cocaine in the treatment population is low. The use of more than one substance is common.

Conclusion: Preventing and reducing heroin injection is the main challenge facing Norwegian policy makers. Other drugs pose a problem as well. Wide availability of substitution treatment has a successful record of helping many former heroin users avoid heroin. The risk of relapsing remains high, however, and of dying after drop out or completion. Current knowledge of hard drug use is fragmented and improved monitoring of this high risk group should be prioritized.

Keywords: Prevalence, intravenous drug user/IDU, substance use, estimation, mortality multiplier method

Introduction

Hard drug use has a variety of heavy personal, social and economic costs. Most hard drug users are in need of help provided by the health and social services, including treatment, harm reduction activities and social reintegration. Although many are in contact with such services, an unknown proportion of hard drug users is “hidden”, making it difficult to estimate overall historical and current prevalence. Knowing the size of the hard drug user population, the types of drugs consumed and the modes of consumption can help improve drug policy planning and execution.

Estimating the size of the hard drug user population calls for a definition. There is no generally accepted and easily implementable definition available. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) has a definition of hard drug use (called “problem drug use”) that include “injecting drug users or long-duration/ regular users of heroin/opioids, cocaine and/or amphetamines”. The term “heroin/opioids” include here both prescribed and un-prescribed methadone and buprenorphine, thus patients in substitution treatment are counted as “problem drug users” in this definition. Currently, EMCDDA is working on ways to adapt the definition to new challenges in hard drug use monitoring: e.g. the increasing number of people seeking treatment for cannabis use (EMCDDA, 2009). Here, we follow the main aspects of the EMCDDAs definition and both include injecting drug users and other long duration/ regular users of illicit drugs. We are more reluctant to include patients in substitution treatment, however, unless they consume illegal psychoactive substances.

Prevalence estimates of hard - or problem - drug use, locally and nationally, can be based on multiplier methods, capture-recapture methods or multivariate indicator methods (Hay, McKeganey, Wiessing, & Hartnoll, 1999; Kraus, et al., 2004). The choice of methods will, at

first hand, depend on the kind and quality of the available data. In addition, the nature and extent of hard drug use will influence the choice.

In Norway, the number of injecting drug users has been estimated using a multiplier method. This article describes this estimation approach and presents trends over time. Although we cannot estimate the prevalence of non-injecting hard drug users, we will employ information from available data sets to establish insights on all hard drug users with respect to types of drugs used and routes of administration.

Prevalence of injecting drug users

The mortality multiplier method (MMM) has been used to estimate the prevalence of intravenous drug users (IDU) in Norway for many years, mainly because no other data was available. Objections to the method tend in many countries to derive from a lack of confidence in the data used. In the Norwegian case, however, information regarding the quality of the data and evaluation of the results are generally good, so objections on those grounds are less relevant (Bretteville-Jensen & Amundsen, 2006). The MMM is used in Norway for estimating the number of people whose drug use is heavy/frequent/addictive and have injected at least once during a calendar year. Persons in this group usually inject more than once, but for definitional reasons one has set the lower threshold to one episode per annum involving a risk of overdose death.

The MMM formula for estimating the prevalence for a year j , $P(j)$, is

$$(1) P(j) = \frac{D(j)}{r(j)}$$

where $D(j)$ is the number of overdose deaths in year j and $r(j)$ is the risk of overdose death in year j (Kraus, et al., 2004). In our case, $D(j)$ was implemented as a three-year moving average for the years $(j-1)$, j and $(j+1)$. $D(j)$ was set to the mean of the values from the data on drug

overdose deaths compiled by the Norwegian Police and Statistics Norway (Bretteville-Jensen & Amundsen, 2006). The police figures are of a preliminary nature, based on information culled from forensic reports and doctors' death certificates at the time of publication.

Statistics Norway maintains the Registry of Causes of Death. The information therein is based on death certificates and published only 1½ years after the year of death. Statistics Norway uses the ICD coding system, and the EMCDDA standard protocol applying the 2002 WHO reclassification of some drug-related deaths. Figure 1 shows all overdose deaths (of persons 60 years of age or less) recorded by the police, together with the number of non-intentional overdoses reported by Statistics Norway for the same age-group.

Figures for $r(j)$ are the product of the total risk of death and the proportion who died of an overdose. The values for $r(j)$ are based on a review of studies of death rates among drug users of relevance to the Norwegian situation, including the effect on death rates of the establishment of substitution treatment in 1997 (Anne Line Bretteville-Jensen & Ødegård, 1999; Clausen, Anchersen, & Waal, 2008; Darke, Degenhardt, & Mattick, 2007; Ødegård, Amundsen, & Kielland, 2007). In the estimates presented here, total death rates per 1,000 person-years among IDUs were set to 35 in 1996–99, 34 in 2000, 33 in 2001, 32 in 2002, 31 in 2003 and 30 in 2004–07. The drop in death rates came about as substitution treatment became more widely available, reducing the number of the most marginalized heroin injectors, and a relative increase in amphetamine injecting. For the proportion of overdose deaths, also needed in $r(j)$, the figure 0.7 was used for all years shown, a figure based on the same sources as above.

Figure 1 about here

Up to 1996, the national prevalence of IDU, also estimated by the MMM, rose from approximately 2,500 (1500–3500) in the early 1980s to 6,900 (6,000–8,000) in 1996 (Skog, 1990). In Figure 1 we see a further increase from 1996, peaking in 2001 at 13,750

(12,000–16,200), before falling back again and stabilizing at 10,000 (8,600–12,000) by 2003. The sensitivity intervals (dotted lines) are based on the assumption that the annual death rate was 5 per 1,000 person-years higher and lower than the death rates used in the estimation.

For the 2002–06 period, we tried different ways of estimating the number of injecting drug users in Norway. These calculations yielded higher figures than the MMM estimations (Bretteville-Jensen & Amundsen, 2006). To adjust to these results the upper limit was increased with five percent to reach an “official” interval of 8,600–12,600 for 2007, which we assume include the true number of injecting drug users in Norway.

The estimated pattern of prevalence in the Norwegian setting, with an increase in use followed by a decrease, is replicated by other indicators of heroin use in Norway, such as seizures of heroin by the police and customs officials, drug-related crimes, and roadside tests revealing the use of morphine among drivers (Bretteville-Jensen & Amundsen, 2006). All of these indicators have theoretical flaws with regard to describing the true situation, but since they all show the same empirical pattern over time they support the trends of the estimation.

Information on hard drug use from treatment data and other sources

Treatment data is the most commonly used data for estimating hard drug use – or problem drug use in EMCDDA terminology – in Europe. Norway has long had a national documentation system where records of persons admitted to treatment and care facilities have been stored, but it has shortcomings and is unsatisfactory as a basis for estimating hard drug use prevalence (Iversen, Lauritzen, Skretting, & Skutle, 2008). The reporting from each facility is in an aggregated form, which increases the risk of duplication. Lack of coverage and item non-response is a problem. Still, it is of interest to examine what we can learn from

Norwegian treatment data regarding drug types and route of administration. In addition we take advantage of data from other sources than treatment data to depict the situation.

The national documentation system for drug treatment and care

Despite shortcomings, the annual reports from the national documentation system do provide a certain amount of useful information: Heroin was reported as the main drug used before admittance to treatment or care in approximately 40 percent of the 9,300 cases registered in 2007 for which illegal/addictive drugs were the main drug (Iversen et al., 2008). About 20 percent reported stimulants, 16 percent cannabis and 24 percent prescribed drugs as their “main drug”. Methadone and Buprenorphine are included in this category.

For a subgroup of persons in the national documentation system, we have individual level information. This sample consists of persons admitted to shelters and housing with rehabilitation and care in Oslo. Duplication was not a problem in these data, but item non-response was present. In the group of persons reporting illegal or non-prescribed drugs before admittance in 2005/2006 (n=367), 60 percent reported heroin as their main drug, 8 percent amphetamines, 13 percent other stimulants, while none reported cocaine as the main drug. Cannabis was the main drug of 5 percent. The level of injecting was high; almost 90 percent among heroin users, 92 percent among amphetamines and 75 percent among users of other stimulants. Smoking heroin and oral intake of amphetamines were also reported, however.

Substitution treatment

Substitution treatment became generally available for Norwegian heroin users in 1998. By the end of 2007, about 4,500 patients were undergoing substitution treatment in Norway, an almost linear increase from the first group of 200 in 1998 (Waal, Clausen, Håseth, & Lillevold, 2008). These statistics are based on reports from the treatment centers. The substitution prevent consumption of heroin for the majority of patients though 14 percent

report relapsing to illegal opioid use during a four week period while in treatment. Stimulant use was reported by 16 percent during a four week period. In 2007 more than 90 percent of the patients remained in treatment for the whole year. Many of those who opt out, however, don't manage to steer clear of opioids (Waal, et al., 2008) and face a substantially higher risk of mortality (Clausen, et al., 2008).

Treatment study

In a study of 481 patients admitted to different types of treatment in the period January 1998 through July 2000, lifetime use of various drugs was registered in addition to the main problem drug and use of drugs in the 30 day period ahead of enrollment (Melberg, Ravndal, & Lauritzen, 2003). Drug treatment types included medication free inpatient treatment, therapeutic communities, substitution treatment, ambulatory psychiatric treatment for young people with a drug problem and inpatient treatment for young people age 15–20. The sample is not representative of all drug users entering treatment or care in that period, but does provide useful information about hard drug use in Norway. More than 70 percent had ever used heroin, 75 percent amphetamines, 92 percent cannabis and 17 percent had ever used cocaine regularly for more than a year. Poly drug use was common. More than 80 percent had ever injected a drug at least once. As for the main problem drug, for 37 percent it was heroin, 10 percent amphetamines and 1 percent cocaine. Cannabis was the main drug of 8 percent and alcohol and medication of 6 percent. Thirty-four percent used more than one problem drug, and 70 percent of this latter group had used heroin during the last 30 days. Of the whole sample, 62 percent had used heroin in the preceding 30 days, 34 percent amphetamines and 5 percent cocaine. Almost 60 percent had used cannabis in the previous 30 days and 22 percent on more than 20 days of that period. Drug use varied with type of treatment. The data were collected almost 10 years ago, but the study participants have been re-interviewed several times since then. At seven years follow-up, drug use was substantially reduced and cocaine

use remained low among current hard drug users (Personal communication, Edle Ravndal, SERAF, and Grethe Lauritzen, SIRUS).

Study of injecting drug users

An ongoing study of users of a needle exchange program in Oslo can supplement our knowledge of hard drug use. Since the study started in 1993 more than 4,500 interviews have taken place. Over the years, both the users of the program and their drug use have changed. One important feature is the increase in heroin use from an average of 14.3 grams per month in 1994–96 to 22.0 grams per month in 2006–08. The price of heroin price fell by more than 70 per cent in the same time span. The ratio between heroin and amphetamine as the main drug remained at 90:10 for a long time, but swung after 2000 to about 85:15 (Bretteville-Jensen, 2005). The increase in substitution treatment is probably one of the main explanations for this change. Only a very small number have taken cocaine on a regular basis during the study period. An increased proportion of the drug injectors, however, have over the years reported heroin smoking experience, see Bretteville-Jensen and Skretting this volume. The data also confirm extensive polydrug use among the interviewees.

Inmates in prison

Illicit drug users are frequently imprisoned. In a study including all Norwegian prisons in 2002, 70 percent of the responding inmates reported some kind of lifetime drug use (Ødegård, 2008). A not much lower figure, 61 percent, reported that they had used drugs during the 6 months period before imprisonment. The study had a low response rate, 41 percent, and there was additional item non-response; the number of persons interviewed was 1093.

Amphetamine use was reported by 42 percent, cocaine use by 27 percent and opiate/opioid use by 24 percent. Daily use was most common among opiate/opioid users (more than 50 percent of such users) and least common among cocaine users (12 percent of such users).

Injecting practices was reported by 25 percent of all inmates, highest for heroin (almost 80

percent of the heroin users). Finally, use of more than one substance was common. This is the dataset with the highest figure of cocaine use, indicating that there is a group with frequent cocaine use also in Norway.

Final remarks

Persons in treatment report extensive injecting practices and heroin is the hard drug of choice for many in Norway. Amphetamines are injected to a degree, but cocaine hardly ever. The actual number of injecting drug users was probably somewhere in the region of 8,600 to 12,600 in 2007 in Norway, a prevalence level which has been stable since 2003. Hard drug users, as described in the data sets presented here, smoke heroin and take amphetamines orally as well, while cocaine remains a less popular drug within the population seeking admittance to drug treatment or care. Cocaine use was found in the prison population, however, so long duration and/or regular use of cocaine are present. Some report cannabis or other drugs as their main problem drug, which would support calls by the EMCDDA for a wider definition of problem drug use regarding type of drugs included.

Injecting heroin has severe consequences; from 1996 to 2007 almost 3,100 died of non-intentional overdose deaths in Norway according Statistics Norway. Norway has had a high level of drug-related deaths in the population compared with other countries in Europe. In 2007, only Estonia and Luxemburg had higher rates of mortality than Norway, which was at approximately the same level as Denmark (EMCDDA Statistical Bulletin 2009).

Preventing and reducing heroin injection is the main challenge facing Norwegian policy makers. Other drugs pose a problem as well. Wide availability of substitution treatment has a successful record of helping many former heroin users avoid heroin. The risk of relapsing remains high, however, and of dying after drop out or completion. Current knowledge of hard drug use is fragmented and improved monitoring of this high risk group should be prioritized.

References

- Bretteville-Jensen, A. L. (2005). *Økonomiske aspekter ved sprøytemisbrukernes forbruk av rusmidler. En analyse av intervjuer foretatt 1993-2004. [In English: Economic aspects of substance consumption among IDU. An analysis of data from 1993 to 2004]* (No. 4/2005). Oslo: SIRUS/Norwegian Institute for Alcohol and Drug Research
- Bretteville-Jensen, A. L., & Amundsen, E. J. (2006). *Omfang av sprøytebruk i Norge [In English: Extent of injecting drug use in Norway]* (Report No. 5/2006). Oslo: SIRUS.
- Bretteville-Jensen, A. L., & Ødegård, E. (1999). *Injeksjonsmisbrukere i Norge (In English: Injecting drug users in Norway)* (Report No. 4/1999). Oslo: SIFA (SIRUS/Norwegian Institute of Alcohol and Drug Research).
- Clausen, T., Anchersen, K., & Waal, H. (2008). Mortality prior to, during and after opioid maintenance treatment (OMT): A national prospective cross-registry study. *Drug and Alcohol Dependence*, 94(1-3), 151-157.
- Darke, S., Degenhardt, L., & Mattick, R. (2007). *Mortality amongst Illicit Drug Users, Epidemiology, Causes and Interventions*. Cambridge: Cambridge University Press.
- EMCDDA (2009). Problem drug use (PDU) Retrieved 23.09. 2009, from <http://www.emcdda.europa.eu/themes/key-indicators/pdu>
- Hay, G., McKeganey, N., Wiessing, L., & Hartnoll, R. (1999). *Methodological Guidelines to Estimate the Prevalence of Problem Drug Use on the Local Level*. Lisbon: EMCDDA.
- Iversen, E., Lauritzen, G., Skretting, A., & Skutle, A. (2008). *Det nasjonale dokumentasjonssystemet innen tiltaksapparatet for rusmiddelbrukere: Klientkartleggingsdata. Rapport for 2007. [In English: The National Client Documentation System of treatment and care for drug users. Report for 2007]* Bergen: Stiftelsen Bergensklinikkene/Statens institutt for rusmiddelforskning.
- Kraus, L., Kümmler, P., Augustin, R., Pfeiffer, T., Simon, R., Wiessing, L., et al. (2004). *Key Epidemiological Indicator: Prevalence of problem drug use*. Lisbon: EMCDDA
- Melberg, H. O., Ravndal, E., & Lauritzen, G. (2003). *Hvilken nytte, for hvem og til hvilken kostnad? : en prospektiv studie av stoffmisbrukere i behandling. (In English: Which benefit, for whom and at what cost?: a prospective study of drug users in treatment)*. Oslo: SIRUS.
- Skog, O.-J. (1990). *Utviklingen av intravenøst narkotikamisbruk i Norge: anslag for insidens og prevalens. [In English: The Development of Intravenous Drug Use in Norway: estimate of incidence and prevalence]* (Report No. 1/1990) Oslo: Statens institutt for alkohol- og narkotikaforskning.
- Statistical Bulletin 2009 (2009). *Statistical Bulletin* Retrieved 25,09, 2009, from <http://www.emcdda.europa.eu/stats09>
- Waal, H., Clausen, T., Håseth, A., & Lillevold, P. A. (2008). *LAR i Norge. Statusrapport 2007 [In English: Medically Assisted Treatment in Norway. Report on Status 2007]* . Oslo: SERAF. Norwegian Centre for Addiction Research.

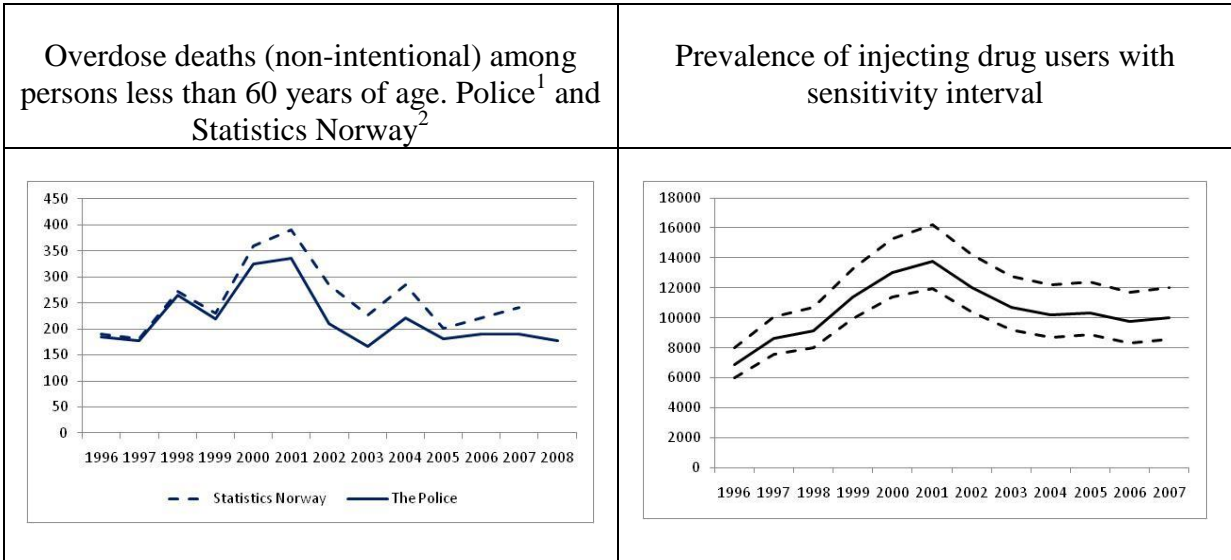
Ødegård, E., Amundsen, E. J., & Kielland, K. B. (2007). Fatal overdoses and deaths by other causes in a cohort of Norwegian drug abusers - A competing risk approach. *Drug and Alcohol Dependence*, 89(2-3), 176-182.

Ødegård, E (2008). Narkotika- og alkoholproblemer blant innsatte i norske fengsler [In English: Substance use problems among inmates in Norwegian prisons] *Nordisk alkohol- & narkotikatidsskrift* 25(3), 169-185.

Legend

Figure 1 Overdose deaths (non intentional) and prevalence of injecting drug users 1996-2008.

Norway



¹Kripos, www.politi.no ² EMCDDA definition, SIRUS