Approaches to Estimating Drug Prevalence in Ireland:

An Overview of Methods and Data Sources

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Acknowledgments

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INTRODUCTION

WHAT DO WE MEAN BY PREVALENCE?

Prevalence is a measure of how many drug users there are in a community or country and how they are distributed across the population e.g. by age, gender, geographical location or type of drug use.

Why do we need to estimate the prevalence of drug use in an area?

Prevalence estimates help to:

- gain a reliable view of the extent of illicit drug use in an area;
- assess whether existing services and responses match the scale of the problem;
- direct responses to the relevant sections of the population;
- evaluate the effects of interventions.

Challenges involved in estimating prevalence:

Drug users are largely a hidden population due to the illegal nature of their activity, which is why identifying the true numbers is so challenging. Methods have to be employed to estimate the numbers by using reliable data sources or by doing primary research such as surveys.

It is not possible to give an accurate, definite, answer to the question of how many drug users are present in a community. Therefore, we must establish an 'estimate' that will provide us with an approximate picture of drug use. The usefulness of prevalence estimates is dependent on the appropriateness of the method employed and the reliability of the data sources used.

Many experts now believe that no one method will give us a true picture and several methods should be combined to get the best picture possible.

The appropriate method to be used for estimating prevalence in a community depends on:

a)   why the prevalence estimate is needed;
b)   which population group we are interested in i.e. men, women, young adults, adolescents, students, older people, the workforce, unemployed or all of the above; and
c)   what resources and data are available.

"Effective Drug Policy should be based on a systematic and comprehensive assessment of the nature, extent and distribution of drug use within a community" (Frischer, 1996)

KEY ISSUES

It is important to distinguish and define the type of drug use to be investigated i.e.

- the type of drug used;
- the means by which it is taken - the route of administration;
- the frequency of its use.

as these will help to determine the extent of the problem involved and the appropriate responses required.

For example the term **'Lifetime Prevalence'** refers to: the proportion of the population who have used a particular drug at least once, whereas **'Current Prevalence'** refers to those who have used a particular drug in a specific period of time such as the last month/week. These terms can help distinguish whether the level of use was a once-off experiment or of a more frequent nature.

"Every estimate must be tailor-made to its proper use or function" **Cohen (1996)**

Prevalence figures have more meaning when they are expressed as a proportion of the population e.g. as a percentage or 'per thousand'. It may be useful to examine drug prevalence in particular age groups such as the 15-34 age group, who tend to be the most frequent users of illicit drugs.

Prevalence figures are described as estimates because, short of surveying every person, we can only estimate the numbers involved using **'indicators'** and **'estimation methods'.**

INDICATORS are data which give pointers or act as tools in the estimation of prevalence e.g. data collected routinely by government agencies such as the Garda Síochána arrest data, drug treatment data and mortality data. The data reflects only those who have come into contact with services and not all users of illicit drugs.

ESTIMATION METHODS are the range of methods which can be used to estimate the prevalence of illicit drug use, such as:

- surveys;
- enumeration;
- multipliers;
- capture-recapture methods;
- network analysis.

Different methods are better suited to examining different types of drug use. The EMCDDA suggests that no one method is best and a combined approach is recommended.

PREVALENCE ESTIMATE(S)

DEPEND(S) ON

WHO WE WANT TO COUNT

↓

WHY WE NEED TO COUNT THEM

WHICH IN TURN DEPENDS ON

↓

WHY WE NEED INFORMATION? IS IT FOR POLICY, PLANNING OR TARGETING RESPONSES?

WHICH INFLUENCES

↓

HOW WE GO ABOUT THE EXERCISE (THE CHOICE OF ESTIMATION METHOD) AND THE SCIENTIFIC ISSUES

WHICH IS AFFECTED BY

↓

PRACTICAL ISSUES SUCH AS RESOURCES, TIMING, AND AVAILABILITY OF INFORMATION/DATA

SOURCES OF DATA ON ILLICIT DRUG USE

What are 'Sources of Data'?

There are two broad categories of data[1] sources which can be used in the estimation of prevalence, which are:

● **ROUTINE DATA SOURCES -** statistics that are collected routinely i.e. in the course of duty, and published in annual reports by agencies such as the Garda Síochána, Customs & Excise and Drug Treatment Services.

● **NON-ROUTINE DATA SOURCES -** statistics that are not routinely collected but are 'once-offs' such as the results of studies of drug use in the general population or in a specific group. These can be gathered for research or planning purposes.

How can these data be used?

Using various research techniques/methods, these data can inform prevalence estimates.

What are the limitations of these data?

Routine data, in particular, are collected in the course of duty for administrative or political reasons, and not for research. Routine data tends to record organisational activity levels and not drug activity per se.

"Official statistics are collected as a by-product of the work of administrative agencies" (Bulmer, 1980)

ROUTINE DATA SOURCES

Police and Criminal Justice Data, i.e.

    Garda Arrest Data

    Customs & Excise seizure data

Drug Treatment Data, i.e.

    National Drug Treatment Reporting System (NDTRS)

    Central Drug Treatment List

Data on Drug-Related Mortality, i.e.

    Central Statistics Office (General Mortality Register)

    Coroner's Court Files, Reports

Data on Drug-Related Morbidity, i.e.

    Hospital In-Patient Enquiry Database (HIPE)

    Drug-Related Infectious Disease (HIV and HCV)

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[1] *The words 'data' and 'information' will be used interchangeably throughout this document*

Police and Criminal Justice Data

Garda Síochána Arrest Data

Provides useful figures on drug-related offences under the Misuse of Drugs Act (1977, 1984), and it gives statistics on the number of offences broken down by drug type. These figures can inform trends and prevalence when certain research methods are applied.

Caution is needed when analysing these data as they are collected in the course of duty. Therefore, they reflect Garda activities and are not a true reflection of the prevalence of various kinds of drug use. Some drug users, by the nature of the drug they misuse e.g. heroin, are more likely to come into contact with the Gardaí than users of other drugs and so will be over-represented in the statistics.

Seizures of Drugs by Gardaí

Provides the breakdown by drug type, quantity and value of drugs that have been seized by the Gardaí generally over a one-year timescale.

Seizures of Drugs by Customs & Excise (C&E)

Provides information on how much drugs are seized by C&E by quantity and value, according to each type of illicit drug in a given year.

Caution is needed. This data can inform trends. However, *where* the drugs are seized does not necessarily reflect prevalence in that location. Seizure data from both sources can only give a partial indication of the actual situation for the following reasons:

- policy decides where resources will be applied and this can change over time. This has a knock-on effect on how much is seized and of which drug;

- availability of more resources could lead to more seizures;

- changes in international markets and distribution can have an effect;

- not all drugs seized in Ireland or Irish waters are necessarily destined for the Irish market.

Available from: Seizure data is published in the Annual Reports of the Revenue Commissioners and the Garda Síochána.

Drug Treatment Data

The National Drug Treatment Reporting System (NDTRS)

Provides information on the number of people who have received treatment for substance misuse. The Drugs Misuse Research Division (DMRD) of The Health Research Board collates and publishes an annual report with information from drug treatment services on treated drug users. The DMRD defines treatment as 'Any activity, which is targeted directly at people who have problems with their drug use and which aims to improve the psychological and medical or social state of the individuals who seek help with their drug problem' (O'Brien, Moran, Kelleher and Cahill, 2000:2) This includes: medical interventions such as detoxification and methadone programmes; non-medical interventions such as counselling, group therapy and psychotherapy.

Anonymous information is collected on each individual case so that a person cannot be identified:

Socio-demographic characteristics, i.e.

- gender,
- age,
- living status,
- area of residence,

- nationality,
- employment status,
- highest educational level,
- age leaving school.

History of drug use:

- primary drug,
- secondary drug(s)

- how the drugs are taken (routes of administration),
- how often the drugs are taken (frequency of use).

The data is broken down into two categories:

Total treatment contacts – all clients receiving treatment in a given year;

First treatment contacts – the number of clients who received treatment for the first time ever during the year.

Caution is needed when using this information. The data only covers those in treatment and thus is not a measure of true prevalence. There is a possibility that people could be counted more than once as cases are not named and so the numbers do not reflect the fact that people may enter treatment a number of times in one year. Not all treatment services provide returns to the system regularly and on time and so not all people in treatment are counted.

Available from: The report is available to the public on the DMRD Website: www.hrb.ie or from the national documentation website www.hrb.ie/ndc.

The Central Drug Treatment List

Provides information on all those who have received treatment with methadone from any health board or GP in the country. All health boards and general practitioners who are authorised to prescribe methadone must register each person as part of the Methadone Protocol 1998. **The Eastern Regional Health Authority** maintains this confidential register with the following information on each person:

First name and surname;
Address;
Date of birth and age;
Methadone card number with date of issue and expiry;
Current status of card;
Name of clinic or doctor the client attends.

Caution: these are **confidential records** and **no public access** is allowed. Service planners in health boards and Drug Task Forces may request anonymised data be provided to them such as the number of men or women in their area on the Drug Treatment List and age ranges.

Available from: by special request from the Eastern Regional Health Authority.

Data on Drug-Related Morality

General Mortality Register (GMR)

Provides information on drug related deaths collated by the **Central Statistics Office (CSO).** Regional Registrars of Births and Deaths collect the information annually from doctors, the Garda Síochána and coroners and report cases to the CSO. Deaths are recorded using the 9th edition of the International Classification of Diseases (ICD 9) under the following broad categories:

- Drug psychoses (ICD code 292);

- Drug dependence (ICD code 304.0-9);

- Non-dependent drug abuse (ICD code 305.2-9);

- Accidental drug poisoning;

- Suicide and self-inflicted drug poisoning;

- Drug poisoning with undetermined intent.

Caution is needed, however. The GMR is not a reliable means of identifying drug related deaths as it reports only the direct underlying cause of death and not contributory factors. It is also hampered by the fact that there is no generally agreed definition of "drug-related death". For example, death by infectious disease or traffic accidents where drug misuse was a contributory factor may not show up as drug-related death. Given these limitations, the number of drug-related deaths on the GMR is likely to be an underestimate of the number of drug-user deaths in any year.

Available from: CSO and the DMRD.

Data on Drug-Related Morbidity (Illness)

The Hospital Inpatient Enquiry Database (HIPE)

Provides information on patients who are admitted and discharged from hospital. HIPE records the primary and secondary diagnoses of all patients discharged from Irish Public Hospitals (private hospitals are not included). The International Classification of Diseases (ICD9) is used to record the information. The Economic and Social Research Institute (ESRI) manages this database and also provides annual statistics to the Department of Health and Children.

Caution is needed however, as there are some drawbacks with this system:

- secondary diagnoses are not always recorded;

- drug-related problems are not always flagged;

- patients who are treated through A&E and not admitted to a ward are not recorded in HIPE;

- the HIPE data records one episode of care and therefore there is a risk of double counting if the patient is admitted more than once in the year;

- accuracy is dependent on complete records being kept.

Available from: There is no public access to these records and permission must be sought from the Department of Health and Children to obtain anonymous information on drug related cases. The ESRI manages the HIPE database.

Drug-Related Infectious Diseases

Data on drug-related infectious diseases can provide valuable information on levels of risk behaviour. The prevalence of HIV and Hepatitis C (HCV) infection are the most relevant data in this regard. Anonymous Information on the incidence of HIV is available from **The Department of Health and Children and the National Disease Surveillance Centre**. Reporting the incidence of these diseases by doctors is on a voluntary basis only. The information that is available provides an indication of levels of drug use and risk behaviours.

Available from: the website of the National Disease Surveillance Centre www.ndsc.ie

NON-ROUTINE DATA SOURCES

There are a range of studies which have focused on illicit drug use by the general public or by specific, targeted groups. **These studies can assist in understanding the issues and context of drug use in Ireland and in interpreting the information on estimates from prevalence studies.**

Existing Prevalence Studies, e.g.

- General Population Surveys (e.g. NACD's All Island Population Survey of Drug Use, 2003 forthcoming; SLÁN/National Health and Lifestyle Surveys, 1999 and 2003)

- School Surveys (e.g. ESPAD - European School Survey Project on Alcohol and Drugs)

- Capture/Recapture Study (e.g. Comiskey, 1998; Kelly *et al,* 2003 forthcoming)

Studies of Populations of Drug Users

- Prison Population Surveys (e.g. Allwright *et al,* 1999; O'Mahony, 1983 and 1997)

- Women Working in Prostitution (e.g. O'Neill and O'Connor, 1990)

- Syringe Exchange Attendees (e.g. Cox and Lawless, 2000)

- Homeless Drug Users (e.g. Cox and Lawless, 1999)

- Cocaine Users (e.g. Mayock, 2001)

- Ecstasy Users (e.g. McElrath and McEvoy, 1999; Murphy, O'Mahony and O'Shea, 1998)

- Drug Users Known to Garda Síochána (e.g. Keogh, 1997)

Ethnographic/Qualitative Studies, e.g.

- Young People and Drug Choices (e.g. Mayock, 2000)

- Drug Use Among Prisoners (e.g. Dillon, 2001)

- Community Based Drug Monitoring Systems

The National Documentation Centre, based in the Drug Misuse Research Division of the Health Research Board, collects and stores information on drug issues in Ireland. (www.hrb.ie/ndc)

METHODS OF ESTIMATING PREVALENCE

There are two broad categories of methods for estimating the prevalence of drug misuse:

- **DIRECT METHODS -** enumeration (counting) of known drug users and conducting surveys;
- **INDIRECT METHODS -** estimating numbers from samples of known drug users.

'Methods must be chosen carefully as the various techniques are not interchangeable and an inappropriate choice can lead to serious errors in the final estimate' (Wickens,1993).

DIRECT METHODS

1) ENUMERATION OF KNOWN DRUG USERS

Multi-source enumeration provides a more accurate method of estimating prevalence than counting from one data source. Gathering together information from routine statistics, surveys of agencies in contact with drug users and field work among drug users can be used to provide a fuller picture of the nature and extent of illicit drug use, providing the following conditions are met:

- that sufficient information on each drug-user is collected to avoid double counting. It is crucial that sufficient identifying data on each user is available to ensure that the same person is not counted in each of the sources used, so as to avoid an over-estimate of prevalence;
- having limited identifying information such as initials, date of birth and gender can ensure that double counting is eliminated and thus a more accurate estimate is arrived at;
- that data from as many agencies as possible are involved.

This method will tell us of those drug users who have come in contact with services or who are known to us through surveys. They do not tell us of the hidden population of drug users.

Example of Irish study employing this method:

Coveney, E., Murphy-Lawless, J., Redmond, D. and Sheridan, S. (1999) *Prevalence, Profiles and Policy: A Case Study of Drug Users in North Inner City Dublin.*

2) POPULATION SURVEYS

These are based on a representative, random sample of the population of interest. They can be used to:

- Estimate prevalence;
- Investigate attitudes towards drug use and policy;
- Measure public awareness about specific types of drugs.

There are several ways of conducting surveys, the two principal being:

Face to face, in an interview;

On a self-completion basis;

While surveys can yield valuable information, there are some limitations:

1) They focus on the individual and provide little insight into the social context;

2) They depend on honest responses about the participant's drug use;

3) Not all the population may be included e.g. household surveys will by their nature not include homeless persons, prisoners, hospital patients etc;

4) Responses vary depending on the way they are conducted;

5) Large scale surveys are expensive to administer, conduct and analyse.

Examples of Irish studies employing this method:

1) **MORI/MRC (2003) All island population survey of drug use. Forthcoming.**

2) **Centre for Health Promotion Studies (2003)** *The National Health and Lifestyle Surveys.*

3) **Friel, S., Nic Gabhainn, S. and Kelleher, C. (1999)** *The National Health and Lifestyle Surveys.*

4) **Bryan, A., Moran, R., Farrell, E. and O'Brien, M. (2000)** *Drug-Related Knowledge, Attitude and Beliefs in Ireland. Report of a Nation-Wide Survey.*

3) SCHOOL - AGE SURVEYS

Many countries carry out surveys focusing on drug use among young people for the following reasons:

- Administration of school based surveys is relatively easy;

- Representative samples are easy to achieve;

- Repeated surveys of different age groups can describe trends in drug use;

- Indications of future levels of use may be provided by such surveys;

- Drug use is most prevalent amongst younger age groups.

Limitations

1) Schools are at risk of being over surveyed;

2) Students may exaggerate or inflate their knowledge and/or use of drugs.

Examples of Irish studies employing this method:

1) **Hibell, B.** *et al* **(2000)** *The 1999 ESPAD Report, Alcohol and Other Drug Use among Students in 30 European Countries.*

2) **Morgan, M.** *et al* **(1999) The ESPAD Study:** *Implications for Prevention.*

3) **Heywood, S. (1996)** *Survey of Tipperary Post-Primary Students' Views and Experiences of Illegal Drugs 1995-1996.*

4) **Grube, J. and Morgan, M. (1990)** *The Development and Maintenance of Smoking, Drinking and Other Drug Use Among Dublin Post-Primary Pupils.*

5) **O'Fathaigh, M. (1990)** *Smoking, Drinking and other Drug Use Among Cork City Post-Primary School Pupils.*

INDIRECT METHODS

1) CAPTURE/RECAPTURE

This technique is favoured by the EMCDDA for estimating the number of drug users and the prevalence of drug use on a local level, primarily for opiate use. It is a method that was originally developed for biological sciences to estimate the size of animal populations. It is based on the principle that a proportion of a sample of a given population, if captured, marked and released back into that population will reappear in a second later sample. The proportion of marked members caught in the second sample represents the proportion that the original marked sample was to the total population. When this technique is applied to drug users, comparisons are made between partial sets of drug users in order to establish the number of overlaps between two or more partial populations. Capture/Recapture is based on the following assumptions:

- That samples are random;
- That all individuals have the same probability of being sampled;
- That the time period and populations are the same in each e.g that all are opiate users;
- That identification of individuals is accurate;
- That sufficient identifying information (e.g. initials, gender and date of birth) is available to avoid double counting.

Main Advantage of this method - it is relatively cheap to use, as existing data sources may be employed. The estimates derived are only as good as the data on which they are based.

Main Disadvantage of this method is that data is not always available or accurately recorded and it takes considerable statistical skill to develop the estimate from the samples.

Examples of Irish studies employing this method:

1) **Comiskey, C. (1998)** *Estimating the Prevalence of Opiate Drug Use in Dublin, Ireland.*

2) **Kelly, A.** *et al* **(2003)** *Estimating the Prevalence of Opiate Use in Ireland 1999 to 2001.*

Three data sources were used in both studies, namely:

- The Methadone Treatment List;
- The HIPE (Hospital Inpatient Enquiry) database;
- The Garda Síochána studies 1997, 2002.

2) MULTIPLIER METHOD

This method involves applying a 'multiplier' to a 'benchmark' (the total of a sub-group of the drug-using population) most frequently to the total number of drug-related deaths (Mortality Data) but can also be applied to the total number in-treatment or total number arrested from Garda data. The benchmark is then multiplied by an appropriate multiplier to estimate the total of the whole drug-using population. For example, if this method is applied to in-treatment data then the benchmark is the total number of drug-users who underwent treatment in a given year, the multiplier is the in-treatment-rate (proportion of total drug-users in treatment). The formula is as follows:

T   Estimated total of problematic drug-users

B   Total number of problematic drug users who underwent treatment in a given year

c   Estimated in-treatment rate

$$T = B \ / \ c$$

However:

- It is difficult to apply to treatment data as an in-treatment rate is required;

- Applying this method to mortality data to extrapolate prevalence is difficult in Ireland where no multiplier rate has, as yet, been established;

- Difficulties also exist with the application of this technique to Garda data in Ireland.

Example of Irish study employing this method:

The NACD has commissioned a study to develop an 'in-treatment' rate. Results from this study are due in 2003.

3) NETWORK ANALYSIS

This technique attempts to estimate the prevalence of a hidden drug using population through direct contact with a small sample of drug users who in turn provide information on their peers. Network analysis often involves a process called 'snowballing', which creates a referral chain to allow the researcher to contact drug users. An alternative process to snowballing is 'nominee peer groups' where drug users are asked for the number of their friends who use drugs or are in treatment. It is usually used to estimate the ratio of known to unknown users.

Although a time consuming, complex process, network analysis yields valuable results.

Example of Irish study employing this method:

The NACD has commissioned a Network Analysis Study that is due to be completed in 2003.

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