This is the authors' final, peer reviewed manuscript published in
Scandinavian Journal of Public Health (ISSN: 1403-4948, ESSN: 1651-1905) (doi: 10.1177/1403494815585909) (2015) online with the title:
Drug-related causes of death: Socioeconomic and demographic characteristics of the deceasedhttp://informahealthcare.com/doi/abs/10.3109/09687637.2014.993921

Drug-related causes of death: Socioeconomic and demographic characteristics of the deceased

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Drug-related Causes of Death – Socioeconomic and Demographic Characteristics of the Deceased

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Running head: Drug-related deaths and socioeconomic status

Word count: 3872

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Abstract

Aim The aim of this study was to describe subgroups of those who died from a drug-related cause of death employing demographic and socioeconomic data. **Methods** A file with 1628 persons with registered drug-related deaths in the Norwegian Cause of Death Registry between 2003 and 2009 were matched with research registers of data on demographic and socioeconomic factors during the five years prior to their deaths. **Results** Three equal-sized clusters were identified: persons with very low socioeconomic status , disability pensioners, and people on the edge of the workforce. **Conclusions** Socioeconomic situation prior to drug-related deaths was more heterogeneous than expected. Greater knowledge about the members of the disability pensioner and the edge of the workforce clusters must be established in order to make prevention efforts towards these groups more precise and goal-orientated.

Keywords: drug-related death, socioeconomic status, prevention, opioids

Introduction

One of the most severe consequences of the hazardous use of illegal drugs is premature death. In Norway, the level of drug-related deaths in the population has been high compared to other European countries since the first comparison was made for 2002 data [1] In 2010 the level in Norway was four times the European average [2]. The need for improvement of prevention measures is therefore critical.

Prevention of drug related deaths has to be relevant for the persons at risk. The most commonly studied group are problem (dependent) users who use illegal drugs regularly and are in poor social, economic, and health situations – often called the street population [3, 4]. They are more frequently male, younger, unemployed, less educated, unmarried, and have a lower socioeconomic background than the population in general. In Norway as well as in Europe, the risk of overdose is especially elevated for high-risk drugs (heroin and other opioids) and their high-risk route of administration (injecting) [5].

There may be other user groups who are at risk of death and whose cause of death are included as a drug-related death. Examples are experimental and recreational users of illegal drugs and misusers of prescribed opioid analgesics and other pharmaceuticals who are not among the street population. These groups will probably score better than the street population regarding socioeconomic factors like being employed more often, having a higher income, being better educated, and more often being married [6].

There are, to our knowledge, no studies mapping the heterogeneity of the economic and social situations several years prior to death for all those with a drug-related death. Longitudinal studies of risk of death and overdose among selected high-risk problem drug

users are numerous [3, 4]. So are studies of drug-related deaths or fatal overdoses selected from coroners (forensic autopsy) and police files as well as agencies for problem and dependent users and the homeless, including recent background information [7-10]. Very few of these studies, however, have a retrospective design including information about status several years prior to death [11, 12]. Also, in most such studies subgroups have been selected instead of analysing all deaths: (cause of deaths are often heroin, opioids, or cocaine. Studies of all registered drug-related deaths in a city or country (including those without a forensic autopsy) and a retrospective design have been rare [13, 14].

By studying the demographic and socioeconomic background prior to death of all who died of a drug-related cause, a more detailed picture about user groups at risk may emerge. The results can reveal whether prevention measures for the street population as well as for other at-risk groups are relevant. If they are not, preventive programs against drug-related deaths must become more differentiated and goal-oriented.

The aim of this study was to describe subgroups of those who died from a drug-related cause, employing demographic and socioeconomic data from research registers up to five years prior to their deaths. The association between subgroups and cause of death, primary type of drug used, and place of death will be assessed.

Methods and material

The sample studied was persons with drug-related deaths registered in the Norwegian Cause of Death Registry [15] in 2003–2004 and 2006–2009 (see definition below). Deaths in 2005 could not be included since the T-codes (see below) were not available in the registry at the time of data extraction. The 10th revision of the International Classification of Diseases (ICD-10) was used for coding of cause of deaths in the period [16].

There is no universal agreement about which ICD codes to include in a definition of drug-related death, especially regarding pharmaceuticals. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) has implemented a definition including mental and behavioural disorders and poisonings (non-intentional and intentional) related to narcotics, including prescribed opioids, as underlying (primary) causes of death. The definition is named "drug induced deaths" and includes:

- Mental and behavioural disorders (dependence): F11-F12, F14-F16, F19 as underlying cause of death;
- Non-intentional poisoning (overdose): 1) X41 or X44 as the underlying cause of death, in combination with the first contributing cause of death being T43.6; or 2) X42 or X44 as the underlying cause of death, in combination with the first contributing cause of death being any of T40.0–T40.9;
- Intentional poisoning (suicide): 1) X61 or X64 as the underlying cause of death, in combination with the first contributing cause of death being T43.6; or 2) X62 or X64 as the underlying cause of death, in combination with the first contributing cause of death being any of T40.0–T40.9.

The type of substance(s) for each F- and T-code included in the registry is shown in Table 1. The group T40.2, "Other opioids", includes codeine and morphine, while the group T40.4, "Other synthetic narcotics", includes buprenorphine and pethidine.

The general EMCDDA definition also includes poisonings with undetermined intent (Y11, Y12 Y14), but these codes are not used in the Norwegian Cause of Death Registry.

--------- Table 1 about here ----------

In addition to underlying and contributing causes of death, information on forensic autopsy (yes/no) and place of death (at home, other place outside hospital, in hospital or other institution, unknown) was obtained from the Norwegian Cause of Death Registry. Cause of death are reported to the Cause of Death Registry by doctors who are required to complete a death certificate. In addition, results from autopsies, both medical and from the forensic medicine, are required. Often more information is requested by the registry. The drug type (T-code) included in the cause of death are mainly determined by the autopsy results when such information is available. With findings of several substances, the most lethal one are noted first (underlying cause), and other substances contributing to the death are registered as well (contributing cause).

Statistics Norway maintains several permanent research registers that contain individual-level data for all persons living in Norway since 1992 [17]. The Norwegian unique personal identification number has been used to match data from several administrative registers with the research registries [18]. In this study, the sample was matched with permanent research registers to draw data about socioeconomic and demographic situation prior to death.

Gender and year of birth were extracted from the personal identification number. Other demographic data (marital status, social welfare benefits, disability pension, work-related benefits and measures) were extracted from the event history of social security database FD-Trygd [19]. Income and wage information was extracted from the Income Registry, and the highest level of education completed was extracted from the Education Registry [17]. All data in these databases were organised with dates for change of events or with yearly figures (income and wages).

Variables from the event history of the social security database (FD-Trygd) are as follows:

- Last registered formal marital status
- Disability pension at year of death
- Periods of benefits and training related to unemployment and periodic occupational disability
- Periods of social security benefits

Income and wage variables from the Income Registry are as follows:

- Total yearly income including all taxable income reported to the tax authorities, as well as non-taxable income from Arbeids- og velferdsetaten (The Employment and Welfare Service) and other sources that must be reported to Statistics Norway
- Yearly earned wages as an employee reported to the tax authorities

Income and wages were adjusted by the consumer price index to the 2009 level.

Education variable(s) from the Registry of Education:

- The highest level of education completed by the deceased person

Operationalization of the variables are shown in Table 3.

The Cause of Death Registry include all residents of Norway while the other public registries include all relevant activity in Norway. The personal identification number for those who died were used to find matches in the other registries. If no match was found – for example regarding disability pension – it meant that the diseased had not received such a pension. There is one exception, however. Education among immigrants are not fully covered in the Registry of Education. In addition, information in other registries regarding the period before immigration was not available.

Even though registry information was available from 1992 and onwards in FD-Trygd and the Income registry, a time window of five years ahead of the year of deaths was found sufficient to illustrate the socioeconomic situation ahead of death. The highest level of education was established regardless of year.

Results for the sample were compared to available statistical variables from registries published at the population level by Statistics Norway [20] and The Employment and Welfare Service [21]. Population proportions were calculated in available age categories, mainly with age range from 15/20 years to 64/69 years. Figures for 2006/2007 (as the middle year 2003-2009) were preferred if available. Figures by gender was not available for all variable comparisons.

Statistical analyses

For tests of differences of distributions in tables 2 to 4, χ^2 tests with a significance level of 5 percent were applied. No differences between the sample values and the population values were tested for significance since the number of observations for the population was so high

that non-interesting differences would become significant. Cluster analysis was applied to group the diseased in such a way that persons in the same group (called a cluster) were more similar to each other regarding characteristics than to those in other clusters. The two-step clustering procedure in SPSS Statistics 22 was used. Cluster analysis is an iterative process of interactive multi-objective optimization, which do not include hypothesis testing.

Permissions and ethics

Extracting and merging data on an individual level require permission and applications for exemption from the Regional Committees for Medical and Health Research Ethics as well as Statistics Norway and several directorates that administer the data included in the research registers. Such permissions and exemptions have been obtained through 31.12.2017.

Results

There were 1628 drug-related deaths during the study periods 2003–2004 and 2006–2009, varying from 251 to 303 deaths per year (see Table 1); 23 per cent were women. Mean age at death was 38.4 years, with a significant difference for males and females: 41.0 for males and 37.6 for females. The youngest was 17 and the oldest 101 years of age at death, but few were younger than 20 years of age (1.8 per cent) and over 60 years of age (3.8 per cent). Table 2 shows the distribution of gender, age, and main category of cause of death.

------ Table 2 about here --------

Comparison with the general population

The socioeconomic status of those who died from a drug-related cause was lower than in the general population. The following results describe the situation for the sample in the five years prior to death, compared to the general population:

- a lower level of completed education (college degree: 10 vs 31 per cent for females and 6 vs 25 per cent for males);
- fewer were in the workforce (27 vs 67 per cent for females and 35 vs 72 per cent of males);
- a higher proportion had a disability pension (40 vs. 11.5 per cent for females and 30 vs 8.5 per cent for males);
- received work-related training or unemployment benefits more often (19 vs 6 per cent);
- a higher proportion received means-tested social security benefits (32 vs 4 per cent);
- a lower proportion was married (12 vs 50 per cent for females and 14 vs 47 per cent for males).

All differences were significant.

The nine variables, that is, gender, age, marital status, highest level of education completed, disability pension, number of years with income higher than minimum pension, number of years with wage higher than minimum pay in the UK, number of weeks of work-related benefits and training during the last five years of life, and number of months of social welfare benefits during the last five years of life were run in a two-step cluster analysis. Two clusters were suggested. One variable (marital status) did not contribute to any of them. Therefore, this variable was removed, and a new analysis based on the eight remaining variables suggested three clusters as described below and in Table 3.

1. Very low socioeconomic status/SES: persons at a younger age (15-44), mainly with the lowest level of education, not participating in the workforce, some participation in shorter work-related training/support and a high level of means tested social benefits.
2. Disabled: persons at an older age (35-64), on a disability pension, low level of education, income higher than the minimum pension (due to the disability pension), not participating in the workforce, some in need of means-tested social welfare benefits, largest proportion of women.
3. Persons on the edge of the workforce (higher socioeconomic status): Mainly aged 24-54 years, highest level of education, more years with income above the minimum pension, highest proportion with workforce participation and work-related training/support, less use of means-tested social welfare benefits.

The three groups were almost equal in size: 32, 35, and 33 per cent respectively. No further classification was carried out, since these clusters identify where prevention measures can be sensibly strengthened (see discussion).

---------- Table 3 about here ----------

In the cluster with very low SES, more than 75 per cent took part in work-related measures and support, as did persons on the edge of the workforce, but members of the very low SES spent fewer weeks on average engaged in such activities (Table 3). In both these clusters, the proportion who took part in measures for occupationally handicapped persons was the same (44 vs 45 per cent), while part-time employment was more common among persons on the edge of the workforce (19 per cent) than in the very low SES cluster (6 per cent).

Autopsy was performed in 88 per cent of the cases: 48 per cent for dependence, 93 per cent for overdose, and 90 per cent for suicide. Thus, cause of death was based on the best possible information in the majority of cases. In the cluster of disability pensioners, 82 per cent of the deceased received an autopsy, while the figures were higher for the other two clusters (Table 4). This indicate that cause of death was more often stated without the need of an autopsy in this cluster than in the other two. Overdosing of prescribed pharmaceutical opioids may be an example.

---------- Table 4 about here ----------

Overall, 80 per cent of the sample were identified as having overdose as the cause of death, 10 per cent succumbed to suicide and 10 per cent to mental and behavioural disorders (dependence). The cluster of disability pensioners was found to have mental and behavioural disorders and suicide as the cause of death more often than the other clusters, while in the very low SES cluster, almost 90 per cent had overdose as the cause of death (Table 4). Heroin overdoses were most common in the very low SES cluster, while other opioids were more

common for the clusters of disability pensioners and persons on the edge of the workforce. Also in regard to suicide, other opioids were a more common cause of death for disability pensioners.

More persons among the disability pensioners and persons at the edge of the workforce died at home, see end of Table 4. In the very low SES cluster, more died outside home or in a hospital.

Discussion

Persons with a drug-related death in Norway had a lower socioeconomic status overall than the general population. Three equal-sized clusters of deceased persons were identified: persons with very low SES, disability pensioners, and people on the edge of the workforce. In the very low SES cluster, more people died of overdose and a heroin-related cause than in the two other clusters. Overall, 80 per cent were found to have died as a result of non-intentional poisoning (overdose), 10 per cent from intentional poisoning (suicide), and 10 per cent as a result of mental and behavioural disorders (dependence). In the cluster of disability pensioners, dependence and suicide were more often the cause of death than in the other clusters, while in the very low SES cluster, almost 90 per cent had overdose as the cause of death.

There is, to our knowledge, no other study that has combined data on all drug-related deaths with a variety of socioeconomic measures prior to death as in this study. Thus, the clusters of disability pensioners and people on the edge of the workforce at risk of drug-related death may constitute new knowledge. Longitudinal studies of risk of death mostly employ treatment samples or notified addicts, while studies of the deceased mainly employ coroner notifications. Cause of death has often been restricted to heroin, opioids, and cocaine [3, 4, 7-12]. A study of all drug-related deaths in Oslo from 2006 to 2008 included information on contacts with health and social services prior to death. The conclusion was that the majority of cases could have been eligible for prevention measures through such contacts [14]. Those in the disability pensioners and people on the edge of the workforce clusters may have had contacts with services other than the ones available to those in the very low SES cluster. This information offers additional opportunities for prevention.

The very low SES cluster may be of the sample type that has often been studied. These persons had hardly any work experience and, a low level of education. Overdose and heroin use were frequent causes of death. Since more than 75 per cent have some kind of work-related measure or support, some members in this cluster may be former drug users who are in the process of being habilitated to the workforce. If so, the risk of overdose after periods of drug abstinence is high in the same way as for persons leaving prison and treatment [22, 23].

Information on the diagnosis used for granting a disability pension was not included in the data set. Thus, it is not possible to distinguish between disability pensioners who were former or still are ongoing members of the "street population" with substance use disorders, and persons without any problem with illegal drugs, but with disabling diseases that have led to the use and possible misuse of legal opioid pain medications. In future research, it is important to determine the relative size of each of these subgroups, thus giving a basis for estimating risks and establishing prevention measures. A disability pension can be granted even without workforce participation. For persons with a substance use disorder, co-occurrence of mental and/or somatic disorders will make it easier to qualify for disability pension.

The cluster with persons on the edge of the workforce was somewhat unexpected, since this group has not been commonly studied. It is not surprising, however, that persons who use illegal drugs or misuse prescribed drugs get problems in the labour market. There is also a risk that a person who have or get problems at work or otherwise, may start taking drugs. The members of this cluster had a higher level of education and more frequent wages than the two other clusters, so most persons had been in the workforce. Hypothetically, some may have been experimental or recreational drug users who misjudged the dose. In addition, relapse to

drug use after periods of abstinence in the process of rehabilitation to the workforce will increase the risk of death in the same way as for persons leaving prison and treatment [22, 23].

The EMCDDA definition of a drug-related (or drug-induced) death applied in this study can be characterized as wide, since it includes mental and behavioural disorders and intentional poisoning. It can also be characterized as narrow in that it includes only illegal substances as the first contributing cause of death and does not include addictive pharmaceuticals other than opioids. Neither does it include violent deaths or accidents for which illicit use of substances contributed to the death, nor fatal drug-related somatic diseases mainly caused by injecting (bacterial infections, hepatitis C, AIDS). The definition was chosen because it has been applied for many countries in Europe. It will, however, be difficult to generalize the results of this study to countries where pharmaceuticals other than opioids are frequently misused and cause dependence and death.

The quality of cause of death registers varies around the world [24]. In Norway, the register was 100 per cent complete, but the proportion of unknown and ill-defined codes exceeded 10 per cent. Therefore, it was characterized as having “medium” quality. Registers in the Netherlands, Denmark, Sweden, Germany, France, Spain, and Italy were in the same category. Ill-defined codes may cover drug-related deaths, due both to lack of autopsy and a reluctance to register a death as drug related [25]. The count of drug-related deaths in a cause of death registry may therefore be incomplete in Norway, as well as in other countries.

Very often, several substances are detected in autopsies and may have contributed to the death [26]. Often it may be the combination of drugs that caused the death. For poisoning

registration using ICD 10, only one substance can be listed as the first contributing cause of death. The cause of death may therefore not represent the preferred or most frequently used substance of use or misuse before death.

Clustering methods represent pure data analysis and give no goodness of fit to a "best" model. Thus, the clusters identified are not the only ones possible. The clusters found here make sense, however, and point to how prevention efforts in other areas besides the most obvious one of street population members should be strengthened.

The proportion in the very low SES cluster can be seen as unexpectedly small (one-third). There may be disabled and persons on the edge of the workforce, however, who are in a situation close to that of the very low SES group. Thus, prevention efforts for those in the very low SES group can reduce the risk of death for persons in the two other clusters as well. This should be studied further.

There were approximately 300 000 disability pensioners in Norway in 2003–2009 [27], and a monthly estimate for the number of persons on the edge of the workforce in the general population was more than 150 000 the years 2006–2008 [28]. Thus, the risk of a drug-related death is very small among the entire population of disability pensioners or among those on the edge of the workforce. To establish goal-oriented prevention measures, the identification of the risk group should be narrowed to persons with a suspected or known dependence or problematic use of illegal drugs and/or prescribed opioids. Professional contact points with both groups should be clarified, as well as who is likely to have information about misuse and abuse. Also to be considered is the question of whether and how such information can be

shared ethically among professionals. With knowledge of the user's situation, relevant prevention efforts of drug-related deaths can be applied or new ones developed.

In conclusion, socioeconomic situation prior to a drug-related death was heterogeneous. The deceased could be classified into three equal-sized groups: younger persons with very low SES (the street population), older disability pensioners, and younger persons on the edge of the workforce. Greater knowledge about the members of the disability pensioner and the edge of the workforce clusters must be established in order to make prevention efforts towards these groups more precise and goal-orientated.

Declaration of Conflicting Interests

The author declare that there is no conflict of interest.

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Table 1. Drug-related deaths by year[1], category and underlying cause of death

	2003	2004	2006	2007	2008	2009
Mental and behavioural disorders, subtotal	38	37	23	25	19	23
F11 Opioids	12	8	3	4	7	7
F15 Stimulants (not cocaine)	0	1	3	0	1	0
F16 Hallucinogenics	0	1	0	0	0	0
F19 Multiple drug use[2]	26	27	17	21	11	16
Non-intentional poisoning, subtotal	190	248	199	222	222	222
T400 Opium	1	0	1	0	0	0
T401 Heroin	104	143	116	118	124	128
T402 Other opioids	46	51	38	38	41	37
T403 Methadone	23	34	28	35	30	34
T404 Other synthetic narcotics	5	6	7	2	7	12
T405 Cocaine	1	0	0	0	1	0
T406 Other narcotics	2	3	2	3	5	2
T407 Cannabis	0	1	0	0	0	0
T408 LSD	0	1	0	0	0	0
T409 Other/unspec. psychodysleptics	2	0	1	6	5	3
T436 Psychostimulants with abuse potential	6	9	6	20	9	6

Intentional poisoning, subtotal	24	18	29	28	22	39
T401 Heroin	6	4	6	6	7	9
T402 Other opioids	10	11	15	15	11	17
T403 Methadone	1	0	3	1	1	4
T404 Other synthetic narcotics	6	3	4	4	1	6
T405 Cocaine	0	0	0	1	0	0
T406 Other/unspec. narcotics	0	0	0	0	0	1
T409 Other/unspec. psychodysleptics	0	0	1	0	0	1
T436 Psychostimulants with abuse potential	1	0	0	1	2	1
Total	252	303	251	275	263	284
Per 1000 capita 15-64 years of age	0.08	0.10	0.08	0.09	0.08	0.09

[1] Data for 2005 was not available at the time of data extraction. [2] For this code 63 percent had not registered any contributing cause of death, 14 percent had registered R960, R98 or R990 (instantaneous, unattended or ill-defined and unspecified cause of death) as first contributing cause, while the rest (23 percent) had different diseases registered as first contributing cause of death.

Table 2. Drug-related deaths by gender, age and category for cause of death

	Mental and behavioural disorders	Poisoning		Total	Mental and behavioural disorders	Poisoning		Total
		Non-intentional	Intentional			Non-intentional	Intentional	
	Number				Percent			
Males								
17-24 years	6	128	5	139	4	92	4	100
25-29 years	12	178	10	200	6	89	5	100
30-39 years	30	332	33	395	8	84	8	100
40-49 years	44	257	19	320	14	80	6	100
50-59 years	24	120	13	157	15	76	8	100
60 years and over	5	17	14	36	14	47	39	100
Total	121	1032	94	1247	10	83	8	100

Females								
17-24 years	4	33	2	39	10	85	5	100
25-29 years	5	32	4	41	12	78	10	100
30-39 years	4	84	12	100	4	84	12	100
40-49 years	13	72	26	111	12	65	23	100
50-59 years	10	38	16	64	16	59	25	100
60 years and over	8	12	6	26	31	46	23	100
Total	44	271	66	381	12	71	17	100

Table 3 Distribution of demographic and socioeconomic variables within clusters. Percent

	Clusters			Total
	Very low SES (n=521)	Disabled (n=572)	Edge of workforce (n=535)	N=1628
Females*	19.6	30.8	19.3	23.4
Age*				
15-24 years	30.1	0.0	3.9	10.9
25-34 years	41.7	6.5	44.9	30.3
35-44 years	21.9	32.9	33.6	29.6
45-54 years	6.1	39.3	14.4	20.5
55-64 years	0.2	15.9	2.8	6.6
65 years and over	0.0	5.4	0.4	2.0
Highest level of education*				
Primary/basic level	85.0	62.8	41.7	63.0
High-school	8.6	26.9	41.9	26.0
University/college, bachelor	2.1	4.5	10.3	5.7
University/college, master	0.0	1.6	1.9	1.2
Not registered	4.2	4.2	4.3	4.2

With disability pension*	1.2	89.5	2.1	32.5
Number of years last 5 years with income higher than minimum pension*				
None	26.1	0.7	0.0	8.6
1 year	20.9	1.2	1.3	7.6
2-3 years	37.6	4.7	13.6	18.2
4 years	10.9	8.2	16.1	11.7
5 years	4.4	85.1	69.0	54.0
Number of years last five years with wages higher than minimum wage in UK*				
None	87.7	91.6	16.1	65.5
1 year	9.4	4.2	19.1	10.7
2-3 years	2.9	3.3	30.7	12.2
4 years	0.0	0.7	12.7	4.4
5 years	0.0	0.2	21.5	7.1
Work-related measure or support *[1]				
None	23.6	74.8	22.6	41.3
1-12 weeks	48.8	16.4	26.9	30.2

13-24 weeks	17.5	6.5	23.9	15.7
25-36 weeks	8.3	1.4	16.1	8.4
More than 36 weeks	1.9	0.9	10.5	4.4
Social benefit support *[1]				
None	11.9	26.4	37.0	25.2
1-3 months	0.8	30.4	32.9	24.9
4-6 months	13.4	15.4	19.1	16.0
7-9 months	24.2	14.2	10.1	16.0
More than 9 months	39.9	13.6	0.9	17.9

[1]Average per year last five years *Significant difference between clusters at 5 per cent level, χ^2 test

Table 4 Distribution of cause and place of death and proportion with autopsy within clusters. Percent

	Clusters			Total
	Very low SES (n=521)	Disabled (n=572)	Edge of work-force (n=535)	N=1628
Cause of death*				
Mental and behavioural disorders (F10_F19)	7.9	15.6	6.5	10.1
Non-intentional poisoning (X41_X45)	87.7	70.8	82.4	80.0
Intentional poisoning (X61_X65)	4.4	13.6	11.0	9.8
Cause of death, detailed*				
Mental and behavioural disorders	7.9	15.6	6.5	10.1
Overdose heroin	55.5	33.6	47.1	45.0
Overdose other opioids	25.3	32.3	29.7	29.2
Overdose psychostimulants	4.2	3.5	3.0	3.6
Other overdoses	2.7	1.4	2.6	2.2
Suicide heroin	2.5	1.9	2.6	2.3
Suicide other opioids	1.5	11.0	7.9	6.9

Other suicides	0.4	0.7	0.6	0.6
Place of death*				
At home	41.8	53.0	50.8	48.7
Other place outside hospital	29.8	20.3	27.7	25.7
In hospital or other health institution	14.0	14.7	8.8	12.5
Unknown	14.4	12.1	12.7	13.0
Proportion with autopsy*	91.6	82.0	90.8	88.0

*Significant difference between clusters at 5 per cent level, χ^2 test