Maladies chroniques et traumatismes

Suicide-related deaths in an enlarged European Union

Objective

The objective of this monograph is to provide producers and users of death statistics with a practical tool to help study **deaths related to suicides**.

Methods

Mortality data produced by health authorities of 33 European countries [1] and compiled yearly by Eurostat [2] were used. Depending on their availability, data were used to describe time trends, geographical distributions and demographical risks.

By reviewing the literature, the international forum for mortality specialists [3], the revision and update process of the International Classification of Diseases (ICD) and the answers of a questionnaire filled in by death statistics producers of 36 European countries [4] in the framework of the **ANAMORT** project [5], it has been possible to:

- describe the limits of the observed differences
- elaborate recommendations for a better use of available data
- elaborate recommendations for a better production of future data.

Definition of deaths related to suicides

Death from suicide was considered as any death reported to Eurostat with an underlying cause of death coded X60 to X84 (table 1) in the 10th revision of ICD (ICD-10).

Definition of indicators used

The number of deaths for each group of underlying causes of death (UCoD) was the one transmitted by the countries' national authorities to Eurostat for a given year. The aggregation of number of deaths for the European Union (EU) was made by Eurostat, using the last available data for a given year. Crude death rate (CDR) was obtained by dividing the number of death by the last estimate of the population available in Eurostat (for a given age group if age specific crude death rate was computed). Age-standardised death rate (SDR) was computed by direct standardisation, using the 1976 European population. The potential years of life lost before 75 years-old (PYLL75) due to a given cause were calculated for each age group by multiplying the number of deaths related to this cause by the difference between age 75 and the mean age at death in each age group. Potential years of life lost were the sum of the products obtained for each age group. Proportions of PYLL75 were calculated by dividing the PYLL75 due to a given cause by the total amount of PYLL75 due to all causes of death. Indicators were produced at country level, for all countries of EU15 [6] or EU25 [7]. For other groups of countries, estimation of a given indicator was calculated as an average of this indicator at country level weighed by the proportion of its population among the group.

Situation regarding deaths from suicide in Europe

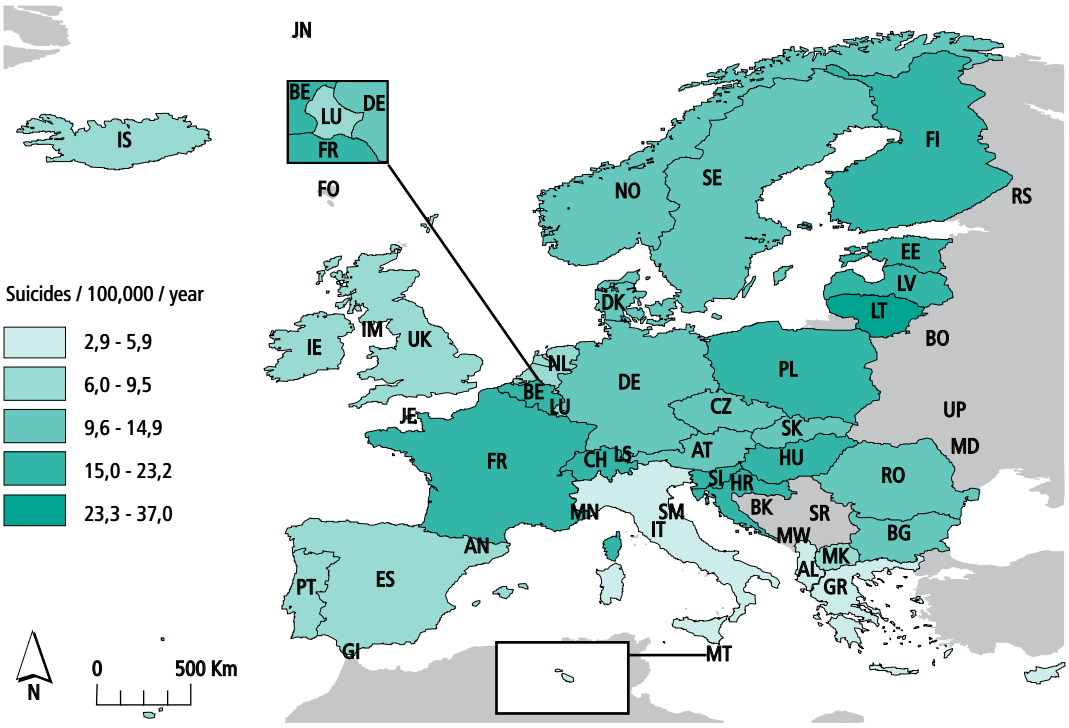
The number of deaths from suicide in EU25 was 56,030 in 2005, which represented 24.4% of deaths due to external causes. SDR for suicide was 10.8 for 100,000 inhabitants in 2005, among the 25 countries of the European Union. Variations between 2.9 and 37.0 /100,000/year according to the countries were observed in Europe (Figure 1).

In 2005, southern European countries had the lowest SDR by suicide as observed in Cyprus, Greece, Malta, Albania, Italy, Macedonia, Spain, and Portugal. The British islands (United Kingdom and Ireland) and Iceland also had low SDR.

Regardless of age, the CDRs by suicide for men were higher than for women (Figure 2). The risk of death by suicide was 3.3 times higher among men (average for EU25 in 2005). In 2005 among EU25 countries, victims were observed among the elderly (65 years-old and more) in 33% of the cases. Compared to 15-24 years-old, the risk of death of the elderly (65 years-old and more) was three times higher. Among men a regular increase of risk was observed after the age of 15. Among women this association with age was also observed between 15 and 49 years old (Figure 2).

1. *Included the 25 Member States of the European Union before 2007, Albania, Bulgaria, Croatia, Iceland, Macedonia, Norway, Romania and Switzerland.*
2. *epp.eurostat.ec.europa.eu.*
3. *www.nordclass.uu.se/index_e.htm.*
4. *33 above mentioned countries, Bosnia Herzegovina, Serbia and Turkey.*
5. *www.invs.sante.fr/surveillance/anamort.*
6. *EU15 comprised the following 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.*
7. *EU25 comprised EU15 and the following 10 countries: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, and Slovenia.*

Figure 1 Age-standardised mortality rate by suicide in Europe in 2005*



** Owing to missing data for 2005, the map included data for 2004 for Albania, 1998 for Belgium, 2001 for Denmark and 2003 for Italy.*

Figure 2 Crude rates of mortality by suicide by gender and age group in the European Union (25 countries) in 2005 – logarithmic scale

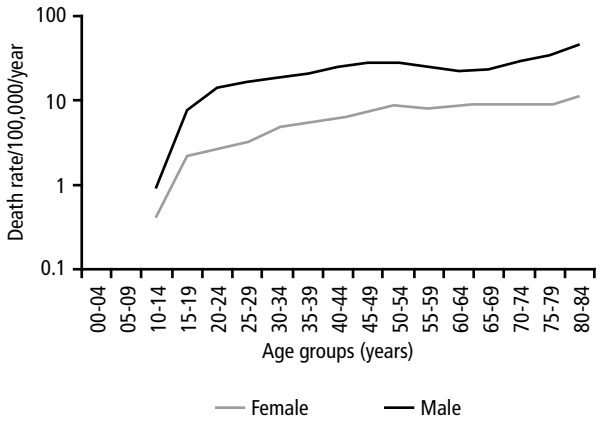
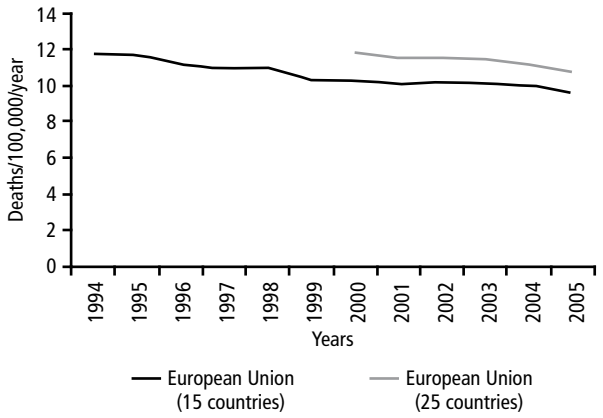


Figure 3 Trends in age-standardised deaths by suicide in the European Union (25 countries)

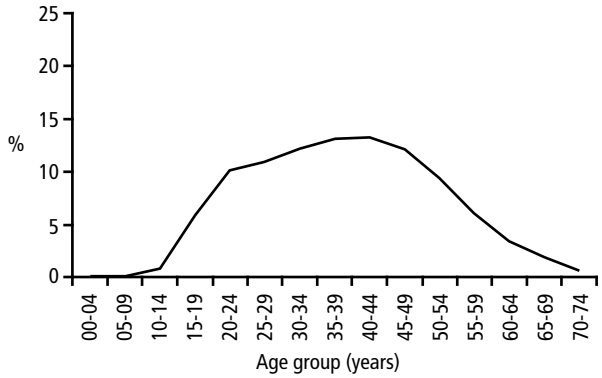


The SDR has decreased by 8% between 2000 and 2005 (from 11.8 to 9.6/100,000/year) in the European Union of 25 countries. (Figure 3). This trend was also observed over a longer period in the European Union of 15 countries (minus 19% between 1994 and 2005). In most of the countries, SDR decreases had been observed over time except for Poland, Iceland and Portugal. No visible impact of ICD-10 implementation was found on trends, apart from Portugal in 2002. Actually, the increase for the risk of death by suicide in Portugal started in 2001 and was completely compensated by the decrease of the SDR for undetermined intent and associated with an effort of complementary investigations between 2001 and 2005. Due to the small number of cases declared, the trend was difficult to establish for Poland and for Iceland. The 10 new Member States, mostly in Eastern Europe, explained the increase in death rates by suicide in the European Union (EU25 versus EU15) was due to higher incidence rates in these countries (Figure 3).

In countries where data were available (23 countries) in 2005, hanging and suffocation were the leading causes, followed decreasingly by poisoning, firearm, fall, drowning and cut and pierce. Variations in the method of suicides were observed in the different countries.

In EU25, deaths from suicide were responsible for 30% of the PYLL by external causes of death. The highest impact was among people between 20 and 54 years of age (Figure 4).

Figure 4 Distribution of potential years of life lost by suicide in the European Union (25 countries) by age group



Interpretation and limits of observed differences in deaths by suicide in Europe

Under estimation of suicides in death statistics was considered as common in most of the European countries (20 out of 36), mainly due to the certification process. Definition of intent (sometimes called "manner of death") is not standardised in Europe. This may lead to variable underestimation of the magnitude of deaths from suicide. This may be a critical issue in countries where the death certificates are used for individual purposes and transmitted to insurance companies, administrations or the public without any ethical approval; in this case a certifier will need much more proof of intent to write the information on the death certificate. In addition, for some other countries, certifiers do not usually put suicide as the underlying cause of death as they represent a strong prejudice for cultural and religious reasons.

For specific causes of death, some countries may apply ICD-10 coding rules differently: hanging, where the intention is not determined, may be systematically coded as a suicide in many countries (coded as hanging with undetermined intent in others); drowning, where intention is not determined, may be systematically coded as accidental in some countries (coded as drowning with undetermined intent in others).

An increased rate of autopsies was linked with an increased codification of the number of suicides.

Difficulties on how to define intent in case of euthanasia and overdoses with narcotics may also depend on national regulation and culture, even though the impact on statistics may be moderate.

Ageing of the population and increased risk of suicide with age as well may be important to take into account for long time trend comparisons.

Analytical recommendation to improve comparability of time trends (for statistics users)

Results on suicides could be presented combining suicides and external causes with undetermined intent as these two categories could sometimes overlap.

Grouping causes of death without taking into account intent (e.g. drowning due to accident, homicide, intentional self-harm and undetermined intent) may be interesting as regulation measures may prevent a given cause of death whatever the intent is.

When studying suicide trends and identifying an increasing number of suicides (according to time or location), it should be useful to investigate whether this observation is linked to an increasing rate of autopsies together with a decreasing proportion of deaths with undetermined intent.

Recommendations to improve comparability of future data collected (for data producers)

To better identify and code suicides, intent should be more clearly assessed during certification. Therefore, it should be useful to add a box in the death certificate to identify systematically the intent in deaths taking into account the difference between intent needed for judicial purposes (as part of a trial) and possible intent which is a purpose of the death certificate.

Possible values for intent could be:
- "no" for disease or accident
- "suspected or possible homicide"
- "suspected or possible suicide"
- "undetermined intent"
- "other" for operation of war, legal intervention, etc.

For the same purposes, common criteria for the determination of suicide and suspected suicide should be defined.

Physicians should be trained to better specify in the death certificate all information useful for codification (in particulare circumstances, intent, place and date of external factor causing death).

As underlined by an ICD-10 update, suicide (X60-X84) should not be accepted as due to any other condition when selecting the underlying cause of death.

Encourage medico-legal institutions to organise a rapid transfer of results of the medico-legal investigations (causes of death with all elements regarding intent including suspected intention) to the coding/statistical office.

Additional and more detailed recommendations may be found on www.invs.sante.fr/surveillance/anamort

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Table 1 Correspondence table defining the group of suicides according to revision number of International Classification of Diseases (ICD)

ICD-10	Label	ICD-9	ICD-8
X60	Intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics	E950-E952	E950-E952
X61	Intentional self-poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified		
X62	Intentional self-poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified		
X63	Intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system		
X64	Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances		
X65	Intentional self-poisoning by and exposure to alcohol		
X66	Intentional self-poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours		
X67	Intentional self-poisoning by and exposure to other gases and vapours		
X68	Intentional self-poisoning by and exposure to pesticides		
X69	Intentional self-poisoning by and exposure to other and unspecified chemicals and noxious substances		
X70	Intentional self-harm by hanging, strangulation and suffocation	E953	E953
X71	Intentional self-harm by drowning and submersion	E954	E954
X72	Intentional self-harm by handgun discharge	E955	E955
X73	Intentional self-harm by rifle, shotgun and larger firearm discharge		
X74	Intentional self-harm by other and unspecified firearm discharge		
X75	Intentional self-harm by explosive material		
X76	Intentional self-harm by smoke, fire and flames	E958	E958
X77	Intentional self-harm by steam, hot vapours and hot objects		
X78	Intentional self-harm by sharp object	E956	E956
X79	Intentional self-harm by blunt object	E958	E958
X80	Intentional self-harm by jumping from a high place	E957	E957
X81	Intentional self-harm by jumping or lying before moving object	E958	E958
X82	Intentional self-harm by crashing of motor vehicle		
X83	Intentional self-harm by other specified means		
X84	Intentional self-harm by unspecified means		
/////*	Late effects of self-inflicted injury	E959	E959

** Not included but a code with a 4th digit (Y87.0) could have been used.*

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