Homicide-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 to study deaths related to homicides.

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 demographic 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 homicides

Death from homicide was considered as any death reported to Eurostat with an underlying cause of death coded X85 to Y09 (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 those transmitted by the countries' national authorities to Eurostat for a given year. 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 deaths 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 European population of 1976. 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 homicide in Europe

The number of deaths from homicide in EU25 was 4 743 in 2005, which represents 2.1% of deaths due to external causes. SDR for homicide was 1.0 for 100 000 inhabitants in 2005, among the 25 countries of the European Union. Variations between 0.2 and 10.0 /100 000/year according to the countries were observed in Europe (Figure 1).

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[1] Included the 25 Member States of the European Union before 2007 , Albania, Bulgaria, Croatia, Iceland, Macedonia, Norway, Romania and Switzerland

[2] http://epp.eurostat.ec.europa.eu

[3] http://www.nordclass.uu.se/index_e.htm

[4] 33 above mentioned countries, Bosnia Herzegovina, Serbia and Turkey

[5] http://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.

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Figure 1 Age-standardised mortality rate by homicide 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.
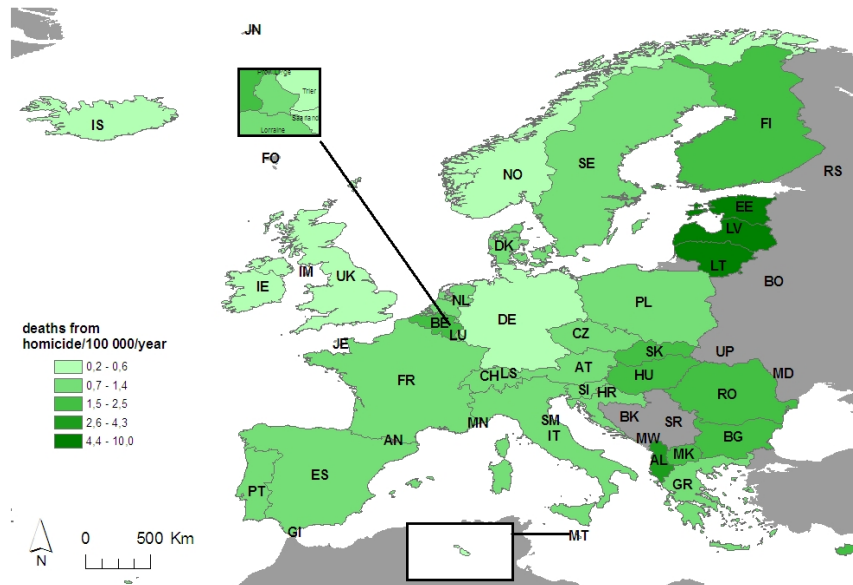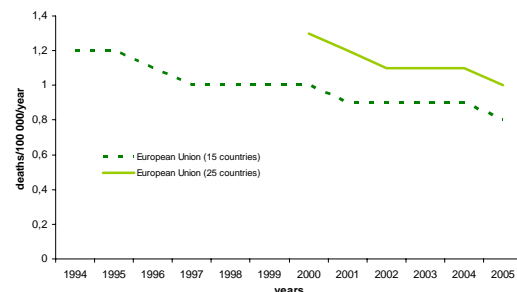

Actually, SDRs by homicide in 2005 were lower than 2.5/100 000 in 29 countries. Much higher SDRs were observed in 4 countries: Albania (4.3), Estonia (8.8), Lithuania (8.8) and Latvia(10.0).

The CDR by homicide were higher for men than for women (Figure 2) after the age of 15. The risk of death by homicide was 2.3 times higher among men (average for EU25 in 2005). In 2005 among EU25 countries, victims were observed among the elderly (65 years and more) in 22% of the cases. The highest CDRs were observed among people between 20 and 59 years-old (maximum for the 45-54 years-old age group with 1.5/100 000 in 2005). There was no clear association of risk of death and age after the age of 20 years.

and 2005). In almost all European countries, no particular trend could be noticed due to small variations of low SDR over time. Only the three Baltic countries experienced important decreases of their SDR by homicide, especially Estonia with a 70% decrease between 1994 and 2005 (37% for Lithuania and 36% for Latvia). Whatever the country, implementation of the ICD-10 did not seem to have an impact on homicide-related statistics trends. The 10 new member states, mostly in Eastern Europe, explained the increase in death rates by homicide in the European Union (EU25 versus EU15) was due to higher incidence rates in these countries (Figure 3).

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


The SDR has decreased by 23% between 2000 and 2005 (from 1.3 to 1.0/100 000/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 33% between 1994

Figure 3 Trends in age standardised deaths by homicide in the European Union (25 countries).

In EU25, deaths from homicide were responsible for 3% of the PYLL by external causes of death. The highest impact was among people between 20 and 49 years-old (Figure 4).

Figure 4 Distribution of potential years of life lost by homicide in the European Union (25 countries) by age group
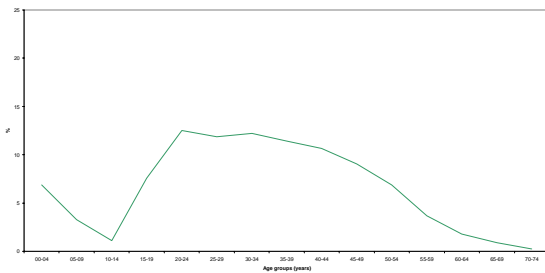
Interpretation and limits of observed differences in deaths by homicide in Europe

Misclassifications of deaths from homicide due to inappropriate selection of the underlying cause of death were described by 14 out of 36 countries questioned during the Anamort project. The combined effect of these misclassifications were considered to lead to underestimation of the magnitude of the deaths due to homicides in all of these countries. Cases which should have been coded as homicide could have been coded in all the other external causes of death categories especially the suicide and undetermined intent ones.

In most of the countries, the main reported issue was that coders lacked information in the death certificate regarding the intent and that results of investigations had not systematically been sent to the coding office by the justice or police authorities. The North European countries, where there are systematic forensic investigations of external causes of death, seemed to experience less problems in transmission of medicolegal information to statistical offices.

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

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.

To improve the mortality data coverage, it should be useful to conduct queries and develop specific studies on homicides through other complementary data (police, media, etc.).

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

To better identify and code homicides, 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 death, 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.

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

When a medico-legal investigation has been performed, the causes of death (with all elements regarding intent including suspected intention) should be systematically transmitted to the coding/statistical office.

It could be useful to explore intimate partner/family violence for unexplained circumstances of external causes of death. In this case, one should refer to the appropriate investigation (coroner, justice, etc.).

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

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

ICD-10	Label	ICD-9	ICD-8
X85	Assault by drugs, medicaments and biological substances	E962	E962
X86	Assault by corrosive substance	E961	E961
X87	Assault by pesticides		
X88	Assault by gases and vapours	E962	E962
X89	Assault by other specified chemicals and noxious substances		
X90	Assault by unspecified chemical or noxious substance		
X91	Assault by hanging, strangulation and suffocation	E963	E963
X92	Assault by drowning and submersion	E964	E964
X93	Assault by handgun discharge		
X94	Assault by rifle, shotgun and larger firearm discharge	E965	E965
X95	Assault by other and unspecified firearm discharge		
X96	Assault by explosive material		
X97	Assault by smoke, fire and flames	E968	E968
X98	Assault by steam, hot vapours and hot objects		
X99	Assault by sharp object	E966	E966
Y00	Assault by blunt object		
Y01	Assault by pushing from high place	E968	E968
Y02	Assault by pushing or placing victim before moving object		
Y03	Assault by crashing of motor vehicle		
Y04	Assault by bodily force	E967	E967
Y05	Sexual assault by bodily force	E960	E960
Y06	Neglect and abandonment		
Y07	Other maltreatment syndromes	E968	E968
Y08	Assault by other specified means		
Y09	Assault by unspecified means		
////*	Sequelae of assault	E969	E969

* not included but a code with a 4th digit (Y87.1) could have been used

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