

Main causes of death in Italy

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Understanding the major diseases processes which lead to mortality is an important aspect of healthcare planning, especially with regards to the life periods in which death is considered as “avoidable” i.e. premature (generally before the age of 70).

From a methodological point of view, the identification of the major causes of death is based on the criterion of frequency. We consider the weight of deaths due to a specific cause in relation to all deaths and then define the main causes of death in relation to the highest weights. The selection criterion is thus merely quantitative.

To exclude any qualitative consideration would limit the analysis, as some causes of death may be less relevant or even rare in terms of frequency, but with a greater impact on society and or health. In such cases, it may prove to be very important to adopt measures of intervention, even though they might relate to a limited number of individuals. Nevertheless, quantitative information has its own value, as it enables us to identify possible areas for intervention. By acting on the risk factors associated to these causes of death that account for a significant rate of mortality, there would be considerable gains in terms of survival.

The first phase of the analysis considers the causes of death using the category three digit codes from the International Classification of Diseases – 9th Revision (ICD9). This intermediate level of aggregation, between “sections” and “subcategories”, was considered sufficiently detailed for the purpose of this analysis.

Nevertheless, the analysis of the rankings of the three-digit codes for causes of death highlighted that the codes between some homogeneous codes were close, in other words codes belonging to the same type of cause (for example, the congenital malformations of the heart and the circulatory system or the ischaemic heart diseases). In these cases, groupings were carried out in order to consider the frequency of the group in question.

At the same time, in cases where it was considered necessary to measure the impact of the specific causes of death that are particularly important in certain age classes, four-digit ICD9 codes were also taken into consideration, for example, in the case of Sudden Infant Death

Syndrome (SIDS) and Acquired Immune Deficiency Syndrome (AIDS).

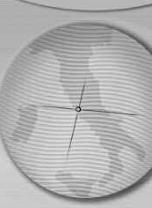
Furthermore, for the chapter relating to Injury, poisoning and violence, it was decided to refer to the supplementary classification of external causes (E codes). This section describes the nature of the condition and permits the classification of environmental events, circumstances and conditions as the cause of injury, poisoning and other adverse effects (see Annex for the list of ICD9 codes used).

We must bear in mind that the cause of death used for the analysis is the cause indicated on the death certificate as “underlying cause of death”. This is the cause conventionally used internationally when compiling statistical mortality data. It is defined as the disease or condition that initiated the train of morbid events leading directly to the death.

The study was conducted by gender and by five-year age groups. Children were distinguished according to whether they died during the first year of life or whether they were between 1 and 4 years of age at the time of death. As regards to the elderly, the last age group considered is that of 85 years of age and over.

Considering some of the age groups, the number of deaths in one calendar year is rather low and this could have weakened the analysis, determining annual variations of the data. Therefore, in order to strengthen the study, we chose to work on data that refer to the three-year period 1999-2001.

In the first year of life, intrauterine hypoxia and birth asphyxia, respiratory distress syndrome and other respiratory conditions of the foetus and newborn accounted for over one third of all deaths, with only slight differences between the genders (Table 1). Correspondingly, the mortality rate results are also high, equal to 18.14 deaths per 10,000 males and 15.61 per 10,000 females. Still considering the first year of life, SIDS, which is one of the leading causes of death amongst new-borns in other European countries, was indicated as the underlying cause of death in only 1.5% of males and 1.1% of females in Italy. Nevertheless, if we consider the other codes indicated in literature, besides the ICD9 code that corresponds to SIDS (7980), as possible causes of death, in which SIDS



Annex - ICD-9 codes used

- 162 — Malignant neoplasm of trachea, bronchus, and lung
- 174 — Malignant neoplasm of female breast
- 191 — Malignant neoplasm of brain
- 204 — Lymphoid leukemia
- 2791 — Acquired immune deficiency syndrome
- 304 — Drug dependence
- 410 — Acute myocardial infarction
- 410-414 — Ischemic heart diseases
- 430-438 — Cerebrovascular diseases
- 571 — Chronic liver disease and cirrhosis
- 745-747 — Congenital anomalies of the heart and the circulatory system
- 740-744, 748-759 — Other congenital anomalies
- 768-770 — Intrauterine hypoxia and birth asphyxia, Respiratory distress syndrome and Other respiratory conditions of fetus and newborn
- 7980 — Sudden infant death syndrome
- 7980, 4274, 4275, 4289, 4599, 5070, 5188, 7708, 7870, 7990, 7991 — Sudden infant death syndrome, Ventricular fibrillation and flutter, Cardiac arrest, Unspecified heart failure, Other unspecified disorders of circulatory system, Pneumonitis due to inhalation of food or vomit, Other diseases of lung not elsewhere classified, Other respiratory problems after birth, Nausea and vomiting, Asphyxia, Respiratory failure
- E810-E819 — Motor vehicle traffic accidents

could be "mixed up", the percentage rises to over 15% of deaths for both genders.

With regards to children up to the age of 14, the number of deaths is rather scarce and the mortality rates are less than one death per 10,000 residents for every age group. For children aged between 1 and 4, the primary cause of death is related to congenital anomalies of the heart and the circulatory system (11% for boys and 12% for girls), followed by other congenital abnormalities and motor vehicle traffic accidents. In the 5-9 and 10-14 age groups, malignant neoplasm of brain and lymphoid leukaemia are important causes of death. Nonetheless, motor vehicle traffic accidents still account for the highest percentage of deaths. This percentage tends to increase as the child grows and is particularly evident with regards to young boys, whereby motor vehicle accidents are responsible for one death in four in children between the ages of 10 and 14 years.

Motor vehicle traffic accidents remain the main cause of death until the age of 39 years, with mortality percentages and rates being significantly higher for men. In particular, for young people aged between 15 and 19, death from this cause accounts for almost 48% of male deaths, (2.83 deaths per 10,000 residents). With regards to the 20 to 24 year-olds, these values increase to 45% (4.16 deaths per 10,000 residents). After the age of 25, death caused by drug dependence and AIDS assumes a minor but not negligible importance. Mortality rates for drug dependence are significant in those young people between the ages of 25 and 34, while the death rate from AIDS is quite considerable especially amongst

men aged 30 to 39. The majority of these causes of death regard men only.

Women over the age of 30 die primarily from motor vehicle traffic accidents and malignant neoplasm of breast. Subsequently, this type of cancer remains by far the leading cause of death in women until they reach the age of 65-69 years, after which, deaths due to Circulatory diseases become increasingly important. In terms of relative weight, the age groups that have the highest mortality percentage due to malignant neoplasm of the female breast are those between 45-49 and 50-54 years of age (18.5%). However, with reference to these levels, the mortality rate for this type of cancer reaches its peak in those women aged between 65 and 69 years (7.41 per 10,000).

With regards to men, acute myocardial infarction and malignant neoplasm of the trachea, bronchus and lung are the main causes of death for adults and older men until they reach 79 years of age. In particular, the percentage of deaths due to acute myocardial infarction reaches its peak between 45 and 59 years of age (10%). Deaths due to malignant neoplasm of the trachea, bronchus and lung account for almost 16% of all male deaths in those aged between 55 and 69 years. In addition to these causes, men also die from chronic liver disease and cirrhosis in the 40-44 and 45-49 age groups and from ischaemic heart diseases in the subsequent age groups.

Ischaemic heart diseases, together with cerebrovascular diseases, predominate until older age in both men and women 70 years of age and older until their last years of life.

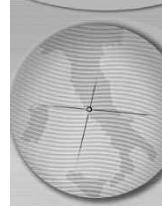


Table 1. Main causes of death in Italy by gender and age classes - Years 1999-2001

Age groups (average of deaths in the three year period)	Males		Cause of death	Females	
	Percentage of the total number of deaths	Mortality rate per 10,000 residents		Percentage of the total number of deaths	Mortality rate per 10,000 residents
≤1 year (M=1,407; F=1,138)	35,4 15,3	18,14 7,83	<i>Intrauterine hypoxia and birth asphyxia, Respiratory distress syndrome and Other respiratory conditions of fetus and newborn SIDS and other possible related codes</i>	35,6 15,6	15,61 6,85
1-4 years (M=220; F=196)	10,9 7,7 7,3	0,22 0,16 0,15	<i>Congenital anomalies of the heart and the circulatory system</i> <i>Other congenital anomalies</i> <i>Motor vehicle traffic accidents</i>	12,2 6,5 8,0	0,23 0,12 0,15
5-9 years (M=183; F=135)	13,3 8,0 7,8	0,17 0,10 0,10	<i>Motor vehicle traffic accidents</i> <i>Malignant neoplasm of brain</i> <i>Lymphoid leukemia</i>	12,6 6,4 6,7	0,13 0,06 0,07
10-14 years (M=254; F=167)	25,1 5,3 4,7	0,44 0,09 0,08	<i>Motor vehicle traffic accidents</i> <i>Lymphoid leukemia</i> <i>Malignant neoplasm of brain</i>	14,6 4,4 6,0	0,18 0,05 0,07
15-19 years (M=935; F=342)	47,6	2,83	<i>Motor vehicle traffic accidents</i>	36,5	0,84
20-24 years (M=1,703; F=491)	45,4	4,16	<i>Motor vehicle traffic accidents</i>	36,1	0,99
25-29 years (M=2,088; F=672)	34,1 6,6	3,20 0,62	<i>Motor vehicle traffic accidents</i> <i>Drug dependence</i>	20,6	0,64
30-34 years (M=2,395; F=926)	22,7 8,1 4,5	2,29 0,81 0,45	<i>Motor vehicle traffic accidents</i> <i>Malignant neoplasm of female breast</i> <i>Drug dependence</i> <i>AIDS</i>	11,5 8,3	0,46 0,33
35-39 years (M=2,945; F=1,398)	14,7 8,4	1,88 1,07	<i>Malignant neoplasm of female breast</i> <i>Motor vehicle traffic accidents</i> <i>AIDS</i>	13,4 7,1 4,8	0,83 0,44 0,29
40-44 years (M=3,552; F=1,932)	7,5 6,1 5,0	1,31 1,07 0,87	<i>Malignant neoplasm of female breast</i> <i>Acute myocardial infarction</i> <i>Chronic liver disease and cirrhosis</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i>	17,2 4,9	1,65 0,47
45-49 years (M=5,029; F=2,824)	10,1 9,1 6,0	2,71 2,45 1,60	<i>Malignant neoplasm of female breast</i> <i>Acute myocardial infarction</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Chronic liver disease and cirrhosis</i>	18,5 5,7	2,76 0,85
50-54 years (M=8,523; F=4,641)	13,6 13,0 10,1	6,04 5,81 4,50	<i>Malignant neoplasm of female breast</i> <i>Ischemic heart diseases</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Acute myocardial infarction</i>	18,5 5,9	4,38 1,40
55-59 years (M=12,385; F=6,270)	15,7 14,1 10,2	11,85 10,67 7,70	<i>Malignant neoplasm of female breast</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Ischemic heart diseases</i> <i>Acute myocardial infarction</i>	15,1 6,1	5,49 2,23
60-64 years (M=19,706; F=10,034)	15,9 13,9 9,5	19,09 16,75 11,45	<i>Malignant neoplasm of female breast</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Ischemic heart diseases</i> <i>Acute myocardial infarction</i>	12,3 5,3 7,5 4,9	6,87 2,97 4,17 2,73
65-69 years (M=29,196; F=15,826)	15,5 14,1 9,0	31,67 28,85 18,33	<i>Malignant neoplasm of female breast</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Ischemic heart diseases</i> <i>Acute myocardial infarction</i>	7,8 9,5 5,8	7,41 8,99 5,46
70-74 years (M=40,788; F=25,673)	14,6 13,7 8,4 8,0	49,70 46,57 28,41 27,18	<i>Ischemic heart diseases</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Acute myocardial infarction</i> <i>Cerebrovascular disease</i>	11,8 6,8 10,1	19,41 11,18 16,57
75-79 years (M=49,366; F=41,604)	14,8 10,3 9,8 7,7	83,47 58,02 55,22 43,35	<i>Ischemic heart diseases</i> <i>Cerebrovascular disease</i> <i>Malignant neoplasm of trachea, bronchus, and lung</i> <i>Acute myocardial infarction</i>	13,2 13,4	40,70 41,12
80-84 years (M=36,599; F=42,409)	14,7 13,0	135,52 119,84	<i>Ischemic heart diseases</i> <i>Cerebrovascular disease</i>	14,2 16,6	83,01 96,69
85 years and over (M=64,609; F=123,026)	15,2 14,3	273,92 256,87	<i>Cerebrovascular disease</i> <i>Ischemic heart diseases</i>	17,9 14,2	255,17 203,35

Source: ISTAT, Causes of death data

Note: Causes of death written in Italics refer to groups of ICD-9 codes.