Addressing Deficiencies in Cause-of-Death Data for Poland

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Abstract

Due to the low quality of data on mortality, in particular a high proportion of deaths assigned to so-called garbage codes[1] (referred to as GCs), Poland has been excluded from the World Health Organization's comparisons of cause-of-death statistics. The most frequent garbage codes include: generalized and unspecified atherosclerosis (ICD-10 code I70.9), heart failure (I50-I51), senility (R54), unattended death, other ill-defined and unspecified causes (R98-99). Large proportion of deaths assigned to GCs means that mortality due to well-defined causes of deaths – all or specific causes – is underestimated in Poland. Therefore, the objective of this study is to investigate the occurrence of most frequent garbage codes: generalized and unspecified atherosclerosis, heart failure and senility, and establish their potential association with well-defined causes of deaths.

The study is based on unique dataset of 388 thousand deaths registered in Poland in 2013. Apart from basic socio-demographic data: age, sex, place of death – region, medical institution / home, and person stating the death, the dataset comprises in-detail information on underlying causes of death, as well as the secondary and direct causes of deaths (referred to as multiple causes of deaths, MCoD, or contributory causes). This is the only dataset on MCoD existing for Poland, and the first analysis of that kind for this country.

In reference to the above mentioned main garbage codes, I intend to execute three types of analysis that:
1) verify whether the occurrence of garbage codes is negatively correlated with the occurrence of specific, well-defined causes of deaths (within small population groups defined by demographic and geographical characteristics), suggesting potential exchangeability between GCs and well-defined causes,
2) test the co-occurrence (at the same death certificates) of garbage codes as underlying causes of deaths and specific, well-defined causes of deaths as MCoD,
3) compare the groups of death that include the same combination of MCoDs, but have been assigned to garbage codes or well-defined causes.

[1] According to Murray and Lopez (1996), garbage codes are all causes of death that are not useful in the analyses of public health and mortality, that is:
1) codes that cannot or should not be considered as underlying causes of death (i.e. symptoms, signs and ill-defined conditions),
2) that constitute intermediate causes of death (i.e. heart failure), or
3) that remain unspecified within larger groups of causes (i.e. malignant neoplasm of other and ill-defined sites).

Preliminary results show that:

1) The occurrence of generalized and unspecified atherosclerosis is significantly and negatively correlated with well-defined atherosclerosis and other well-defined heart diseases. The same is true for senility and other well-defined heart diseases;

2) About 10% of all death certificates include, incorrectly, a garbage code as the underlying cause and a non garbage code as the MCoD. In case of generalized and unspecified atherosclerosis (65% of such cases) and heart failure (14%) as the underlying cause, the most frequent contributory causes include well-defined cerebrovascular diseases, ischaemic heart diseases, cardiomyopathy, dementias, influenza and pneumonia. The same MCoD are associated with senility (11% of such cases) as the underlying cause, but in this case the occurrence of volume depletion, anaemias and diabetes mellitus should not be neglected;

3) Several combinations of MCoD have been assigned to GCs and non-GCs as the underlying cause. To present one example, a combination of the following contributory causes of death:

> – other bacterial intestinal infections, other septicaemia, acute alcohol intoxication, cardiac arrest, other diseases of digestive system and other symptoms and signs involving the circulatory and respiratory systems –

occur both at death certificates with GCs as the underlying cause, and death certificates with alcoholic cirrhosis of liver as the underlying cause. The question is whether it is medically and statistically justifiable to replace these GCs with alcoholic cirrhosis of liver and re-estimate mortality due to alcoholic cirrhosis of liver.

The main conclusion is that mortality due to well-defined cardiovascular and respiratory diseases is considerably underestimated in Poland. This study aims to identify other well-defined causes of death that are frequently and inappropriately registered as GCs. The final result will consist of re-estimation of mortality due to specific, well-defined causes of death in Poland.