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Preventing premature deaths in the Northern Dimension area

This policy brief reports key findings of a study [1] that analyzed official mortality data on premature deaths under 70 years of age in eight countries in the Northern Dimension area (Belarus, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden). The study found that the PYLL rate ("Potential Years of Life Lost") differs considerably among ND area countries. A striking feature is its gender difference, being on average 2.5 times higher for men than for women. Most of this difference is due to external causes of death such as suicides and traffic accidents. Alcohol-related causes also have a heavy male over-representation. The general development in public health outcome was however good in 2003-2013, resulting in average 26% PYLL reduction. Encouraging trends include decrease in losses caused by vascular (heart) diseases, cancer and external causes, such as suicides and alcohol related causes, in all ND countries that participated in the study.

- **Recommendation 1.** Premature mortality can be prevented effectively by designing and implementing health and economic policies on health promotion and disease prevention. Evidence based treatment of diseases also makes a difference, but is less effective than prevention of diseases and accidents.
- **Recommendation 2.** Positive changes in male health behavior has an immediate decreasing effect on overall premature mortality. Policies should be targeted towards improving traffic and occupational safety, and decreasing harmful use of alcohol.
- **Recommendation 3.** Public health strategies should be intersectoral and involve all stakeholders. Practicing Health in All Policies (HiAP), promoting healthy lifestyles and holistic healthcare are crucial for preventing and avoiding many of premature deaths.
- **Recommendation 4.** PYLL rate was selected in 2015 as the indicator to measure the progress of the current 2016-2020 Strategy of the NDPHS. Continuing this practice in the renewed strategy beyond 2020 is highly recommended. The ongoing ND PYLL-2 study should also pre-assess the 2020 COVID-19 caused years of life lost in order to evaluate its burden on the public health of populations.
- **Recommendation 5.** Health policy makers are invited to discuss the results of the PYLL-2 study, launched by the NDPHS NCD Expert Group in 2020, in workshops that will be organized in 2021 in selected NDPHS countries [2].

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Measuring premature deaths in the ND area

Premature deaths are a significant economic burden for ND area countries and incur considerable loss of human capital. The majority of premature deaths are avoidable by effective health promotion, disease prevention, and evidence based medical treatment. The successful implementation of these measures requires reliable and timely information on population's health, its determinants and their distribution, and time trends between various population groups. Mortality statistics are among the most comparable sources of such information, although the procedures for registering and classifying mortality rates somewhat differ across countries.

One of the most used well-being parameters based on mortality statistics is the Potential Years of Life Lost (PYLL) rate. It is used by the World Bank, OECD, World Health Organization (WHO), and European Union (EU). The PYLL rate is used for reviewing time of death in relation to life expectancy, and therefore is a sensitive way to describe premature deaths. PYLL-rates are calculated from death certificates or death registers. PYLL-rates take into account not only the number of deaths, but also the age of each deceased individual at the time of death and only those deaths that are considered preventable. The longer the life expectancy applied in calculation of PYLL, the more similar are the PYLL-rates and the standardized mortality rates.

The NDPHS chose in 2015 PYLL as the indicator to assess progress of the public health component of EU Strategy of the Baltic Sea Region. The NDPHS Expert Group for Non-communicable Diseases (NCD) carried out in 2016 a study to calculate PYLL-rates in eight countries of the ND area (Estonia, Finland, Germany, Latvia, Lithuania, Poland, Sweden, and Belarus). Norway and Russian Federation chose not to participate, but their PYLL data is included in the ND-averages. Our Northern Dimension research used the age under 70 years as the limit of premature deaths.

In ND area, premature deaths cause each year over 7 million lost human years of life to the partnership countries. Due to inefficient and weak health policy, all ND area countries are wasting their human capital in billions of Euros of their GDP and hence slowing down their economic growth. Health comes first, then the prosperity.

According to the pooled data of ND countries, in 2013 the biggest causes for premature, preventable or avoidable losses of life years were:

- External causes such as accidents, poisonings, violence and suicides (1023 years/ 100.000)
- Cancer (921 years/ 100.000)
- Vascular diseases (816 years/ 100.000)
- Alcohol-related causes (270 years/ 100.000)

Trends in decline of premature deaths in ND-area

The PYLL rate differs considerably among ND area countries being in Poland, Estonia, Latvia and Lithuania about 2 times higher than in Sweden, Germany and Finland, and in Belarus about 3 times higher. A striking feature is also the gender difference, the PYLL rate being on average 2.5 times worse for men than for women. The higher (worse) the national PYLL rate, the bigger was the PYLL rate difference between men and women. Usually this difference was due to external causes such as suicides and traffic accidents, and also alcohol-related causes. The overall development in ND-area in public health was however good in 2003-2013, resulting in average -26% PYLL improvement (Figure 1).

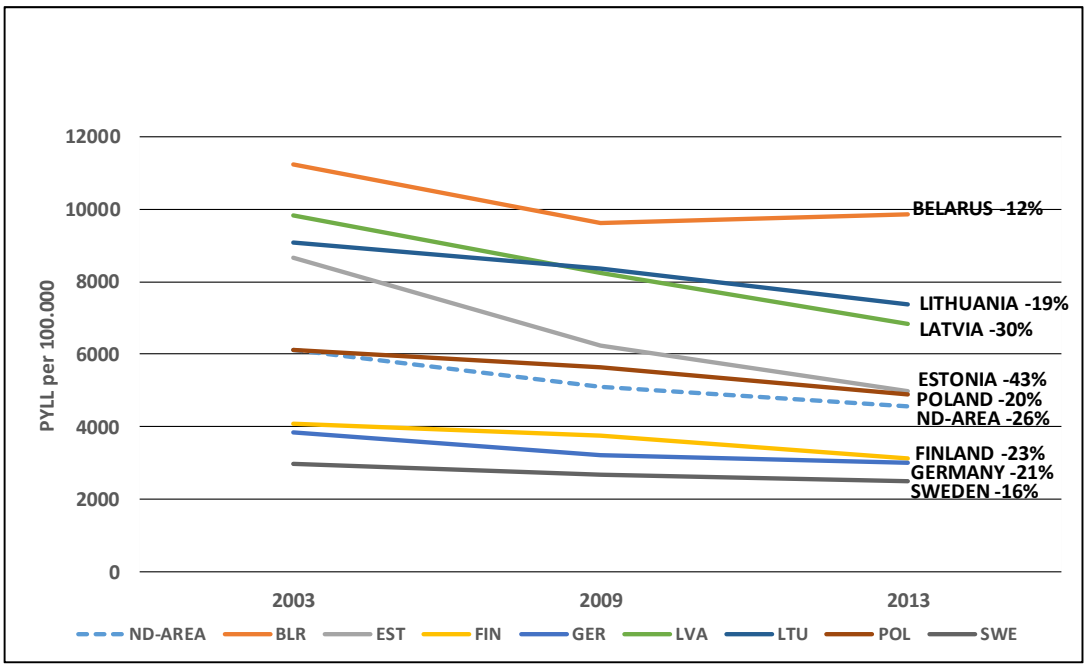

Figure 1: Age standardized PYLL-rates in 2003, 2009 and 2013 and their 2003-2013 reduction in eight countries and the pooled ND-area. All causes (all males and females)

Encouraging trends include:

- Losses caused by cardiovascular diseases and cancer improved in all ND countries. Cancer primary prevention, screening, early detection, access to modern effective treatment and quality of care have all had an impact on this. For cardiovascular diseases, lifestyle changes (reduction in smoking prevalence and salt-intake, lower cholesterol levels, better blood-pressure control), explain a significant share of the premature mortality decline.
- Premature mortality from external causes (accidents and suicides) declined in all participating countries. Important factors behind this positive trend are safety improvements in traffic and work, and changes in the harmful use of alcohol.
- Estonian striking success in decreasing PYLL-rate might be explained by effective reforms in primary healthcare, tobacco and alcohol policies and intersectoral public health strategies keeping "Health-in-All-Policies" (HiAP) high on the agenda. Important improvements have included clear mandate, improved accountability, resource allocation and preparation processes involving all stakeholders.

Recommendations

Key points

1. There are large differences in life expectancy among ND area countries.
2. Alcohol is alarmingly common cause of premature mortality in all ND area countries.
3. The number of years lost (PYLL) due to premature preventable and avoidable mortality in 2003-13 improved in all eight ND Partnership countries participating in the study. However, there were still remarkable differences in the PYLL-rates between countries.
4. International comparability of death registers is highly dependent on the validity of cause of death in the death certificates.
5. The PYLL-ratio of men/women differed considerably between countries. The higher (worse) the national PYLL-rate, the higher is the PYLL-ratio men/women.
6. ND countries all still have potential for improvement of protecting their human capital through lowering their premature deaths. It is important to follow the trend regularly, say every 5th year. Hence the next statistical year for analysis would be through 2017 mortality data, which is already in process through NDPHS/NCD Expert Group, funded by the Ministry of Foreign Affairs/ Finland and implemented by the National Institute of Health & Welfare/ Finland. The new PYLL-report will be available during the first half of 2021, and follow-up seminars will be organized through EU funding.

The first PYLL study revealed that the classification and coding of causes of death is not uniform in death registers of all ND countries, which affects the international comparability and validity of data. Nevertheless, the following recommendations can be made on the basis of data available.

- **Recommendation 1.** Premature mortality can be prevented effectively by health and economic policies on health promotion and disease prevention. Evidence based treatment of diseases also makes a difference, but is less effective than prevention of diseases and accidents.
- **Recommendation 2.** Positive changes in male health behavior has an immediate decreasing effect on overall premature mortality. Policies should be targeted towards improving traffic and occupational safety, and decreasing harmful use of alcohol.
- **Recommendation 3.** Public health strategies should be intersectoral and involve all stakeholders. Practicing Health in All Policies (HiAP), promoting healthy lifestyles and holistic healthcare are crucial for preventing and avoiding many of premature deaths.
- **Recommendation 4.** The current 2016-2020 Strategy of the Northern Dimension Partnership in Public Health and Social Well-being (NDPHS) is being renewed for beyond 2020. PYLL rate was selected in 2015 as the indicator to measure the progress of the previous NDPHS strategy. Continuing this practice is highly recommended.
- **Recommendation 5.** The 2020 renewed ongoing ND PYLL-2 study should also pre-assess the 2020 COVID-19 caused years of life lost in order to evaluate its burden on public health of populations. Health policy makers are invited to discuss the results of the PYLL-2 study in workshops that will be organized in 2021 in selected NDPHS countries [2].

References

[1] Vienonen, Mikko A., Jousilahti, Pekka J., Mackiewicz, Karolina, Oganov, Rafael G., Pisaryks, Vital M., Denissov, Gleb R., Nurm, Ulla-Karin, Pudule, Iveta, Gurevicius, Romualdas J., Zablocki, Bartosz M., Friberg, Marita I., Krasilnikov, Igor A., Koistinen, Veli O., Vohlonen, Ilkka J. (2019) Preventable premature deaths (PYLL) in Northern Dimension partnership countries 2003–13. *European Journal of Public Health*, 29, 4: 626–630.

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[2] The workshops will be funded from an EU grant on PROVIDING SUPPORT TO IMPLEMENTATION OF THE NDPHS STRATEGY / FWC SIEA 2018 LOT 4: HUMAN DEVELOPMENT AND SAFETY NET/ EuropeAid/ 138778/DH/SER/multi.

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