Life expectancy advantages of high education: a comparison between Sweden and Lithuania

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Introduction

The majority of studies on mortality inequalities traditionally focus on unfavorable position of lower socio-economic groups and magnitude of the differences. The center of attention in this paper is directed towards the high education group showing the lowest mortality.

The study looks more closely at the age- and cause- specific patterns predetermining advantages of high education group against low education group in the two very different countries - Sweden and Lithuania. First, Sweden is distinguished by universalistic and egalitarian welfare policy, which let it to achieve one of the highest levels of social equality in the world. In addition this country demonstrates one of the lowest levels in mortality in the world. Second, Lithuania is a post-transitional country characterized by very high social inequality, low social support, and considerably higher mortality levels than in Western countries. This research has been inspired by the prior findings on the similarities in risk factors explaining socio-economic mortality differentials within countries. For example, outcomes of the LiViCordia survey comparing distributions of risk factors of coronary heart diseases found that the same pattern of risk factors characterize unfavorable situation of men belonging to lower socio-economic classes within both cities (Kristenson et al., 2001).

Great attention in this study is also paid to the specifics of age- and cause-specific mortality pattern of high education group in Lithuania. We look at potentials and disadvantages of this group by comparing mortality patterns of

males and females with high education in Lithuania to the corresponding group in Sweden.

Data and method

Data for both countries come from the census-linked mortality databases. The datasets used for analyses were transformed into the frequency format and include frequencies of deaths and numbers of person years of exposure by each combination of available variables. These data were used to calculate age- and cause-specific mortality rates and life tables for each education category.

100% of death records were linked to the census in case of Sweden, whereas the corresponding share in Lithuania was 95%. The remaining 5% were included into the analyses by introducing correction factors for census-unlinked (death record based) information. This methodological solution is described in more detail in the published article (Shkolnikov et al., 2007).

Data for Sweden cover the period 1998-2000, whereas the corresponding period for Lithuania refer to the July 1st 2001 – end of 2004. Due to higher probability of changes of education in younger ages, we restrict our analyses to the ages 35+.

Two data quality issues should be considered before proceeding to analyses and explanations of mortality differentials within and between two countries. The first issue concerns the comparability of cause-specific data due to differences in coding practices. We assume that restricting our analyses to 8 commonly used broad groups of causes of death diminishes such potential bias. The second potential problem concerns the comparability of educational groups between countries. We attempt to diminish such effect by introducing three large education categories (high, medium, and low) according to both completed education and years spent in education.

We used standard techniques of life table analyses and age and cause decomposition algorithm proposed by Andreev (Andreev, Shkolnikov, Begun, 2002).

Results

Our findings disclose remarkable advantage of males and females with high education in Lithuania (Table 1). Lithuanian males with high education show life expectancy of 40.8 years, whereas males with low education – only 30.3 years. The difference between these two categories exceeds ten years! The same life expectancy gap in Sweden is more than twice lower (4.5 years). The most striking fact is that Lithuanians with high education show lower life expectancy than Swedes with low education (Table 1). The educational gap is considerably smaller among females (from 6.6 years for Lithuania to negligible figure of 3.5 years in Sweden).

The decomposition analyses show that life expectancy advantage of males with high education in Lithuania against males with low education is mainly due to the differences in mortality at adult ages below 65 (Figure 1A). Almost a half of the total gap is explained by differences in mortality due to external

causes, smoking-related cancers, and alcohol-related causes. At the same time, lower mortality in both age ranges (below and above age 65) contributes equally to the life expectancy gap in Sweden. Higher mortality due to cardiovascular diseases in low education group explains almost 50% of the total difference, whereas external causes, smoking-related cancers, and alcohol-related causes play much less important role than in Lithuania (Figure 1A).

Differences in mortality due to cardiovascular system diseases make the biggest contribution to the total gap between females with high and low education in both Lithuania and Sweden (Figure 1B). However, the advantage of Swedish females with high education almost exclusively concerns older ages (above age 65), whereas the effect of lower mortality at younger ages (below 65) explains two thirds of the life expectancy differences in Lithuania. Such importance of premature mortality in Lithuania can be explained by notable impacts of excess mortality due to external and alcohol-related causes in low education group (Figure 1B). These causes of death play negligible role for educational gap in Sweden.

Finally we compare the lowest mortality (high education) groups in two countries. In the case of males, the results of decomposition analyses are similar to those comparing high and low education groups in Lithuania. The findings show that Lithuanian males with high education also suffer from relatively high premature mortality due to external, alcohol-relarted, and smoking-related causes of death (Figure 2). These causes of death explain almost 35% of the total differences in life expectancy between highly educated Swedes and Lithuanians. Almost entire life expectancy gap between highly educated Swedish and Lithuanian females comes from excess mortality due to cardiovascular diseases at older ages with some important contributions of other cancers between ages 50 and 65.

Conclusions

Our results suggest that there are some similarities in patterns of cause-specific contributions to the life expectancy advantage of high versus low education groups in Lithuania and Sweden. However, both high and low education groups in the two countries seem to be very different in terms of age patterns of mortality. Both Lithuanian males with high and low education show a striking importance of premature mortality due to external and alcohol-related deaths. These findings point to common risk factors affecting all population groups in the society. Taking into account that the most recent recovery in mortality has been mostly driven by high education group, persisting elevated premature mortality may lead to diminishing contributions of this group to improvements in male life expectancy in Lithuania.

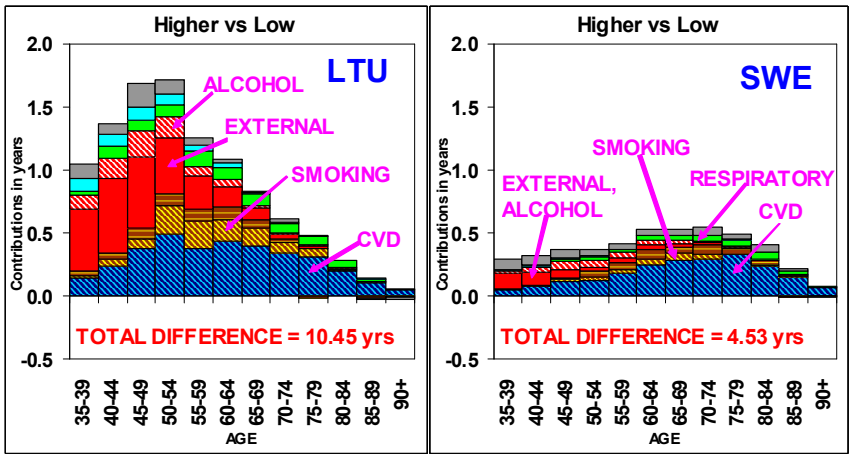
Table 1. *Life expectancy at age 35 by education. Lithuania (2001-2004) and Sweden (1998-2000).*

Life expectancy at age 35

	MALES				*FEMALES*			
	e(35)	*Diff.*	*e(35)*	*Diff.*	*e(35)*	*Diff.*	*e(35)*	*Diff.*
Education	**LTU**		**SWE**		**LTU**		**SWE**	
High	40.75 (40.45-41.04)	*0.0*	46.23 (46.07-46.39)	*0.0*	47.57 (47.23-47.91)	*0.0*	50.38 (50.18-50.57)	*0.0*
Medium	35.15 (34.99-35.31)	*-5.6*	43.98 (43.86-44.09)	*-2.3*	44.39 (44.24-44.53)	*-3.2*	48.95 (48.82-49.08)	*-1.4*
Low	30.29 (30.05-30.54)	*-10.5*	41.70 (41.61-41.79)	*-4.5*	40.94 (40.63-41.26)	*-6.6*	46.85 (46.75-46.94)	*-3.5*
Total	34.35 (34.25-34.45)		43.04 (42.98-43.10)		43.99 (43.90-44.07)		47.72 (47.66-47.78)	

Figure 1. *Age and cause of death contributions to the total differences in life expectancy at age 35 between high and low education categories in two countries.*

A) Males



B) Females

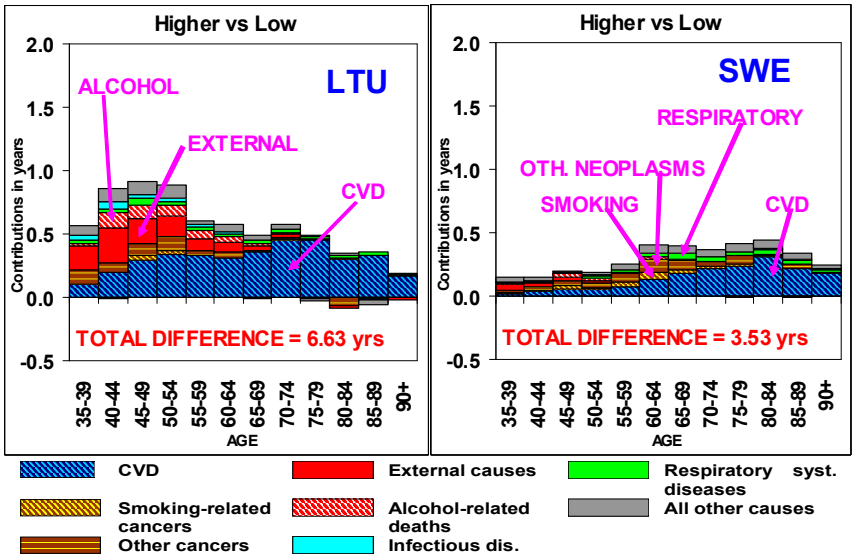
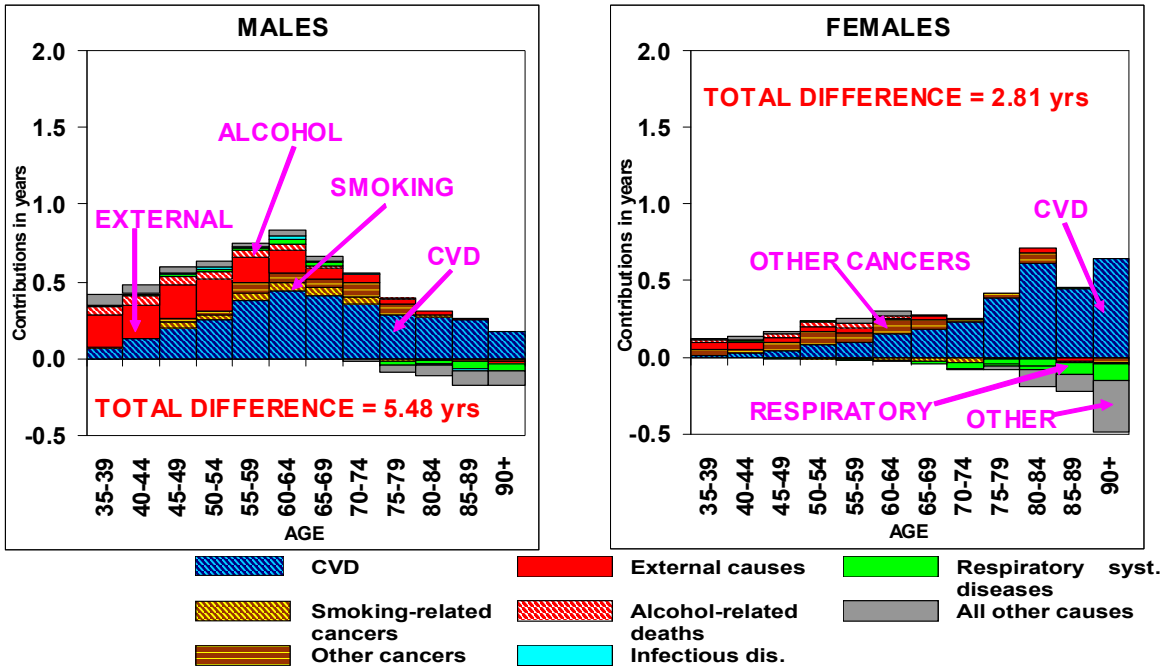


Figure 2. *Age and cause of death contributions to the total differences in life expectancy at age 35 between Swedish and Lithuanian males and females with high education*



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