Mortality Differentials by Marital Status in Bulgaria and Lithuania: Evidence from Census-Linked Studies

Iliana V. Kohler[1]
Domantas Jasilionis[2]

Abstract

In this paper, we investigate mortality differentials by marital status in Bulgaria and Lithuania during the post-transition period after 1989. We use a unique set of comparable data to shed new light on the relationship between marital status and mortality in both countries that so far have not been compared in terms of their mortality experience despite broadly similar socioeconomic and political development. A particular strength of our analyses is the availability of comparable high-quality census-linked mortality data that has been obtained from a linkage between population censuses and vital registration records. Based on our preliminary findings, we anticipate that the magnitude in the absolute and relative differences in mortality by marital status is similar in both countries, and that these differentials are larger for men than for women. In addition, our analyses will investigate the cause-of-death patterns by marital status in both countries, with the hypothesis that mortality from external and alcohol-related causes of death is highest among unmarried individuals (and in particular, men).

Key words: mortality, marital status, Bulgaria, Lithuania, census-linked studies

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1. Introduction

Among the most robust research findings in the demographic and related epidemiological literature is the relationship between marital status and mortality risk: married individuals have been consistently shown to face lower mortality risks than divorced and widowed individuals, or those who have remained single (Burgoa 1998; Morgan 1980; Lillard and Panis 1996; Murray 2000; Preston and Taubman 1994; Trovato and Lauris 1989; Wait and Lehrer 2003). This mortality gradient by marital status is typically stronger for men than for women (e.g., Hu and Goldman1990; Valkonen, Martikainen, and Blomgren 2004), and it is often smaller in higher SES groups as compared to lower SES groups that have less access to markets, insurance, health-care systems and other health inputs. It has

[1] Population Studies Center, University of Pennsylvania; 3718 Locust Walk, Philadelphia, PA 19104-6298. Email: Iliana@pop.upenn.edu;
[2] Max Planck Institute for Demographic Research; Konrad-Zuse-Str. 1, 18057 Rostock, Germany. Email: Jasilionis@demogr.mpg.de

also been suggested that this gradient is particularly large and potentially widening in the countries of Central and Eastern Europe, including Russia, due to lack of relevant public institutions, insurance and other markets and that in part provide alternatives for the health-inputs "produced" within marriage.

In this paper we use a unique set of comparable data to shed new light on the above and related issues by investigating recent mortality differentials by marital status in Bulgaria and Lithuania, two countries that so far have not been compared in terms of their mortality experience despite broadly similar socioeconomic and political development. A particular strength of our analyses is the availability of comparable high-quality census-linked mortality data that has been obtained from a linkage between population censuses and vital registration records. Based on our preliminary findings reported below, we anticipate that the magnitude in the absolute and relative differences in mortality by marital status is similar in both countries, and that these differentials are larger for men than for women. In addition, our analyses will investigate the cause-of-death patterns by marital status, with the hypothesis that mortality from external and alcohol-related causes of death is highest among unmarried individuals (and in particular, men).

2. Data and Methods

2.1. Data

The comparative analysis between Bulgaria and Lithuania is based on individual-level data generated by a similar procedure. In particular, we use datasets obtained from a linkage between population census data and death records. Both linkages use a personal identification number available on the census and death records to uniquely identify individuals and link the records. In Lithuania, 95% of all death records for the period 2001-2004 were linked to the census records. The remaining 5% unlinked deaths were incorporated into the dataset by applying a special redistribution procedure and introducing corrections for the census unlinked information (for more details see Shkolnikov et al, 2007). In Bulgaria, 93% of all death records for the period December 5th---December 31st, 1998 have been linked to the census records.

Information on marital status and other socioeconomic characteristics is obtained from the census records and thus measured at census. The following four marital status categories are considered in this analysis: married, never married, divorced and widowed. In both datasets we do not have information about cohabitation. The analysis is limited to the non-institutionalized population.

2.2. Methods

The analysis are based on life table estimates by marital status, conditional on survival to age 30, from which we compute absolute and relative differences in life expectancy by marital status. In addition, standard decomposition techniques will be used to estimate the age and cause-specific contributions to the differences in life expectancy between

married and non-married individuals. Cause-specific mortality ratios and their 95% confidence intervals are obtained using Poisson regression.

3. Preliminary results

Figure 1 shows trends in male and female life expectancy in Bulgaria and Lithuania for the period 1959—2005. Bulgarian men are characterized by higher life expectancy at birth during the entire period of observation than Lithuanian men. While during the 1960s Bulgarian male life expectancy stagnated, it declined in the 1970s, a trend that accelerated during the decade of transition in the 1990s. Only in the most recent years after 2000, male life expectancy at birth showed some improvements and recovered to the level observed during the 1960s. In contrast, male life expectancy for Lithuanian men fluctuated during the period of observation, but remained below the level observed for Bulgarian men. In 1986 it increased to 67.92 years and almost reached the level observed for Bulgarian men. The trend however reversed dramatically in the following years and male life expectancy in Lithuania declined by about 6 years to a level of about 63 years in 1995.

In contrast to men, female life expectancy at birth for Bulgarian women increased until the 1990s, but remained below the level observed for Lithuanian women. Only around 1995 women in Bulgaria and Lithuania reached the same level of life expectancy at birth due to the fact that Lithuanian female mortality decreased. In the mid-1990s the trends diverged again with Lithuanian female life expectancy at birth increasing faster than the one observed for Bulgarian women. In summary, while Bulgarian men are characterized by lower mortality than Lithuanian men, we observe the opposite pattern among women. Although there are noticeable differences in life expectancy at birth between Bulgaria and Lithuania, the trends over time between the two countries are similar.

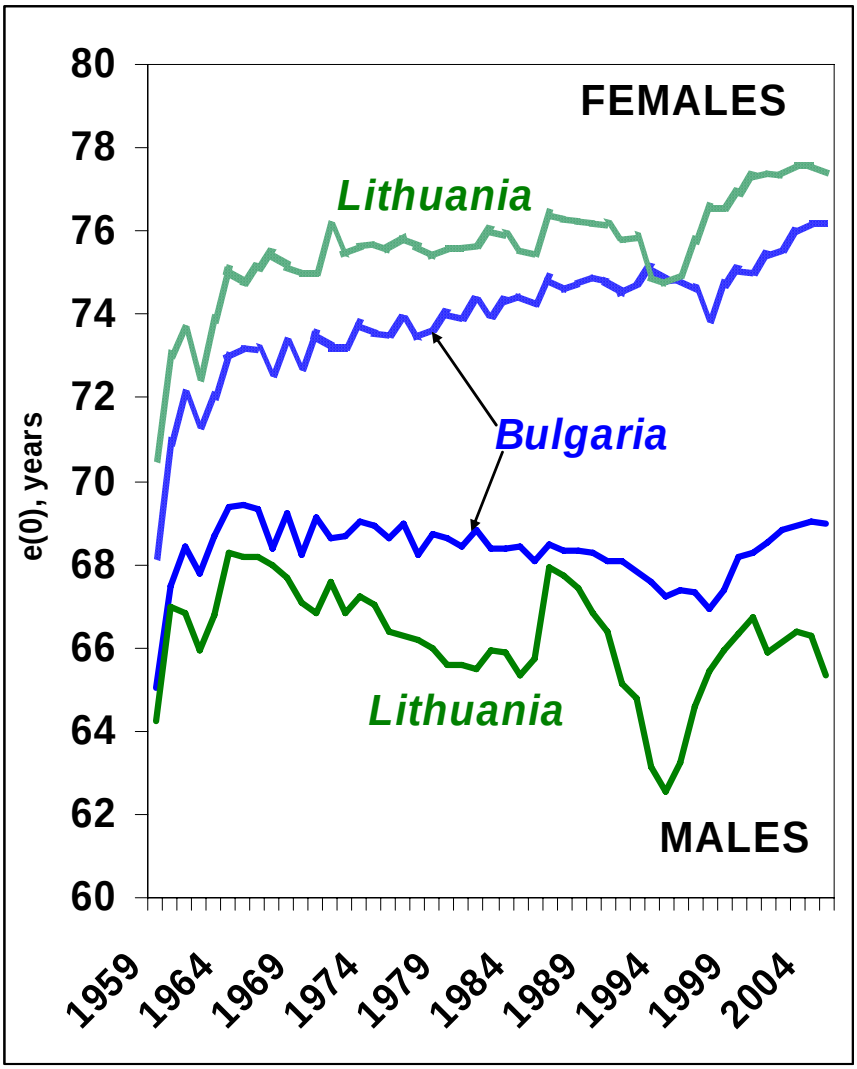

Figure 1. Male and female life expectancy at birth in Bulgaria and Lithuania, 1959-2005. Source: Human Mortality Database available at: http://www.mortality.org

Table 1. Life expectancy at age 30 by marital status. Bulgaria, 1993-1998 and Lithuania, 2001–2004

	Males		Females	
	Bulgaria	**Lithuania**	**Bulgaria**	**Lithuania**
Married	42.00	41.53 (41.41–41.65)	48.49	50.30 (50.16–50.45)
Never-married	37.45	30.74 (30.41–31.06)	45.05	45.43 (45.08–45.78)
Divorced	37.75	31.31 (31.01–31.60)	47.77	47.45 (47.13–47.77)
Widowed	37.32	30.37 (28.95–31.78)	46.69	46.52 (46.14–46.91)

Note: Life expectancy values have been calculated based on different techniques.

Table 1 contains the estimates for life expectancy at age 30 by marital status. For men, these results indicate substantial differences in life expectancy between married men on the one side, and men in the other marital status groups on the other side. In both countries, married men are characterized by the highest life expectancy at age 30 (42 years in Bulgaria and 41.53 years in Lithuania). Married men in Bulgaria have 4.7 years higher life expectancy at age 30 than never married men. In Lithuania the difference is substantially larger—11.1 years between the two groups. Differences in life expectancy at age 30 between the never married, divorced and widowed groups are less than one year in both countries. Bulgarian men however have a slight advantage in life expectancy in all marital status groups compared to their Lithuanian counterparts.[3] The pattern for women is similar, albeit less pronounced: married women in both countries have the highest life expectancy at age 30 of 48.5 years in Bulgaria and 50.3 years in Lithuania, with women in other marital statuses being characterized by lower life expectancy and higher mortality risks.

Table 2 shows cause-specific Poisson regression mortality rate ratios by marital status in Lithuania. The largest differences in the relative risks of death are observed for infectious diseases, external causes, and alcohol-related deaths among males: mortality in non-married groups is about 3-6 times higher than in the married group (reference category). Among women, the relative mortality rate ratios are smaller. The largest relative differences are observed for diseases of the respiratory system and for alcohol related causes, where never married women have 2.5 times higher mortality risk than married women.

[3] The only exception of this pattern are widowed men---in Lithuania, they have 0.05 years higher life expectancy at age 30. This difference however may be due to differences in the methodology used to calculate life expectancy. In the final paper, we will apply the same methods for both countries.

Table 2. Cause-specific relative mortality rate ratios by marital status in Lithuania, 2001–2004

	All causes	Infectious diseases	Cardiovascular system diseases	Smoking-related cancers	All other cancers	Respiratory system diseases.	Alcohol-related causes	External causes	All other causes
MALES									
Married	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N.Married	**2.16***	**5.81***	**2.04***	**1.50***	0.93	**2.85***	**3.45***	**2.80***	**2.69***
Divorced	**2.09***	**4.39***	**1.85***	**1.41***	**1.14***	**2.43***	**4.03***	**2.94***	**2.70***
Widowed	**1.68***	**3.66***	**1.71***	**1.34***	**1.12***	**1.87***	**2.73***	**2.33***	**1.93***
FEMALES									
Married	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N.Married	**1.66***	**1.98***	**1.76***	**1.41***	**1.24***	**2.49***	**1.55***	**1.93***	**1.76***
Divorced	**1.36***	**1.61***	**1.27***	**1.54***	**1.18***	**1.53***	**2.35***	**1.88***	**1.40***
Widowed	**1.45***	1.28	**1.52***	**1.29***	**1.16***	**1.62***	**2.50***	**1.88***	**1.37***

Note: age 30 and above

***** *statistically significant differences from the reference (married) group. Source: Jasilionis et al., 2007.*

The above preliminary analyses will be augmented in the final version of this paper with additional analysis in which we will explore to which extent the relationship between marital status and mortality in both countries is modified once education is controlled for.

4. Summary

The analyses in this paper are the first attempt to compare marital status differentials in two Eastern European countries using similar higher quality census-linked datasets. With these analyses we aim to identify groups in the society that are characterized by highest levels of mortality and that appear particularly disadvantaged during period of socioeconomic transformations. These analyses will also shed more light on possible commonalities and differences in specific risk factors behind unfavorable mortality trends in the region.

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