Changes in Mortality in the Second Half of 19th and First Half of 20th Centuries: An Event History Analysis with Monthly Data in Rural Population in Serbia

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Extended abstract

Through first demographic transition, decline in mortality was supported by different theories about main determinants contributing to this decline, e.g. living standard, improvement in public health, urbanization and vaccination. Main objective of this paper is to explore overall and cause-specific mortality in the Bačko Petrovo Selo (Serbia), particularly in terms of long-term changes due to first and second demographic transition. Bačko Petrovo Selo is village situated in North Serbia and has a Hungarian ethnic majority (more than 70%), second ethnic group are Serbs (about 20%), third are Rome population (about 3%). In time covered in this analysis, Bačko Petrovo Selo has population increase from 5 292 (1950) to 10 224 (1948). Today in village lives 6 350 inhabitants.
Mortality data for Bačko Petrovo Selo were collected from parish registers, from 1850 until 1950. For period 1850-1888, parish registers are in Historical archive in Senta, while from 1889 data was collected from parish registres in three curch: two chatolic-"All Saints" and "Saint Imre" and one orthodox "Saint Nikola". All three curch are situated in Bačko Petrovo Selo. Mortality data are collected on monthly level, by age, gender and causes of death. Due to the limitation in registers (damage over time, failure to register etc..), data for causes of death are available from 1868. Data about causes of death are registered by priest in church. Until 1895, there was no legislation about death certified by the doctor, and the causes of death was registered according to the information given by the relatives of the person who died. Despite the weaknesses of the data on causes of death, general trends in the type of causes can be given, especially transition from infectious to chronic diseases. The origin causes of death were classified in 9 groups, employing the clasification about causes of death used in preious studies dealing with same issue. For the purpose of this paper crude death rate (CDR) was calculated. CDR was calculated for overall mortality as well as by gender. In order to investigate seasonal changes of mortality over time, coefficient of seasonal variation in mortality (CSVM) was calculated as excess number of deaths occurring during the winter period (December to March) compared with average of non-winter seasons.
Follow-up changes in overal mortality since 1850 shows strong oscilation in CDR from 38.5 to 15‰ (in 1950). Similar trend was founded for both gender. In male population it has varied from 46 to 13.3‰ and in female population from 32.3 to 16.6‰. Average age at death (AAD) during the second half of 19^{th} century was not exceeding 20 years, but in first half of 20^{th} century continuously increse in AAD was observed, and around 1950 average age of death was about 40 years. Analysis of causes of death conducted from 1868, gives evidence that communicable diseases waere leading causes of death. Accoring to the collected data, nine groups of causes of death were defined: Infectious and parasitic diseases; Neoplasms; cardiovascular diseases, Influenza, pneumonia and bronchitis; Diarrhoea; Certain degenerative diseases; Certain diseases of infancy; Injuries and external causes; All other and ill-defined causes of death.
Due to the fact that majority of causes of death were communicable diseases, CSVM shows shift oscillation, without exact seasonal pattern. There was no linear trend in increase or decrease in CSVM, and transition of excess death in winter and non-winter period was founded. Results in this paper contribute to the better understanding of mortality risk in the past due to the insufficient medical and public health progress in the past and shows that seasonal changes

in mortality are connected more with non-communicable diseases. Also, analysis performed in this research should improve better understanding of population theories related to the mortality declining over time.

Keywords: overall mortality, cause-specific mortality, causes of death, seasonality in mortality, Serbia