**Impact of unhealthy lifestyle on life expectancy of men and women in Russia**

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The association between unhealthy lifestyle factors and health is well studied in the medical literature, making healthy lifestyle policies a priority for healthcare authorities. The focus of this study is on lifestyle factors, and their impact on regional life expectancy. Therefore, policy makers introduce different measures to decrease tobacco and alcohol consumption, and promote sports participation. In such a heterogeneous and vast country as Russia, people’s lifestyles and regional policies vary across the regions, resulting in high variation of smokers, alcohol consumers and adults engaged in sports. Therefore, one can expect that in regions with high levels of per capita alcohol consumption, high proportion of male and female smokers, and low rates of sports participation, life expectancy be low compared to regions with healthier lifestyles. *The goal of this study* is to identify the impact of unhealthy lifestyle factors on regional life expectancy of men and women in Russia.

This study used data from Federal State Statistics Service (Rosstat) including an observation study «Comprehensive observation of living conditions of the population» (COLC) and regional data from Rosstat official publications. For some regions part of the data was missing, therefore the study sample included a balanced panel for 77 Russian regions for the years 2014-2020. *The dependent variables* were male and female life expectancy. The lifestyle variables included the percentage of smokers, alcohol consumers, adults engaged in sports and alcohol consumption measured as per capita of adult population (15+) in a region over a calendar year, in litres of ethanol (APC).

*The control factors* included a standard block of economic variables (Gini coefficient, unemployment rate, real per capita income, share of urbane population) and a block of variables related to healthcare provision. For the latter we used: hospitals capacity measured as daily average number of patients’ visits to hospitals per 10000 population, population per hospital bed, population per medical doctor (physician) and average waiting time for emergency care (in minutes). We also included air pollutant emissions from stationary sources (thousand tons per year) to control for regional ecological condition. To control for COVID-19 pandemic we introduced a dummy variable for the year 2020.

For econometric analysis, we used fixed effect (FE) and random effect (RE) models. However, the preferred model was FE model since the sample of Russian regions that we analysed in the study was not random A Hausman test also showed a preference for the FE model. The RE model was estimated to check the robustness of results. The regressions were run separately for men and woman since previous studies on healthy lifestyles showed that men and women differ significantly by their lifestyle and attitude towards health.

The results showed that the APC was negatively associated with both male and female life expectancy, but the share of adults consuming alcohol was not statistically significant neither for men nor for women.The share of smokers negatively correlated with life expectancy for both men and women, but was statistically insignificant for men.Sport participation rates positively correlated with life expectancy in all models.

In absolute values, the share of urban population is the most important factor attributed to men’s life expectancy.However, the share of urban population was not significant for women’s life expectancy.Population per hospital bed was significant in all models.Average waiting time for emergency care varied considerably across the regions, especially in 2020, but was not statistically significant in econometric models.The other variables, describing healthcare system showed mixed results. Hospitals capacity (the average number of patients’ visits to hospitals per 10000 population) was positively correlated with men’s life expectancy, but was not significant for women’s’ one. The population per a medical doctor ratio was significant only in RE models, showing negative correlation with expectancy life for both men and women.

The real per capita income was not statistically significant, but the Gini coefficient that shows income inequality was negatively associated with life expectancy. Unemployment rates were negatively correlated with life expectancy, but for men they were significant in RE model only. Finally, the coefficients for the year 2020 indicated a decrease in life expectancy in 2020 compared to previous years.

The study therefore showed a drastic variation in male and female life expectancy across Russian regions. In some part, it can be explained by lifestyle and prevalence of bad habits, such as smoking, alcohol consumption and physical inactivity.