

Self-rated health of the older population in Estonia and Russia: the impact of ethnic, cross-country differences and age at migration

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Abstract

Within the framework of the life trajectory paradigm, factors of poor health in older age may include ethnicity, as well as migration history of an individual. Estonia, with a large share of the Russian population, is a good example to analyze the impact of migration and changes in the ethnic environment on health throughout the life course. The purpose of the study is to assess differences in self-rated health of the older population (50+) living in Estonia and Russia, and identify reasons for these differences. The empirical basis of the study was data of the SHARE survey conducted in Estonia in 2010-2011 and the SAGE survey conducted in Russia in 2007-2010. The sample includes urban population aged 50+ in private households: 2,655 Estonians living in Estonia, 1,478 Russians living in Estonia, and 2,446 Russians living in Russia. The tested ordinal regression models show that the native-born in Estonia have a 39% higher chance of rating their health as good compared to Russians in Estonia, which is associated with differences in educational level in the population aged 50-64, while in the population aged 65+ it is associated with differences in living standards between the native-born and immigrants of the first and subsequent generations. At the same time, Russians from Russia are 70% (population aged 50-64) or 60% (population 65+) less likely to rate their health as good, which is related to the lifestyle and loneliness. Russians aged 65+ in Estonia who moved to the country at the age of 25+ have the same chances. The study negates the healthy migrant effect identified in young immigrants, and also indicates health behavior and poor quality of social connections as possible reasons for poor health of the older Russian residents.

Keywords

health, migration history, elderly, ordinal regression, self-rated health, Commonwealth of Independent States

JEL codes: J15, J11, I14

Introduction

The phenomenon of increased mortality (low life expectancy) in Russia against the background of countries with a high level of economic development is reflected in a number of scientific papers and has received various explanations related to both peculiarities of health behavior and individual characteristics of the population (for example, the level of education) (Shkolnikov et al. 2001; Vishnevsky 2015), as well as imperfections of the existing healthcare system (Andreev et al. 2003). At the same time, much less is known about Russia's place among the world countries in terms of health indicators and reasons for the country's distinctive features in terms of population health. Results of the undertaken comparisons are few and sometimes contradictory. Self-rated health makes it possible to characterize human health across the spectrum of aspects of this phenomenon in the sense it is understood by the World Health Organization (WHO). The existing cross-country comparisons characterize Russia as a country with a fairly high share of people not satisfied with their health (Menec et al. 2007; Vuorisalmi et al. 2008; Pärna & Ringmets 2010). However, in the late 1990s, Russia did not significantly differ from the Eastern Europe countries by this indicator (Hungary, Latvia), compared to mortality (Bobak et al. 2000). According to later assessments, Russia stands out for low self-rated health among countries with a higher level of economic development (Mansyur et al. 2008). M. Bobak and co-authors (Bobak et al. 2000) consider the level of material security (prevalence of material deprivation of the population) and low levels of perceived control as a reason for differences in self-rated health, while K. Mansyur and co-authors (Mansyur et al. 2008) suggest a significant variation in self-rated health between the population of Russia and other 45 countries under study, which is not explained by differences in the socio-economic status of individuals identified by the sample surveys.

In our opinion, studies involving Russian immigrants provide for bridging the gap in the analysis of differences between Russia and other countries in terms of health indicators, as well as the nature of these differences. Comparing the ethnic Russians in the country of origin and another state allows us to separate the reasons for health disparities related to institutions and individual characteristics of citizens, to assess impact of the national culture on health, which can determine both objective differences in health and biases in its subjective assessments. Estonia is one of the countries with a high share of Russians and is eligible for such comparisons. Sample surveys on ageing make it possible to conduct these cross-country and interethnic comparisons by a wider variety of health indicators, since questionnaires for this age group usually contain the widest range of health indicators. Therefore, older population living in Estonia and Russia is the focus of the research presented in the article.

Studies on older immigrants who have just relocated to the country explain the health advantage that the recently arrived usually have by the healthy immigrant effect (HIE): generally, the most active and healthy population of the donor country with possibly a superior health compared to the host country population decides to take a move (Borjas 1987). However, a long stay in the country, worse working and housing conditions compared to the local counterparts, complicated access to medical care, as well as stress associated with acculturation and discrimination, can exhaust the initial “advantage” in health: by older age, under the influence of the “exhausted migrant effect”, the immigrated may feel worse than the native-born population (Bollini & Siem 1995; Fokkema & Naderi 2013; Kristiansen et al. 2016; Cela & Barbiano di Belgiojoso 2021).

About a third of the Estonian population at the time of data collection for the study were not ethnic Estonians¹, and most of this group was represented by Russians who had lived in the country for a long time (Statistics Estonia 2011), therefore Estonia is a good example to analyze the impact of immigration and changes in ethnic environment on health throughout the life course.

A long-term stay in the country (the highest migration flow from Russia to Estonia was registered after the end of World War II and until the 1980s and 1990s (Katus et al. 2002)) and the nature of migration (more often on the initiative of the authorities rather than population, not suggesting a full acculturation of the incoming population (The Russian..., 2011)) determine peculiar features of the impact of immigration on health of the population residing in the country and the need for a special study of this problem.

Individual researchers have attempted to analyze health characteristics of the Russian population living in the post-Soviet space outside Russia (Värnik et al. 2006; Baburin et al. 2011; Guillot et al. 2011), mainly on the basis on mortality rates, yet the researchers failed to come to universal and unambiguous conclusions. The researchers note that in many countries the Russian population has poorer health compared to the local population, and associate these differences with a special national culture regarding health, suggesting a high commitment to bad habits and unhealthy diet.

Studies conducted in Estonia also show that the Russian population has poorer health compared to the native-born population².

Although Estonia, like Russia, is characterized by stagnation in life expectancy in the period from the 1960s to the end of the 1990s and is still lagging on this indicator from European countries, the local population of the country showed a less significant reduction in life expectancy compared to the Russian population of the country. By 2009, in non-titular ethnic groups residing in Estonia, life expectancy equalled to 67 years in males and 79.4 years in females, which was lower than similar indicators for ethnic Estonians, yet higher than in Russia (Abuladze et al. 2023). The authors attribute the observed differences to an unhealthy lifestyle and fail to find any disparities in the access to medical care between Estonians and representatives of other ethnic groups residing in the country (Baburin et al. 2011; Reile & Markina 2010).

Large-scale comparative studies reflecting differences in health of the population of Estonia and its ethnic groups, as well as Russia, have not been conducted until recently. Estonia, along with Russia, was among the countries studied by Voormann and Helemae (2016); another study compared health indicators of women living in Estonia and St. Petersburg (Dubikaytis et al. 2014), but without any analysis by ethnic group.

A recent study showed that older Russians residing in Estonia are distinguished from the local population, as well as from the Russian population, by a high prevalence of cognitive impairments (based on the results of the immediate recall (Abuladze et al. 2023)). The current study aims to examine differences between ethnic groups on a more general indicator – self-rated health – covering physical and mental health problems, as well as other types of restrictions that may arise in older ages.

The purpose of this study is to assess differences in self-rated health of the older population (50+) residing in Estonia and Russia, and to identify reasons for these differences.

1 In this work, Estonians are ethnic Estonians residing in Estonia regardless of their Estonian citizenship.

2 The native-born population is here and after defined as the ethnic Estonian population.

Theoretical framework and an overview of empirical research

The study was conducted within the framework of the life trajectory paradigm, according to which human health is a subtotal of the accumulated throughout life impact of socio-economic situation and individual events that can positively or negatively affect health, including those related to immigration and incomplete adaptation to the conditions of the host society (Marmot 2013). According to E. Cela and E. di Belgiojoso (Cela & Barbiano di Belgiojoso 2021), older immigrants face a double burden of circumstances that can worsen their well-being. The first type of factors includes an immigration status and any kind of discrimination associated with it (in the labor market, health care system, and others). Factors of the second type include a lower social status (including the level of material security).

Hypothesis 1: the impact of discrimination. From the perspective of these paradigms, the most likely reason for disparities between residents of individual countries, ethnic groups or groups with different migration history (migration groups) is inequalities in education, employment characteristics and standard of living between the local population and migrants, which may also result from the social exclusion of the arrived population.

Faced with discrimination (if not during relocation from Russia to Estonia, then after the country gained independence), Russian immigrants could occupy a lower position in society compared to Estonians: they had difficulties finding employment, occupied less privileged positions in the labor market and as a result, in the 1990s and early 2000s they faced difficulties caused by a lower standard of living and less favorable housing conditions. At the same time, the nature of migration could hardly lead to any significant differences in the level of education between the Russian and Estonian older population, since during the period of active migration, especially the first waves, Estonia, the host country, acted as a territory of active development, rather than an already more developed host country.

Another manifestation of discrimination against immigrants, which in older ages can have a negative impact on health of the arrived, are problems with access to medical care (Hjelm & Albin 2014).

Hypothesis 2: the impact of institutions for health maintenance. Access to health services can also cause loss of health of the native-born elderly population if the health system lacks necessary resources to provide assistance to citizens with increased demand for medical care and age-associated diseases or does not allow the older population to overcome barriers to receiving care associated with aging (McDermid & Bagshaw 2011; Riou & Boddaert 2016; Selezneva et al. 2020).

Hypothesis 3: the impact of national culture. Studies on the immigrant health confirm the importance of differences in the socio-economic status of the native-born and foreign-born populations, however, demonstrate that this group of factors does not fully explain peculiarities of the well-being of these groups (Reijneveld 1998). Another reason for health disparities between the native-born population and immigrants is the health-related lifestyle (Reijneveld 1998; Jonnalagadda & Diwan 2005; Kobayashi et al. 2008). The culture of attitude towards one's health and the popularity of health-promoting practices may differ in the donor country and the host country. If an immigrant came from a country with a widespread "unhealthy" behavior (as noted above, this may be the case of immigrants from Russia who moved to post-Soviet countries), cultural inertia may determine his greater tendency towards destructive behavior after relocation and, as a result, to poorer health in older age. Also, the very fact of immigration can provoke unhealthy behavior, primarily through bad habits as a way to relieve stress associated with adaptation to a new place. Russians in Estonia

may have poorer health compared to Estonians due to a greater tendency towards unhealthy behavior – as carriers of the Russian “culture of unhealthy behavior” associated with the prevalence of bad habits and a tendency towards unhealthy diet.

Russians in Estonia may find unhealthy daily habits more typical than Russians in Russia, since in the former they may be provoked not only by culturally determined behaviors, but also by difficulties in acculturation or experiences associated with incomplete acculturation.

Official statistical data (Table 1) also substantiate hypotheses 2 and 3. The data also indicate differences in the resource availability and performance of the health systems of the countries under study. Estonia spends more on medical care than Russia, less making the population pay out of pocket for their treatment, which can be expressed in higher access to medical care in Estonia for both Estonians and Russians. Estonian healthcare can also cope with chronic diseases more effectively, at least due to their better diagnosis (for example, the detection rate of diabetes in Estonia is higher). The data also confirm that smoking is more common among men in Russia, although in terms of consumption of strong drinks in 2010, Estonia was ahead of Russia. Russia is clearly distinguished from Estonia by the prevalence of unhealthy diet and obesity among women.

Hypothesis 4: the impact of social connections. Social connections, having a significant impact on the older people health (Stoekel & Litwin 2016; Arezzo & Giudici 2017; Ayalon & Levkovich 2019), are a significant predictor of health of the middle-aged or older immigrants (Carmel 2001; Litwin 2006; Kulla et al. 2010). According to gerontologists and migration specialists, the presence of inner circle, receiving help from friends and relatives and satisfaction with social contacts act as a factor mitigating the impact of negative events

Table 1. Healthy lifestyle indicators and access to medical care in Estonia and Russia in 2010

	EU	Estonia	Russia
Health-related lifestyle			
Age-standardized prevalence of smoking among population aged 15 and over, % (WHO estimates)			
- males	33.4	41.7	46.9
- females	25.3	24.4	12.6
Consumption of strong alcoholic beverages by population aged 15+, liters of pure alcohol per capita	2.3	5.6	5.4
Average annual intake of fruit and vegetables, kg per capita	213	184	171
Age-standardized prevalence of obesity (BMI > 30 kg/m ²), % (WHO estimates)			
- males	20.4	17.9	15.6
- females	20.4	20.8	26
Access to health care			
Prevalence of diabetes mellitus, % (2006)	4.2	2.9	1.9
Total health expenditure, % of GDP	9.6	6.3	5.8
Direct household expenditure on health care, % of total health expenditure	16.2	18.6	43.3

Source: compiled by the authors according to the database “Health for All” (WHO).

in a person's life: serious illnesses, bereavement of loved ones, as well as stress associated with acculturation in a new country. However, H. Litwin (Litwin 2006) shows that among immigrants representing different national cultures, the impact of social networks on health can be of different strength.

Russians in Estonia may have poorer health compared to Estonians, and probably compared to Russians in Russia, due to less developed social networks and low satisfaction with both close contacts and communication with people in general, which may be associated with incomplete acculturation in the host country.

Hypothesis 5: the impact of mental health. Another significant factor in self-rated health in older ages is such a component of mental health as a presence/absence of depression (Serby & Yu 2003; Alexopoulos 2005; Millán-Calenti et al. 2012). Depression can manifest in the elderly in the form of cognitive decline, dementia and other somatic diseases (Cole & Dendukuri 2003). In these cases, low self-rated health, which is primarily considered an indicator of physical health (Krause & Jay 1994), is determined by mental and psychological problems. Although data on the prevalence of depression among immigrants are limited, researchers associate relocation to another country with increased risks of depression: This mental disorder may result from acculturation stress (Lindert et al. 2009).

Russians in Estonia may have poorer health compared to Estonians and probably compared to Russians in Russia, due to a greater prevalence of depression associated with acculturation stress in the host country.

Thus, the theoretical model of the study included both factors that can determine the increased vulnerability of an immigrant to health deterioration (related to residence in a donor country or integration into life in a new environment) and specific parameters that worsen health at an older age, regardless of migration history.

Data and methodology

The empirical basis of the study was a combined set of data of two surveys on older people living in private households. Data of the first wave of the European Survey on Health, Ageing and Retirement in Europe (SHARE), conducted in Estonia in 2010-2011, cover the native-born population (Estonians) and the Russian population of the country of older age (50+). Together with the selected respondents aged 50+, their partners participated in the survey as well. The study is based on a random stratified¹ sample formed on the basis of the population register and death register, excluding recently deceased citizens.

Since the respondent was free to choose the preferred language of the survey, Russian or Estonian, the survey probably reflects the distribution of the Estonian population of older ages by ethnicity as well – poor command of the Estonian language could hardly prevent the Russian-speaking population in Estonia to take part in the survey. The response rate at the household level equaled to about 60% (Abuladze et al. 2023).

Data of the Survey on Global Ageing and Adult Health (SAGE) conducted by the World Health Organization in 2007-2010 make it possible to assess health status of the elderly in Russia and compare health of Russians living in Estonia with it. The surveyed SAGE population is based on a sample from the World Health Survey (WHS) in 2003 and an additional

¹ Stratification was done by sex and year of birth, and ensured representativeness of various regions of the country in the survey.

set of respondents to ensure representativeness of the key socio-demographic indicators in line with the 2002 census data.

The SAGE sample is represented by both a subsample of the older population and a small subsample of the population aged 18-49, which was excluded from the analysis. The response rate added up to 71.8% (WHOC).

In order to ensure comparability of ethnic groups, the rural population was excluded from the consolidated data set. Russians in Estonia are concentrated mainly in cities, and ethnic Russian dwellers of Estonian villages included in the sample are a small group, the data on which may be biased.

The final dataset for the analysis included 6,579 observations: 2,655 Estonians residing in Estonia, 1,478 Russians living in Estonia and 2,446 Russian respondents living in Russia.

Although more relevant surveys allow us to compare the three ethnic groups under study in terms of self-rated health and individual predictors of health, for example, the European Social Survey (ESS) in 2014 with the participation of two countries, the 8th wave of SHARE in Estonia (2020) and the National Study of the Older Generation conducted using a comparable methodology in Russia in 2021 (Human Capital...), in our opinion, the database used is preferable, since it provides a larger sample size and allows to track more Estonian citizens of Russian descent alive.

A regression analysis was used to test the study hypotheses on the origins of differences between the ethnic groups under study; ordinal regression models were constructed with health indicator being a dependent variable. At the first step, one independent variable was included in the model – the ethnic group. Further, other independent variables were introduced one after the other. A decrease in the significance level of the regression coefficient for an ethnic group below 0.05 was regarded as a situation where all predictors included in the model fully explain the differences between ethnic groups.

Self-rated health as a health indicator

The leading indicator of health in the study is self-rated health - an indicator that reflects a general condition of a person. Despite the subjectivity of such assessments, the research results show that they still allow for a fairly accurate assessment of an individual's well-being, including undiagnosed health problems, risk of death, possible deterioration of health in the future and demand for inpatient and nursing care (Idler & Benyamini 1997).

The limitation of self-rated health is its dependence upon cultural context: representatives of certain age, social and ethnic groups may understand "good" or "poor" health in a different way, since they take into account different aspects of their well-being and use different standards for health rating (Krause & Jay 1994; Idler & Benyamini 1997; Garbarski 2016). Researchers also point out that individuals who follow a healthy lifestyle tend to be more pessimistic about their health, while individuals with unhealthy behavior may be more tolerant of the negative effects of such attitudes on health and give excessively positive health ratings (Bombak 2013). D. Garbarski (Garbarski 2016) tries to offer a comprehensive list of factors that determine results of the self-rating health scale: factors characterizing health status, its key determinants, as well as factors responsible for the bias. The latter include psychological characteristics of the respondent and conditions of the survey, which are often impossible to control when analyzing the data collected.

Ultimately, according to researchers, self-rated health is a relatively reliable indicator of the respondent health status, even if it is used in studies involving interethnic compari-

sons (Cela & Barbiano di Belgiojoso 2021). In addition, in the current study, the use of the self-rating health scale proposed by the World Health Organization ensures to some extent validity and possibility of interethnic comparisons. According to methodological tests, this scale was presented as less sensitive to the described biases than, for example, the self-assessment US scale, with a clear dominance of the categories with a positive assessment of health over categories with a neutral or negative assessment of health in the scale (Jurges et al. 2008). To ensure representativity of the groups, the original self-rating scale, consisting of five categories, was recoded into a scale with three categories, where 0 is poor or very poor health, 1 is average health, and 2 is good or very good health.

Ethnic differences and age at migration

Ethnicity in this study was determined based on data on the respondent's country of residence and the respondent's self-identification of the ethnic group affiliation, regardless of whether they have Estonian or Russian citizenship. The part of the consolidated dataset related to included only those who considered themselves ethnic Estonians or Russians, and respondents who identified themselves as Russians were included in the subsample of the consolidated array for Russia.

In the initial models (not presented in the article) with the three groups discussed above (Estonians, Russians in Estonia and Russians in Russia), using the available predictors it was possible to fully explain the differences only between Estonian and Russian males residing in Estonia. Differences in self-rated health between them disappeared after including age, family composition, financial situation, employment status and educational level, as well as socio-professional status in the current or previous employment in the model. Less significant differences between ethnic groups were obtained when a variable was included in the model in which Russians residing in Estonia were divided into subgroups by age at migration, as well as when regression models in different groups were tested by age rather than gender: respondents aged 50–64 and respondents 65+. The division into these two age groups allows, first, to separate migration flows that differ in characteristics of the arrived, and second, the causes of health deterioration at different ages (for example, problems with access to medical care may have more significant consequences for people over 65).

Simultaneous separation of the sample by gender and age for the regression analysis was impossible due to a small number of observations in the subgroups of the Russian population in Estonia.

Other predictors and control variables

Gender was included in the regression models as a control variable that can determine both objective differences in health and differences in health rating by men and women (Idler & Benyamini 1997). It was added to the model in the first step, along with the “ethnic group” variable. Further, control variables such as age (the number of completed years within the age group under under), household type (whether an elderly person lives alone or with relatives) and marital status were included in the model. At the next stages of the regression analysis, variables were introduced into the model to control the impact of the key health factors such as:

- socio-economic status (self-rated financial situation, housing in personal ownership, employment status, level of education (total number of years of study), socio-profes-

sional status at current or previous employment, level of education of parents as an assessment of the socialization conditions in childhood;

- health-related lifestyle (frequency of alcohol consumption in the last 3 months, smoking history, frequency of moderate and intense physical activity, body mass index (BMI)),
- signs of depression,
- quality of social connections: with close people (satisfaction with relations with loved ones, assistance to loved ones¹) and people in general (the level of depersonalized trust),
- access to health care – the number of hospitalizations² over the past year as an indirect sign of low accessibility of primary care.

Although this study is based on the life cycle paradigm, emphasizing the importance of characteristics and events that could affect health at different stages of life, regarding the empirical basis used, the influence of not all significant events can be controlled, even though indirect indicators. Thus, success of acculturation of the Russian population in Estonia during relocation to the country, in adulthood, or in the early 1990s, when independence of the state was declared, can be evaluated to the extent that the events taking place at that time influenced the level of education and success in the labor market, partly on social communication and mental health (presence of depression) at the time of the study. Outside of this work, there are events and, possibly, facts of discrimination based on ethnicity that have taken place long before the survey. It is also impossible to control selectivity of the Russian population in Estonia associated with the return of some part of this ethnic group to Russia.

Results

Descriptive statistics

The SHARE and SAGE data show (Fig. 1) that, in terms of self-rated health, Russians residing in Estonia hold an intermediate position between the native-born population of Estonia and the population in Russia. It is especially evident in self-rating of health as both good and very good which is the highest among Estonians (39.9% among those aged 50-64 and 20.8% among those aged 65+) and the lowest among Russians in Russia (19.6% and 6.1%, respectively), while it decreases almost linearly across groups that differ in the age at migration among Russians in Estonia aged 65+. Differences in self-rating of health as poor or

1 Assistance provided by the respondent to people around him or her was not considered because it had less impact on health than the assistance received. The impact of assistance, both provided and received by the respondent, on health through *emotional state*, in our view, is fixed by the variable “satisfaction with social connections.” The direct impact of assistance on health, by freeing an elderly person from the tasks with which he or she is assisted, occurs only when he or she receives help from the respondent, but not when he or she provides it to others.

2 The number of hospitalizations serves as an estimate of the possible unmet demand for outpatient (primary) care, an important determinant of health of persons with chronic diseases, which is a significant share of the older population. The level of hospitalization for a number of diseases is used as an indicator of the primary care accessibility and quality of the health care system in general (Ansari 2007). Recognizing that the total number of individual hospitalizations, regardless of the cause of hospitalization, is not the most accurate and valid indicator of the care accessibility (it can be more correlated with health rather than health characteristics), we are forced to use it in the absence of other comparable variables on health care utilization in SHARE and SAGE.

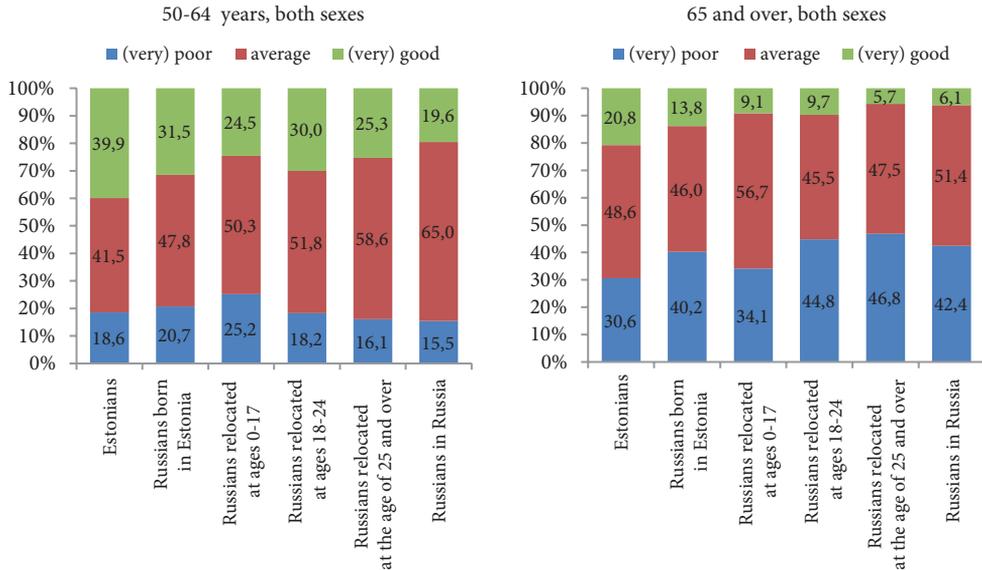


Figure 1. Self-rated health of the older population in Estonia and Russia. *Source:* authors’ calculations based on SHARE (2010-2011) and SAGE (2007-2010) data

very poor, as well as good or very good, do not take the form of such a linear trend¹ among citizens aged 50-64, while in the 50-64-year group, the relationship between ethnicity, age at migration to Estonia and the share of those rating their health as average is clearly visible. The prevalence of “average” and “normal” self-ratings of health among the Russian population has been known for a long time (Palosuo et al. 1998; Ramonov 2011). However, in the group of 65 +, the share of Russians who rate their health as average varies quite significantly.

A possible impact of the socio-economic situation on health is indicated by the fact that the profile of ethnic groups in terms of self-rated health repeats the one observed when comparing these groups in terms of material security and employment status (Table 2). Estonians have the highest level of education, are employed more often than other groups and are less likely to report financial difficulties. Russians living in Russia are more likely than other groups to say that it is difficult for them to make both ends meet. Russians who once moved to Estonia are less often employed and more often retired. Russians residing in Russia favorably differ from other groups by residential housing in ownership, while Russians relocated to Estonia are in the most vulnerable position among the ethnic groups under study regarding this indicator, reflecting differences between countries in approaches to housing privatization. Russians in Russia are also distinguished by a relatively high socio-professional status and higher level of education of their parents.

¹ These deviations from the linear trend may be the result of the heterogeneity of the ethno-migration groups in terms of their socio-professional status. For example, among Russians relocated to Estonia, who at the time of the study were aged 50-64, a high prevalence of positive health ratings was registered among citizens relocated to the country in ages 18-24, apparently due to a high share of highly skilled and employed in this group, usually characterized by a higher health concern and healthier working environment. These differences in self-rated health become insignificant in the regression model if differences in socio-occupational status and employment status are controlled.

Table 2. Differences by socio-demographic characteristic and health-affecting characteristic

	50-64 years old						65 years old and older					
	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia
N	1033	271	151	170	87	1174	1622	87	164	268	280	1272
Females, %	58.7	59.8	58.3	60.0	59.8	62.9	62.0	70.1	64.6	61.6	62.1	71.5
Age, years	57.8	57.1	58	58	59.2	56.6	74.6	74.9	73.1	75.1	75.5	74.3
(SD)	4	4.1	4.2	4	3.5	4	6.5	7.1	4.8	6.2	5.7	6.2
Living alone, %	16.7	18.8	17.9	17.1	8.0	17.6	31.9	33.3	26.8	27.6	31.1	41.3
Marital status, %												
- married/ partnered	64.9	67.2	71.5	72.9	82.8	67.1	57.5	56.3	60.4	62.7	60.4	40.1
- separated/divorced/never married	27.9	25.5	23.2	17.1	13.8	18.7	16.7	18.4	14.0	10.8	10.0	6.2
- widowed	7.3	7.4	5.3	10.0	3.4	14.1	25.8	25.3	25.6	26.5	29.6	53.7
Hardly making both ends meet, %	9.7	21.8	23.2	24.7	19.5	29.9	5.7	21.8	17.1	16.4	14.6	28.2
Home owners, %	60.2	64.2	58.9	56.5	55.2	90.4	58.9	65.5	56.7	57.8	61.8	91.2
Employment status, %												
- employed	76.7	72.3	60.3	65.9	62.1	59.5	15.2	13.8	6.1	7.1	6.1	8.7
- retired	12.2	17.3	25.2	27.1	29.9	27.6	84.1	85.1	93.9	91.4	92.1	81.8
- other	11.1	10.3	14.6	7.1	8.0	12.9	0.7	1.1	0	1.5	1.8	9.4
Years of education	12.8	12	12.1	12.3	13	12.7	11.4	9.7	10.5	10.1	10.9	10
(SD)	3	2.7	2.3	2.6	2.9	2.8	3.8	3.3	3.5	3.6	3.9	3.8
Socio-professional status, %												
- law makers, top officials, top and mid-level managers, military servants	17.6	8.1	13.2	8.8	13.8	29.6	15.2	9.2	12.2	9.0	17.5	22.0

	50-64 years old					65 years old and older						
	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia
- top-qualified specialists	19.9	17.3	21.2	22.9	21.8	3.4	20.6	14.9	18.9	15.3	20.0	3.0
- mid-level specialists, officials, office and customer service specialists, sales and service workers	20.7	22.1	11.9	12.9	16.1	17.4	18.1	23.0	9.8	13.4	10.7	15.0
- skilled manual workers	17.1	28.4	33.1	30.0	27.6	27.9	17.8	24.1	36.0	28.0	22.9	36.0
- skilled workers using machines and machinery	6.3	6.3	2.6	5.9	6.9	9.9	7.2	12.6	7.9	9.7	5.7	8.3
- unskilled workers	18.3	17.7	17.9	19.4	13.8	11.9	21.1	16.1	15.2	24.6	23.2	15.7
Mother's education level, %												
- below secondary	47.7	52.4	55.6	47.6	39.1	36.1	62.3	56.3	58.5	60.8	55.7	65.3
- secondary, specialized secondary and higher	30.3	22.9	26.5	24.7	36.8	60.1	16.4	14.9	15.9	8.2	13.6	27.4
- no data	22.0	24.7	17.9	27.6	24.1	3.7	21.3	28.7	25.6	31.0	30.7	7.4
Father's education level, %												
- below secondary	41.3	39.5	39.1	40.6	40.2	29.5	56.1	42.5	43.3	50.0	42.9	49.1
- secondary, specialized secondary	23.6	26.2	26.5	20.0	19.5	52.3	14.4	16.1	12.8	9.3	13.9	31.7
- higher	6.9	4.8	7.3	7.6	13.8	8.9	4.0	3.4	6.1	4.5	3.2	5.2
- no data	28.2	29.5	27.2	31.8	26.4	9.3	25.5	37.9	37.8	36.2	40.0	14.0
Frequency of alcohol consumption in recent 3 months, %												
- never	26.0	29.9	26.5	25.9	36.8	9.8	49.6	58.6	46.3	51.5	55.7	22.2
- sometimes/no data	45.8	48.7	53.0	54.7	48.3	81.1	36.9	34.5	44.5	42.2	37.5	73.3
- often (once a week and more)	28.2	21.4	20.5	19.4	14.9	9.1	13.5	6.9	9.1	6.3	6.8	4.4

	50-64 years old					65 years old and older						
	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia	Estonians	Russians born in Estonia	Russians relocated at ages 0-17	Russians relocated at ages 18-24	Russians relocated at the age of 25 and over	Russians in Russia
History of smoking, years (SD)	13.5	13.7	16.4	12	12.1	6.2	9.2	6.8	9.7	9.7	8.8	3.6
Intense physical activity rate, %												
- less than once a week/never	37.5	48.7	53.6	44.7	51.7	64.8	58.6	79.3	73.8	76.5	78.9	80.2
- once a week	19.1	12.9	14.6	13.5	17.2	3.2	11.3	5.7	11.6	9.3	12.1	3.1
- more often than once a week	43.5	38.4	31.8	41.8	31.0	32.0	30.1	14.9	14.6	14.2	8.9	16.7
Moderate physical activity rate, %												
- less than once a week/never	12.0	17.3	19.2	11.2	14.9	17.0	23.9	41.4	24.4	33.6	30.7	31.7
- once a week	12.6	13.7	9.9	14.1	14.9	2.6	13.7	6.9	20.7	13.8	12.5	3.4
- more often than once a week	75.4	69.0	70.9	74.7	70.1	80.4	62.4	51.7	54.9	52.6	56.8	64.9
BMI, kg/m ²	27.2	27.5	27.6	28.7	26.7	28.6	26.7	25.6	28.1	27.8	27.2	28.2
(SD)	6.4	6.8	7.5	5.6	6.7	6.2	6.5	8.1	6.9	6.7	7.9	6.1
Signs of depression, %	33.8	39.9	37.1	42.9	36.8	38.5	37.2	56.3	56.7	45.9	51.4	47.2
Does not show satisfaction with relations with loved ones, %	9.4	10.7	10.6	11.2	12.6	16.4	10.7	16.1	7.9	9.7	10.7	24.7
Does not report receiving help from loved ones, %	86.7	87.1	89.4	92.9	87.4	85.0	74.9	73.6	78.7	77.2	68.9	73.9
Thinks people can be trusted, %	86.6	89.3	90.1	90.0	80.5	65.8	87.1	80.5	85.4	87.3	86.8	71.8
Number of hospitalizations for 12 months	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3
(SD)	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.7	0.6	0.9	0.6

Source: authors' calculations based on SHARE (2010-2011) and SAGE (2007-2010) data

The profile of people with bad habits is the opposite of the one observed in people with poor health: groups with better (according to self-ratings) health rather than poorer health are more likely to drink alcohol and have a longer history of smoking. To a greater extent, the differences in self-rated health correspond to the profile of the groups according to BMI and intense physical activity.

Higher subjective health ratings of Estonians in older age may be associated with a lower prevalence of depression. These differences are especially pronounced in the age group over 65. On the contrary, Russians residing in Estonia, have the highest rates.

Contrary to expectations, the group with the lowest quality of social connections were Russians living in Russia rather than in Estonia. In the first group we observe the largest share of those who do not state they are satisfied with relations with loved ones, as well as the lowest level of depersonalized trust.

Differences in the frequency of hospitalizations in the groups under study turned out to be insignificant, suggesting an equal access to primary medical care across the groups.

Regression analysis results

The ordinal regression model for self-rated health among individuals aged 50-64 (Table 3), which includes only gender and ethnic group as independent variables, indicates that only differences between Estonians and Russians are statistically significant, regardless of the country of residence. The native-born population of Estonia has a 39% higher chance of better health (M1-M4 models). When age, marital status, as well as self-rated financial status, housing ownership and employment status are added to the model, the differences between Estonians and Russians hardly change. When economic indicators (M3-M4) are included in the model, only the value of the pseudo-R-square significantly increases, probably suggesting an improvement in the quality of the model. The differences between Estonians and Russians living in the two countries become insignificant only if differences in educational level are introduced into the model.

In the initial model for individuals aged 65+, with gender and ethnic group, Estonians also rate their health higher compared to Russians born in Estonia and other groups of the Russian population under study. However, at these ages, the gap between Estonians and Russians is more significant - the odds ratio adds up to about 60%. Statistical significance of these differences disappears after adding a subjective assessment of financial situation (M3) and housing ownership into the model.

In both age groups, 50-64 years and 65+, after including alcohol consumption (M8) and smoking (M9) in the model, differences in self-rated health between Russians born in Estonia and Russians in Russia become significant. Russians residing in Russia tend to rate health poorer than Russians born in Estonia, given similar parameters of unhealthy behavior.

With inclusion of the indicators of motor activity (M10) and BMI (M11) in the model, these differences increase in the age group of 50-64 years, remaining unchanged in the group 65+, however, the differences between Russians born in Estonia and Russians relocated to Estonia at the age over 25 become also significant. In the models for the 50-64-year group, these differences disappear if variables characterizing the quality of social contacts are included in the model (M13-M14), while in the models for the 65+ group they remain after adding variables on social contacts and accessibility of medical care (M16).

Table 3. Odds ratios for ethnic groups in the ordinal regression models for self-rated health with a different set of predictors

	M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR	OR
50-64 years (control group – Russians born in Estonia)																	
- Estonians	1.392**	1.487**	1.504**	1.358*	1.343*	1.260	1.259	1.261	1.246	1.243	1.150	1.144	1.122	1.120	1.130	1.128	1.113
- Russians relocated at ages 0-17	0.711	0.759	0.748	0.771	0.867	0.846	0.828	0.819	0.798	0.808	0.817	0.814	0.783	0.784	0.772	0.773	0.763
- Russians relocated at ages 18-24	1.021	1.098	1.061	1.124	1.120	1.074	1.080	1.081	1.053	1.043	0.989	1.009	1.034	1.041	1.019	1.020	1.026
- Russians relocated at the age of 25 and over	0.941	1.123	1.061	1.119	1.128	1.024	1.019	1.012	1.042	1.036	1.037	1.013	1.024	1.030	1.039	1.028	1.028
- Russians in Russia	0.815	0.788	0.777	0.804	0.916	0.857	0.856	0.803	0.716*	0.688*	0.728*	0.743*	0.728*	0.752	0.757	0.732*	0.726*
N	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881	2881
Pseudo-R2	0.009	0.022	0.026	0.045	0.106	0.113	0.117	0.118	0.123	0.124	0.145	0.147	0.1717	0.173	0.177	0.177	0.193
Cut 1	-1.624	-6.027	-6.172	-5.663	-4.668	-3.563	-3.614	-3.560	-3.119	-3.254	-2.243	-2.740	-3.196	-3.245	-2.694	-2.781	-2.922
Cut 2	0.838	-3.515	-3.645	-3.050	-1.762	-0.626	-0.660	-0.602	-0.138	-0.270	0.837	0.352	0.025	-0.017	0.552	0.466	0.406
65+ (control group – Russians born in Estonia)																	
- Estonians	1.608*	1.589*	1.595*	1.437	1.428	1.301	1.293	1.241	1.198	1.198	0.962	0.986	0.861	0.859	0.886	0.889	0.863
- Russians relocated at ages 0-17	1.080	0.934	0.938	0.931	1.030	0.986	0.991	0.979	0.922	0.922	0.844	0.879	0.913	0.890	0.885	0.888	0.829
- Russians relocated at ages 18-24	0.771	0.769	0.777	0.767	0.823	0.803	0.811	0.805	0.772	0.772	0.726	0.759	0.681	0.662	0.651	0.654	0.610
- Russians relocated at the age of 25 and over	0.666	0.678	0.688	0.656	0.711	0.651	0.647	0.655	0.643	0.643	0.574*	0.593*	0.561*	0.553*	0.570*	0.572*	0.549*
- Russians in Russia	0.793	0.734	0.755	0.732	0.825	0.804	0.817	0.731	0.592*	0.592*	0.574*	0.598*	0.527**	0.560*	0.576*	0.571*	0.552*

	M0	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
	OR																
N	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689	3689
Pseudo-R2	0.020	0.047	0.026	0.061	0.084	0.113	0.094	0.118	0.112	0.112	0.151	0.152	0.1871	0.193	0.199	0.2	0.207
Cut 1	-0.617	-6.131	-6.035	-5.726	-5.644	-4.284	-4.447	-4.544	-3.457	-3.456	-1.038	-1.726	-2.399	-2.461	-1.554	-1.600	-1.810
Cut 2	1.864	-3.548	-3.450	-3.094	-2.897	-1.503	-1.660	-1.731	-0.588	-0.587	2.007	1.327	0.819	0.779	1.711	1.664	1.483

Notes:

1. *** - < 0,001, ** - < 0,01, * - < 0,05
2. A step-by-step addition of variables to the model: M0 – ethno-migration group, gender, M1 – age, M2 – household size, marital status, M3 – self-rated financial status, housing ownership, M4 – employment status, M5 – years of education, M6 – socio-professional status, M7 – education of parents, M8 – frequency of alcohol consumption, M9 – history of smoking, M10 – frequency of motor activity, M11 – BMI, M12 – signs of depression, M13 – satisfaction with relations with loved ones, M14 – receiving help from loved ones, M15 – trust of others, M16 – number of hospitalizations.
3. Confidence intervals for odds ratios are included in Supplementary Materials 1. Regression models are presented in full in Supplementary Materials 2.

Source: authors' calculations based on SHARE (2010-2011) and SAGE (2007-2010) data

Discussion

The study finds that according to the self-rated health in general, Russians residing in Estonia hold an intermediate position between Estonians who are more satisfied with their health at an older age and Russians in Russia who are less satisfied with their health. This result correlates with differences in life expectancy among representatives of the three ethnic groups under study and confirms that the subjective assessment of health, despite some influence of cultural characteristics, reflects key differences in the well-being of different ethnic groups and can be used in studies on the migration impact on population health and cross-country comparisons. However, the use of self-rated health as a health indicator could result in some underestimation of the extent of the differences in health status between the ethno-migration groups under study due to excessively high health ratings by categories of the population with a low health concern and therefore poorer health (men, Russian population in Estonia and Russia, citizens with low income and low level of education and socio-professional status).

The distributions of self-rated health for Estonian residents (Estonians and Russians) and residents of Russia obtained on the basis of SHARE and SAGE data indicate that in the age group of 65+, health disparities between ethnic groups and groups with different history of migration are more pronounced compared to the 50-64 age group.

If in the younger age group, only differences in the share of people with (very) good health are noticeable, then in the older group the disproportion is also manifested in the distribution of those who consider their health to be (very) good or average. These differences are probably the result of the accumulated environmental influences or differences in life trajectories, including those related to migration. Research indicates that health in older age reflects the accumulated effects of factors a person has been exposed to during the life course (Smith & Kington 1997).

Differences in self-rated health between Russians residing in Russia and Estonia are a complex phenomenon that could not be fully explained by the regression analysis. However, the results indicating that these cross-country gaps in health status are determined by differences in health-related lifestyle, as well as low quality of social contacts in individuals aged 50-64. Overweight and insufficient physical activity, as well as bad habits, turn out to be significant lifestyle problems of the elderly in Russia, determining the lag in health indicators compared to the population of Estonia. A strong impact of physical activity and smoking on health of the elderly in Russia is identified by A. Selivanova and J. Cramm (Selivanova & Cramm 2014). The hypotheses of the block 3 are also confirmed: peculiar characteristics of health-related lifestyle are a significant reason for differences in self-rated health between ethno-migration groups.

Another reason for poorer health among Russians residing in Russia compared to Russians in Estonia, may be the fact that living in their ethnic homeland rather than a different cultural environment, they are less likely to be satisfied with their relations with loved ones, and also have difficulties trusting others. Researchers dealing with the problem of social connections in Russia believe that older people in Russia (primarily women) may more often experience loneliness as a result of early bereavement of a spouse (this is the result of a significant gender gap in life expectancy) (Stickle et al. 2015), as well as the spread of value orientations of individualism and the concomitant destruction of the practices of joint leisure, the exchange of benefits in post-Soviet society (Parsons 2020). The hypothesis 4 has been partially confirmed: low self-rated health of one of the ethno-migration groups is asso-

ciated with social connections and their low quality, which was found in Russians in Russia rather than their deficiency (which was supposed to be registered in Russians in Estonia).

Although linear distributions show that the share of people with depression is increased in certain groups of the Russian population in Estonia, this health predictor in the regression models explaining differences in health between ethno-migration groups, turned out to be insignificant – thus, the hypothesis 5 has been rejected. Based on the results of the analysis of the linear distributions and regression analysis, the hypothesis about the impact of differences in access to primary care on self-rated health in the ethno-migration groups has been rejected as well. The hypotheses 1 and 2 (regarding discrimination in receiving medical care) failed to be confirmed.

Following the work on cognitive abilities (Abuladze et al. 2023), the present study calls into question the significance of the healthy migrant effect in determining the differences between native-born and Russian populations in Estonia and the elderly in Russia. None of the studied subgroups of Russians in Russia demonstrates any advantages in self-rated health. As in the study on cognitive abilities, the analyzed differences in self-rated health in general, revealed some signs that the Russian population in Estonia is the most vulnerable group with a worse situation compared to Russians in Russia - Russians are more likely to report poor health among population aged 65+ than other ethno-migration groups relocated to Estonia at the age of 18-24 and at the age of 25+. However, the regression analysis does not confirm that health of these two groups is significantly worse than the one in their peers in Russia if socio-economic differences are controlled.

The results of both the linear distribution analysis and regression analysis suggest the impact of age and generation of immigration on health in old ages. If Russians born in Estonia (second-generation immigrants) or those relocated to the country as children are closer to native-born Estonians in terms of self-rated health, then those who immigrated to Estonia at the age over 24 resemble the population of Russia in a high level of dissatisfaction with health and increased risks of poor health. The similarity of the risks of poor health for those relocated to Estonia at the age over 24 and Russians in Russia is registered only in the regression model for the population aged 65+, rather than in the model for the population aged 50-64. There are two possible explanations for this. First, it can be assumed that the influence of individual events in life trajectory in Russia manifests only at the very advanced age, when a person starts losing the ability to self-care.

Second, we have very limited information about the older generations, which probably does not allow us to take into account differences in factors of the life trajectory of older and younger generations of immigrants: perhaps socialization of young people, primarily with regard to health standards, in Estonia and Russia before the end of the 1960s had more significant differences than in subsequent years.

Assessment of the impact of age at migration on health, according to the followers of this line of research, is an understudied phenomenon. However, it may be promising in studying the effects of immigration on health of the elderly population, since it reflects peculiar features of life trajectory that are important for understanding health in old ages (Gubernskaya 2015). The age at migration may reflect the impact on health through the following mechanisms:

1. It may indicate the type of migration: relocation in adulthood is more often associated with a personal decision and health advantages resulting from self-selection, while relocation in childhood will be more determined by the health of the parents rather than the health of the children (Gubernskaya 2015).

2. Earlier (in childhood) relocation is associated with more successful mastery of the local language and, as a result, more successful education and integration into the labor and marriage market (Guyen & Islam 2015; Ma & Xia 2021), creating prerequisites for good health in old ages.
3. The age at migration allows us to assess duration of the impact of conditions of the donor and host country on health - those relocated at an older age experience a more significant impact of the environment and culture of the donor country than those relocated in childhood: on the contrary, immigration at an early age can determine a higher sensitivity to the culture of the host country (Gubernskaya 2015).

The impact of the first mechanism in Estonia may be limited by a strong role of the State in stimulating migration. However, the second mechanism may explain good health of Russians born in Estonia or those relocated in childhood by higher integration into Estonian society (for example, due to the Estonian language acquisition in childhood) by the beginning of the transformations in the early 1990s and a lower level of stress associated with acculturation during this period.

The third mechanism may explain the increased risks of poor health in older ages among Russian-Estonians relocated in adulthood with unhealthy habits developed during their life in Russia.

Existing studies on health of the second generation of immigrants, as far as we know, are focused on populations with the healthy migrant effect, and their main result is the conclusion that the descendants of immigrants, unlike their parents, do not have any health advantages (Razum et al. 1998; Mladovsky 2007; Shamionov et al. 2022). The current study, refuting the significance of the healthy immigrant effect, also captures the opposite peculiar feature of health of the second generation of immigrants: in terms of self-rated health, Russians born in Estonia are closer to the native-born population of Estonia rather than the Russian population.

Studies show that on average, the native-born in Estonia have better access to material resources than the Russian population of the country, which is probably due to differences in the level of proficiency in the Estonian language, different educational trajectories and inequality in chances for obtaining citizenship (The Russian..., 2011). The analysis presented in this article confirms that taking into account differences in education or financial status makes ethnic differences between Russians living in Estonia and Estonians insignificant. Also, the higher level of education among Estonians may determine a higher health concern. Education is a stronger factor of health than the level of material security (Deaton 2013). Thus, the hypothesis 1 has been confirmed.

The conducted research has both strengths and limitations. On the one hand, it is implemented on a unique empirical basis, making it possible to track a large number of Estonian residents immigrated to the country in the 20th century, and to conduct cross-country and interethnic comparisons of health status with their participation by a wide range of demographic and socio-economic indicators. The study contributes to understanding the impact of immigration on health of the elderly, as well as international comparisons to health-related issues among the elderly.

The study limitations include as follows: (1) the problem of self-selection and underestimation of individual health factors (individual risk factors, for example, alcohol abuse at a younger age can result in premature death in middle age and, as a consequence, selection of survivors; we cannot unambiguously determine whether this selection has an ethnic gradient), (2) the cross-sectional nature of the data, making it impossible to separate the ageing effect from the cohort effect, (3) the lack of comparable indicators in SHARE and SAGE

for individual reasons for intergroup differences (scales for fixing restrictions in everyday life, nutrition characteristics, direct indicators of the primary care accessibility, comparable typology of urban settlement by size), and (4) the lack of data in SHARE on the problems of integration into the new Estonian society, which the Russians faced in the early 1990s.

The research has both theoretical and practical value. The analysis results show, first, a significant impact of material well-being, and therefore, social support programs, on health of the elderly. However, since this effect is cumulative, it is unlikely that such programs focused only on the elderly will be effective – a decent standard of living should be provided throughout the life course, as indicated by experts (WHOa). Second, the study confirms the importance of lifestyle - not so much bad habits, but a balanced diet and level of physical activity - for the state of health in older ages, as well as a rather tangible request for the development of measures on quality of nutrition and obesity control in the Russian population.

Conclusion

The study demonstrates that analysis of the older population, as well as the long-term consequences of immigration of the Russian population to a former republic of the USSR during the Soviet period, largely regulated by the state, fails to identify the healthy migrant effect. However, Russians can “benefit” from living outside their homeland: if they arrived in another country during the period of active socialization (in childhood or early youth) or were born in this country, they can adopt a higher health concern typical of the host country. According to self-rated health, as well as life expectancy, the Russian population aged 50+ in Estonia holds an intermediate position between the native-born population in Estonia and the population in Russia. At the same time, this group itself is heterogeneous, and the study has attempted to make a distribution by age at migration. Further studies can focus on analyzing the group composition, for example, by period of immigration to Estonia, and the impact on health.

Comparisons of Russians residing in Estonia and Russians in Russia should more correctly consider the type or size of an urban settlement in which individuals from those two countries reside; the population in Russia as a base for comparison is also very heterogeneous. The studies indicate significant and increasing inter-settlement differences in health of the residents in Russia (Shchur et al. 2021).

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Data sources

The publication uses SHARE data 1, 2, 3, 4, 5, 6, 7 and 8 waves (DOI: 10.6103/SHARE.w1.710, 10.6103/SHARE.w2.710, 10.6103/SHARE.w3.710, 10.6103/SHARE.w4.710, 10.6103/SHARE.w5.710, 10.6103/SHARE.w6.710, 10.6103/SHARE.w7.711, 10.6103/SHARE.w8.100, 10.6103/SHARE.w8ca.100). SHARE data collection was funded by the European Commission's Directorate General for Research and Innovation through grants FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARISON: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: No. GA 211909, SHARE-LEAP: GA No. 227822, SHARE M4: GA No. 261982, DASISH: GA No. 283646), by Horizon 2020 (SHARE-DEV3: GA No. 676536, SHARE-COHESION: GA No. 870628, SERISS: GA No. 654221, SSH: GA No. 823782) and the Director General for Employment, Social Affairs and Social Integration through Grants VS 2015/0195, VS 2016/0135, SUN 2018/0285, SUN 2019/0332 and SUN 2020/0313. Additional funding was provided by the German Ministry of Education and Research, The Max Planck Society for the Advancement of Science and the US National Institute of Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06). -11, OGHA_04-064, HHSN271201300071C, RAG052527A). The data used for Estonia relate to the 4th wave of the survey in Europe.

The official website of the study: <http://www.share-project.org/data-documentation/share-data-releases.html>.

The second database used is WHO's Global Ageing and Adult Health (SAGE). SAGE is conducted with the financial support of the U.S. National Institute of Aging under interagency agreements (OGHA

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The official website of the study: <https://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/68>

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Conflict of interest

The authors declare is no conflict of interest.

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