



# RUSSIAN FEDERATION

## Study on global AGEing and adult health (SAGE), Wave 1



WHO SAGE WAVE 1

The Study on global AGEing and adult health (SAGE) is supported by WHO's Surveys, Measurement and Analysis unit. SAGE compiles comparable longitudinal information on the health and well-being of adult populations and the ageing process from nationally representative samples in six countries (China, Ghana, India, Mexico, Russian Federation and South Africa). Financial support for SAGE was provided by the US National Institute on Aging and the World Health Organization. The Russian Federation's national report is a descriptive summary of SAGE Wave 1 results. Wave 2 will be implemented in 2015 and Wave 3 in 2016. More information is available at: [www.who.int/healthinfo/sage](http://www.who.int/healthinfo/sage)



# Study on global AGEing and adult health (SAGE) Wave 1

## Russian Federation National Report

National Research Institute of Public Health,  
Russian Academy of Medical Sciences (RAMS)

**Study Report** December 2013

SAGE is supported by the US National Institute on Aging (NIA) through Interagency Agreements (OGHA 04034785; YA1323-08-CN-0020; Y1-AG-1005-01) and through a research grant (R01-AG034479). The NIA's Division of Behavioral and Social Research, under the directorship of Dr Richard Suzman, has been instrumental in providing continuous intellectual and other technical support to SAGE, and has made the entire endeavour possible.



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Copyediting: Dr Wynne Russell

Design and layout: Rick Jones, Exile: Design & Editorial Services, London (United Kingdom)





## Acknowledgements

The authors wish to thank:

- The World Health Organization (WHO) for initiating the study, financial and technical support, and provision of materials and instrumentation for the conduct of the study, as well as the specialists of the Multi-Country Studies Unit—Dr Somnath Chatterji, Dr Paul Kowal and Ms Nirmala Naidoo—for their help in preparing and editing of this report;
- The Russian Federation Ministry of Health and Minister of Health V.I. Skvortsova for their support for the study;
- The Russian Federation Ministry of Regional Development (Prof. E.P. Kakorina) for material for the analytical parts of the study;
- The Department of Preventative Medicine, Russian Academy of Medical Sciences (RAMS) (Academician V.V. Zverev, head) for their support and regular consultations on the basic results of the research;
- The administrations of territories participating in the study for their help in organising the work;
- The administration of Federal State Budgetary Institution, National Research Institute of Public Health under the RAMS, (Academician O.P. Shepin, director) and administrations of territories participated in SAGE, for organization of work;
- All participants who consented to participate in the study;
- All the fieldwork supervisors and their teams of interviewers for collecting the data;
- The Saint Petersburg Institute of Bioregulation and Gerontology, RAMS (O.N. Mikhailova, vice-director) for information relating to problems of ageing, for instance about the implementation of the Madrid Plan in Russia;
- Mechnikov Research Institute of Vaccines and Sera RAMS (N.A. Mikhailova, vice-director), Laboratory “Hemotest” (T.A. Silkina) for long-term storage of DBS;
- Mary McEniry, Kevin Kinsella and Wynne Russell for editing the report and providing materials for data comparison;
- SAGE is supported by the US National Institute on Aging (NIA) through Interagency Agreements (OGHA 04034785; YA1323–08-CN-0020; Y1-AG-1005–01) and a research grant (R01-AG034479); and,
- The Russian Federation Ministry of Health and Social Development (L.A. Mikhailova, vice-director of department) for support for the study.



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# 1. Introduction

## 1.1 Global ageing

Population ageing is one of the greatest social and economic challenges of the 21st century. Population ageing is defined as a progressive rise in the number and proportion of older people (conventionally those aged 65-plus) relative to the rest of the population, producing an increase in the median age of the population. The increase in the size and rate of growth of the older population can arise from (a) an increase in the number and proportion of older persons; (b) a decrease in the number and proportion of the younger population (conventionally aged below 15); or (c) both of these factors (Coleman, 2006).

The world's older population has been growing for centuries, but the pace of growth has recently accelerated. Two major developments have brought about the global population ageing process: lower fertility rates, and increasing life expectancy across all ages due to reduced mortality rates for infectious and non-communicable diseases, better preventative approaches, and increased use of advanced medical technologies. Today almost 800 million people are aged 60-plus, accounting for 11% of the world's population (UN PopDiv, 2012). The developed regions of the world have reached a more advanced stage of population ageing, but the developing world is well on its way to a similar

scenario. A critical point will be reached in the year 2025, when the global population aged 50-plus is projected to exceed the population below the age of 15. By that year, the median age of the global population is projected to have increased from the 2005 level of 28 to 33 (UN PopDiv, 2012).

Several demographic indicators are used to compare trends and differentials in ageing, including median age and the dependency ratio.

- The *median age* is the age that divides the population into two numerically equal groups, one younger and the other older than the median age. In 2009, the median age in Europe was 39.7, more than twice the median age of 19.7 in Africa (see Table 1.1). From 1950 to 2005, the median age of the world population increased from 24 to 28; in 2010, a median age of more than 40 years was recorded in 19 countries. By 2050 half of the world population is projected to be older than 38 years.
- The *dependency ratio* is the ratio of people of non-working age, whether younger (variously defined as aged under 15 or under 18) or older (variously defined as aged 60-plus or 65-plus), to people of working age – the age group most likely to provide financial and other forms of material support to the younger and older populations. Demographic

**Table 1.1** Selected ageing indicators, world and regions, 2009

Major areas and regions	Median age	Sex ratios (men per 100 women)		
		60+	65+	80+
World	29.2	83.4	79.0	59.4
More developed regions	39.7	74.3	69.2	50.1
Less developed regions	26.9	88.9	85.4	70.1
Least developed regions	19.7	86.0	85.0	80.4

Source: UN Population Division, World Population Prospects, 2012.



**Table 1.2** Percentage of population in older ages, by region

Region	60 years and older					80 years and older				
	1950	1975	2000	2025	2050	1950	1975	2000	2025	2050
Asia	6.7	6.6	8.6	14.8	24.4	0.4	0.4	0.9	1.7	4.5
Europe	12.1	16.5	20.3	27.3	33.6	1.1	1.8	3.0	5.3	9.3
Latin America/ Caribbean	5.6	6.5	8.4	14.9	25.0	0.4	0.5	1.0	2.2	5.5
Middle East/ North Africa	5.6	5.4	6.5	10.6	19.4	0.3	0.4	0.5	1.0	2.6
North America	12.4	14.6	16.3	24.7	27.0	1.1	2.1	3.2	4.4	8.0
Oceania	11.2	11.0	13.4	19.1	23.5	1.0	1.3	2.3	3.4	6.3
Sub-Saharan Africa	5.2	4.8	4.8	5.5	8.3	0.3	0.3	0.3	0.5	0.8

Source: UN Population Division, World Population Prospects, 2012.

projections also use the older age dependency ratio, defined as the ratio of people older than working age to those of working age.

The current level and pace of population ageing vary widely across geographic regions, and usually within regions as well. Europe has had the highest proportion of population aged 65-plus for many decades, and will remain a global leader in ageing well into the twenty-first century (Table 1.2). By 2025, the proportion of the European population aged 60-plus is projected to be around 27%, increasing to around 34% by 2050 – by which time every tenth person in Europe is expected to be 80 years or older. By contrast, the proportion of the sub-Saharan African population aged 80-plus years is projected to be only 0.8% in 2050. Meanwhile, in sheer numerical terms, the number of older adults in the developing world has been growing at a phenomenal rate, with a large portion of this growth occurring in Asia.

Population ageing also varies by sex. In most countries across the world, the sex ratio (number of males per 100 females) is below 100; women especially outnumber men in the older ages, due to higher life expectancies (refer back to Table 1.1). Consequently, the challenges and problems created by the demographic transition process will be disproportionately faced by females.

Population ageing may be seen as a human success story – the triumph of public health, medical advancements and economic development over diseases and injuries that had limited human life expectancy for years. However, population ageing has a profound impact on the socioeconomic structure of the global population, affecting not only societal health needs but also economic growth, savings, investment, retirement

ages and pensions, labour markets and intergenerational transfers. This demographic trend thus creates new challenges, particularly for less developed countries and regions.

## 1.2 Emerging health trends related to population ageing

In addition to the health and social implications of population ageing, the likely rise in non-communicable diseases (NCDs) as a consequence of ageing populations may bring additional economic and financial costs (Bloom *et al.*, 2011, Prince *et al.*, 2014). The 2010 Global Burden of Disease estimates suggest that per capita disability-adjusted life years are 40% higher in low- and middle-income countries, like India, than high-income countries (Prince *et al.*, 2014). This does not directly translate into higher health care costs with increasing age, but greater demand for long-term care is likely to generate increased expenditures (Rechel *et al.*, 2009). Considerable potential exists to modify those factors that impact health as populations age – to which SAGE in India contributes evidence to inform policy and planning.

## 1.3 Social aspects of population ageing

The social problems of older adults are emerging issues in all regions of the world. Even in more developed regions where financial security and access to health care are less of a problem than in developing countries and regions, many older adults struggle with social insecurity, vulnerability, and isolation, as well as relative

**Table 1.3** Global trends in ageing: regional estimates, 1950-2050

Region	Percent of population aged 60-plus				
	1950	1975	2000	2025	2050
Asia	6.8	6.6	8.8	14.7	22.6
Europe	12.1	16.4	20.3	28.8	36.6
Latin America/Caribbean	5.9	6.5	8.0	14.0	22.5
North America	12.4	14.6	16.2	25.0	27.2
Oceania	11.2	11.0	13.4	19.7	23.3
Sub-Saharan Africa	5.3	5.0	5.1	6.3	10.2

Source: UN Population Division, 2009.

economic deprivation. Major challenges thus are emerging in relation to support for the older population, especially for older women. Because of higher survivorship and lower propensity to remarry, older women are more likely than their male counterparts to live alone and in social isolation: globally, an estimated 50% of older women living independently live alone, compared to a minority of older men living alone (UN, 2013). In fact, older women are now considered to be the most vulnerable group in most societies (Berkman *et al.*, 2012).

Older persons in nearly all settings are on average less likely to be in paid employment than younger adults, thereby relying more on a combination of assets, savings and government and family support (Bloom *et al.*, 2010). At the same time, in many countries older people are working longer. Older persons in low and middle income countries are much more likely to rely on participation in the labour force for income than older adults in higher income countries (ILO, 2011). If those who are working in older age are made more vulnerable by chronic illness, their financial situation becomes more tenuous. Pensions can be extremely important, but particularly in developing countries they tend to be small, and coverage is spotty (Bloom *et al.*, 2012). In many countries, the filial piety underpinning support of older persons is beginning to shift (Aboderin, 2005). Social protection programmes are effective means of supporting poorer individuals and families in lower and higher income countries alike, and may even contribute to economic growth; however, the gaps between need and available programmes remain large in most countries.

In response to these issues, new approaches will be required in relation to social programs, professional training, long-term and palliative care, and developing age-friendly social services. For example, increasing

loneliness will become an urgent social problem. Early detection of health issues, support for people living with chronic disease, and support for independent living will also require significant initiative and resources. It will also be necessary to encourage recognition of older populations as a resource for society, and to develop approaches such as active ageing (WHO, 2010), which allows people to realize their potential for physical, social and mental wellbeing throughout their lives.

**Table 1.4** Russia: selected socio-demographic indicators

Socio-demographic indicators	2009	2011
Total population (millions)	142.7	142.9
● Male	65.9	66.0
● Female	76.8	76.8
Annual population growth rate	- 0.1%	0.1%
Density of population per km <sup>2</sup>	8.3	8.4
Urban population	73.5%	73.8%
Sex ratio, females/1000 males	1 164	1 163
Dependency ratio*	395.6	387.5
Crude birth rate	12.3%	12.6%
Total fertility rate (15-49)	1.5%	1.6%
Population distribution by age groups		
0-14	15%	15.2%
15-49	52.7%	51.4%
50-plus	32.3%	33.4%
60-plus	17.5%	18.3%
65-plus	13.4%	12.7%

\* The dependency ratio is calculated as the number of people aged between 0 and 14 years and 65-plus, divided by the number of people aged 15-64.

Source: Rosstat 2013a; Heleniak 2014.

## 1.4 Population ageing in Russia

Russia is the largest country in the world in area, and the eighth most populous (UN, 2012). As a consequence of its huge size, it has a low population density, especially in the northern and Asian parts of the country.

Russia is no exception to the population ageing process. Russia's mean population age in 2010 was 37.9 years; this is projected to top out at 45 years in 2025. Meanwhile, more than 17% of the Russian population was aged 60-plus in 2009 (Table 1.4). According to UN baseline projections, this percentage will almost double by the year 2050, to more than 31% (UN 2012). This increase in the ageing population is likely to result in heavy burdens on pension, health care and long-term care systems.

Russian statistics mainly use the statutory pension ages of 55 for women and 60 for men to define the proportion of the population "older than working age", and are used in different population projections. Trends in the percentage of different age groups in current and

future populations are shown in Table 1.5. The share of population aged 85 and older remained effectively unchanged between 2002 and 2009, and the share of the population aged 60-plus actually dropped slightly; however, according to Russian government projections, the portion of the population older than working age will increase to 28.8% of the total population by 2031 (Rosstat 2013b).

Although in the last decades Russia has experienced a reduction of mortality rates and a rise in life expectancy, life expectancy rates for the total population, and in particular for persons aged 60-plus, remain comparatively low. Life expectancy at birth in 2011 was 64.0 years for Russian men and 75.6 years for Russian women, compared to Japan's 79.6 years for men and 86.5 years for women (Rosstat 2013a, Tables 1.7 and 1.8). The widest range in life expectancy rates between men and women is recorded in the former USSR republics; in Russia, it stands at 12.5 years, compared to Japan (6.8 years) (Table 1.7).

**Table 1.5** Russia: share of different age groups in overall population, 2002-2031 (%)

Age group	2002	2003	2004	2005	2006	2007	2008	2009	2011	2031
Total older than working age*	20.5	20.4	20.3	20.3	20.4	20.6	21.0	21.2	22.0	28.8
60-plus	18.6	18.3	17.8	17.3	17.0	17.1	17.2	17.4	—	—
65-plus	12.6	13.0	13.4	13.7	13.9	14.0	13.8	13.3	12.5	19.6
75-plus	4.4	4.6	4.9	5.1	5.3	5.4	5.5	5.4	—	—
80-plus	1.8	1.8	1.9	2.0	2.2	2.3	2.5	2.7	—	—
85-plus	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	—	—

\* Older than working age = aged 55-plus (women), 60-plus (men).

<sup>1</sup> Rosstat. Statistical Bulletin 2013.

**Table 1.6** Percentage of individuals aged 60-plus, life expectancy at 60-plus, and statutory retirement ages, selected countries, 2009

Country	Percentage of population aged 60-plus	Share of persons aged 80-plus	Life expectancy at 60-plus		Statutory retirement age	
			Male	Female	Male	Female
China	12	12	18	21	60	60
India	7	9	15	17	58	58
Israel	14	19	23	26	66.7	61.7
<b>Russia</b>	<b>18</b>	<b>16</b>	<b>14</b>	<b>20</b>	<b>60</b>	<b>55</b>
France	23	24	22	27	60	60
Germany	26	19	21	25	65	65
United Kingdom	22	21	22	25	65	60

Source: UN Population Division, 2009.

**Table 1.7** Russia: life expectancy trends at different ages, 1996-2009<sup>1</sup>

Age	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>Men</b>														
50	19.1	19.7	20.0	19.2	18.7	18.5	18.1	18.0	18.4	18.4	19.4	19.9	20.0	19.8
60	13.5	13.7	14.0	13.4	13.2	13.1	12.8	12.8	13.2	13.2	13.8	14.1	14.2	14.0
70	9.1	9.1	9.2	8.9	8.8	8.8	8.7	8.7	8.9	9.0	9.3	9.5	9.5	9.4
80	5.5	5.5	5.6	5.4	5.4	5.5	5.4	5.5	5.7	5.8	5.9	6.0	6.0	5.9
<b>Women</b>														
50	26.8	27.0	27.2	26.8	26.6	26.5	26.2	26.2	26.6	26.8	27.3	27.8	27.9	28.1
60	18.8	18.9	19.1	18.7	18.7	18.7	18.5	18.5	18.9	19.0	19.4	19.7	19.9	20.0
70	11.8	11.8	11.9	11.7	11.7	11.7	11.6	11.6	11.9	12.0	12.2	12.4	12.6	12.7
80	6.5	6.5	6.6	6.3	6.4	6.4	6.3	6.4	6.5	6.6	6.7	6.8	6.8	7.0

<sup>1</sup> Rosstat. Statistical Bulletin, 2013.

**Table 1.8** Older age dependency ratio, current and projected, selected countries (%)

Country	Years														
	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050	2060	2070	2080	2090	2100
<b>Russia</b>	<b>9.9</b>	<b>11.7</b>	<b>15.0</b>	<b>15.3</b>	<b>17.9</b>	<b>17.7</b>	<b>22.5</b>	<b>29.4</b>	<b>31.2</b>	<b>38.5</b>	<b>42.4</b>	<b>36.9</b>	<b>38.4</b>	<b>39.6</b>	<b>38.5</b>
United Kingdom	18.1	20.7	23.3	24.1	24.3	<b>25.1</b>	29.4	34.4	38.5	39.9	43.5	45.1	47.4	48.9	50.0
Germany	17.1	21.7	23.7	21.5	24.0	<b>30.8</b>	36.0	48.2	56.1	56.5	55.6	52.7	50.3	50.8	51.7
Italy	14.5	17.2	20.7	21.8	27.1	<b>31.0</b>	36.0	43.8	57.1	61.7	58.2	54.3	54.5	54.5	54.1
Poland	9.5	12.7	15.4	15.5	18.0	<b>19.0</b>	27.3	34.6	36.8	47.9	55.2	48.8	46.2	48.2	47.4
USA	11.4	13.9	17.9	18.4	20.4	<b>22.0</b>	24.6	29.9	32.5	40.4	45.3	38.7	39.4	40.6	39.4
Japan	8.9	10.2	13.4	17.1	25.2	<b>35.5</b>	48.2	52.9	63.3	69.6	68.6	65.1	62.2	60.5	59.8

Source: *Demoscope Weekly* № 483-484, 2011.

The Russian urban population has a longer life expectancy than the rural one: 69.4 years for urban areas and 66.7 years for rural ones in 2009. Urban men had a life expectancy of 63.5 years compared with 60.9 years for rural men; the corresponding figures for women were 75.1 and 73.3 years.

The life expectancy of older Russians in particular does not compare favorably with that of other industrialised nations. According to UN data, in 2009 life expectancy at 60-plus in Russia was only 14 years for men and 19 years for women (see Table 1.6). As of 2008, life expectancy in Russia at 65-plus was 11.7 years for men and 16.1 for women, lower than in most of the former USSR republics; at 75-plus, it was only 9.2 years, comparable to Tajikistan and Suriname, and in contrast to 13.7 years for Japan (Rosstat 2013a).

Meanwhile, older Russians are not showing the same increases in life expectancy as their younger counter-

parts. Between 2000 and 2010, Russian life expectancy at birth increased by 3.7 years for men and by 2.4 years for women; these rates of increase were substantially lower in older cohorts, however (see Table 1.7).

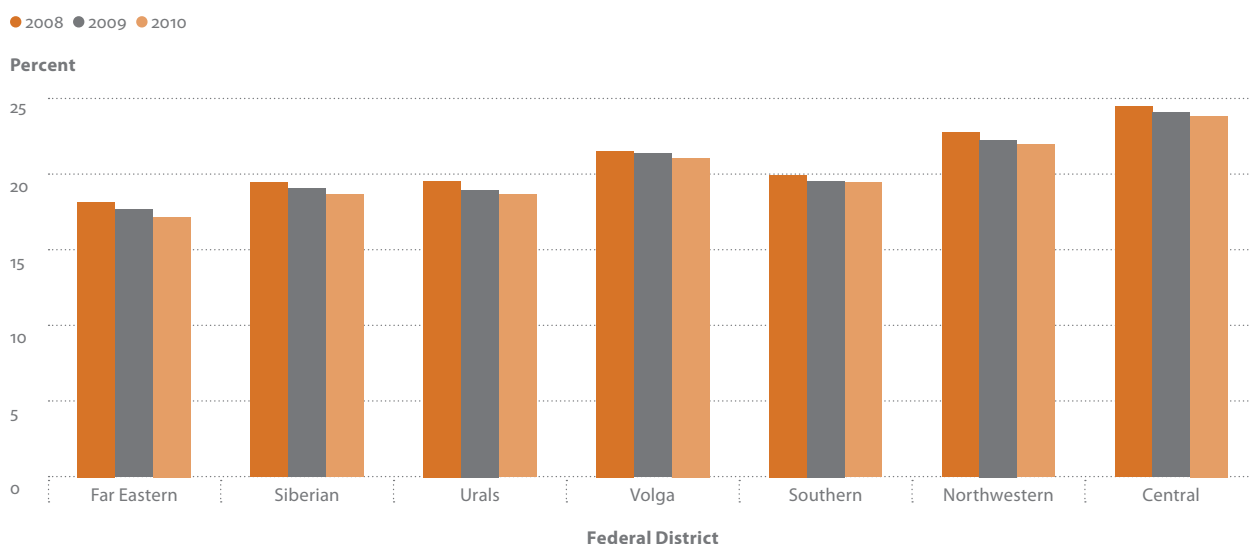
As a consequence of lower life expectancies at older ages, Russia's older age dependency ratio—the ratio of the number of people aged 65 and older to the population aged 20–64—is comparatively low: 17.7% in 2010, compared to a global high of 35.5% in Japan (Table 1.8).

## 1.5 Russia: regional socio-demographic peculiarities

Russia is divided into eight federal districts (FD – *federalniye okruga*): the Central, Southern, Northwestern, Far Eastern, Siberian, Urals, Volga, and North Caucasus FDs. These districts show marked economic, cultural



**Figure 1.1** Trends in the share of population aged 60-plus, Russian Federal Districts



Note: prior to 2010, the North Caucasus FD was included in the Southern FD.

and demographic variations, including in terms of their population age structures. The Central FD has the highest proportion of its population aged 60-plus, and the Far Eastern FD the lowest; however, recent years have shown an increase in the proportion of the older population in all FDs (Figure 1.1).

There are impressive differences in life expectancy rates between Federal districts. The Southern FD has the highest life expectancy rates for both men and women, and the Far Eastern the lowest — a gap of 5.2 years and 3.6 years respectively in 2009 (Table 1.7).

Federal districts also differ in the geographic distribution of their populations: more than 80% of the population of the Northwestern FD is urban, whereas the level in the Southern FD is less than 60% (Table 1.10).

## 1.6 Ageing issues and social policy goals

Population ageing is one part of the general dependency ratio, defined as the number of people younger or older than working age in relation to those of working age. As of 2010, every Russian of working age was supporting 0.6 persons, as shown in Figure 1.2.

The demographic dependency load varies by FD (Table 1.11). It is the lowest in the Far East, and the highest in the Southern FDs (mainly because of a large share of children) and the Central FD (mainly because of a large share of older people).

In the Central and Northwestern FDs, fertility rates are low and mortality rates high (10.3 and 10.7 in 2008);

**Table 1.9** Life expectancy at birth, Russian Federal Districts (years)

Federal Districts	2007		2008		2009	
	Male	Female	Male	Female	Male	Female
<b>Russian Federation</b>	<b>61.39</b>	<b>73.90</b>	<b>61.83</b>	<b>74.16</b>	<b>62.77</b>	<b>74.67</b>
Southern	64.22	75.22	64.74	75.50	65.3	75.8
Central	61.95	74.55	61.95	74.55	63.5	75.3
Urals	61.53	73.95	61.73	74.19	62.6	74.7
Volga	60.80	73.94	61.25	74.24	62.3	74.8
Northwestern	60.75	73.47	61.16	73.81	62.2	74.3
Siberian	59.55	72.30	60.09	72.69	61.0	73.2
Far Eastern	59.06	71.30	59.21	71.45	60.1	72.2

Source: Rosstat. Statistical Bulletin 2013.

**Table 1.10** Trends in urbanisation, Russian Federal Districts (%)

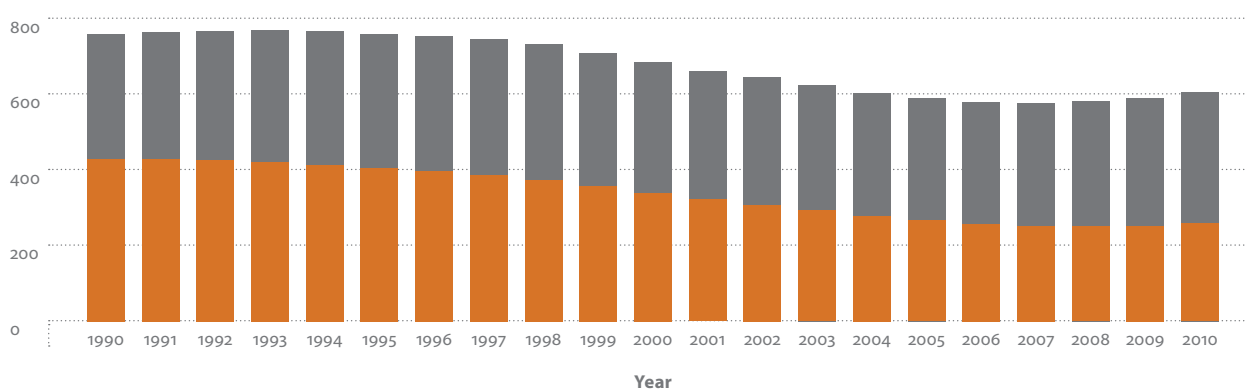
Federal Districts	1990	1995	2000	2005	2009	2010
<b>Russian Federation</b>	<b>73.6</b>	<b>73.0</b>	<b>73.1</b>	<b>73.0</b>	<b>73.1</b>	<b>73.1</b>
Southern	78.1	78.4	79.4	80.3	80.8	80.9
Central	82.2	82.0	82.2	82.3	82.4	82.5
Urals	59.8	57.9	57.8	57.1	56.8	57.1
Volga	70.9	70.9	70.6	70.2	70.3	70.3
Northwestern	80.6	80.2	80.5	79.4	79.7	79.3
Siberian	72.0	70.4	70.8	70.8	70.8	70.9
Far Eastern	76.1	75.6	75.8	74.2	74.3	74.3

Source: Rosstat. Statistical Bulletin 2013.

**Figure 1.2** Dependency ratio trends, Russia (number of people younger and older than working age per 1000 population of working age)

● Younger than working age ● Older than working age

Per 1000 population of working age

**Table 1.11** Trends in the dependency ratio in different Russian Federal Districts (number of people younger and older than working age per 1000 population of working age)

Federal Districts	1990	1995	2000	2005	2010
<b>Russian Federation</b>	<b>764.16</b>	<b>760.43</b>	<b>685.06</b>	<b>590.3</b>	<b>606.1</b>
Central	780.2	778.68	693.44	603.26	623.91
Northwestern	713.86	717.62	644.93	564.81	596.34
Southern	820.06	820.2	751.9	637.35	627.76
Volga	787.49	787.62	709.75	602.75	607.84
Urals	737.19	720.5	641.35	547.32	576.01
Siberian	757.97	743.14	658.21	565.02	588.06
Far Eastern	626.31	620.3	571.2	518.14	556.24

Source: Rosstat. Statistical Bulletin 2013.

in the Southern FDs they are higher (13.9), with mortality rates of 16.1%, 15.7% and 12.1%, respectively.

The dependency ratio receives so much attention because it has an immediate impact on the funding of social expenditures related to ageing, such as pensions,

health and long-term care. Labour force participation is an important mediating factor between demographics and the social expenditure burden. According to the World Health Survey (WHS) data, the proportion of Russian males with no paid employment in pre-pension ages (according to Russian law, 54-59 years) is very

similar at 25.8% to Germany, the United Kingdom, or France (around 27%) (Author's calculations, <http://apps.who.int/healthinfo/systems/surveydata/index.php/catalog/81>).

Public pension systems are an important social achievement. Statutory pension ages vary widely across the world, ranging from 50 to 67 (UN 2013). The lowest statutory retirement ages tend to be seen in low income countries and the highest in economically developed countries; in European countries and the United States, the pension age ranges from 60 to 67 for men and from 55 to 67 for women. The statutory retirement age in Russia is 60 for men and 55 for women, with some professions having a lower pension age. There has been much discussion about the pension age in Russia; however, the data shows that there is no strong correlation between statutory retirement age and life expectancy at age 60 and over.

## 1.7 Ageing related studies, data and policy gaps

All decisions at the state level require statistical and scientific information about older people and their health and medical care needs, life satisfaction, and conditions of life.

The Russian Federation has two institutes of gerontology (in Moscow and Saint Petersburg) and a centre for

gerontology (in Moscow). These provide thorough theoretical, clinical and other studies of older people and their health and needs. Related population data are also available from the Russian Longitudinal Monitoring Survey (RLMS) and Rosstat sample surveys, and several territories have special data programs.

Most national studies focus on the whole population, however, and the older people, with their specific concerns, form only one part of such studies. Information from SAGE, with its specific focus on the older population, will fill the gaps in other data bases and other sources of information. SAGE will play a specific role in investigations of health status over time and will describe different situations in the life of older people according to their location (both in terms of their FD of residence and in terms of urban/rural residence), education, ethnicity, income, and access to medical care services. The SAGE data base will make it possible to analyze the interaction between various factors and to test different hypotheses, using special statistical programs.

## 1.8 SAGE and the World Health Survey

To address the gap in evidence-based policy, in 2007 the Study on global AGEing and adult health (SAGE) India was initiated by the World Health Organization (WHO) as a part of a study focusing in on six of the 70 countries that participated in the 2003 World Health Survey (WHS). The other five SAGE countries are China,

**Table 1.12** Demographic indicators in SAGE countries, 2005 and 2025: sex ratio, life expectancy at birth and median age by country for 2005 and 2025

Region/Country	Sex ratio <sup>1</sup>		Life expectancy at birth, both sexes (years)		Median age (years)	
	2005	2025	2000-2005	2020-2025	2005	2025
<b>Africa</b>	<b>99.8</b>	<b>101.1</b>	<b>49.1</b>	<b>55.9</b>	<b>18.9</b>	<b>21.8</b>
Ghana	102.5	103.1	56.7	63.7	19.8	24.7
South Africa	96.5	101.7	49.0	49.3	23.5	26.0
<b>Asia</b>	<b>103.9</b>	<b>102.3</b>	<b>67.3</b>	<b>72.5</b>	<b>27.7</b>	<b>33.7</b>
China	105.6	103.7	71.5	74.5	32.6	39.5
India	105.2	103.0	63.1	70.0	24.3	30.4
<b>Europe</b>	<b>92.7</b>	<b>92.4</b>	<b>73.8</b>	<b>77.0</b>	<b>39.0</b>	<b>44.4</b>
Russian Federation	86.6	84.3	65.4	68.2	37.3	41.7
<b>Latin America and the Caribbean</b>	<b>97.5</b>	<b>96.8</b>	<b>71.6</b>	<b>76.0</b>	<b>25.9</b>	<b>32.3</b>
Mexico	95.6	94.5	74.9	79.0	25.0	33.4

<sup>1</sup> Males per 100 females.

Source: WHO and UN Population Division.

Ghana, Mexico, the Russian Federation and South Africa. The six countries were selected to give a broad representation across different regions, taking into consideration population and health characteristics (Table 1.12), as well as WHO's ongoing working relationship with the country (WHO, 2007).

SAGE Wave 1 is a longitudinal, face-to-face household survey. The WHS is considered Wave 0 in Russia; Wave 1 used an updated version of the same sampling frame and included many follow-up respondents. In addition to providing needed health and ageing data for participating countries, SAGE will continue to improve methods for measuring health and wellbeing in ageing and older adults. It is anticipated that the SAGE results will help inform the health, social, environmental and economic policies and programmes that affect the health status of individuals and populations across different countries.

This work is based in the WHO Multi-Country Studies unit, using a survey platform developed over the last nine years, and including validated and new assessment methodologies. The survey instruments are based on the WHS programme, with substantial revisions and additions based on a review of other major ageing surveys, cognitive testing of a draft survey instrument, and recommendations from a group of experts. Data were collected using a standardised questionnaire (with country-specific adaptations) including self-reported and objective health measures (performance tests, anthropometry and biomarkers).

## 1.9 SAGE goals and objectives

The goals of SAGE are to: (a) promote a better understanding of the effects of ageing on wellbeing; (b) examine the health status of individuals aged 50-plus as well as changes, trends and patterns that occur over time; and, (c) improve the capacity of researchers to analyse the effects of social, economic, health care and policy changes on current and future health. SAGE will provide baseline and longitudinal health-related data on older persons in middle and low income countries. It especially will improve the empirical evidence base on the health and wellbeing of older adults in developing countries, by providing reliable, valid and cross-nationally comparable data, examining health difference across individuals, countries and regions, and providing validated health measurement methods.

The data collection domains in SAGE include self-reported assessments of health, using anchoring vignettes for improved comparability across individuals, communities and populations; assessment of perceptions of wellbeing and quality of life; self-reported assessment of functioning, with measured performance tests on a range of different health domains; biomarkers; and the introduction of a longitudinal study design to allow dynamic examination of changes in health expectations and experiences over the life course and investigation of compression of morbidity in aging populations.

### Primary objectives

- To obtain reliable, valid and comparable data on levels of health in a range of key domains for adult populations who are 50 years and older in nationally representative samples;
- To examine patterns and dynamics of age-related changes in health and wellbeing, using longitudinal follow-up of survey respondents as they age, and to investigate socioeconomic consequences of these health changes;
- To supplement and cross-validate self-reported measures of health and the anchoring vignette approach to improving comparability of self-reported measures, through measured performance tests for selected health domains;
- To collect data on health examinations and biomarkers to improve reliability of data on morbidity and risk factors and monitor the effect of interventions.

### Additional objectives

- To generate a large enough cohort of older adult populations, and a comparison cohort of younger populations, to permit follow-up of intermediate outcomes, monitoring of trends, examination of transitions and life events, and addressing relationships between determinants and health, wellbeing and health-related outcomes;
- To develop a mechanism to link survey data to surveillance data from demographic surveillance sites;
- To build linkages with other national and cross-national ageing studies;
- To improve methodologies in order to enhance the reliability and validity of outcomes and determinants;



- To examine how the mix and distribution of health, health care, and socioeconomic and family resources affect key outcomes, including mortality, morbidity and health care utilisation;
- To provide a public-access information base to engage all stakeholders, including national policy makers and health systems planners, in planning and decision-making processes about the health and wellbeing of older adults.

## 1.10 Dissemination of SAGE results

This document presents the SAGE results for the main dimensions of health, social and economic conditions of the older population, with the results analyzed predominantly by age, sex, type of residence (rural or urban location), education, and wealth quintiles. These results will be used to develop a range of indicators for engaging researchers, public health officials, policy makers and decision makers.

We aim to produce the following (both independently and with participating countries and WHO collaborating centres):

- public-access datasets;
- this report;
- policy and research briefs;
- links to surveillance data collection systems and other data collection efforts;
- data for monitoring international, regional and national policy documents, and for monitoring effects of interventions;
- recommendations for research, policy and planning.

The results will be used as a public-access information base to engage stakeholders, including national policy makers and health systems planners.



## 2. Methodology

This chapter describes the SAGE sampling design and sample selection process. It also describes the survey's instruments and its implementation, including training, fieldwork and supervision, data collection and data management.

### 2.1 Sampling design, implementation and size

Every individual in the population had an equal and non-zero chance of being selected into the survey sample.

The SAGE Russian national sample was constructed using data from two sources:

1. The sample for the 2003 World Health Survey (WHS)
2. The 2002 All-Russia Population Census.

In constructing the SAGE Russian national sample, efforts were made to ensure even representation across administrative units. The largest administrative unit in the Russian Federation is the Federal District (FD). In 2007, there were seven FDs: Central, Southern, Northwestern, Urals, Volga, Siberian, and Far Eastern. Each FD is made up of federal subjects, administrative divisions which have varying levels of autonomy, but equal rep-

resentation in the federal government; these include republics, *krais*, *oblasts*, federal cities, autonomous *oblasts* and autonomous *okrugs*. In 2007, there were 86 federal subjects.

For the purpose of SAGE, federal subjects with particularly low population densities (making up 0.2% of the total population of Russia) were excluded: these included the Yamal-Nenets, Taimyr, Evenki, Koryak, and Chukhotka autonomous *okrugs*, the republic of Sakha (Yakutia), Khabarovsk *krai*, and Magadan *oblast*.

#### 2.1.1 First stage

The first stage of sample design was the definition of strata for selection. The sample was initially stratified by FDs, according to the distribution of population.

#### 2.1.2 Second stage

The second stage of the sample design was selection of primary sampling units (PSUs), mainly according to the data from the 2002 Russian Census.

For the selection of PSUs, first, all households which had participated in the WHS and which had a member aged 50-plus were listed again, as well as some WHS households with a member aged 18-49. These

**Table 2.1** Probability of selection and inhabited localities

Federal districts	Population	Probability of selection	Inhabited localities	Weight
All	15,770,409	1.00	100	–
Southern	6,154,958	0.39	39	1/0.39=2.6
Siberian	5,319,755	0.34	34	1/0.34=2.9
Far Eastern	1,056,496	0.07	7	1/0.07=14.3
Urals	3,239,200	0.20	20	1/0.20=5.0

households were drawn from the three FDs that were included in the WHS: Central, Northwestern, and Volga.

Next, PSUs were selected for the remaining four FDs (Southern, Siberian, Urals and Far Eastern). Within FDs, administrative and territorial formations (ATF) constituted the primary sampling units (PSU). The population distribution within the four districts was used to determine the number of sample localities in each district, which were then weighted to reflect their representation in the four districts (Table 2.1).

A computer program (according to the PPS method) was then used to select specific settlements in each district from the total number of ATFs, according to census data. ATFs were selected randomly and proportionally to the size of federal districts' population. This resulted in 39 ATFs from the Southern FD, 34 from the Siberian FD, 20 from the Urals FD and 7 from the Far Eastern FD. From each ATF, households, which constituted the study's secondary sampling units (SSU), were chosen at random, using a special formula for each

territory sample. The probability of being including in the sample was equal for all households (0.00247). Between 1 and 551 households were selected from each ATF. Address lists for all selected households (including house and apartment numbers) were compiled with the help of out-patient clinic staff.

In each territory, the sample was based on a household listing and enumeration, randomly selecting houses/apartments until the desired sample size was reached.

All members of each household selected for the survey sample were enumerated on the household roster and all eligible people aged 50-plus were invited to participate in the survey.

If a household had at least one person aged 50 or older, then that household was included in the 50-plus sample. In the remaining households (that is, with no member aged 50 or older) one respondent aged 18–49 was randomly selected using Kish tables (Kish, 1965; Kish, 1987).

In selected households, the individuals eligible for interview formed the ultimate sampling unit. The total sample size of individuals was targeted to be 1000 people in the age group 18–49 years old and 5000 people aged 50 or older.

**Table 2.2** Number of selected enumeration areas, by urban/rural, SAGE Russia

Federal districts	Residence		
	Urban	Rural	Total
Central	64	21	85
Northwestern	26	9	35
Southern	13	26	39
Volga	49	19	68
Urals	9	11	20
Siberian	17	17	34
Far Eastern	4	3	7
<b>Total</b>	<b>182</b>	<b>106</b>	<b>288</b>

### 2.1.3 Stratification and allocation of enumeration areas

Table 2.2 presents the allocation of the administrative and territorial formations (ATF) by federal districts, broken down by urban/rural status.

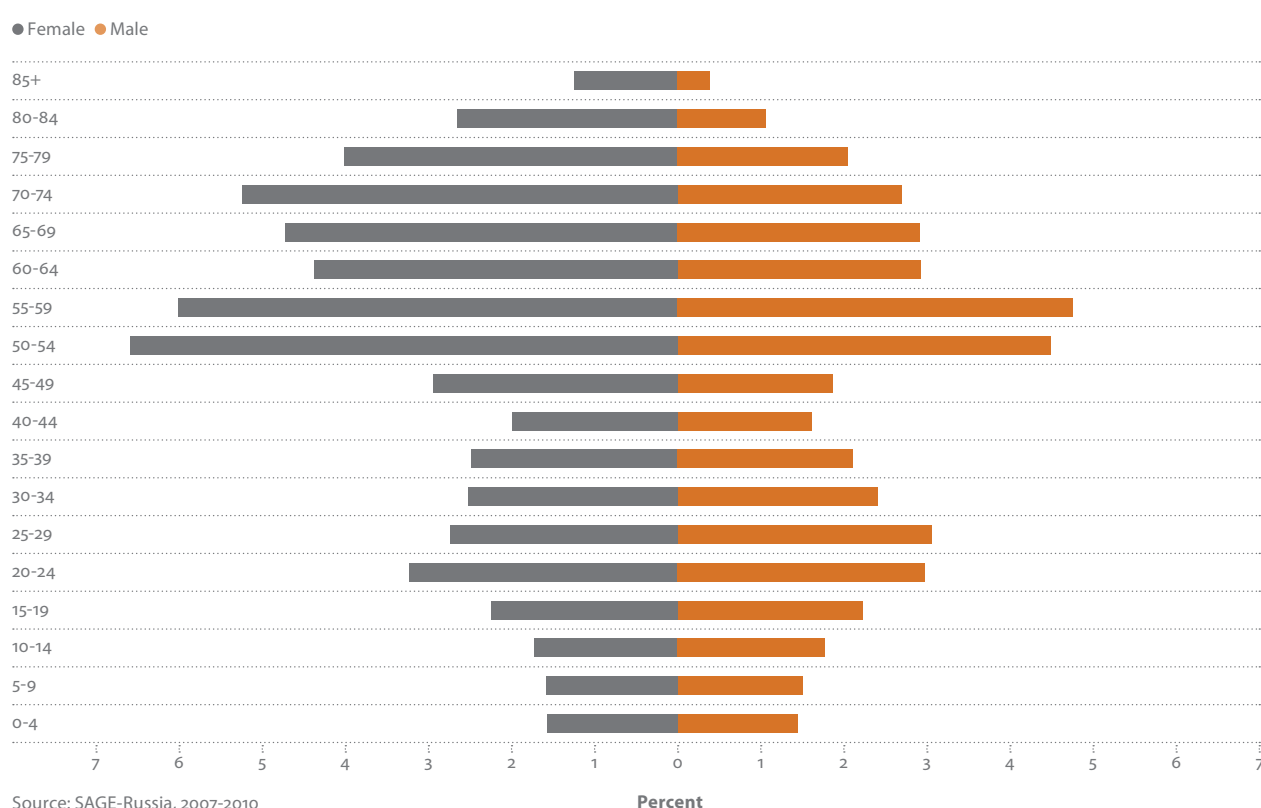
Table 2.3 presents the coverage of ATFs by province and urban/rural status. From a total of 288 enumeration areas, 176 ATFs were visited: the coverage was 61.1%

**Table 2.3** Coverage of enumeration areas, SAGE Russia

Federal district	Targeted number of ATFs (% visited)	Number of ATFs visited	
		Rural	Urban
Central	85 (70.6%)	16	44
North West	350 (31.4%)	3	8
Southern	39 (71.8%)	19	9
Volga	68 (66.2%)	14	31
Urals	20 (50.0%)	4	6
Siberian	34 (50.0%)	6	11
Far Eastern	7 (71.4%)	3	2
<b>Total</b>	<b>288 (61.1%)</b>	<b>65</b>	<b>111</b>

**Table 2.4** Number of households and individual respondents covered, SAGE Russia

Federal districts	Urban		Rural		Urban		Rural		Total HH	Total Indiv.
	HH	Indiv.	HH	Indiv.	HH	Indiv.	HH	Indiv.		
Central	768	504	74	47	152	186	1	1	995	738
North West	152	123	2	2	15	18	–	–	169	143
Southern	–	–	–	–	966	1 041	445	654	1 411	1 695
Volga	388	317	23	25	174	212	13	16	598	570
Urals	–	–	–	–	422	560	192	230	614	790
Siberian	–	–	–	–	559	708	238	228	797	936
Far Eastern	–	–	–	–	31	40	29	35	60	75
<b>Total</b>	<b>1 308</b>	<b>944</b>	<b>99</b>	<b>74</b>	<b>2 319</b>	<b>2 765</b>	<b>918</b>	<b>164</b>	<b>4 644</b>	<b>4 947</b>

**Figure 2.1** Population pyramid derived from the SAGE Russia household roster data

of the targeted ATFs, with the highest percent of visited enumeration areas in the Southern FD (71.8%).

Of 7,200 eligible households, 4,644 HHs were included in the final sample and visited (both in urban and rural territories (Table 2.4). 1,407 of them took part in the WHS survey.

## 2.2 SAGE survey instruments

SAGE used household, individual, and proxy questionnaires. For deaths recorded in follow-up older households, a verbal autopsy questionnaire was completed.

## Translation

WHS guidelines (available through WHO) were used for the translations of SAGE instruments. The translated instruments included the household, individual (all four rotations, A–D), and proxy respondent questionnaires. Consent forms and information sheets were also translated. All documents were translated into Russian.

To check the quality of translation, a list of key words and phrases was provided by WHO for translation and back translation. These key words and phrases were translated from English into Russian by the original



translator, then back-translated into English by an independent translator who provided all possible interpretations for the words and phrases. Fieldworkers were given a copy of the approved translated documents during practice training and field testing.

### (a) Household questionnaires

The household questionnaire was administered to any household member aged 18-plus. Before administering the household interview, consent was sought from the respondent.

The following is a brief description of each section in the household questionnaire.

- *Section 0000*: Summary of key information for supervisors, interviewers and data entry clerks, including ID numbers, rotation codes, key dates and quality control checks.
- *Section 0100*: Sampling details necessary for calculating sampling weights.
- *Section 0200*: GPS information.
- *Section 0300*: Specific address and location information for the respondent, plus information for a backup informant in cases where the respondent could not be located.
- *Section 0350*: Record of contact with the household.
- *Section 0400*: Household roster, with details about all household members, including sex, age, marital status, education and care needs.
- *Section 0450*: Provided the interviewer with the correct procedure for selecting new respondents for the individual questionnaire and the consent form for the informant completing the household questionnaire.
- *Section 0500*: Physical characteristics of the dwelling/household, including ownership status, flooring and wall materials, water supply, sanitation and cooking arrangements.
- *Section 0600*: Cash and non-cash transfers into and out of the household.
- *Section 0700*: Household income and assets.
- *Section 0800*: Household health and non-health expenditures.

The household roster for follow-up respondents differed slightly from that for new households. It included questions about deaths in the household since the last interview, other reasons for departures from the house-

hold, and new members of the household since the last interview.

### (b) Individual questionnaire

The individual questionnaire was administered to all adult respondents aged 50-plus in older households, or the selected adult aged 18-49 years in younger households. Respondents were asked to sign a consent form (Appendix 3) prior to the administration of the individual questionnaire, even if the same person had given consent for the household questionnaire. This form also included consent for taking and storing a blood sample for analysis.

The individual questionnaire was divided into nine sections. The first section started with filter questions about memory to assess whether respondents aged 60-plus were cognitively capable of understanding and completing the survey. If a respondent was not capable of completing the questionnaire, a proxy respondent was selected, and a proxy questionnaire administered.

The following is a brief description of each section in the individual questionnaire.

- *Section 1000*: Individual consent form and background characteristics of the respondent.
- *Section 1500*: Details of current or past work situation, including if the person was currently looking for work (unemployed).
- *Section 2000*: Overall health, abilities in day-to-day life, and eight self-rated health domains (affect, mobility, sleep and energy, cognition, interpersonal activities, vision, self-care, pain, and breathing). This section included the vignette methodology. Functioning was assessed using the 12-item version of the WHO Disability Assessment Schedule WHODAS-2, complemented by an extended set of questions on indicators of functional wellbeing, in particular the ability to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (see Section 6.2 for further discussion).
- *Section 2500*: Blood pressure, height, weight, waist and hip circumferences of the respondent. The respondent was also asked to complete performance tests (vision, lung function, cognition, timed walk) and asked for a blood sample (noted where declined). (See below for further discussion.)
- *Section 3000*: Selected risk factors and health behaviours, including tobacco and alcohol use, diet, food security and physical activity.

- *Section 4000*: Diagnosis, and for some conditions symptoms, of 11 health conditions (stroke, angina, arthritis, diabetes, chronic lung disease, depression, hypertension, cataracts, injuries and oral health problems). Information about treatment-seeking behaviour.
- *Section 5000*: Use of inpatient, outpatient and home-based health care over the previous five years.
- *Section 6000*: Social connections and participation in the community.
- *Section 7000*: Perceptions of quality of life and well-being, using the WHO Quality of Life (WHOQoL) eight-item version along with an abbreviated Day Reconstruction Method (DRM) module for characterising daily life experience and happiness.
- *Section 8000*: Assessment of the impacts of care-giving on the respondent and their household, through questions about care-giving and losses to the household, including loss of support, physical and financial burdens of care-giving, and changes in health status as a result of care given for adult children or orphaned grandchildren/kin.
- *Section 9000*: Interviewer's observations about the respondent and impressions of the interview process.

## 2.3 Biomarker measurements

In older or disabled populations, performance tests are used not only to estimate the prevalence of selected conditions, but also to provide information about causal pathways from preclinical disease to clinical disease and impairments in functional capacity. SAGE also uses performance test results for cross-validation of the anchoring vignette strategy and as an independent test for improving understanding of self-reported health.

In the performance test, an individual performs a task in a standardized manner and the result is measured against predetermined objective criteria such as time, accuracy of completion or maximal effort. By comparing the result of measured performance tests with self-reported health and vignette responses, it is possible to assess whether adjustments based on the anchoring vignette strategy improve comparability of self-reported health over time and across populations. It is also possible to evaluate specific vignettes and sets of vignettes in terms of overall performance, and to test critical assumptions of the anchoring vignette strategy. Performance measures also quantify physical function

along a continuous scale, and are therefore expected to be particularly valuable in detecting change in function over time.

- **Anthropometry**: Weight and height were measured to calculate Body Mass Index (BMI) as an independent risk factor for several health outcomes. Waist and hip circumferences were measured to calculate waist-to-hip ratio, which is an independent risk factor for cardiovascular disease and other health outcomes.
- **Physical tests**: The following tests were administered:
  - *Four-meter timed walk at normal and rapid pace*: The respondent was allowed to use a walking aid, if necessary.
  - *Hand grip strength*: Using each hand.<sup>1</sup>
  - *Spirometry*: Lung function measures (forced expiratory volume in the first second (FEV<sub>1</sub>) and forced vital capacity (FVC)) were obtained to screen for chronic obstructive pulmonary disorder.<sup>2</sup>
  - *Eyesight*: Tests for myopia and hyperopia were performed using Log MAR charts.<sup>3</sup>
  - *Blood pressure*: Readings were measured twice during the interview, using an automated recording device, both times on the right arm/wrist with the respondent seated.<sup>4</sup>
- **Cognition tests**: A short set of cognition tests measured concentration, attention and memory. This provided an estimate of cognitive ability and impact on health status (for example, dementia). Over time, these tests will provide a basis for examining changes in cognitive function with age.
  - *Verbal fluency*: Ability to produce as many words as possible in a one-minute time span. This test assessed retrieval of information from semantic memory.
  - *Immediate and delayed verbal recall*: Ten words were successively presented, after which the

1 Smedley's Hand Dynamometer, Scandidact, Oldenvej 45, 3490 Kvistgard, Denmark.

2 MIR SpiroDoc Diagnostic Portable Spirometer, Medical International Research, via del Maggolino 125, 00155 Roma, Italy.

3 Tumbling "E" Chart for 4m testing and Tumbling "E" Near Vision Card for 40cm testing, Precision Vision Ltd., 944 First Street, LaSalle IL 61301, USA.

4 OMRON R6 Wrist Blood Pressure Monitor, HEM-6000-E, Omron Healthcare Europe, Wegelaan 67-69 2312 JD Hoofddorp, The Netherlands.

respondent was given the opportunity to recall as many words as possible. This was repeated three times to saturate the learning curve. After about 10 minutes, delayed recall and recognition were tested. This test assesses learning capacity, memory storage and memory retrieval.

- *Digit span (forward and backward)*: Participants were read a series of digits and asked to immediately repeat them back. In the backward test, the person must repeat the numbers in reverse order. These tests measure concentration, attention, and immediate memory.

**Blood sample:** Dry blood spot (DBS) samples were collected as part of the SAGE survey. Prior to collection, the respondent signed a separate informed consent form (that included consent for taking and storing a blood spot sample for future analysis). A small amount of whole blood (5 spots) was then collected on filter-paper from the respondent by means of a finger-prick, using sterile techniques. Universal precaution procedures were applied while obtaining the blood specimen and transporting them to the laboratory for storage.

### (c) Proxy questionnaire

For respondents aged 50-plus, a short set of questions about memory preceded the main set of questions in the individual questionnaire. These questions allowed the interviewer to subjectively determine whether a respondent was cognitively and physically competent to complete the interview. If the respondent was deemed unable to provide reliable results or too ill to participate, then the proxy respondent questionnaire was used to interview a person who knew the respondent well and was able to accurately answer questions about the respondent's health and well-being on their behalf. The proxy respondent questionnaire consisted of a standardized set of screening questions for dementia and cognitive decline. The proxy respondent needed to provide specific consent for a proxy interview.

- *Consent form.*
- *Informant Questionnaire on Cognitive Decline (IQ Code)*: Sixteen-item version of screening questions for dementia and cognitive decline (Cherbuin and Jorm, 2010).
- *Health state descriptions*: Captured health information in the eight health domains.
- *Chronic conditions and health care service use*: Asked about same conditions as in the individual questionnaire.

- *Health care utilization*: Same strategy as used in the individual questionnaire.

## 2.4 Georeference data

Georeference data gave the physical location of ATF and households selected for SAGE (Figure 2.1); this data included GIS coordinates for latitude and longitude. As described in Section 2.1, georeferenced aerial photograph maps provided the basis for the household listing, from which households were selected for the sample. During the interview phase, the coordinates of the selected household were confirmed with Garmin eTrex GPS receivers, and were registered to be stored in the SAGE database.

Geographical data served several purposes. First, the accurate recording of coordinates of sampled households was necessary to assist with finding respondents for the next round of the SAGE longitudinal data collection. Second, the EA and household GIS coordinates were stored in the SAGE database to be used for further spatial analyses of health and illness data. Finally, the data may eventually be linked with other data sources to measure distance between selected households and health-care facilities.

## 2.5 Data collection procedures and data management

### 2.5.1 Data collection

Fieldwork was conducted through face-to-face interviews. The first contact with a household occurred during general rounds or through a preliminary telephone call. If the individual gave their consent, the interview took place on the spot or arranged a suitable interview time. In cases where the targeted respondent was unavailable during the first visit, at least two additional visits were attempted. Fieldwork began in 2007 in the Central, Northwestern and Volga FDs (where the WHS was conducted in 2003) and ended in 2010 in the Southern, Far Eastern, Siberian, and Urals FDs. Coordinators spent a few weeks training a team in the field, and then maintained regular contacts with the group. The average number of interviews conducted per day was three household interviews and two individual ones. Each interview team included a professional nurse whose main responsibility was to collect DBS samples.

The quality of data was checked throughout all stages of collection. Once fieldworkers had completed the interviews, they checked their questionnaires while still in the respondents' houses, which helped ensure that all the necessary questions had an answer and were recorded correctly. Afterwards, the interviewers handed the completed questionnaires with the DBS sample to the field supervisor. The supervisor then checked the questionnaire and tracking sheets for completeness, consistency and quality.

A tracking sheet was used to track day-to-day progress throughout the interview process. Questionnaires and anthropometric data were recorded on a separate questionnaire tracking sheet, and the DBS data on a specimen tracking sheet. Tracking sheets were maintained by each data collector, checked by the field supervisor and captured by checkers based in the office. The following aspects were captured:

- Questionnaire number
- Participant number
- Age of participant
- Sex of participant
- Date of data collection
- Type of anthropometric measurement(s) done
- Whether DBS was collected
- Data collector number
- Field supervisor number and signature.

## 2.5.2 Data management and data entry

The data were entered into a CSPro software application provided by WHO. Five computers were networked, four for data capture and one for the supervisor. The supervisor maintained the control file that contained all of the data entered. Five data capturers and the supervisor were trained on CSPro data entry over 2 days.

The data cleaning process involved:

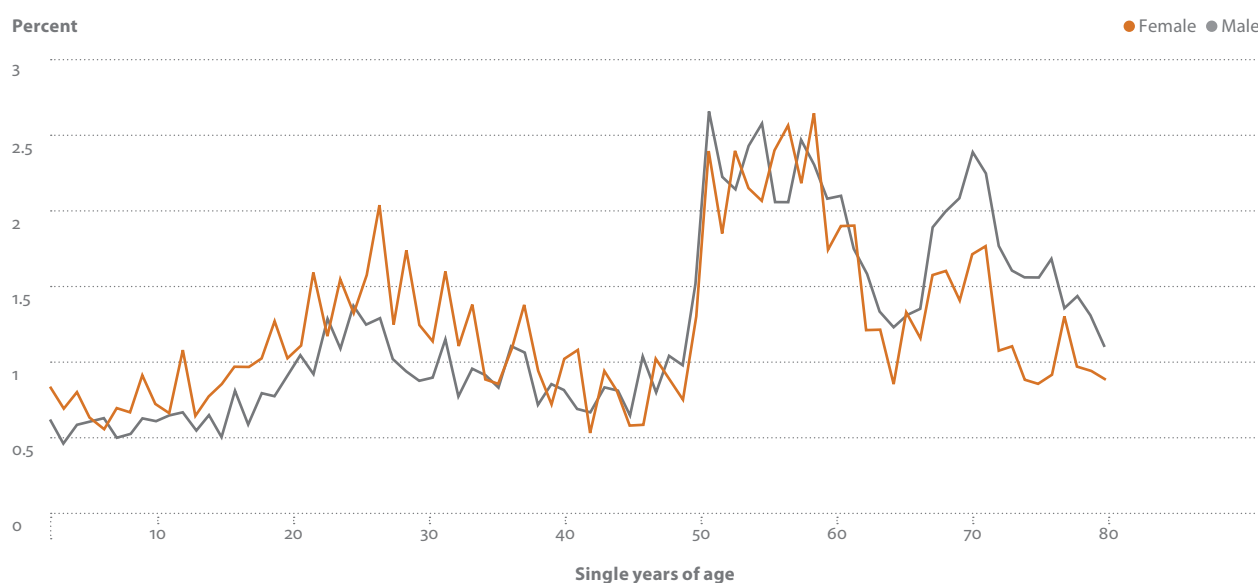
- Verifying questionnaires to identify and correct data inconsistencies
- Reconciling ATF numbers
- Identifying and eliminating duplicate cases
- Correcting miscodes that were a result of errors in fieldwork or data capture
- Reconciling questionnaires with screening data.

## 2.6 Survey metrics and data quality

### 2.6.1 Sample representativeness

The sample-population deviation index is a measure of the sample's representativeness of the general population. Between the ages of 25 and 50, the SAGE sample population of household members closely approximated the national population, except for males aged 50–55, where the sample contained a slightly higher proportion because households were sampled contingent on having a member aged 50 years or older.

**Figure 2.2 Meyer's Blended Index: age heaping**



Source: SAGE 2007–2010

Oddly, however, there were relatively few people aged 70 years or older in the sample compared to the general population.

## 2.6.2 Age reporting

Myers' Blended Index is a measure of age heaping that involves a comparison of expected proportions of population at each age with the reported proportions of population at each age. The Index is the absolute value sum of percentage differences between the reported and expected age distribution. It ranges from 0 to 99, with 0 meaning no age heaping and 99 meaning that all ages are reported with the same terminal digit. The Myer's Index for the SAGE Russia sample was 3.3, with no evidence of age heaping in the sample (Figure 2.2).

## 2.7 Response rate

The overall response rate among those aged 50 years or older was 71.8% (Table 2.6). Females were more likely than males to complete the survey. Those in rural areas were also more likely to participate than those in the urban areas, especially in the capital and big cities.

**Table 2.6** Individual response rates by background characteristics, SAGE Russia

Characteristics	Individuals contacted	Individual response rate (%) <sup>*</sup>
<b>Age group</b>		
50–59	1 473	96.3
60–69	1 071	96.7
70–79	1 018	95.8
80-plus	376	96.0
No response	2 331	
<b>Sex</b>		
Male	1 867	80.6
Female	3 068	87.7
No response	1 334	
<b>Residence</b>		
Urban	4 894	69.9
Rural	1 375	78.8
<b>Total</b>	<b>6 269</b>	<b>71.8</b>

<sup>\*</sup> Refers to completion of the full interview.





## 3. Household and Individual Characteristics

### 3.1 Household characteristics

This chapter presents a profile of the selected households and household members. The information on household members and housing characteristics was collected from household informants, usually the head of the household. The information collected from each of the households included a roster of household members; member composition and demographic characteristics, including marital status and education; insurance coverage and care needs of all residents staying in the household for at least four months per year; housing characteristics; and the income/economic situation of the household. These basic household data play an important role in gaining an understanding of the issues related to adult health at the micro level, particularly of older persons.

#### 3.1.1 Sociodemographics of the household population

Table 3.1 presents the characteristics of household composition by sex and age. Males represented 40.6% of all household members. Persons aged 0-14 made up 9% of the household population, those aged 15-64 constituted 60% and those aged 65-plus constituted 31%. Females aged 65 and older were more prevalent than males (35.8% versus 23.8%, respectively) and were more often located in urban areas.

It should be noted that the age distribution of household members does not match what might be considered a “regular” distribution: there are smaller percentages of both men and women at ages 40-49 compared to neighboring age groups. This represents the second generation effects of decreased fertility during World War II (those who were not born in 1940-1945, and hence did not bear children in 1975-1980).

Over half of men (56.7%), but only 38.7% of women were currently married; this fact reflected a higher share of widows than widowers (29.5% among women compared to 6.6% among men) and of women among people who were separated/divorced (8.9% of women compared to 4.5% of men). Widowhood can be attributed to the age structure of the older population: women live longer than men, and their chances to become widowed are much higher. The second difference represents variation in self-reporting of marital status among men and women: men more often tend to report that they are free from any relationship, whereas women in the same situation are more likely to declare themselves to be in a relationship.

The survey's household population was highly educated, with only 14.8% having at most a primary education. Among the adult population aged 20-49, 60.6% had completed secondary education and around 30% had some higher education. At age 50-plus the corresponding figures were 50.6% and 19%; however, lower education levels were higher, with only 11.9% of this age group having at most a primary education.

The majority of the survey's household population had health insurance, with only 1.5% of the population being uninsured. This is because public health insurance in Russia is mandatory. Around 1% of participants had supplementary private health insurance.

Nearly 90% of household members reported no ongoing healthcare needs; 11% reported a care need due to an acute condition or to long-term illness or disability.

#### 3.1.2 Household size, household head and main income earner

The mean household size was 2.3 members. Households with two-five members were more common in urban

**Table 3.1** Household members' age groups and background characteristics (%) by sex, SAGE Russia

Characteristics	Male (%)	Female (%)	Total (%)	Number of household members at time of survey
<b>Age group</b>				
0–4	3.6	2.4	2.9	238
5–9	3.0	2.7	2.8	232
10–14	3.7	3	3.3	269
15–19	4.1	3.3	3.6	297
20–24	6.4	4.9	5.5	458
25–29	6.9	4	5.2	428
30–34	5.5	4.4	4.8	400
35–39	4.4	4.2	4.3	355
40–44	3.4	2.9	3.1	256
45–49	3.7	4.2	4.0	329
50–54	12.7	11.7	12.1	1 001
55–59	10.9	9.7	10.2	842
60–64	7.9	7.0	7.4	610
65–69	7.6	9.0	8.5	702
70–74	6.6	8.6	7.8	646
75–79	5.7	9.8	8.1	674
80+	3.9	8.4	6.6	546
<b>Residence</b>				
Urban	73.1	75.1	74.3	6 275
Rural	26.9	24.9	25.7	2 168
<b>Marital status</b>				
Never married	26.9	19.9	22.7	1 894
Currently married	56.7	38.7	46.0	3 831
Cohabiting	4.4	2.9	3.5	291
Separated/divorced	5.4	8.9	7.5	624
Widowed	6.6	29.5	20.3	1 692
<b>Education</b>				
No formal education/less than primary	8.7	8.0	8.3	694
Primary	6.1	6.9	6.5	545
Incomplete secondary	14.3	17.8	16.4	1 367
Secondary	51.5	48.6	49.7	4 144
Higher	19.3	18.5	18.8	1 569
Post-graduate	0.2	0.1	0.1	12
<b>Insured</b>				
Mandatory	97	97.7	97.4	8 226
Voluntary	0.6	0.6	0.6	52
Both	0.6	0.3	0.4	36
None	1.8	1.4	1.5	129
<b>Needs care</b>				
Yes	9.8	11.7	11.0	922
<b>Number of household members</b>	<b>3,402</b>	<b>5,042</b>	<b>8,444</b>	

**Table 3.2** Household size, household head and main income earner, percent distribution/mean by residence, SAGE Russia.

Characteristics	Residence		Total	Number*
	Urban	Rural		
Household size				
1 member	35.6	39.1	36.6	1 282
2–5	60.2	55.1	58.9	2 063
6+	4.2	5.8	4.6	161
Mean household size	2.3	2.2	2.3	
Household head				
Female aged 18–49	6.7	2.8	5.6	196
Female aged 50+	51.2	53.1	51.8	1 798
Male aged 18–49	5.6	4.9	5.4	189
Male aged 50+	36.4	39.2	37.2	1 292
Mean age of household head	63.5	64.9	63.8	
Main income earner				
Female aged 18–49	7.6	4.5	6.8	231
Female aged 50+	42.6	48.9	44.3	1 509
Male aged 18–49	13.4	8.6	12.1	411
Male aged 50+	36.4	38	36.9	1 255
Mean age of main income earner	59.6	62.7	60.5	

\* Refers to households where interviews were completed.

**Table 3.3** Household size, household head and main income earner, percent distribution/mean by income quintile, SAGE Russia

Characteristics	Wealth quintile					Total	Number
	Lowest	Second	Middle	Fourth	Highest		
Household size (%)							
1 member	66.9	48.3	41.2	16.4	9.5	36.6	1 280
2–5	32.1	50.1	55.9	79.0	77.8	58.8	2 056
6 +	1.0	1.6	2.9	4.6	12.7	4.6	161
Mean household size (number of HH members)	1.5	1.9	2.0	2.6	3.4	2.3	
Household head (%)							
Female aged 18–49	4.1	4.8	3.9	6.9	8.4	5.6	195
Female aged 50+	66.8	62.4	58.6	36.8	34.2	51.8	1 795
Male aged 18–49	2.7	2.3	3.3	8.1	10.3	5.4	186
Male aged 50+	26.4	30.5	34.2	48.2	47.0	37.2	1 291
Mean age of household head (years)	66.5	66.1	66.3	59.1	58.9	63.4	195
Main income earner (%)							
Female aged 18–49	5	5.6	5.1	11.1	7.3	6.8	231
Female aged 50+	62.6	58.1	48.2	31.3	22.5	44.4	1 509
Male aged 18–49	4.8	6.4	8.2	13.6	25.8	11.9	405
Male aged 50+	27.6	29.9	38.4	44	44.4	36.9	1 254
Mean age of main earner (years)	65.7	64.1	64.0	55.9	52.9	60.5	

areas, while single-member households and large households were more frequent in rural areas (Table 3.2). Households with more than two members were more common among the higher income quintiles, while single-person households made up the large majority (67%) of the poorest income quintile (Table 3.3). Only seven households had more than 11 members, so this category was included in the 6-10 member category. Household size varied by Federal District (FD): 23.5% of householders from the Southern FD lived with four or more other household members, compared with 3.8% in the Central FD. The Southern FD had the lowest share of one- or two-member households (21.6% and 26%), contrasted with 46.5% and 32.2% in the Central FD. Interestingly, in the overall sample mean household size increased with income, ranging from 1.5 members for the poorest quintile to 3.4 members for the richest quintile.

A majority of households, especially in rural areas, were headed by a woman aged 50 or older, followed by a man in the same age group. In the lowest income quintile, an older woman also was most likely to be the head, whereas an older male head was more common in the richest quintile. The mean age of the head of household decreased by more than 10 years with increasing income quintile: the overall mean age was around 60 years (66.5 for the lowest quintile and 52.9 for the highest).

A similar pattern was found when looking at the main income earner: while women aged 50-plus headed up 44% of households overall, this share rose to almost two-thirds in the lowest income quintile (Tables 3.2, 3.3). Older men were most likely to be the main household earner in the highest income quintile.

**Table 3.4** Living arrangements of households, percent distribution by residence, SAGE Russia

Living arrangements	Residence (%)		Total (%)	Number
	Urban	Rural		
Single-person household aged 50+				
No	67.6	61.7	66.0	2 315
Yes	32.4	38.3	34.0	1 191
Dual, one spouse aged 50+ and one <50				
No	99.5	99.6	99.5	3 489
Yes	0.5	0.4	0.5	17
Dual, both spouses aged 50+				
No	80.5	76.5	79.4	2 784
Yes	19.5	23.5	20.6	722
One generation				
No	76.4	72.0	75.2	2 638
Yes	23.6	28.0	24.8	868
Multigenerational households				
Two generations				
No	74.8	78.7	75.8	2 659
Yes	25.2	21.3	24.2	847
Skip generation <sup>a</sup>				
No	99.3	99.8	99.4	3 487
Yes	0.7	0.2	0.6	20
Three generations				
No	87.8	89.6	88.3	3 095
Yes	12.2	10.4	11.7	411
Number	2571	935		

<sup>a</sup> Skip-generation households—for example, grandparents living with grandchildren—are a type of two-generation household and are therefore not included in the column totals.

### 3.1.3 Living arrangements

Among respondents aged 50-plus, a third overall lived alone (38% in rural areas). The 2002 All-Russia Population Census found that 26.1% of the population aged 65-plus lived alone (12.9% among men, 32.2% among women). A similar proportion of older persons who live alone and receive non-family help has been observed in Sweden, and even higher levels in the Netherlands and Switzerland (SHARE, 2005).

People whose spouse had died were particularly likely to live on their own: in both the urban and rural populations, around 60% of widowed men and nearly 80% of widowed women lived in a single-person household, implying a need for special help and care. Single-person households were also more common among respondents who had never married or were separated/divorced, both more common in urban than in rural areas.

About 21% of the SAGE households consisted of two people both aged 50-plus (Table 3.4). One- and two-generation households were the most common, followed by three-generation households. One-generation households were relatively more common in rural areas, whilst two-generation households were mainly located in urban areas. This may be explained by the tendency of young people to leave rural areas and move to cities, which causes a rising population density in urban areas and forces families to live together even after their children are grown.

Very few households had one spouse aged 50 or more and the other aged less than 50—a situation that can be explained by the fact that a large difference in spousal ages is not common in Russia.

More than 60% of people aged 50-plus in single-person households were in the lowest income quintile,

**Table 3.5** Living arrangements of households, percent distribution by wealth quintile, SAGE Russia

Living arrangements	Wealth quintile (%)						Number
	Lowest	Second	Middle	Fourth	Highest	Total	
Single-person household aged 50+							
No	38.0	53.8	60.5	85.8	92.4	66.0	2 307
Yes	62.0	46.2	39.5	14.2	7.6	34.0	1 191
Dual, one spouse aged 50+ and one <50							
No	99.6	99.5	99.6	99.4	99.4	99.5	3 480
Yes	0.4	0.5	0.4	0.6	0.6	0.5	17
Dual, both spouses aged 50+							
No	89.6	79.8	75.6	69.4	81.6	79.4	2 775
Yes	10.4	20.2	24.4	30.6	18.4	20.6	722
One generation							
No	86.5	74.9	71.1	64.6	77.9	75.2	2 630
Yes	13.5	25.1	28.9	35.4	22.1	24.8	868
Multigenerational household							
Two generations							
No	85.9	84.0	81.7	69.3	58.7	75.9	2 656
Yes	14.1	16.0	18.3	30.7	41.3	24.1	842
Skip generation							
No	99.5	99.0	99.0	99.6	100	99.4	3 478
Yes	0.5	1.0	1.0	0.4	0	0.6	20
Three generations							
No	97.0	92.3	92.2	85.7	74.3	88.2	3 086
Yes	3.0	7.7	7.8	14.3	25.7	11.8	411
Number	703	716	700	651	728	3 498	



a figure that declined steadily as income quintile increased (Table 3.5).

### 3.1.4 Household head characteristics

As noted earlier, a majority of household heads were women and more likely than their male counterparts to be concentrated at higher ages, a fact that probably reflects higher life expectancy and lower mortality rates for women. Some 14% of households were headed by women aged 80-plus, compared to 7.4% for men in the same age group.

Male household heads were more highly educated than their female counterparts—a tendency observed amongst all respondents, but more strongly evident

among household heads. Both among men (56.6%) and women (51.1%), most household heads had a secondary education, which resembles the Russian population as a whole. Among households with respondents aged 50+ years, 34% of female household heads had an educational level lower than secondary, and 17.6% had higher or more education (compared to 8.9% and 22% among men, respectively). Among household heads aged 20-49, 28.7% of men and 26.3% of women were highly educated, more so than seen in the overall population.

In line with the overall findings outlined earlier, female household heads were more likely than male household heads to be in poorer households, with 48.3% falling in the two lowest income quintiles and only 30% falling in the two highest quintiles, compared with 29.2% and 53%, respectively, of male household heads (Table 3.6).

**Table 3.6 Household head by sociodemographic characteristics, percent distribution by sex, SAGE Russia**

Sociodemographic characteristics	Men (%)	Women (%)	Total (%)	Number
<b>Age group (household head)</b>				
18–29	2.4	0.9	1.5	55
30–39	3.9	4.7	4.4	160
40–49	6.5	4.3	5.2	191
50–59	34.3	22.2	27.4	1 005
60–69	25.6	24.6	25.0	917
70–79	19.9	29.8	25.6	940
80+	7.4	13.5	10.9	400
<b>Residence (household)</b>				
Urban	72.2	73.8	73.1	2 682
Rural	27.8	26.2	26.9	986
<b>Education (household head)</b>				
No formal education	0.4	0.9	0.7	27
Less than primary	1.1	2.2	1.7	62
Primary	6.3	7.1	6.7	246
Incomplete secondary	14.4	23.6	19.7	721
Secondary	56.6	51.1	53.5	1 958
Higher	20.9	14.9	17.5	640
Post-graduate	0.4	0.1	0.2	8
<b>Wealth quintile (household)</b>				
Lowest	13.5	24.4	19.7	723
Second	15.7	23.9	20.4	746
Middle	17.7	21.9	20.1	737
Fourth	24.8	14.3	18.8	686
Highest	28.2	15.6	21.0	768
<b>Number of households</b>	<b>1 563</b>	<b>2 105</b>		<b>3 668</b>

## 3.2 Individual respondents

This section describes the results from the individual questionnaire, with the focus on respondents aged 50-plus. A total of 4196 individual respondents completed interviews from the seven FDs. Information related to behavioural issues as well as morbidity and other health aspects was collected from the respondents. The socio-economic and demographic characteristics of the individual respondents aged 50-plus are presented below. Results for younger adults aged 18-49 included in the sample are not presented in this report.

### 3.2.1 Main background characteristics of respondents

Among 3763 respondents aged 50-plus, women represented 61.1% of the sample; they were older on average than men, reflecting a higher average life expectancy at birth for women than for men (74.7 versus 62.8 years in 2009). Most (72.5%) older men were currently married, while only 10.4% were widowed (Table 3.7); by contrast, an almost equal number of older women were widowed as were married (about 41% to 43%, respectively), a fact that reflects excess mortality among men. Similar pro-

**Table 3.7** Sociodemographic characteristics of adults aged 50-plus, percent distribution by sex, SAGE Russia

Sociodemographic characteristics	Men (%)	Women (%)	Total (%)	Number
<b>Age group</b>				
50–59	52.0	40.9	45.2	1 701
60–69	25.2	24.3	24.6	927
70–79	16.5	25.1	21.8	819
80+	6.3	9.7	8.4	317
<b>Residence</b>				
Urban	72.5	72.9	72.7	2 737
Rural	27.5	27.1	27.3	1 026
<b>Marital status</b>				
Never married	1.4	3.5	2.7	101
Currently married	72.5	42.9	54.4	2 042
Cohabiting	5.4	2.9	3.9	146
Separated or divorced	10.4	9.4	9.8	368
Widowed	10.3	41.2	29.2	1 093
<b>Education</b>				
No formal education	0.2	1.0	0.7	26
Less than primary	0.4	1.9	1.3	48
Primary	5.2	5.8	5.5	209
Incomplete secondary	17.6	21.8	20.2	759
Secondary	58.1	51.4	54.0	2 032
Higher	18.5	18.1	18.2	686
<b>Wealth quintile</b>				
Lowest	13.2	18.1	16.2	610
Second	17.6	20.8	19.6	737
Middle	17.1	20.4	19.1	719
Fourth	21.0	20.2	20.5	773
Highest	31.0	20.4	24.6	924
<b>Number</b>	<b>1 463</b>	<b>2 300</b>	<b>3 763</b>	

**Table 3.8** Religion, language and ethnicity of adults aged 50-plus, percent distribution by sex, SAGE Russia

Characteristics	Male	Female	Total	Number
<b>Ethnic background</b>				
Russian	85.8	86.7	86.3	3 087
Ukrainian/Belorussian	1.5	1.5	1.5	54
Caucasus nationalities	6.4	6.1	6.2	222
Volga region nationalities	4.1	3.4	3.7	133
Altai, Buryat, Kalmyk	0.9	1.3	1.1	40
Central Asian nationalities	0.6	0.7	0.7	25
Other	0.6	0.2	0.4	14
<b>Native language</b>				
Russian	87.8	88.8	88.4	3 328
Other	12.2	11.2	11.6	435
<b>Religion</b>				
None	21.4	11.3	15.2	567
Christianity	69.7	80.6	76.3	2 836
Islam	8.0	6.5	7.1	264
Other	0.9	1.6	1.3	49
<b>Number</b>	<b>1 463</b>	<b>2 300</b>	<b>3 763</b>	

portions were found in the 2002/04 World Health Survey in Russia (WHO, 2003). Older men were more likely to report that they were cohabiting, whereas women in the same situation were more likely to report being never married or currently married. The sexes were equally split between urban and rural areas.

The respondents were well educated overall. Just over 50.5% of had achieved a middle educational level (secondary or analogous school completed), and 20% had completed university or education analogous to university education or a postgraduate degree; around 30% had secondary uncompleted, primary, or less than primary school education. Older women were moderately less educated, though shares at the higher and postgraduate education levels were similar (approximately 18%). Some differences in educational attainment existed by age: a large majority (82.9%) of those with less than secondary education were persons aged 70-plus, although the age structures of the groups with secondary and higher education were practically equal.

About 39% of older women and 31% of older men were in the two poorest income quintiles, compared with 41% and 52% in two richest quintiles. This may be related to the age of the respondents; since men in the sample

were younger than women, and the male pension age is higher (60 compared to 55), it was more probable that a woman aged 50-plus would be receiving a pension without any additional earnings.

The ethnic structure of respondents effectively corresponded to the ethnic structure of the Russian Federation population in general. A large majority – 86.3% – self-identified as ethnic Russians, with an additional 2.1% (88.4% in total) speaking Russian as their mother tongue. Nations of the Caucasus represented the second largest general ethnic grouping, 6.2% of the total, and nations of the Volga region the third, at 3.7%. About 12% of the population indicated that their mother tongue was one other than Russian (Table 3.8). Christianity was the prevalent religion among respondents (76.3%); 8.4% of respondents reported that they belong to another religion (mainly Islam, at 7%), and 15% of respondents declared no religious affiliation. Women were more likely than men to report religious affiliation.



## 4. Income, Consumption, Transfers and Retirement

Economic status is an important factor influencing health. In general, the older population is a more vulnerable socio-demographic group as work force participation declines. Research on aging issues and concerns about the living conditions of older adults are inseparable from the understanding of the economic situation of families and individuals. Therefore, the economic situation of the older population and the population who are about to become older is an important element of the SAGE survey.

This chapter presents results on individual work histories and current work status, type of employment, and usual occupation (either current or, if retired, over the course of the respondent's working life). It also describes household economic conditions, transfers of assistance (social, emotional and financial), expenditures on health care, and information about care and support provided in the household.

### 4.1 Work history

Respondents were asked whether they had ever worked for pay, the type of work, place of work and for how long they had been working. Further questions were asked about the age at which the respondent started working and, if a person was no longer working, the age at which the respondent stopped working and why.

Among respondents aged 50-plus, 40% were currently working for pay, 59.1% were not working, and around 1% had never worked for pay. At the time of the survey, approximately 48% of older men and 35% of older women were currently working (Table 4.1). Notably, 4-5% of respondents aged 70-plus or even 80-plus were still working. Of those who had ever worked, more men than women were still working.

The work history showed that the majority of respondents aged 50-plus had worked for pay. Only 0.3% of men and 1.3% of women indicated that they had never worked during their lives. Women from the World Health Survey in Russia (SAGE Russia Wave 0) were more likely to have worked during the pre-pension period (ages 50-54) than were their European counterparts, as well as women from some Asian countries (China, India) (WHO, 2003). The percent of respondents who had never worked for pay was higher among those who had only a primary education, mostly older women who worked at home.

In Russia, men and women often leave work when they reach the mandatory pension ages of 60 and 55, respectively. However, 26% of these respondents continued to work. Persons with low education levels were more likely to stop working at the pension age than were persons with higher education; 56.7% of those who graduated from university continued to work after retirement age. The share of respondents aged 50-plus who continued to work for pay was significantly higher among the widowed, separated or divorced. The share of persons not working for pay was practically the same among rural and urban population.

The average age when respondents stopped working was 58.7 for men and 56.5 for women. The average age when women stopped working was higher than the statutory pension age, while for men it was lower. Indeed, at the global level, labor force participation among the older population has been falling for men and rising for women (UN, 2013).

The mean age of retirement or work stoppage increased with increasing age; the highest mean age of work stoppage was around 60 years for people aged 80 or older, compared with 51.7 years for people aged 50-59 (Table 4.2). This difference probably reflects the participation of

**Table 4.1** Work status of adults aged 50-plus, percent distribution by background characteristics, SAGE Russia

Characteristics	Had worked for pay		Had never worked for pay	Number
	Currently working	Currently not working		
Sex				
Male	48.2	51.77	0.03	1 528
Female	34.89	63.85	1.26	2 393
Age group				
50–59	71.38	28.36	0.26	1 769
60–69	25.96	72.97	1.08	966
70–79	5.25	93.52	1.23	855
80+	4.0	94.47	1.53	332
Residence				
Urban	38.39	60.71	0.91	2 854
Rural	44.60	54.95	0.44	1 067
Education				
No formal education	0.43	69.24	30.33	28
Less than primary	2.29	92.49	5.22	51
Primary	3.45	94.57	1.98	217
Secondary	14.28	85.14	0.58	794
Higher	49.26	50.29	0.45	2 115
Post-graduate	56.74	43.08	0.16	707
Marital status				
Never married	25.04	74.59	0.37	636
Currently married	29.77	69.85	0.38	768
Cohabiting	26.33	73.23	0.45	751
Separated or divorced	51.52	47.46	1.02	808
Widowed	59.51	39.05	1.43	956
Total	40.08	59.14	0.78	
Total respondents	1 571	2 319	31	

younger respondents in professional occupations that had low statutory pension ages, in some cases lower than 50. Some 5–6% of respondents (both men and women) stopped work before the age of 50, while about a quarter of men and more than 60% of women stopped working between ages 50 and 60. About 30% of both men and women stopped working at their respective statutory pension ages of 55 and 60. A low mean age of work stoppage was reported by persons who had never been married, which might be related to health issues.

The study's respondents had started working young overall. More than half of respondents (56.7%) had started working at age 16–19; older generations typically had started to work for pay at younger ages than had younger generations. Only 4.3% of persons aged 50–59 had started work before the age of 16, compared with 18.5% among persons aged 80-plus. Around 38% of respondents aged 50–59 had started work after age 20, compared with 18.5% among the 80-plus group.



**Table 4.2** Mean age of retirement/work stoppage for adults aged 50-plus, percent distribution by background characteristics, SAGE Russia

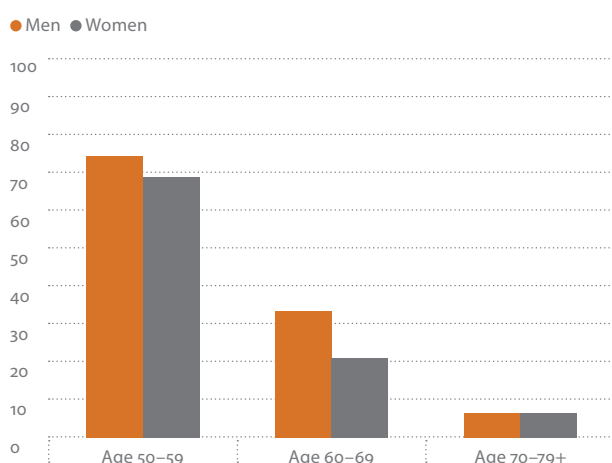
Background characteristics	Mean age of retirement/ work stoppage
<b>Sex</b>	
Men	58.7
Women	56.5
<b>Age group</b>	
50–59	51.7
60–69	57.6
70–79	59.1
80+	59.9
<b>Residence</b>	
Urban	57.4
Rural	56.7
<b>Marital status</b>	
Never married	51.9
Currently married	56.9
Cohabiting	57.2
Separated or divorced	55.7
Widowed	58.2
<b>Wealth quintile</b>	
Lowest	57.3
Second	58.0
Middle	57.5
Fourth	56.5
Highest	56.5
<b>Total number</b>	<b>2 316</b>

Seventy-five percent of men and about 70% of women aged 50–59 continued to work. The reasons given for such behaviour were: need for income (67.7%); need to help their family (20.4%); and, need to be active (11.6%). Only a small proportion of persons aged 50–59 who were not currently working (12%) were actively looking for work (in other age groups this share was lower than 1%), perhaps because non-participation in the work force in this age group was more likely to be related to illness or family responsibilities. However, about 2% of men and 45% of women who were both of retirement age and not working at the time of the survey were looking for work. Some 8% of persons not working in the 50–59 ages group indicated that they had worked during the previous 12 months, whereas in older age groups, this was significantly lower (1.5–4.0%).

## 4.2 Household income and transfers

Reliable income data are notoriously difficult to obtain in household health surveys. SAGE Wave 0 in Russia relied on income estimates derived from household assets, dwelling characteristics and reported income/consumption – and converted into wealth/income quintiles. Retirement and financial security issues related to older age and ageing populations are critical for SAGE, so income and transfers questions were added to the SAGE Wave 1 survey instrument (sections 0700 and 0600, respectively). Questions about work history, income, expenditures and transfers, started broadly and then narrowed, based on the level of detail provided by the respondent. The determinants of the interrelationship between health and wealth are essential for examining changes and trends in health and wellbeing over time.

**Figure 4.1** Share of individuals of different ages working at the time of the survey (%)



### 4.2.1 Types of employment

Beginning with work history and occupation, as proxies for social standing, SAGE begins to define the contributions of social status to health. The private sector began to develop in Russia only at the end of the 20th century. It is therefore quite understandable that around 90% of respondents aged 50-plus had worked or continued to work in the public sector (Table 4.3), and that the share of those in the private sector was higher at younger ages (15.7% in the 50–59 group). Men and respondents from urban areas were more likely than their counterparts to have found a job in the private sector. There was no pronounced association between sector of employment and income quintile.

**Table 4.3** Types of employment of adults aged 50-plus who had ever worked, percent distribution by background characteristics, SAGE Russia

Background characteristics	Employment type (%)				Total number
	Public sector	Private sector	Self-employed	Informal employment	
Sex					
Men	84.4	11.3	2.9	1.4	1 513
Women	90.5	7.2	1.2	1.1	2 336
Age group					
50–59	80.4	15.7	3.0	0.9	1 745
60–69	93.4	4.7	1.7	0.2	945
70–79	95.9	2.4	0.5	1.2	835
80+	93.9	0.8	0.02	5.3	324
Residence					
Urban	86.7	10.1	2.2	1.0	2 804
Rural	91.9	5.4	1.2	1.6	1 045
Marital status					
Never married	84.8	9.9	4.4	0.9	100
Currently married	86.3	10.9	2.2	0.6	2 101
Cohabiting	84.4	12.8	2.1	0.7	152
Separated/divorced	85.5	9.6	3.2	1.7	382
Widowed	93.2	4.0	0.6	2.2	1 110
Wealth quintile					
Lowest	86.9	8.5	1.1	3.5	624
Second	89.6	8.1	1.4	0.9	752
Middle	91.9	6.6	0.5	1.0	743
Fourth	86.1	10.7	2.6	0.7	798
Highest	86.3	9.9	3.3	0.5	931
Total	3 390	339	73	46	

### 4.2.2 Occupational categories

Men aged 50-plus more often had worked (or were still working) as craft and related trades workers and plant and machine operators and assemblers (categories 7 and 8 in Table 4.4), whereas women more often worked as professionals, clerks and service workers, and shop and market sales workers and in elementary occupations (categories 2, 4, 5 and 9).

Craft and related trade workers were more often found among urban respondents, whereas skilled agricultural and fishery workers, plant and machine operators and assemblers, and elementary occupations were more

widely found among rural respondents. Women predominated among those who worked in the public sector, and men among the self-employed.

The main income source of households with respondents aged 50 or older overall was pensions (84%). However, for those in the wealthiest quintile, wages were more often the main income source. Income from trading and rental were also more common in this quintile compared to the others (Table 4.5). In rural areas, wages were less often the main income source, largely because the level of wages was often lower than in urban areas and because there were fewer opportunities for employment, especially for people older than 50.

**Table 4.4** Occupations of adults aged 50-plus who had ever worked, percent distribution by background characteristics, SAGE Russia

Characteristics	Occupation group <sup>1</sup>										Total number
	1	2	3	4	5	6	7	8	9	10	
Sex											
Men	4.1	12.2	0.9	1.0	2.4	1.3	31.4	27.4	17.7	1.6	1 499
Women	4.6	25.0	3.5	14.3	9.4	3.9	13.3	2.4	23.5	0.0	2 305
Age group											
50–59	5.2	21.3	3.3	10.2	7.2	0.9	18.5	15.8	17.3	0.3	1 727
60–69	4.2	21.6	1.2	7.4	5.6	2.3	22.6	11.3	22.9	1.0	938
70–79	3.6	16.7	2.8	9.8	6.3	5.2	21.3	5.6	28.5	0.2	824
80+	3.5	16.1	1.4	5.8	7.8	9.7	22.5	12.1	18.8	2.3	316
Residence											
Urban	5.2	20.7	2.3	9.1	7.5	1.6	22.6	10.7	19.8	0.6	2 752
Rural	2.5	18.1	3.0	9.1	4.6	6.2	14.8	16.1	25.0	0.7	1 053
Marital status											
Never married	6.1	25.0	3.3	9.8	6.5	0.7	13.9	9.4	25.3	0.0	101
Currently married	5.3	21.4	1.9	6.7	5.7	2.2	21.3	12.4	22.1	1.0	2 082
Cohabiting	1.1	8.9	2.8	4.7	2.9	4.0	33.3	25.3	16.9	0.0	148
Separated or divorced	4.1	18.6	4.7	9.2	5.6	0.2	9.8	31.0	16.8	0.0	379
Widowed	3.2	18.6	2.8	14.0	9.3	5.2	21.5	3.9	21.2	0.3	1 091
Wealth quintile											
Lowest	2.2	15.4	4.1	6.6	10.1	6.0	24.2	8.3	23.2	0.0	627
Second	4.7	19.5	3.7	7.1	6.4	2.4	24.2	10.8	21.0	0.3	749
Middle	2.9	17.9	1.3	9.3	7.7	3.4	22.4	10.2	24.0	1.1	727
Fourth	2.6	18.8	1.9	12.7	5.9	1.3	18.4	10.0	27.0	1.0	772
Highest	8.4	26.0	2.0	9.2	4.4	2.2	15.1	19.4	13.1	0.3	929
Total respondents	169	759	95	345	253	110	778	464	807	24	3 805

<sup>1</sup> ISCO-88 major occupation groups: 1 = Legislators, senior officials and managers; 2 = Professionals; 3 = Technicians and associate professionals; 4 = Clerks; 5 = Service workers and shop and market sales workers; 6 = Skilled agricultural and fishery workers; 7 = Craft and related trades workers; 8 = Plant and machine operators and assemblers; 9 = Elementary occupations; 10=Armed forces

**Table 4.5** Percent distribution of income sources, mean monthly household income and perceptions of income sufficiency, by background characteristics, SAGE Russia

Background characteristics	Wages (%)	Trading (%)	Rental (%)	Pension (%)	Other (%)	Mean monthly HH income (RUB)	Income sufficient (%)	Total number
<b>Sex</b>								
Male	61.9	4.4	1.8	79.8	0.8	15 161.6	29.7	1 442
Female	44.3	1.8	1.7	86.3	2.2	8 832.7	20.2	1 942
<b>Residence</b>								
Urban	54.4	2.7	2.0	82.7	1.8	11 753.5	25.0	2 478
Rural	45.0	3.6	1.0	85.5	1.0	10 748.6	22.4	906
<b>Marital status</b>								
Never married	62.7	0.6	1.2	61.4	3.3	8 515.8	21.7	128
Currently married	67.2	4.8	2.2	80.0	0.7	16 541.1	26.6	1 451
Cohabiting	56.6	2.3	0.3	73.3	4.4	11 910.1	21.8	114
Separated or divorced	64.5	0.7	4.1	63.9	3.2	9 061.6	14.3	343
Widowed	30.0	1.7	0.8	95.4	1.9	7 069.2	24.7	1 340
<b>Wealth quintile</b>								
Lowest	28.7	0.4	1.7	87.1	1.0	6 475.7	20.4	653
Second	37.9	1.0	0.5	88.0	2.2	7 527.1	17.0	707
Middle	38.7	2.0	1.7	88.2	1.6	10 493.5	24.6	695
Fourth	72.9	2.9	1.6	80.9	2.3	13 296.1	24.2	618
Highest	80.0	8.0	3.2	73.5	1.0	19 761.1	35.0	710

A gender comparison showed that men provided household income through wages and trading more often than women, whereas women more often provided pension income.

Given the heavy reliance of older respondents on pensions for income, it is perhaps not surprising that a substantial number of respondents were struggling financially. Only 30% of men and 20% of women considered their income sufficient for daily needs. Even taking non-income factors into account, only just over half of respondents (51.2%) evaluated their household's material welfare as satisfactory, with 29.4% reporting "bad" and 4.6% "very bad".

### 4.2.3 Transfers of assistance or support

This section contains information about sources of material welfare for households and about help provided by them to their family, neighbours and community. Households could receive or provide several types of transfers, both monetary and non-monetary (in-kind). The most frequent into-household transfers were monetary (Table 4.6). These more often came from the government into large families (three-plus children).

Monetary and non-monetary transfers from family members were reported by almost the same percent (about 65%) of households, and family members also provided assistance (housework, nursing, help with travelling) to half of the survey households.

The most frequent out-of-household transfers were made in monetary form, and were directed towards helping other family members who lived separately (85.3%) as well as other relatives, neighbours and community members (68.4%). The share of households that received any kind of support from groups and other social organizations was very small (2%).

The average level of monetary assistance from the government was not much higher than that from family members (Table 4.7), and non-monetary assistance from both these sources was roughly similar. The average amount of monetary help provided by households to other family members and relatives who lived separately was higher than that coming into the household. Households in this survey received on average two hours more of assistance from their families than they provided. It should also be mentioned that three times as many households provided assistance to the community as received it.

**Table 4.6** Transfer of assistance/support into and out of households, percentage by type of transfer, SAGE Russia

Type of transfer	Transfers of assistance and support (%)							
	Into households				Out of households			
	Monetary	Non-monetary	Assistance	Number	Monetary	Non-monetary assistance	Assistance	Number
Family	65.4	64.8	49.3	614	85.3	53	18.5	924
Community	50.6	45.8	26.9	83	68.4	53.3	24.8	375
Government	90.5	19.2	–	374	–	–	–	–

**Table 4.7** Average monetary value of assistance/support into and out of households or mean hours of assistance in the previous 12 months, by type of transfer, SAGE Russia

Type of transfer	Transfers of assistance and support							
	Into households				Out of households			
	Monetary (RUB)	Non-monetary (estimated value in RUB)	Mean hours of support per week	Number	Monetary (RUB)	Non-monetary (estimated value in RUB)	Mean hours of support per week	Number
Family	8 714.7	4 184.5	10.7	614	11 082.1	4 290.4	8.4	924
Community	4 068.6	538.4	4.8	83	3 292.3	1 545	4.3	375
Government	10 136.5	4 532.1	–	374	–	–	–	–

### 4.3 Household expenditures on health

The household expenditure module gathered data on total household expenditure, including food and non-food expenditure, expenditures on health, education, insurance and other goods and services and on financial sources for paying for health services. The various sub-sections of expenditure/consumption cover different time periods, in an attempt to minimize recall bias and to be as comprehensive as possible. Expenditures were captured for three time periods, the last 7 days for food expenditures, the last 30 days and the last 12 months for different non-food expenditures, to maximize catchment and also to balance more modest and larger expenditures. All data is adjusted to monthly figures for analysis.

Every year, approximately 44 million households, or more than 150 million individuals, throughout the world face catastrophic health expenditures, and about 25 million households or more than 100 million individuals are pushed into poverty by the need to pay for health services (Xu, 2003). Reducing out-of-pocket health care payments to pre-payment mechanisms would be an essential component of health care finance planning.

As noted earlier, almost all respondents had compulsory medical insurance. As a consequence, the overall percentage of households that spent their own money in order to receive health care services, both inpatient and outpatient, was 15%. Non-poor households spent almost five times more on health services in absolute terms than did poor households (RUB 1,135/month versus RUB 234/month, respectively); however, compared to their capacity to pay, the difference in out-of-pocket expenditures between the poor (13.2%) and non-poor (18.3%) was small (Table 4.8). Lower availability of health care services in rural areas contributed to rural households spending almost a third less on health services (RUB 681/month) than urban ones (RUB 980/month). With respect to their capacity to pay, urban households spent somewhat more (15.2%) than rural households (13.0%).

Unfortunately, compulsory medical insurance did not protect from catastrophic medical expenditures entirely. Catastrophic expenditures occurred in all income groups, but the percentage of households with catastrophic expenditures was higher among the poor than the non-poor. Households residing in urban areas and those with at least one member aged fifty and above

were more likely to face catastrophic expenditures and impoverishment. Those respondents who had catastrophic expenditures in the last 12 months spent 4.3 times more – a third of total household monthly expenditure – than those who had not faced such expenses.

#### Box 4.1 Guide to variables included in Tables 4.8–4.10

- (1) **Household expenditure** comprises both monetary and in-kind payments on all goods and services and the money value of the consumption of home-made products.
- (2) **Poor**: a household is considered poor when its total household expenditure is less than the minimum requirement to maintain a basic life in society. An estimated food poverty line was used as the definition of subsistence spending for calculating catastrophic expenditures. The poverty line was set at the level of the household food expenditure for a household whose food share of total household spending is at the median of the country. Food expenditure is the amount spent on all foodstuffs by the household plus the value of the family's own food production consumed within the household. It excludes expenditure on alcoholic beverages, tobacco and food consumption outside the home (for instance, in hotels and restaurants).
- (3) **Impoverished**: a non-poor household is considered to be impoverished by health payments when it becomes poor after paying for health.
- (4) **Out-of-pocket payments** are payments made by households at the point of receiving health services. They include doctor's consultation fees, purchases of medication, hospital bills and spending on alternative or traditional medicines. Such payments exclude expenditure on health-related transportation and special nutrition and insurance reimbursement.
- (5) **Catastrophic expenditure** occurs when a household's total out-of-pocket health payments equal or exceed 40% of the household's capacity to pay or of non-subsistence spending.
- (6) **Capacity to pay** is a household's non-subsistence spending.
- (7) **Expenditure quintile** is derived from total household expenditure after adjusting for household size using an equivalence scale.



**Table 4.8** Mean household and out-of-pocket (OOP) health expenditures and percentage of households with health expenses in the past 12 months, by selected household characteristics, SAGE Russia

Household characteristics	Mean expenditure (RUB)	Poor (%)	Impoverished (%)	Catastrophic expenditure (%)	OOP as % of all expenditure	OOP as % non-subsistence EXP	Mean OOP (RUB)
<b>Catastrophic expenditure</b>							
No	11 347	26.2	1.7	–	5.3	9.8	686
Yes	8 381	35.0	24.8	–	31.6	61.2	2 961
<b>Residence</b>							
Rural	9 859	29.7	2.1	8.2	6.9	13.0	681
Urban	11 540	26.0	4.6	9.7	8.0	15.2	980
<b>Poor</b>							
No	13 895	–	5.3	8.3	7.7	13.2	1 135
Yes	3 460	–	0	12.0	7.7	18.3	254
<b>Expenditure quintile</b>							
Lowest	2 986	100.0	0	12.0	8.2	19.1	232
Second	5 857	35.2	14.6	12.0	6.6	14.9	394
Middle	8 525	0	4.3	9.2	7.8	14.9	673
Fourth	12 601	0	0.5	8.0	7.8	12.8	980
Highest	25 414	0	0	5.2	8.3	11.0	2 209
<b>Member aged 50+<sup>a</sup></b>							
No	16 765	10.0	0.4	2.6	4.9	8.0	818
Yes	10 530	28.7	4.2	9.9	8.0	15.2	905
<b>Total</b>	<b>11 072</b>	<b>27.1</b>	<b>3.9</b>	<b>9.3</b>	<b>7.7</b>	<b>14.6</b>	<b>897</b>

Note: See Box 4.1 for explanations of terms used in this table.

Impoverishment as a consequence of catastrophic expenditure on health occurred in all but the richest income group. However, impoverishment was greater in the lower income groups, especially in the second quintile (14.6%). No household became impoverished in the lowest income group, as these households were below the poverty line even before health expenditures.

Average household spending on health services was RUB 897, which was 7.7% of total household monthly expenditure and 14.6% of household capacity to pay for non-subsistence spending. There was an increasing trend in average household spending on health services across the expenditure quintiles, with households in the poorest quintile spending on average RUB 232 compared to those in the richest quintile, who spent nearly ten times that amount (RUB 2,209).

Of total household out-of-pocket health payments in the month prior to the survey, 51% was spent on medi-

cations, 35.1% for other services, 9.2% for outpatient care, 2.4% for inpatient care and just 0.5% for traditional care. The share of outpatient expenses was higher for uninsured households than for those that were insured. The proportion of out-of-pocket expenditures devoted to pharmaceuticals changed steeply by household income level: 92.3% in the lowest income quintile, versus 36.1% in the highest (Table 4.9). The reverse pattern was seen with regard to outpatient payments.

In order to pay for health services, the majority of households across all population groups relied heavily on their current income, followed by savings. An episode of hospitalization sharply changed this distribution; although current income was still the main source of (83.9%), borrowing (from relatives and from others) became much more prominent, as did health insurance (Table 4.10). Across the board, a greater share of out-of-pocket medical expenses was associated with a greater likelihood of borrowing from relatives.

**Table 4.9** Households with out-of-pocket health payments in the past 30 days, percent distribution by type of purchase or service, SAGE Russia

Individual or household characteristics	Inpatient (%)	Outpatient (%)	Traditional (%)	Pharmaceuticals (%)	Other (%)
<b>Catastrophic expenditure</b>					
No	1.6	5.7	0.3	53.8	36.3
Yes	4.2	17.2	0.7	44.7	32.1
<b>Poor</b>					
No	2.5	9.9	0.5	47.8	37.5
Yes	0.5	1.1	0.0	89.8	6.3
<b>Residence</b>					
Rural	2.5	7.4	0.3	56.7	31.7
Urban	2.4	9.7	0.5	49.5	36.0
<b>Expenditure quintile</b>					
Lowest	0.6	0.7	0.0	92.3	4.3
Second	1.4	5.0	0.0	75.0	16.4
Middle	1.1	5.8	0.1	60.7	30.7
Fourth	1.6	6.8	0.7	58.5	30.8
Highest	3.5	13.0	0.6	36.1	44.8
<b>Member aged 50+</b>					
No	2.1	11.6	0.2	45.4	38.8
Yes	2.4	9.0	0.5	51.5	34.7
<b>Total</b>	<b>2.4</b>	<b>9.2</b>	<b>0.5</b>	<b>51.0</b>	<b>35.1</b>

Note: See Box 4.1 for explanations of terms used in this table.

## 4.4 Impact of caregiving

Building on Section 4.2 above (household income and transfers), this section describes the financial support and caregiving assistance provided by respondents to other family members, friends and members of the community. With limited formal long-term care programmes and systems in many countries, and as populations age, the importance of informal care increases, as well as the need for a system of support that can be given to informal carers (Robison, 2009). Informal care remains the main source of care for older people worldwide (Fernandez, 2009).

Older persons are often net providers of care, rather than solely recipients of care. The distribution of monetary and non-monetary support provided by household members has considerable financial and social impacts on households.

This section discusses the type of care and support received and provided by households from and to other household members, friends, members of the community and the government, including financial, social or emotional, physical, health or personal care and support.

Table 4.11 presents the health state of caregivers and non-caregivers by different background characteristics, as well as the type of care that was provided to either adults or children. Health state scores were derived from self-reported health in nine health domains covering affect, cognition, interpersonal activities and relationships, mobility, pain, self-care, sleep or energy, vision and hearing. Item response theory (IRT) was then used to generate a composite score. The scores were transformed into a continuous cardinal scale, from 0 (worst health) to 100 (best health). The health-state score is described in more detail in Chapter 6, and is used here

**Table 4.10** Financial sources of payment for health services among households that paid for health services in the previous 12 months, percent distribution by selected financial and background characteristics, SAGE Russia

Financial or background characteristics	Savings	Sold items	Borrowed from relatives	Borrowed from others	Health insurance	Current income	Other
<b>Hospitalization in last 12 months</b>							
No	13.8	0.5	8.3	3.5	1.8	93.4	0.8
Yes	17.5	0.4	22.7	12.9	14.2	83.9	0.7
<b>OOP as % of non-subsistence spending</b>							
Less than 10%	15.4	0.5	6.0	3.4	1.8	90.8	0.9
10-20%	11.8	0.9	8.0	3.9	1.3	97.5	0.6
20-40%	11.9	0.4	11.1	4.9	3.1	93.1	1.1
Above 40%	16.2	0.1	17.8	3.7	5.0	93.3	0.0
<b>Residence</b>							
Rural	11.0	0.7	6.7	2.0	0.8	89.7	0.4
Urban	15.0	0.5	9.7	4.5	2.9	94.2	0.9
<b>Expenditure quintile</b>							
Lowest	4.5	0.3	9.5	0.3	1.7	93.6	0.0
Second	12.6	0.1	10.2	4.7	2.0	96.7	1.2
Middle	13.3	0.1	5.4	1.4	2.4	93.5	0.1
Fourth	18.4	0.7	8.5	3.7	1.4	92.7	0.6
Highest	20.2	1.3	11.5	9.1	4.2	89.5	2.0
<b>Member aged 50+</b>							
No	10.0	0.5	10.0	15.2	1.5	97.0	3.8
Yes	14.3	0.5	8.9	2.9	2.5	92.7	0.5
<b>Total</b>	<b>14.0</b>	<b>0.5</b>	<b>9.0</b>	<b>3.9</b>	<b>2.4</b>	<b>93.0</b>	<b>0.8</b>

to emphasize the health impacts of care giving on the care provider.

Care was most frequently provided by women aged 50-59, to children as well as to adults. Men, both caregivers and non-caregivers, had better health state scores than the women (Table 4.11). Overall, however, non-caregivers had slightly higher scores than their counterparts. With regard to age, the older the respondent, the lower was the health state score for both caregivers and non-caregivers. Non-caregivers had slightly better scores at all ages except the oldest category.

Respondents not providing care showed higher health evaluation scores regardless of marital status (except among those that had never been married) in both urban and rural settings. Overall, the share of individuals providing care was lower at higher ages.

**Table 4.11** Health-state scores for caregivers and non-caregivers by background characteristics and type of care provided, SAGE Russia

Characteristics	Health score <sup>a</sup> mean		Type of care or support provided to adults or children, %										Total
			Financial		Social/ emotional		Health		Physical		Personal		
	Caregivers	Non-caregivers	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child	
Sex													
Men	59.2	64.0	52.8	38.4	40.8	28.1	32.3	13.0	41.5	19.8	34.0	18.6	136
Women	54.1	58.3	47.2	61.6	59.2	71.9	67.7	87.0	58.6	80.2	66.0	81.4	203
Age group													
50-59	61.2	67.7	62.2	72.7	45.8	56.8	47.3	74.9	31.8	62.5	37.0	55.5	143
60-69	53.9	60.8	21.8	16.0	27.6	19.7	36.6	17.5	36.5	19.8	35.2	25.1	100
70-79	50.8	51.6	14.0	8.9	22.0	20.1	12.9	4.7	25.3	15.9	23.7	17.6	78
80+	47.5	45.0	2.0	2.4	4.6	3.5	3.2	3.0	6.4	1.7	4.2	1.9	18
Marital status													
Never married	59.2	56.2	6.8	6.2	7.8	9.0	5.5	8.6	9.1	12.7	8.1	10.4	30
Currently married	50.7	59.0	17.0	12.4	19.1	6.4	17.8	4.0	22.9	7.1	17.9	12.7	58
Cohabiting	55.0	57.4	14.6	11.9	15.7	13.7	15.3	7.1	21.6	13.5	19.6	16.9	62
Separated or divorced	58.2	63.0	26.4	26.6	28.0	28.4	37.5	28.4	27.5	26.2	26.6	12.7	89
Widowed	56.6	65.3	35.2	43.0	29.5	42.5	24.0	51.9	18.8	40.6	27.8	47.4	100
Residence													
Urban	56.4	60.5	73.4	78.8	82.5	82.8	79.7	82.2	89.4	78.3	82.9	77.4	271
Rural	54.5	60.5	26.6	21.2	17.5	17.2	20.3	17.8	10.7	21.7	17.1	22.6	68

<sup>a</sup> Health scores: 0 represents worst health and 100 (maximum score) represents best health.



## 5. Risk Factors and Health Behaviours

This chapter describes risks to health and measures how these risks are distributed in the population. The rationale behind the inclusion of risk factors in SAGE is that, 1) they have significant impact on mortality and morbidity from non-communicable diseases, and 2) risk modification is possible through effective primary prevention and health promotion efforts. It is important to understand the prevalence of risk factors both to understand factors affecting disease patterns in Russia (for instance, cardiovascular disease, whose mortality rates in Russia are very high) and to provide a global comparison.

SAGE Wave 1 included five major risk factor categories:

- tobacco abuse,
- alcohol consumption,
- intake of fruit and vegetables,
- physical activity levels, and
- environmental risk factors.

The set of behavioural risk factor questions are based on recommendations from the WHO NCD STEPS guidelines (WHO 2009), and environmental risk factor questions based on a harmonized approach in household surveys (WHO/UNICEF 2006). SAGE added questions on food security – which are particularly important for vulnerable groups – and even more so with issues of globalization, inequalities, environmental damage and rolling financial crises.

### 5.1 Tobacco and alcohol consumption

#### 5.1.1 Tobacco use

Tobacco use among older adults in Russia is high: 20% were currently smoking, and 9% among both sexes

were ex-smokers, while 70% had never smoked (Table 5.1). Approximately 47% of men and 5% of women are currently smoking (daily or not daily). These findings are consistent with the World Health Organization's World Health Statistics (2012) for men, where age-standardized prevalence rates for those aged 15 or older were 59% for Russian men and 24% for Russian women. In comparison, the World Health Statistics for women in other European countries had rates of 45% in Austria, 28% in Denmark and Norway, and 27% in Spain. This same source showed that Russian men smoked more than their European counterparts on average, but less than in Greece (63%) and Indonesia (61%).

A number of background characteristics were found to be statistically associated with the frequency of tobacco use. The youngest age group (50–59 years) had the highest prevalence of current smokers (31%), with 15.2% using tobacco products daily (Table 5.2). Men were much more likely to smoke than women (45% compared to 5%). In comparison, results from a national Global Adult Tobacco Survey (GATS) revealed the prevalence of tobacco smoking in Russia at ages 45–64 was 62.4% among men and 18.2% among women, and at ages 65-plus was 40.7% (men) and 2.9% (women) (Chuchalin *et al.*, 2009).

Current smokers were more common in rural areas, although the mean consumption of tobacco products was lower than in urban areas. The proportion of current smokers was higher in each level of education through the secondary level, although it was lower again among those with a tertiary education. A further comparison of smoking prevalence by sex and educational level showed that the proportion of men who had ever smoked was nearly the same at each educational level, whereas among women there was a trend of higher rates with higher educational level. Separated/divorced or cohabiting people were most

**Table 5.1** Frequency of use of tobacco products among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Background characteristics	Tobacco use				Total (n)
	Current daily user	User, not daily	Not current user	Never used	
Age group					
50–59	30.6	1.1	8.1	60.2	1 681
60–69	18.4	1.3	8.6	71.8	914
70–79	6.4	1.9	10.5	81.2	810
80+	2.9	0.2	11.8	85.1	317
Sex					
Men	44.4	2.5	18.9	34.2	1 444
Women	4.5	0.5	2.8	92.2	2 277
Residence					
Urban	18.2	1.6	9.8	70.3	2 708
Rural	24.7	0.2	7.0	68.2	1 014
Education					
No formal education	1.5	0	1.0	97.4	25
Less than primary	7.3	0	3.5	89.2	48
Primary	13.9	4.3	9.2	72.6	205
Incomplete secondary	17.6	1.4	10.6	70.4	748
Secondary	24.8	0.7	8.6	66.0	2 010
Higher	11.9	2.0	9.4	76.6	683
Marital status					
Never married	14.6	0.7	6.3	78.5	101
Currently married	23.2	1.8	10.6	64.3	2 026
Cohabiting	33.1	0.3	22.3	44.3	141
Separated or divorced	40.2	0	5.5	54.3	367
Widowed	6	0.8	5.8	87.5	1 083
Wealth quintile					
Lowest	20.6	1.0	6.4	72.0	598
Second	16.5	1.5	8.9	73.2	724
Middle	14.9	1.3	9.9	74.0	714
Fourth	20.8	1.0	7.7	70.5	771
Highest	25.6	1.4	11.4	61.5	913
Total (%)	20.0	1.2	9.0	69.7	
Total individuals (n)	744	46	337	2 594	

likely to be current smokers (40.2% and 33.1%, respectively). Most widowed respondents (mostly older women) had never smoked. People in the richest wealth quintile reported the highest level of current smoking (one out of four).

Comparing the results of SAGE with another multi-country study carried out in 11 European countries (SHARE), similar rates of smoking emerged among Russian and European men aged 50-plus (65.8% of Russian men in this age group had ever smoked,



**Table 5.2 Mean daily consumption of tobacco products among adults aged 50-plus by background characteristics, SAGE Russia Wave 1**

Background characteristics	Mean daily tobacco consumption (cigarettes)	Number
<b>Age group</b>		
50–59	15.2	515
60–69	17.4	168
70–79	15.8	52
80+	11.6	9
<b>Sex</b>		
Male	16.3	641
Female	11.9	103
<b>Residence</b>		
Urban	16.7	494
Rural	13.7	250
<b>Education</b>		
No formal education	8.0	1
Less than primary	15.4	3
Primary	16.1	29
Incomplete secondary	17.3	132
Secondary	15.5	498
Higher	14.0	81
<b>Marital status</b>		
Never married	16.5	15
Currently married	16.6	470
Cohabiting	17.2	47
Separated or divorced	12.8	147
Widowed	14.5	65
<b>Wealth quintile</b>		
Lowest	17.5	123
Second	16.1	120
Middle	16.8	106
Fourth	15.7	160
Highest	14.0	234
<b>Total</b>	<b>15.7</b>	<b>744</b>

compared with 64.0% of European men), but a very large difference in prevalence among women (7.8% of Russian women aged 50-plus, compared with 27.2% among their European counterparts). It is necessary to note that the smoking question in the SHARE survey

was perhaps more exact than in the SAGE one: “Have you ever smoked for a year or more?” as compared with the SAGE question “Have you ever smoked?”

The SAGE results add new information to the key indicators related to different provisions of the WHO Framework Convention on Tobacco Control and MPOWER policy packages, which will help in implementation and evaluation of tobacco control policies.

### 5.1.2 Alcohol consumption

As the 2004 Global Status Report on Alcohol indicated, the link between alcohol consumption and overall health depends on the volume of consumption, patterns of drinking, and mediating mechanisms (biochemical effects, intoxication and dependence) (WHO 2004). Biochemical effects of alcohol may influence chronic disease in either a beneficial way, through putative protective effects of moderate consumption especially when consumed with meals, or a harmful way (toxic effects) through excessive consumption. In Europe, alcohol is the third leading disease risk factor for mortality, after tobacco use and high blood pressure (Andersen 2012). Heavy alcohol consumption is thought to be an important cause of morbidity and mortality in Russian men (Perlman 2008; Malyutina 2000; Leon 2007).

In SAGE Russia Wave 1, almost 45% of those aged 50-plus had never consumed alcohol (lifetime abstainers) and about 48% reported consuming alcohol less than two days a week (Table 5.3). Frequent heavy drinkers represented only 1.4% of the population. Lifetime abstainers were more common among the oldest age group, women, urban residents, the lowest educational level, the widowed, and the poorest wealth quintile. An international comparison shows that the proportion of abstainers among people aged 15 or older in Russia (41.0%) was significantly lower than in Islamic countries (for example, Turkey at 90.3%) but higher than in some European countries, for instance Germany (4.3%) or Norway (10.0%) (Global Status Report on Alcohol and Health 2011). The proportion of lifetime abstainers among all men aged 50-plus was 20%, compared with only 2.3% among cohabiting men and 4.8% among separated/divorced men; these data may suggest an association between drinking and family life difficulties. Frequent heavy drinkers were more common among the youngest age group, males, rural residents, people who had never married, and the poorest wealth quintile.

The SAGE data confirmed clear gender differences in alcohol consumption. More than 14% of the study's men

**Table 5.3** Alcohol consumption among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Background characteristics	Alcohol consumption (%) <sup>a</sup>				Number
	Life-time abstainer	Non-heavy drinker	Infrequent heavy (binge) drinker	Frequent heavy drinker	
Age group					
50–59	33.8	56.0	8.1	2.1	1 122
60–69	39.7	53.4	5.5	1.3	503
70–79	66.8	28.1	4.8	0.3	408
80+	77.7	21.8	0.5	0	171
Sex					
Male	20.1	65.8	11.0	3.1	945
Female	63.1	33.9	2.8	0.1	1 258
Residence					
Urban	45.6	46.3	7.2	0.9	1 610
Rural	42.1	51.1	4.0	2.8	593
Education					
No formal education	100	0	0	0	21
Less than primary	81.0	18.6	0.4	0	35
Primary	67.1	28.0	4.8	0.1	109
Incomplete secondary	55.3	35.2	7.7	1.8	394
Secondary	40.9	50.7	6.9	1.5	1 241
Higher	33.8	60.0	4.7	1.4	403
Marital status					
Never married	50.1	36.8	5	8.1	76
Currently married	39.0	51.7	7.9	1.4	1 257
Cohabiting	46.7	45.9	5.5	1.9	72
Separated or divorced	24.9	68.0	5.5	1.5	275
Widowed	67.6	28.6	3.4	0.4	521
Wealth quintile					
Lowest	64.2	24.7	8.6	2.5	360
Second	46.6	45.6	5.6	2.1	401
Middle	47.1	48.7	3.8	0.5	409
Fourth	48.1	43.8	6.4	1.7	490
Highest	25.4	66.8	7.2	0.7	543
Total	44.7	47.6	6.3	1.4	
Total individuals	984	1 048	139	31	

<sup>a</sup> Alcohol consumption categories are defined as: lifetime abstainer (never consumed alcoholic beverage); non-heavy drinker (social drinkers, <2 days per week with 5+ standard drinks in last 7 days); infrequent heavy drinker (binge drinkers, 2–3 days per week with 5+ standard drinks in last 7 days); and frequent heavy drinker (4 or more days per week with 5+ standard drinks in last 7 days).

were either infrequent heavy or frequent heavy drinkers; on the other hand, only around 3% of women were infrequent and frequent heavy drinkers (Table 5.3) However, among both men and women, the propor-

tion of lifetime abstainers among those cohabiting and separated/divorced was lower, and the proportion of infrequent and frequent heavy drinkers higher, than for other marital statuses. A notably high prevalence

of heavy drinking was found cohabiting women (7.4%); this may be explained by the fact that relatively loose family ties are sometimes regarded by Russian women as indicating a problem with family life.

For a better understanding of alcohol consumption in Russia, it is necessary to examine the consumption of alcohol beverage types (beer, wine, vodka) separately. According to the Global Status Report of Alcohol (WHO 2004), Russia is not included in the top 20 countries with the highest per capita consumption of beer and wine, but has the leading position for consumption of spirits among adults 15 years or older. The EU Report on Alcohol (2012) indicated that Russia is a country with hazardous drinking behavior (infrequent but heavy consumption without meals) (Andersen 2012).

Alcohol policy has to take into account the characteristics, effects and consequences of alcohol use in different population groups and act on the public health goal of minimising the harm caused by drinking – including in men who drink into their 70's.

## 5.2 Diet and physical activity

The most recent Global Burden of Disease Study estimated that dietary risk factors and physical inactivity together account for up to 10% of global disability-adjusted life years in 2010 (Lim 2012). In the Western Europe region, it is the fourth leading risk factor. Dietary risks are the leading risk factor, and physical inactivity the seventh leading factor contributing to disease in Russia (IHME, 2012).

### 5.2.1 Diet

Information on dietary habits and their changing patterns are important for planning and improving diet-related health policies and programmes. Following the WHO NCD risk factors surveillance strategy (WHOSTEPS), SAGE collected data on the number of servings of fruit and vegetables eaten by respondents on a typical day (WHO, 2009). WHO considers fewer than five servings of fruits and vegetables per day to be insufficient to reduce the risk of diet contributing to cardiovascular disease and other health conditions (WHO, 2003).

Seventy-nine percent of older adults had insufficient intake of fruit and vegetables. Notable differences can be seen between localities: almost 88% of respondents living in rural areas and 76% of urban dwellers did

not consume sufficient portions of fruits or vegetables (Table 5.4). The association with wealth quintiles was inconsistent, with the lowest and two highest quintiles reporting the greatest levels of insufficient intake.

**Table 5.4 Intake of fruit and vegetables among adults aged 50-plus by background characteristics, SAGE Russia Wave 1**

Characteristics	Insufficient intake of fruit and vegetables (%) <sup>a</sup>	Number
<b>Age group</b>		
50–59	78.3	1 701
60–69	78.8	927
70–79	80.4	819
80+	81.6	317
<b>Residence</b>		
Urban	75.9	2 737
Rural	87.9	1 026
<b>Sex</b>		
Male	79.0	1 463
Female	79.3	2 300
<b>Education</b>		
No formal education	99.3	26
Less than primary	82.3	48
Primary	86.1	209
Incomplete secondary	77.3	759
Secondary	78.0	2 032
Higher	81.4	686
<b>Marital status</b>		
Never married	82.3	101
Currently married	78.0	2 042
Cohabiting	62.6	146
Separated or divorced	80.5	368
Widowed	82.5	1 093
<b>Wealth quintile</b>		
Lowest	83.6	610
Second	71.6	737
Middle	73.2	719
Fourth	82.3	773
Highest	84.2	924
<b>Total</b>	<b>79.1</b>	
<b>Total individuals</b>	<b>2 978</b>	<b>3 763</b>

<sup>a</sup> Insufficient intake of fruit or vegetables: less than five servings in a typical day on average in the last seven days.

**Table 5.5** Level of physical activity among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Background characteristics	Physical activity <sup>1</sup>			Number
	Low	Moderate	High	
Age group				
50–59	14.4	12.7	72.9	1 661
60–69	24.3	17.1	58.6	906
70–79	40.8	19.4	39.8	803
80+	61.9	16.2	22.0	305
Sex				
Male	23.6	13.2	63.2	1 430
Female	28.4	17.1	54.6	2 245
Residence				
Urban	29.2	16.8	53.9	2 671
Rural	19.3	12.2	68.5	1 004
Education				
No formal education	76.9	10.5	12.7	25
Less than primary	67.9	20.0	12.0	47
Primary	44.6	17.0	38.4	203
Incomplete secondary	33.5	19.0	47.5	744
Secondary	21.1	13.0	65.8	1 983
Higher	24.4	18.7	56.9	670
Marital status				
Never married	35.7	12.9	51.4	99
Currently married	21.0	14.6	64.5	1 998
Cohabiting	31.0	15.2	53.8	144
Separated or divorced	16.0	11.7	72.3	361
Widowed	39.0	18.9	42.0	1 069
Wealth quintile				
Lowest	45.9	15.9	38.2	599
Second	33.1	17.6	49.3	718
Middle	23.2	17.4	59.4	702
Fourth	16.3	14.6	69.1	759
Highest	19.6	13.1	67.4	896
Total	26.5	15.6	57.9	
Total individuals	975	572	2 129	

<sup>1</sup> High physical activity: vigorous-intensity activity achieving a minimum of at least 1500 MET (metabolic equivalent)-minutes on at least 3 days per week or 7 or more episodes of any combination of walking, moderate or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes per week.

Moderate physical activity: 3 or more days of vigorous-intensity activity of at least 20 minutes per day or 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day or 5 or more days of any combination of walking, moderate or vigorous intensity activities achieving a minimum of at least 600 MET-minutes per week.

Low physical activity: a person not meeting any of the above mentioned criteria falls in this category.

Source: WHO 2009.

The World Health Organization has recommended that governments eliminate industrially produced trans-fats (PHVO) from the food supply, adapt national diet recommendations in order to exclude partially hydrogenated oils, and diminish the use of free sugars (WHO EURO 2012).

## 5.2.2 Physical activity

Physical activity refers to activity undertaken at work, around the home and garden, to get to and from places, and for recreation, fitness and sport. Regular physical activity has a significant positive effect in preventing ischemic heart diseases, ischemic stroke, type two diabetes mellitus, and breast and colon cancers. Physical activity is also important in preserving the residual fraction once peripheral arterial disease and chronic airways disease have developed (Shephard, 1998). It also increases sensitivity to insulin, raises HDL cholesterol levels and reduces blood pressure. In addition, recreational physical activity has been shown to reduce minor anxiety, depression and weight (Salmon, 2001).

About one quarter of SAGE respondents reported low levels of physical activity level, while almost 60% reported high level of activity (Table 5.5). The latter was seen more among younger respondents, males, rural residents, the more educated, the separated or the divorced, and the highest wealth quintile. A low level

of physical activity was seen more often among the oldest, less educated, widowed, and the lowest wealth quintile. The share of persons with a high level of physical activity decreased with age (only one individual out of five at aged over 80).

In the international context, physical inactivity contributes a considerable amount to mortality and morbidity (Lim 2012; Lee 2012). The prevalence of physical inactivity and low levels of physical activity is consistently higher in higher income countries (WHO 2013). Levels of physical inactivity were higher in women than men in both higher and lower income countries (WHO 2013).

## 5.3 Access to improved water sources and sanitation

Access to improved water is necessary for good health. In Russia, access to improved drinking water was available for almost all households – 98.4% in urban areas and 92.1% in rural areas (Table 5.6). Accessibility was related to wealth quintile: more than 8% of the poorest households did not have improved water, versus 0.3% among the richest households.

Nearly 85% of urban and nearly 55% of rural households had clean piped water in the dwelling, while about 10%

**Table 5.6** Households with access to improved drinking water, percentage by wealth quintile and residence, SAGE Russia Wave 1

Characteristic	Improved drinking-water source <sup>1</sup>	Unimproved drinking-water source	Number of households
<b>Residence</b>			
Urban	98.4	1.6	2 557
Rural	92.1	7.9	933
<b>Wealth quintile</b>			
Lowest	91.8	8.2	696
Second	97.6	2.4	716
Middle	95.7	4.3	700
Fourth	98.7	1.3	651
Highest	99.7	0.3	728
<b>Total</b>	<b>96.7</b>	<b>3.3</b>	
<b>Number of households</b>	<b>3 375</b>	<b>116</b>	

<sup>1</sup> Improved drinking-water sources include water piped into household, yard or plot; public standpipes; tube-wells or boreholes; protected dug wells; protected springs; rainwater collection; or bottled water. Unimproved sources include unprotected dug wells; unprotected springs; surface water; and tanker truck water.

of urban and more than 30% of rural households used a public standpipe and/or a protected dug well.

Despite these results, collecting drinking water took more than 30 minutes for more than 10% of households. In rural areas this duty was typically performed by an adult woman, while in urban areas it was an adult man who took care of water collection (Table 5.7). The wealth quintile affected the sex distribution of persons collecting water, with adult men taking this responsibility in the highest wealth quintile and adult women in the lowest (Table 5.8).

Indoor toilets are vital for older people, and in most European countries these facilities are nearly universal. Table 5.9 shows that nearly three-quarters of the study's urban households and 65% percent of rural households had access to improved sanitation. However, the pro-

portion of households with unimproved sanitation (28%) was much higher than the proportion with unimproved drinking water (3.3%). Unimproved sanitation was more commonly located in rural areas (35.5%). A quarter of rural households had both improved drinking water and improved sanitation; at the same time, 32.8% of rural households had neither improved drinking water nor improved sanitation.

## 5.4 Solid fuel use

Clean fuel (electricity, gas) was used by almost all Russian households, with only 2% using solid fuel. The main exceptions were rural areas and the lowest wealth quintile, where 3% and 5% of households respectively used solid fuel (Table 5.10).

**Table 5.7** Amount of time needed to collect drinking water by wealth and residence, SAGE Russia Wave 1

Characteristic	Time to collect drinking water (round trip)			Number of households
	Water on premises	<30 minutes	>30 minutes	
Residence				
Urban	13.2	75	11.8	239
Rural	26.1	63.2	10.7	355
Wealth quintile				
Lowest	12.6	77.6	9.8	175
Second	23.7	66.7	9.7	83
Middle	18.6	66.9	14.5	146
Fourth	37	56.1	6.9	98
Highest	20.9	64.8	14.3	92
Total	20.9	67.9	11.2	
Number of households	124	403	66	

**Table 5.8** Household member usually collecting drinking water, percent distribution by residence and wealth, SAGE Russia Wave 1

Characteristic	Person who usually collects drinking water			Number of households
	Adult man	Adult woman	Other	
Residence				
Urban	53.4	45.9	0.7	197
Rural	45.3	48.0	6.7	208
Wealth quintile				
Lowest	24.2	75.7	0.1	91
Second	41.1	58.6	0.3	62
Middle	58.7	31.0	10.3	118
Fourth	54.2	42.0	3.8	61
Highest	68.0	31.3	0.7	73
Number of households	200	191	15	



**Table 5.9** Improved and unimproved sanitation, percentage by wealth and residence, SAGE Russia Wave 1

Characteristic	Sanitation		Number of households
	Improved <sup>1</sup>	Unimproved <sup>2</sup>	
Residence			
Urban	74.7	25.3	2 555
Rural	64.5	35.5	933
Wealth quintile			
Lowest	73.9	26.1	694
Second	72.3	27.7	715
Middle	66.7	33.3	700
Fourth	69.9	30.1	651
Highest	76.8	23.2	728
Total	72.0	28.0	
Number of households	2 510	978	

<sup>1</sup> Improved sanitation: connection to septic system, pour-flush latrine, covered dry latrine (with privacy).

<sup>2</sup> Unimproved facility: uncovered dry latrine (without privacy), bucket latrine, no facilities.

**Table 5.10** Cooking fuel used among all households, percent distribution by wealth and residence, SAGE Russia Wave 1

Characteristics of household	Cooking fuel used			Number of households
	Clean fuel	Kerosene or paraffin	Solid fuel <sup>1</sup>	
Residence				
Urban	98.1	0.1	1.7	2 538
Rural	97.0	0.0	3.0	933
Wealth quintile				
Lowest	94.5	0.5	5.0	676
Second	98.8	0.0	1.2	716
Middle	97.4	0.0	2.6	700
Fourth	99.4	0.0	0.6	651
Highest	98.8	0.0	1.2	728
Total	97.8	0.1	2.1	
Number of households	3 395	3	72	

<sup>1</sup> Coal, charcoal, wood, agriculture or crop, animal dung, shrubs or grass, or other.

Among the households which did use solid fuel, about 17% had a shared room for cooking and living or sleeping and 78% had a separate room for cooking. A chimney or hood was the prevalent fire or stove covering.

## 5.5. Food security

Food security is considered a basic measure of population well-being. Even though older adults are recognized as an age group at risk, comparatively little food security research has been conducted among aging populations.

The definition of food insecurity used in SAGE incorporated availability of food, and the limited or uncertain ability to acquire food (for instance, too hard to get to the store/market), and the inability to prepare, gain access to, and/or eat food that is available in the household because of functional impairments. Research guided by this broader perspective has now established that older adult food insecurity is linked to physical and mental health conditions that may become more prevalent with age. Overall, 13.6% of older Russians had food insecurity based on questions about eating less and hunger included in SAGE.



## 6. Health State

The World Health Organization has defined health as a multi-dimensional construct:

Health is a state of complete physical, mental and social well-being, not just the absence of disease or infirmity (WHO Constitution, 1948).

However, this definition does not provide objective indicators for monitoring and evaluation of health. No uniform scale to measure health exists, and measurement often differs according to sex, occupation, families, communities, and socioeconomic groups. But in general, health refers to mental and physical functions.

More recently, WHO has proposed and used a standardized approach to the measurement of health across a parsimonious set of health domains (Salomon *et al.*, 2003). Health in SAGE was assessed in a number of ways, through a single overall general health question, as well as questions covering eight different health domains. One of the major advantages of SAGE as compared to other health surveys is the composite health score created from a set of health domains that explain most of the variance in approximating true health.

Decrements in health were measured using the 12-item version of WHO Disability Assessment Scale (WHODAS) 2.0 (Üstün *et al.*, 2010). It is a measure of functioning or disability that evaluates six domains – understanding and communicating, getting around, self-care, getting along with people, household activities and participation in society – of day-to-day functioning in the last 30 days. Details on the selected items and how the individual score was computed are shown in Appendix 1. A fuller set of activities of daily living (ADLs) and instrumental activities of daily life (IADLs) were also included because they are widely used in surveys and studies of older populations. The list of ADL and IADL items is shown in the Appendix.

This chapter presents results on self-reported ratings of overall health and functioning. These ratings include evaluations of health in nine domains used to generate the SAGE composite health state score, measurement of disability using WHODAS 2, and reported ADLs and IADLs.

### 6.1 Self-reported health and functioning

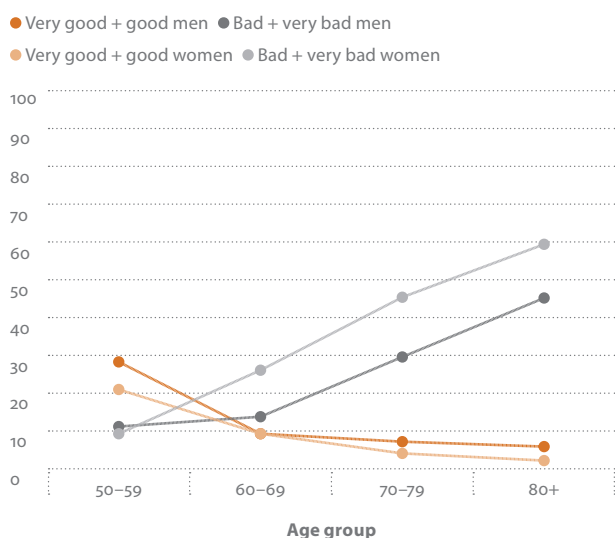
Self-reported general health status in epidemiological surveys has been well studied and applied, and has been shown to be an important indicator for many health and health-related issues. Often it is included as a single question, and has been a good predictor for numerous health and health-related outcomes. SAGE included a common version of this overall general health question, “In general, how would you rate your health today?” Respondents could choose among five response options: very good, good, moderate, bad and very bad.

Self-reported health is widely used in different surveys in different countries and population groups. A number of researchers now argue that reductions in poor self-reported health must be as much of a national priority as reductions in overall and age-specific death rates and improvements in life expectancy (Starfield *et al.*, 2008). Several regularities appear in the distribution of self-assessment of health:

With increasing age, reports of excellent and good health decrease and reports of bad and very bad health increase.

Self-reported health for men is better than for women in all age groups. It is useful to note, however, that self-reported health in some European countries is similar

**Figure 6.1** Age trends in self-assessments of health by age and sex (%), SAGE Russia Wave 1



for men and women, perhaps due to differences in social welfare arrangements (Bambra *et al.*, 2009).

These patterns are visible in the SAGE data for Russia (Figure 6.1). It is worth noting, however, that data from both SAGE Wave 1 and SAGE Wave 0 (World Health Survey 2003) show that it is very important to take into account cultural differences and people's mentality when asking health-related questions, and to consider how these differences might affect responses to self-reported health questionnaires. For example, Russian people very rarely evaluate their health as very good or excellent; they tend to say "moderate" instead of "good".

Tables 6.1 and 6.2 describe overall general self-rated health and difficulties in work or household activities. Almost two-thirds of respondents rated their overall health as moderate, and 22% rated their health as bad. A higher percentage of women reported bad health than men (25.7% versus 16.1%), and more than half of the oldest respondents rated their health as bad or very bad compared with just 10% of the youngest respondents. Around 5% of the respondents aged 70-79 and 3% of those 80-plus rated their health as good or very good.

It is interesting to compare these results to those from European countries. For example, nearly 50% of Danes aged 50-plus, and more than 40% of Swedes and Swiss citizens in the same age range, report themselves to be in very good or excellent health. The proportions in France, Germany, Italy and Spain are about 20%, closer to what is observed in Russia (Mackenbach *et al.*, 2005).

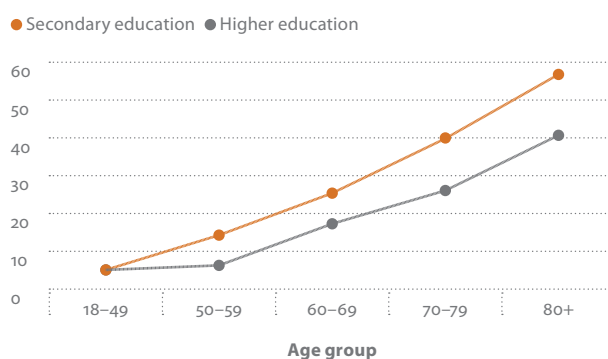
Self-assessment of health was connected with marital status in Russia: widowed men and women had a high

prevalence of bad health. While this could be initially attributable to advanced age, this difference is seen both in crude and in age-adjusted rates, suggesting that the psychological impact of the death of a spouse may contribute to reporting bad health. It is important to note that among the Russian population, there are proportionally more widowed persons than in most European countries, especially among women: in the ten European countries that are part of the SHARE project, 7.6% of men and 29.1% of women have lost their spouse (<http://www.share-project.org/>), compared to 10.7% and 40.6%, respectively, in Russia.

One important factor determining individual health is educational level. People with different levels of education usually have differences in their life values, lifestyles and material well-being. Among SAGE respondents aged 50-plus, the highest rates of good and very good health, and the lowest rates of bad and very bad health, were reported by respondents in the highest educational level. Persons with primary and less than primary education reported the lowest levels of good and very good health. Persons with a high educational level were significantly ( $p < 0.05$ ) more healthy than their counterparts with secondary educational attainment. Poor health in those with secondary and higher education increased at older ages, a well-known pattern; but among persons with secondary education, practically the same rates appeared one decade earlier than among persons with a higher educational level (Figure 6.2). Similarly, self-reported health by wealth quintile showed a clear gradient, with poorer quintiles reporting worse health.

Russia is a country with considerable geographic, ethnic and cultural heterogeneity, all of which interact to influence population health. Different Federal Districts have their own peculiarities of climate, economics, industry, and trade, and their populations also demonstrate

**Figure 6.2** Age trends in self-assessment of health as bad at different educational levels, SAGE Russia (both sexes combined, %)



**Table 6.1** Overall self-rated health among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

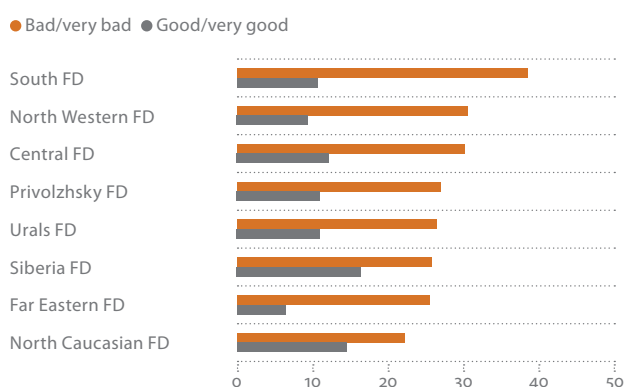
Characteristic	Self-rated overall health					Number
	Very good	Good	Moderate	Bad	Very bad	
Sex						
Male	0.5	17.9	64.8	16.1	0.8	1 526
Female	0.1	11.7	61.1	25.7	1.4	2 393
Age group						
50–59	0.4	23.7	66.1	9.4	0.4	1 767
60–69	0.0	9.0	70.0	20.4	0.6	966
70–79	0.2	4.6	54.6	37.9	2.7	856
80+	0.3	2.8	41.9	52.0	3.0	331
Residence						
Urban	0.3	14.6	60.8	22.9	1.3	2 853
Rural	0.1	12.8	67.2	19.3	0.7	1 067
Marital status						
Never married	0.6	17.7	64.1	17.1	0.5	106
Currently married	0.3	17.3	65.1	16.6	0.7	2 130
Cohabiting	0.7	13.0	64.2	20.3	1.8	153
Separated or divorced	0.4	9.6	74.2	14.5	1.3	385
Widowed	0.1	9.5	53.4	35.1	1.9	1 142
Wealth quintiles						
Lowest	0.1	13.5	51.3	32.7	2.4	636
Second	0.1	11.7	61.9	25.2	1.1	769
Middle	0.0	10.9	64.0	23.6	1.5	751
Fourth	0.4	11.0	70.4	17.4	0.7	807
Highest	0.5	21.6	62.8	14.7	0.5	956
Total %	0.3	14.1	62.5	22.0	1.2	
Total individuals	10	529	2 341	822	43	

differences in self-reported health. Figure 6.3 shows the regional breakdown of self-reported health. Participants who live in the Siberian and North Caucasus districts considered themselves to be in reasonably good health compared to residents of other territories.

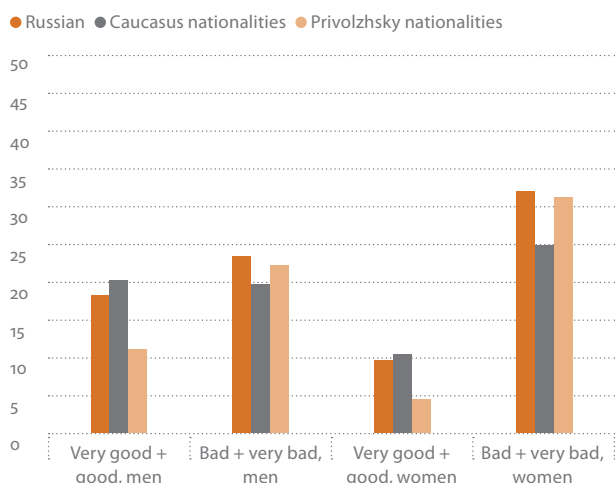
The distribution of self-reported health among urban and rural populations was quite similar. Both sub-populations showed the same patterns as a whole: lower good health and higher poor health ratings with advancing age, and more optimistic evaluations among men than women.

Some variation in overall general health was seen in the main national population groups (Figure 6.4). Respondents

**Figure 6.3** Self-assessment of health among respondents aged 50-plus, by Federal District, SAGE Russia Wave 1



**Figure 6.4** Distribution of self-reported health among different nationalities (%), SAGE Russia Wave 1



from the Caucasus nationalities had the best self-assessments, with the proportion of respondents reporting good and very good health higher than among Russians and members of the Volga nationalities, and lower reporting of bad and very bad health. These differences are statistically significant ( $p < 0.05$ ). However, they appear to be less than differences in health reporting among racial/ethnic groups in the United States, where only about 25% of Afro-American and Hispanic respondents aged 55-plus reported themselves as being in good or excellent health, compared to 45% of white respondents (US Health and Retirement Study, 2002).

Some 22% of respondents aged 50-plus had no difficulties with work or household activities, while 11.6%

**Table 6.2** Self-rated difficulties with work or household activities among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Characteristic	Self-rated difficulty with work or household activities					Number
	None	Mild	Moderate	Severe	Extreme	
Sex						
Male	26.7	35.2	29.9	7.4	0.8	1 519
Female	18.3	31.6	36.4	12.4	1.4	2 384
Age group						
50–59	34.3	40.0	22.4	3.1	0.3	1 760
60–69	16.7	35.6	37.3	9.7	0.7	956
70–79	7.4	23.3	51.2	16.1	2.1	855
80+	4.5	13.4	40.3	37.0	4.8	331
Residence						
Urban	22.4	31.6	34.3	10.4	1.4	2 839
Rural	19.3	36.7	32.7	10.7	0.5	1 064
Marital status						
Never married	26.4	22.2	39.9	9.8	1.7	106
Currently married	26.7	35.8	30.7	6.2	0.7	2 119
Cohabiting	16.3	39.5	35.7	7.0	1.5	153
Separated or divorced	21.8	43.5	25.8	8.7	0.2	385
Widowed	12.1	24.3	41.9	19.5	2.3	1 137
Wealth quintile						
Lowest	17.2	24.7	36.6	20.1	1.6	636
Second	20.3	28.8	39.9	8.9	2.1	764
Middle	15.6	31.6	39.6	12.1	1.1	750
Fourth	21.6	38.0	30.2	9.4	0.8	801
Highest	30.1	38.8	25.8	4.7	0.5	952
Total %	21.6	33.0	33.9	10.4	1.2	
Total individuals	805	1 233	1 264	390	43	

**Table 6.3** Self-reported difficulties with particular functions during the last 30 days, respondents aged 50-plus, percentage distribution, SAGE Russia

Difficulties	Self-reported difficulties			Number of respondents
	No/some	Moderate	Serious/very serious	
Moving around	65.3	21.5	13.2	3 917
Self-care	84.7	10.4	4.9	3 912
Grooming	89.9	7.7	2.4	3 914
Pain	54.3	29.2	16.5	2 701
Personal relationships or participation in the community	88.7	7.2	4.1	3 896
Making new friendships or maintaining current friendships	91.9	5.7	2.4	3 901
Sleeping	63.3	23.5	13.2	3 875
Feeling sad, low or depressed	82.2	13.2	4.7	3 846

indicated that they have severe or even extreme (1.2%) difficulties in daily activities (Table 6.2). Women, older people, the widowed, and those in the poorest wealth quintile reported higher levels of difficulties than their counterparts. Almost 22% of persons from the lowest wealth quintile reported such difficulties—a potential social problem, given their limited means to engage support.

Younger people were more likely to report no difficulty with work or household activities (34.3% at age 50-59 versus 4.5% at age 80-plus), as were those currently married and never married, and the highest wealth quintile. The opposite trend was seen with regard to severe or extreme difficulties: in the 80-plus age group, around 40% of respondents had severe difficulties with household activities, and nearly 5% extreme, suggesting the urgent need to develop social care programs in light of a projected rapid increase in this age segment of the population.

As this is a community-based sample, few limitations in activities of daily living are expected. Most respondents had no or only mild limitations in self-care (84.7%), grooming (89.9%), personal relationships (88.7%), and making new friendships (91.9%). However, a high proportion felt sad, low or depressed (82.2%), and almost 50% were in some degree of pain. The most common extreme difficulties related to pain (16.5%), difficulties with moving around (13.2%) and sleeping (13.2%) (Table 6.3).

### 6.1.1 Health state scores

For a better understanding of health determinants and the differences between perceived health and true levels of health, further disaggregation of health into

health domains is needed. Eight health domains were covered in the survey: mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep, energy, and age effect. Results are discussed in terms of mean scores.

The overall mean health score was 60.1 (Table 6.4). Mean health scores were lower among women (57.8, versus 63.6 among men) and with advancing age, ranging from a mean of 67.1 for the youngest age group to 45.2 for the oldest group. On average, widowed people had the lowest health scores (53.5), and an increasing trend with higher level of education was noticeable. No differences were seen between urban and rural areas. The data also showed a generally rising mean health score and a simultaneously decreasing health state score as material well-being improved.

## 6.2 Disability

Measures of functioning are common in surveys of older adults, and often include activities of daily living (ADLs<sup>1</sup>) and instrumental activities of daily living (IADLs<sup>2</sup>). In SAGE, functioning was assessed through the WHO Disability Assessment Schedule (WHODAS-2). The WHODAS contains many of the most commonly asked ADL and IADL questions, as well as an assessment of the severity of disability.

- 1 Activities of daily living (ADLs) include basic daily self-care activities, typically within an individual's place of residence, such as eating, bathing and toileting.
- 2 Instrumental activities of daily living (IADLs) include more complex activities, such as heavy or light housework, laundry, preparing meals, shopping for daily necessities, getting around outside, travelling, managing money and using a telephone.



**Table 6.4** Mean health state scores among adults aged 50-plus, by background characteristics, SAGE Russia Wave 1

Characteristic	Mean health score, unadjusted	Number	Health state score	Number
<b>Sex</b>				
Male	63.6	1 529	15.6	1 463
Female	57.8	2 393	21.5	2 300
<b>Age group</b>				
50–59	67.1	1 769	10.9	1 701
60–69	60.0	967	17.8	927
70–79	51.5	856	29.4	819
80+	45.2	332	41.3	317
<b>Residence</b>				
Urban	60.1	2 856	19.5	2 737
Rural	60.0	1 067	18.4	1 026
<b>Education</b>				
No formal education	41.7	28	51.5	26
Less than primary	47.3	51	40.6	48
Primary	48.9	218	34.5	209
Incomplete secondary	54.2	794	25.1	759
Secondary	62.1	2 116	16.7	2 032
Higher	65.6	707	12.7	686
<b>Marital status</b>				
Never married	60.6	106	19.0	101
Currently married	63.5	2 133	15.7	2 042
Cohabiting	59.8	153	17.6	146
Separated or divorced	60.8	385	16.0	368
Widowed	53.5	1 142	27.2	1 093
<b>Wealth quintile</b>				
Lowest	56.4	636	25.8	610
Second	58.4	769	21.5	737
Middle	57.2	751	21.9	719
Fourth	62.4	808	15.3	773
Highest	64.2	958	14.1	924
<b>Total</b>	<b>60.1</b>		<b>19.2</b>	

Tables 6.5 and 6.6 describe the proportion of respondents with different numbers of ADL and IADL deficiencies. Overall, 74.1% had no difficulties with ADLs, and 86.6% had no difficulties with IADLs. The prevalence of moderate or severe difficulties was 18.2% for ADLs and 7.9% for IADLs. The prevalence of difficulties in both areas among women was almost twice as high as among men, in keeping with global trends among ageing populations. The relationship between disability and

age was also clear: increasing age was associated with higher prevalence of moderate/severe level of difficulties, ranging from 5.3% among the 50–59 age group to 52.8% among people aged 80-plus for ADLs and from 1.3% to 32.7% for IADLs, respectively. Area of residence had little association with ADLs, with 76.6% of rural dwelling individuals reporting no difficulties compared with 73.2% of those living in urban areas; this difference disappeared for IADLs.

**Table 6.5** Difficulty in carrying out activities of daily living and overall mean WHODAS score among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Characteristic	Difficulty in carrying out activities of daily living (%)			Number
	No difficulty	Mild	Moderate or severe	
Sex				
Male	82.3	5.4	12.3	1 460
Female	68.9	9.2	21.9	2 285
Age group				
50–59	90.9	3.8	5.3	1 688
60–69	74.9	8.8	16.3	923
70–79	55.4	11.2	33.4	818
80+	30.7	16.6	52.8	316
Residence				
Urban	73.2	7.3	19.5	2 725
Rural	76.6	8.8	14.6	1 019
Education				
No formal education	12.8	24.0	63.1	26
Less than primary	27.2	13.8	59.0	48
Primary	40.2	15.3	44.5	208
Incomplete secondary	64.5	8.9	26.6	758
Secondary	79.7	6.9	13.4	2 019
Higher	84.3	5.5	10.2	684
Marital status				
Never married	76.8	3.4	19.8	101
Currently married	81.6	6.5	11.9	2 036
Cohabiting	71.7	8.9	19.4	145
Separated or divorced	81.2	6.1	12.7	368
Widowed	57.8	10.8	31.4	1 091
Wealth quintile				
Lowest	62.4	9.4	28.2	607
Second	71.7	6.4	21.8	734
Middle	66.9	9.9	23.3	717
Fourth	81.4	6.5	12.1	771
Highest	83.3	7.0	9.6	913
Total %	74.1	7.7	18.2	
Total individuals	2 775	290	680	
Mean WHODAS score	11.6	30.7	45.6	

The mean WHODAS score increased with increasing level of ADL limitation, ranging from 11.6 for individuals with no ADL limitation to 45.6 for those with a moderate/severe level of ADL difficulties. The corresponding mean WHODAS scores for IADLs were 14.6 and 57.2, respectively.

## 6.3 Cognitive capacity

Deficiencies in ADLs or IADLs often signal a cognitive decline or dementia – the challenge remains to assess normal changes in cognition and cognitive impairment. In addition to ADL-type measures in SAGE, self-

**Table 6.6** Difficulty in carrying out instrumental activities of daily living and overall WHODAS score among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia Wave 1

Characteristic	Difficulty in carrying out instrumental activities of daily living (%)			Number
	No difficulty	Mild	Moderate or severe	
Sex				
Male	89.1	5.5	5.3	1 453
Female	84.9	5.6	9.5	2 279
Age group				
50–59	95.9	2.8	1.3	1 687
60–69	91.2	3.9	4.9	922
70–79	76.4	8.3	15.3	809
80+	48.9	18.4	32.7	314
Residence				
Urban	86.2	5.8	8.0	2 713
Rural	87.6	5.0	7.4	1 019
Education				
No formal education	29.6	20.2	50.2	26
Less than primary	53.4	11.7	34.9	48
Primary	68.1	11.0	20.9	208
Incomplete secondary	78.4	9.0	12.6	748
Secondary	90.7	4.7	4.6	2 016
Higher	93.5	1.9	4.6	683
Marital status				
Never married	82.8	5.4	11.8	101
Currently married	91.7	3.7	4.6	2 032
Cohabiting	76.8	12.7	10.5	145
Separated or divorced	91.6	5.0	3.4	368
Widowed	76.9	8.4	14.7	1 082
Wealth quintile				
Lowest	79.2	7.3	13.4	606
Second	83.9	6.9	9.3	733
Middle	81.9	8.5	9.6	709
Fourth	91.7	3.4	4.9	770
Highest	92.9	3.0	4.2	913
Total %	86.6	5.6	7.9	
Total individuals	3 230	208	293	
Mean WHODAS score	14.6	36.9	57.2	

reported cognition and objective cognition tests were used. Recent literature has also pointed to the additional predictive ability of changes in walking speed on future cognition ([www.alz.org/aaic/releases/sun\\_1030amct\\_gait.asp](http://www.alz.org/aaic/releases/sun_1030amct_gait.asp)). The focus of this section is results from the three cognition tests used in SAGE:

verbal fluency, verbal recall, and digit span. These tested learning ability, concentration and memory. The test used for verbal fluency challenged the respondent to produce as many words (animals) as possible in a one-minute time span. Immediate verbal and delayed verbal recall were used as tests of memory,

wherein 10 words are successively presented after which the respondent is given the opportunity to recall as many of the words as possible. This is repeated thrice to saturate the learning curve. After approximately 10 minutes of interview time, recall and recognition were again tested. Digit span forward and backward were used to test working memory and executive function.

### 6.3.1 Verbal recall and fluency

Mean verbal recall scores were similar by sex and urban/rural residence, while the verbal fluency measure showed a higher mean value among men and among people living in rural areas. Younger age groups and those with higher levels of education reported higher mean values for both measures, as did separated/divorced people and respondents in the higher wealth quintiles (Table 6.7).

**Table 6.7** Verbal recall and verbal fluency among adults aged 50-plus, mean scores by background characteristics, SAGE Russia Wave 1

Characteristic	Verbal recall <sup>a</sup>	Verbal fluency <sup>b</sup>	Number
<b>Sex</b>			
Male	5.7	13.2	1 463
Female	5.8	11.7	2 300
<b>Age group</b>			
50–59	6.5	14.5	1 701
60–69	5.7	11.8	927
70–79	4.7	9.9	819
80+	4.0	8.0	317
<b>Residence</b>			
Urban	5.6	11.8	2 737
Rural	6.0	13.4	1 026
<b>Education</b>			
No formal education	3.8	9.7	26
Less than primary	3.3	6.9	48
Primary	3.9	7.6	209
Incomplete secondary	5.1	9.7	759
Secondary	6.1	13.1	2 032
Higher	6.2	14.5	686
<b>Marital status</b>			
Never married	5.7	12.7	101
Currently married	5.9	12.0	2 042
Cohabiting	4.3	7.4	146
Separated or divorced	6.8	18.9	368
Widowed	5.2	11.1	1 093
<b>Wealth quintile</b>			
Lowest	5.2	10.5	610
Second	5.4	9.5	737
Middle	5.2	11.2	719
Fourth	6.3	11.8	773
Highest	6.3	16.8	924
<b>Total</b>	<b>5.7</b>	<b>12.3</b>	

<sup>a</sup> List of 10 words

<sup>b</sup> Average number of animals

**Table 6.8** Forward and backward digit span among adults aged 50-plus, mean scores by background characteristics, SAGE Russia

Background characteristics	Forward digit span	Backward digit span	Number
<b>Sex</b>			
Male	4.6	4.2	1 463
Female	4.5	4.1	2 300
<b>Age group</b>			
50–59	4.9	4.5	1 701
60–69	4.7	4.2	927
70–79	3.9	3.5	819
80+	3.7	3.1	317
<b>Residence</b>			
Urban	4.6	4.1	2 737
Rural	4.4	4.1	1 026
<b>Education</b>			
No formal education	3.5	3.0	26
Less than primary	3.1	3.2	48
Primary	3.3	3.3	209
Incomplete secondary	3.9	3.8	759
Secondary	4.7	4.1	2 032
Higher	5.3	4.6	686
<b>Marital status</b>			
Never married	4.5	4.1	101
Currently married	4.6	4.2	2 042
Cohabiting	2.9	4.0	146
Separated or divorced	5.2	4.3	368
Widowed	4.4	3.8	1 093
<b>Wealth quintile</b>			
Lowest	4.2	3.7	610
Second	4.1	4.1	737
Middle	4.2	4.0	719
Fourth	4.7	4.3	773
Highest	5.2	4.3	924
<b>Total</b>	<b>4.5</b>	<b>4.1</b>	

### 6.3.2 Digit span

The overall mean scores for forward and backward digit span were 4.5 and 4.1, respectively, and in nearly all groups the mean forward score was higher than the backward score (Table 6.8). The main exception was seen among cohabiting individuals. Mean values were lower with increasing age, and generally higher with increasing levels of education and income.

### 6.3.3 Overall cognition

The mean overall cognition score was 57.4. It declined with age, increased with education, was high among separated/divorced respondents relative to other marital statuses, and generally increased from the lowest to highest wealth quintile (Table 6.9).

**Table 6.9** Mean overall cognition score by background characteristics, SAGE Russia

Background characteristics	Mean overall cognition score	Number
<b>Sex</b>		
Male	58.1	1 463
Female	57.0	2 300
<b>Age group</b>		
18–49	64.7	1 701
50–59	57.6	927
60–69	48.3	819
70+	40.0	317
<b>Residence</b>		
Urban	56.9	2 737
Rural	58.8	1 026
<b>Education</b>		
No formal education	34.6	26
Less than primary	38.3	48
Primary	41.4	209
Incomplete secondary	51.6	759
Secondary	58.9	2 032
Higher	64.6	686
<b>Marital status</b>		
Never married	57.6	101
Currently married	58.5	2 042
Cohabiting	57.4	146
Separated or divorced	65.4	368
Widowed	52.4	1 093
<b>Wealth quintiles</b>		
Lowest	49.6	610
Second	56.1	737
Middle	55.6	719
Fourth	59.4	773
Highest	62.9	924
<b>Total</b>	<b>57.4</b>	





## 7. Morbidity and Interventions

Chronic disease is a leading threat to human health and development. In Russia, the contribution of chronic non-communicable conditions to the overall burden of disease is increasing, yet, HIV/AIDS is now the third leading cause of disability-adjusted life years (DALYs) (GBD Profile: Russia, 2010).

SAGE gathered evidence on a selected range of chronic diseases that contribute a large portion of the non-communicable disease burden and are more widely prevalent among older adults. This information has important applications for health management and for the prevention of disease-related complications and mortality.

In this section, results are presented for angina, arthritis, asthma, chronic lung disease, depression, diabetes mellitus, edentulism, hypertension and stroke. Prevalence rates were based on self-reported diagnosis. As was found in a recent Australian study, prevalence rates of most chronic diseases were similar when taken from medical records by general practitioners and from self-reports by respondents (Caughey *et al.*, 2010). Yet some reporting biases exist, so in addition to disease prevalence based on self-reported diagnosis, alternate prevalence rates were generated for four of the conditions (angina, asthma, depression and arthritis) based on a set of questions about common disease-related symptoms.

Additional questions about each condition helped to determine who is in need of certain health interventions and how many respondents actually received treatment. Unmet treatment needs for each condition – those with a condition and not receiving treatment – were estimated, which indicates a potential gap in interventions or services. This section also covers injuries, cataract surgery and estimates of health service coverage through use of preventive health services for two indicator conditions: cervical and breast cancers.

### 7.1 Chronic conditions

Epidemiological characteristics (emergence and prevalence of diseases) are important both on the theoretical level, allowing us to evaluate the scale of population trends, and on the practical level, as these characteristics allow us to define the amount and content of medical support activity.

For SAGE, prevalence rates for chronic diseases were calculated through self-reporting (SR), and description of symptoms combined with the use of special diagnostic algorithms (Sx) where applicable. For self-reported disease diagnosis, respondents were asked the question, “Has a health care professional ever told you that you have . . . ?” (angina, arthritis, asthma, chronic lung disease, depression, diabetes, hypertension and stroke). Four conditions have symptoms with sufficient specificity to provide an additional means of estimating prevalence rates by using established algorithms based on reporting of common symptoms (angina, arthritis, asthma and depression). For these four conditions, prevalence rates were presented for both methods.

The survey results indicated that ageing was associated with an increase in the prevalence of a number of chronic diseases and health problems (hypertension, ischemic heart disease, stroke, joint diseases, diabetes, cataracts and edentulism).

Tables 7.1 to 7.4 show the prevalence rates for selected chronic conditions in Russia. Rates for current treatment in the last 12 months (CTx) and recent treatment in the last two weeks (RTx) were also included for these conditions. Prevalence was defined as including ever having been diagnosed with a condition or having symptoms of a condition.

## 7.1.1 Single chronic conditions

### Hypertension and angina pectoris

Angina pectoris, other ischemic heart diseases, and stroke are complications of hypertension; the adequate control and management of hypertension is a way to decrease such complications and consequently the mortality rates from cardiovascular diseases.

More than half of respondents (52.8%) reported having hypertension, with a higher prevalence among women (60.2%) (Table 7.1). Higher rates of hypertension were

seen with increasing age, except at the oldest ages. Hypertension prevalence was lower among married couples than among cohabiting or divorced people. Particularly high rates were observed among the widowed, which might be rooted in the sex and age structure of this group. Almost 80% of respondents who reported having hypertension received current treatment (in last 2 weeks), and about 94% received treatment during the last 12 months. Treatment rates were lowest among younger respondents, those not married, and those in the lowest wealth quintile.

**Table 7.1 Hypertension and angina pectoris: percentage reporting condition, current or recent therapy, and symptom-based reporting of angina pectoris among adults aged 50-plus, percentage and number, by background characteristics, SAGE Russia**

Characteristic	Hypertension						Angina pectoris							
	SR	N	CTx	N	RTx	N	SR	N	Sx	N	CTx	N	RTx	N
<b>Sex</b>														
Male	41.3	1 521	77.4	628	92.6	628	30.6	1 520	39.1	1 270	70.7	496	86.7	496
Female	60.2	2 377	79.8	1 429	94.0	1 429	33.5	2 377	46.5	1 957	61.6	909	77.9	908
<b>Age group</b>														
50–59	43.3	1 761	75.0	762	92.8	762	22.4	1 761	30.8	1 459	58.3	449	78.8	449
60–69	54.2	960	77.2	520	93.4	520	31.9	958	45.0	790	57.4	353	74.4	353
70–79	66.9	846	85.1	565	93.5	565	46.7	847	62.8	694	71.3	436	83.9	436
80+	63.6	331	82.4	210	96.9	210	50.1	331	58.3	285	81.5	166	93.6	166
<b>Residence</b>														
Urban	52.4	2 835	78.2	1 485	91.9	1 484	31.9	2 835	43.0	2 362	60.3	1 013	78.0	1 013
Rural	53.9	1 062	81.3	572	97.8	572	33.7	1 062	45.2	865	76.7	391	88.9	391
<b>Marital status</b>														
Never married	45.7	106	68.7	48	93.1	48	24.9	106	32.2	85	32.6	27	87.8	27
Currently married	47.9	2 121	79.3	1 017	93.8	1 016	25.0	2 120	35.7	1 750	60.0	625	78.2	625
Cohabiting	52.8	152	80.2	80	95.5	80	41.9	152	53.4	137	62.3	73	83.1	73
Separated or divorced	54.5	382	76.3	209	93.6	209	42.9	382	51.0	331	78.2	168	82.9	168
Widowed	62.2	1 133	80.1	703	93.1	703	41.9	1 134	55.5	922	68.4	510	83.2	510
<b>Wealth quintile</b>														
Lowest	48.4	630	62.3	305	87.6	305	30.8	629	42.9	515	60.9	219	77.0	219
Second	55.1	762	81.3	419	93.2	419	37.8	762	53.9	600	61.7	323	77.8	323
Middle	55.4	745	81.1	413	95.0	413	36.9	745	48.0	622	71.9	299	85.1	299
Fourth	53.6	807	86.2	432	95.4	431	29.4	807	39.1	681	61.4	266	79.9	266
Highest	51.3	952	79.5	488	94.7	488	28.0	953	36.7	809	67.0	297	84.4	297
<b>Total %</b>	<b>52.8</b>		<b>79.1</b>		<b>93.6</b>		<b>32.3</b>		<b>43.6</b>		<b>64.8</b>		<b>81.0</b>	

CTx: current therapy (in past 2 weeks); RTx: recent therapy (past 12 months); SR: self-reported prevalence of a diagnosed condition; Sx: symptom+ algorithm-based prevalence of condition.

Angina pectoris was reported by almost one-third of the respondents; this prevalence rose to 43.6% when applying the symptom-based algorithm. The prevalence of angina was lower among married respondents than among those cohabiting or divorced (Table 7.1). A higher prevalence of angina was found in the middle and lower wealth quintiles, while the lowest prevalence was seen in the wealthiest quintile. More than 65% of those suffering from angina were receiving current treatment (over last 2 weeks) for this condition, and 81% had received treatment during the last twelve months.

Men, older age, and individuals living in rural areas were more likely to receive current (last 2 weeks) treatment. Treatment coverage was higher in higher wealth quintiles, but was still not 100%, indicating a deficit in continuous, lifelong treatment for this condition after diagnosis. A lower percentage of respondents under the age of 70 received current as well as recent treatment compared to older respondents. The lowest level of current and recent treatment was among patients from the lowest wealth quintile, perhaps due to difficulties in accessing care or paying for treatment.

**Table 7.2 Self-reported stroke and diabetes mellitus, and current or recent therapy and symptom-based reporting of stroke among adults aged 50-plus, by background characteristics, percent by background characteristics, SAGE Russia**

Characteristic	Stroke						Diabetes mellitus					
	SR	N	CTx	N	RTx	N	SR	N	CTx	N	RTx	N
<b>Sex</b>												
Male	5.1	1 520	63.9	77	75.2	77	5.3	1 520	50.3	80	52.7	80
Female	4.7	2 377	54.2	112	77.5	112	8.1	2 377	79.8	193	83.7	193
<b>Age group</b>												
50–59	2.3	1 761	52.5	40	76.1	40	5.2	1 761	63.7	91	69.6	91
60–69	4.9	958	61.0	47	80.6	47	8.5	958	74.5	82	75.4	82
70–79	8.1	847	52.6	68	74.4	68	9.7	847	70.2	82	74.6	82
80+	10.3	331	72.0	34	75.9	34	5.5	331	97.6	18	98.2	18
<b>Residence</b>												
Urban	5.4	2 835	61.6	154	78.3	154	7.5	2 835	67.9	212	71.6	212
Rural	3.2	1 062	42.6	34	68.6	34	5.8	1 062	82.3	62	85.5	62
<b>Marital status</b>												
Never married	6.5	106	53.0	6	81.3	6	7.3	106	100	8	97.1	8
Currently married	4.1	2 120	60.5	88	79.5	88	6.2	2 120	57.1	130	61.2	130
Cohabiting	10.2	152	81.6	15	81.6	15	4.1	152	44.1	6	75.7	6
Separated or divorced	3.1	382	53.3	12	53.3	12	5.4	382	86.1	21	82.4	21
Widowed	5.9	1 134	51.0	67	75.2	67	9.6	1 134	84.8	108	87.8	108
<b>Wealth quintile</b>												
Lowest	4.9	629	57.9	30	85.1	30	6.5	629	89.0	41	88.7	41
Second	5.8	762	59.6	44	78.2	44	5.8	762	79.2	44	87.3	44
Middle	7.2	745	66.4	53	80.7	53	9.5	745	77.2	71	73.2	71
Fourth	3.3	807	31.4	26	62.3	26	8.4	807	42.6	67	53.1	67
Highest	3.5	953	64.2	34	71.5	34	5.3	953	79.6	50	83.5	50
<b>Total %</b>	<b>4.8</b>		<b>58.1</b>		<b>76.6</b>		<b>7.0</b>		<b>71.2</b>		<b>74.8</b>	

CTx: current therapy (in past 2 weeks); RTx: recent therapy (past 12 months); SR: self-reported prevalence of a diagnosed condition; Sx: symptom+ algorithm-based prevalence of condition.

## Stroke

The overall prevalence of self-reported stroke was less than 5%; this was higher in urban areas. An age pattern was noticeable, ranging from 2.3% among the youngest age group to 10.3% for the oldest group. The highest prevalence rate for stroke was among cohabiting individuals. Around three-quarters (76.6%) of patients who reported a stroke received therapy during the last 12 months, and 58.1% received therapy during the last two weeks (Table 7.2).

## Diabetes mellitus

The self-reported diabetes prevalence was higher among women (8.1%) than men (5.3%), with the overall prevalence of this condition equal to 7% (Table 7.2). In the United States, by contrast, diabetes prevalence rates at ages 65 and over are higher than 18% (IOM, 2008). The percentages of individuals suffering from diabetes who received either current or recent treatment were 71.2% and 74.8%, respectively. At 80 years and older, almost all diabetic patients received both current (last 2 weeks)

**Table 7.3** Per cent distribution of self-reported chronic lung disease and asthma, and current or recent therapy and symptom-based reporting of asthma among adults aged 50-plus, by background characteristics, SAGE Russia

Characteristic	Chronic lung disease						Asthma							
	SR	N	CTx	N	RTx	N	SR	N	Sx	N	CTx	N	RTx	N
<b>Sex</b>														
Male	16.6	1 520	19.6	252	44.8	252	2.0	1 520	5.8	1 520	27.5	88	30.0	88
Female	13.4	2 377	16.6	314	51.6	314	3.0	2 377	6.4	2 376	35.9	153	40.2	153
<b>Age group</b>														
50–59	12.6	1 762	13.0	222	42.4	222	2.2	1 762	4.4	1 762	34.9	77	42.3	77
60–69	17.1	958	22.9	160	55.7	160	3.1	958	7.5	958	31.1	72	33.3	72
70–79	15.5	846	23.1	32	53.3	32	3.5	846	8.8	845	34.8	74	36.6	74
80+	16.2	331	10.4	53	41.1	53	1.2	331	5.2	331	21.6	17	22.4	17
<b>Residence</b>														
Urban	15.5	2 835	17.3	434	46.4	434	2.4	2 835	5.9	2 834	28.0	168	32.1	168
Rural	12.5	1 062	20.1	133	55.7	133	3.2	1 062	6.9	1 062	43.8	73	46.4	73
<b>Marital status</b>														
Never married	11.4	106	41.9	12	73.4	12	2.2	106	3.5	106	33.9	4	50.0	4
Currently married	15.0	2 120	17.0	318	46.3	318	2.6	2 120	5.7	2 120	33.6	121	39.0	121
Cohabiting	13.9	152	11.3	21	45.9	21	1.4	152	11.7	152	11.9	18	11.9	18
Separated or divorced	16.5	383	13.7	63	51.3	63	1.9	383	5.7	383	33.1	22	33.1	22
Widowed	13.8	1 133	20.6	152	50.7	152	3.2	1 133	6.8	1 133	36.2	77	38.4	77
<b>Wealth quintile</b>														
Lowest	13.9	629	18.8	83	62.3	83	2.7	629	6.3	629	32.3	39	39.9	39
Second	16.1	762	19.3	123	55.2	123	2.3	762	6.5	762	30.9	50	31.1	50
Middle	13.6	745	20.5	101	46.5	101	2.6	745	7.4	745	28.7	55	34.2	55
Fourth	16.4	807	11.9	132	35.5	132	2.9	807	5.4	807	44.0	44	44.0	44
Highest	13.3	952	20.2	127	48.5	127	2.6	952	5.6	952	30.0	53	35.0	53
<b>Total %</b>	<b>14.7</b>		<b>17.9</b>		<b>48.6</b>		<b>2.6</b>		<b>6.2</b>		<b>32.8</b>		<b>36.4</b>	

CTx: current therapy (in past 2 weeks); RTx: recent therapy (past 12 months); SR: self-reported prevalence of a diagnosed condition; Sx: symptom+ algorithm-based prevalence of condition.

and recent (over last 12 months) therapy. In the younger age group (50-59) the share of patients receiving current therapy was slightly higher than 60%, and around 70% had received recent therapy. Alarming, however, only around half of diabetic men had received both current (last 2 weeks) and recent (over last 12 months) therapy.

## Chronic lung disease and asthma

Chronic lung disease was present in about 15% of respondents while asthma was reported by only 2.6%.

The prevalence of asthma, however, was greater when estimated using the symptom-based algorithm. It would appear that these diseases, and especially asthma, are under-diagnosed: according to the European Respiratory Society, only 25% of cases are diagnosed in a timely fashion, and in Russia more than 90% of cases are under-diagnosed (Chuchalin, 2004).

The prevalence of chronic lung disease and asthma was broadly similar among age groups, although lower among people aged 50-59, in keeping with findings

**Table 7.4** Per cent distribution of self-reported and symptom-based depression and arthritis and current or recent therapy among adults aged 50-plus by background characteristics, SAGE Russia

Characteristic	Arthritis								Depression							
	SR	N	Sx	N	CTx	N	RTx	N	SR	N	Sx	N	CTx	N	RTx	N
<b>Sex</b>																
Male	25.3	1 521	27.8	1 521	58.8	423	75.5	423	1.8	1 520	3.4	1 520	7.1	52	15.1	52
Female	33.4	2 378	37.4	2 369	45.8	883	71.6	883	4.6	2 376	9.6	2 376	21.3	227	24.7	227
<b>Age group</b>																
50-59	21.4	1 763	26.1	1 761	43.4	458	65.0	458	3.5	1 761	4.7	1 761	26.3	83	35.5	83
60-69	30.4	959	34.4	954	54.1	328	76.8	328	4.6	958	10.0	958	17.9	96	15.2	96
70-79	43.5	847	45.4	845	52.6	383	75.0	383	2.7	846	9.1	846	9.8	77	16.3	77
80+	42.9	331	41.6	330	55.0	137	83.7	137	2.4	331	7.1	331	23.4	24	31.2	24
<b>Residence</b>																
Urban	30.4	2 837	31.9	2 828	51.3	900	76.2	900	4.1	2 834	7.3	2 834	23.3	206	27.6	206
Rural	29.7	1 062	38.2	1 062	47.2	406	65.4	406	1.8	1 062	6.9	1 062	5.7	73	9.7	73
<b>Marital status</b>																
Never married	26.2	106	22.5	105	53.1	24	80.0	24	2.3	106	6.1	106	10.2	6	10.2	6
Currently married	23.5	2 122	28.8	2 118	38.9	608	65.5	608	2.6	2 120	5.2	2 120	21.6	110	31.5	110
Cohabiting	32.7	152	37.6	152	59.1	57	66.6	57	8.3	152	4.5	152	13.4	7	37.9	7
Separated or divorced	43.7	382	47.8	379	65.0	181	81.1	181	6.7	382	8.3	382	46.4	32	19.6	32
Widowed	38.4	1 134	38.5	1 133	57.9	436	80.0	436	3.6	1 133	11.0	1 133	9.7	125	16.0	125
<b>Wealth quintile</b>																
Lowest	30.7	630	30.8	630	41.6	192	73.5	192	5.2	629	8.5	629	29.8	54	15.5	54
Second	35.9	762	39.8	758	58.8	301	78.7	301	2.3	762	6.2	762	11.5	47	19.1	47
Middle	33.8	746	34.8	745	51.6	259	77.0	259	2.5	745	10.6	745	10.3	79	16.5	79
Fourth	21.3	807	31.9	803	32.8	256	52.5	256	5.6	807	7.1	807	34.8	57	44.8	57
Highest	30.1	953	31.2	953	60.0	297	80.3	297	2.4	952	4.5	952	6.3	42	18.8	42
<b>Total %</b>	<b>30.2</b>		<b>33.6</b>		<b>50.0</b>		<b>72.8</b>		<b>3.5</b>		<b>7.2</b>		<b>18.7</b>		<b>22.9</b>	

CTx: current therapy (in past 2 weeks); RTx: recent therapy (past 12 months); SR: self-reported prevalence of a diagnosed condition; Sx: symptom+ algorithm-based prevalence of condition.

elsewhere that the incidence of asthma does not increase with age (Mackenbach *et al.*, 2005). Differences between men and women were not pronounced.

Among patients with chronic lung disease, only 18% were receiving current (last 2 weeks) treatment, versus 48.6% who had received recent (over last 12 months) treatment. Among asthma sufferers, the corresponding percentages were 32.8% on current and 36.4% on recent therapy. Treatment rates for asthma were low in view of increasing mortality rates related to this condition (Table 7.3).

## Arthritis

Arthritis was self-reported by 30.2% of the respondents and was reported more often by women (33.4%) than men (25.3%). The prevalence using the symptom-based diagnostic algorithm was slightly higher (33.6%) with a wider difference between sexes (37.4% in women and 27.8% in men). Both self-reporting and symptom-reporting/algorithm showed higher values for arthritis with increasing age. Urban and rural respondents had similar rates using self-report, whereas the symptom-reporting/algorithm analysis indicated a higher prevalence in rural areas (38%) than in urban areas (32%). No pattern was found in relation to wealth (Table 7.4).

## Depression

The overall self-reported depression prevalence was 3.5%. The prevalence using symptom-reporting and diagnostic algorithm was generally twice as high. It was definitely higher among women (4.6%) than men (1.8%) and reached 8% among cohabiting people and 6.7% among those separated or divorced (Table 7.4). Urban respondents seem to be more depressed (4.1%) than their rural counterparts (1.8%). The wealth quintile findings showed the lowest prevalence of depression in the second, middle, and highest quintiles and the highest prevalence for the other two quintiles. The percentage of people receiving current or recent treatment was very low, ranging from 18.7% to 22.9%, respectively. It appears that depression may be under-diagnosed by physicians and therefore those suffering from depression often do not receive sufficient treatment.

About half (49–55%) of the respondents suffering from the diseases selected for specific examination evaluated their health as moderate, compared with 60% of the total study population. More than 40% of the respondents who mentioned having any of the above diseases

evaluated their health as bad or very bad: the highest rates (59.0% and 53.7%) belonged to patients who had suffered strokes and with asthma, and the lowest to patients with hypertension (36.0%) and chronic lung disease. The highest prevalence of self-evaluated very bad health was among stroke sufferers. Meanwhile, a large share of respondents who were diagnosed with the selected diseases evaluated their health as good or moderate, suggesting good quality medical care and treatment.

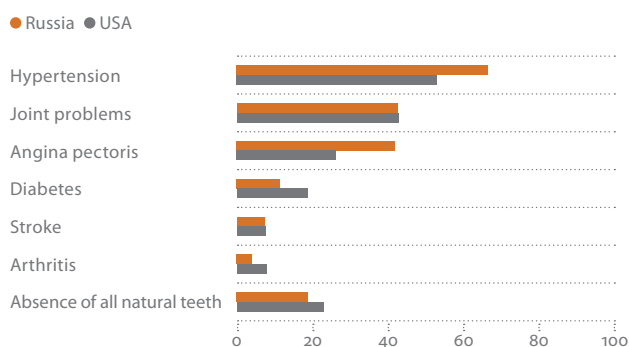
Important gender differences were observed for different pathologies. At age 50+ years, compared to men, women significantly ( $p < 0.05$ ) more frequently self-reported hypertension (60.2% versus 41.3%), angina pectoris (33.5% versus 30.6%), arthritis (33.4% versus 25.3%), depression (9.6% versus 3.4%), and diabetes, and were slightly more likely to self-report asthma (3.0% versus 2.0%). Men, by contrast, were more likely than women to report chronic lung diseases (16.6% versus 13.4%). In the age groups 50–59 and 60–69, prevalence rates of angina pectoris and stroke were slightly higher among men than women, while other conditions were more frequent among women. This picture is very similar to that seen in European countries in the SHARE project (Mackenbach *et al.*, 2005).

Differences in prevalence rates among population groups may be attributed to a cohort effect. This study did not have a question about disease onset, but it was possible to calculate the mean age for individuals currently suffering from several diseases. For the respondents with asthma, the mean in years was 63.4 for men and 64.8 for women; in case of chronic lung diseases, 63.7 and 64.5; and for depression, 63.5 and 63.9. The mean age for these diseases was significantly lower both for men and women ( $p < 0.05$ ) than in case of angina pectoris (69.0, 69.8) and stroke (68.4, 70.8), and significantly lower only for women in case of diabetes and hypertension (65.7, 67.1). The highest mean age was among respondents who had cataracts (71.4, 72.0). The mean age of respondents suffering from such diseases as depression, arthritis, chronic lung disease and cataracts was practically the same among men and women. The mean age for asthma and hypertension was 1.4–1.6 years higher for women than for men, and similarly for diabetes, angina pectoris and stroke (2.4–2.5 years higher).

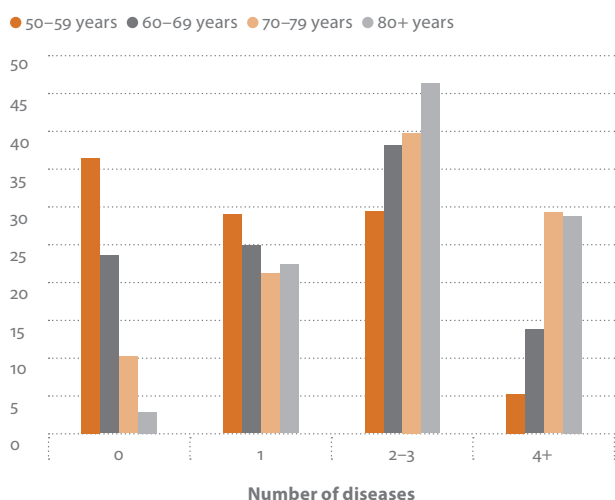
The prevalence of some diseases (notably stroke and joint problems) is similar in Russia and the USA among people aged 65–74 years (Figure 7.1). The prevalence of hypertension is significantly higher in Russia than in the USA, whereas such diseases as diabetes and asthma have



**Figure 7.1** Prevalence of different diseases (self-reported data) in Russia and the USA (%)<sup>1</sup>



**Figure 7.2** Percent distribution (%) of number of diseases by age groups, SAGE Russia



significantly higher prevalence in the USA. According to Chobanian (2007), approximately two-thirds of Russians aged 60 years and over have hypertension. The difference in hypertension prevalence in Russia and the USA is likely to reflect differences in treatment and management of this disease.

The risk of cardiovascular disease increases progressively and continuously with increases in systolic and diastolic blood pressure, and this increase in risk does not depend on other risk factors for cardiovascular disease (Chobanian, 2007). The higher prevalence of heart disease in Russia than in the USA may thus be a consequence of less effective hypertension management.

## 7.1.2 Comorbidity and multimorbidity

Comorbidity is the presence of two chronic conditions, while multimorbidity is the combination of 2 or more chronic conditions. Information about such combina-

tions is very important for ensuring medical care and health management.

The overall percentage of SAGE Russia respondents free of any chronic problems at age 50-plus was 24.7%. The figure declined with age, from 36.4% at ages 50-59 to 3% at age 80-plus (Figure 7.2). By comparison, in 2004, 40% of Americans aged 55-64 and 17-26% in older age groups were free of any chronic problems (Health and Retirement Study, 2004).

The distribution of respondents by selected diseases indicated that only a small share of patients (5-7.5%) had only one disease. Fifteen to 18% of respondents had hypertension or chronic lung diseases 12% had arthritis, 12% (compared to 13% in Caughey *et al.*, 2010); and 9% had different cardio-vascular diseases. The proportion of persons with only one reported disease decreased with age, from 77.8% among men and 72.2% among women at ages 18-49, to 22.2% in men and 16.1% in women at age 70-plus. Conversely, the percentage of respondents with multiple chronic diseases increased with age. Very few people in the 18-49 age group had four or more diseases, but the share of those with four or more diseases was 5% at ages 50-59 and almost 30% at age 70-plus.

Among women aged 50-59 with only one chronic condition, the prevalence of each individual surveyed condition was 10-20%, although there were no cases of stroke and only 6.9% of such respondents had asthma. Among men in this same age group - 28-30% had one chronic condition, with diseases such as stroke, angina or diabetes in 6-8% of the cases. In the older age groups, diabetes was increasingly accompanied by other chronic conditions, and no longer appeared as a sole chronic condition.

The majority of older respondents had multiple chronic conditions. From a health policy perspective, it is notable that a considerable percentage of respondents had three or more chronic conditions. Indeed, 20.6% of individuals suffering from asthma and 14-15% of those suffering from stroke or diabetes had more than six diseases. A comparison of data from previous publications in Russia (Potechina, 1970) showed that the Russian population has a high rate of multimorbidity, and a smaller proportion of patients who have only one disease: in 1970, 43.4% patients at ages 60 and older had only one disease, while 4.8% had 5 or more diseases. In contrast, in the United States in 2002, 34-36% persons at ages older than 54 had one chronic condition, and 2-6% had four or more chronic conditions (Health and

<sup>1</sup> IOM, 2008.

Retirement study, 2004); a later study found that almost 90% of respondents aged 65-plus reported having at least one chronic disease, with 64% reporting two or more (Caughey *et al.*, 2010).

Such patients require complex medical care and more specialists for their medical treatment, including more frequent physician's visits and hospitalizations, the latter also of longer duration. These combinations of diseases may have not only common risk factors but common social determinants of disease. It is becoming increasingly evident that medical care must be centered more on the whole patient than on individual diseases – an idea advanced in 1812 by the Russian clinician M.I. Mudrov (Mudrov, 1949; see also Caughey *et al.*, 2010) – and that clinical guidelines should be modified for patients with comorbidities (Braithwaite *et al.*, 2007).

## 7.2 Injuries from road traffic accidents and from all other accidents

Injuries constitute a third broad grouping of disease burden estimates and are a growing burden for most countries. The questions in SAGE Wave 1 follow WHO's suggested injury surveillance guidelines (WHO, 2001), including questions about road-traffic injuries and other types of injuries, along with details and impact of injury. Around 6% of respondents aged 50 or older had any injuries from road traffic accidents (2.5%) or from other accidents (3.4%), more frequently among urban respondents (Table 7.5). Road traffic injuries were more common among respondents under the age of 80, among the separated/divorced, and among those with higher wealth.

**Table 7.5 Injuries among adults aged 50-plus, percentage by background characteristics, SAGE Russia**

Characteristic	Road traffic accident injuries				All other injuries			
	%	Number	% with resulting disability	Number	%	Number	% with resulting disability	Number
<b>Sex</b>								
Male	2.1	1 520	1.2	31	3.0	1 520	1.9	45
Female	2.7	2 376	4.2	64	3.6	2 376	2.0	86
<b>Age group</b>								
50–59	2.3	1 760	4.0	40	3.7	1 760	1.3	65
60–69	3.4	959	0	33	3.8	959	0	37
70–79	2.3	846	6.1	20	2.1	846	5.8	18
80+	1.0	331	8.6	3	3.5	331	6.1	12
<b>Residence</b>								
Urban	2.9	2 834	3.8	82	3.9	2 834	1.4	111
Rural	1.3	1 062	0	14	1.9	1 062	4.9	20
<b>Marital status</b>								
Never married	0	106	0	0	1.9	106	17.6	2
Currently married	2.9	2 119	0	62	3.4	2 119	1.5	72
Cohabiting	0.8	152	3.1	1	5.1	152	0	8
Separated or divorced	4.4	382	0	17	5.0	382	2.1	19
Widowed	1.4	1 133	0	16	2.6	1 133	2.4	30
<b>Wealth quintile</b>								
Lowest	1.9	630	0	12	2.1	630	0	13
Second	2.4	762	7.0	19	2.3	762	5.8	18
Middle	2.5	745	1.5	19	5.3	745	3.9	39
Fourth	2.5	807	0	20	4.1	807	0	33
Highest	2.7	951	5.8	26	2.9	951	0	27
<b>Total %</b>	<b>2.5</b>		<b>3.2</b>		<b>3.4</b>		<b>2.0</b>	

The share of individuals who reported disability after car accidents was higher among older people. Disability from injuries on the highway was also more likely among city dwellers, while disability from other kinds of injuries was more likely among the rural population.

## 7.3 Oral health and cataracts

The proportion of individuals who reported having cataracts in the last 5 years was 12.9% (Table 7.6). Percentages were higher for women than men, and a clear age gradient was visible, with higher values were reported in the older age groups (up to 31.4% for the 80-plus age group). Urban residents reported a higher prevalence of cataracts than did their rural counterparts. Around

one third of those who reported cataracts had had operations during the last five years to remove them.

The proportion of individuals who reported having lost all their teeth (edentulism) was 18.1%, higher among women and in older age groups, from 7.1% at ages 50-59 to 52.1% at age 80-plus. The prevalence of edentulism at ages 60-69 was around 13% for both sexes, while around 40% of respondents aged 70+ had lost all their natural teeth and need special dental care. SAGE Wave o/WHS data demonstrated that edentulism exists at practically the same level in many different countries: for example, for Russian women aged 60-64, the prevalence of edentulism was 14.3%, compared with 14.4% for Europe (Germany, UK, France, Israel), and 18% in Asian countries (China, India). The overall picture is that older population have greater problems with oral

**Table 7.6** Prevalence of edentulism and cataracts among adults aged 50-plus, by background characteristics, SAGE Russia

Characteristic	Edentulism (%)	Number	Cataracts (%)	Number
<b>Sex</b>				
Male	15.7	1 519	9.7	1 479
Female	19.6	2 375	15.0	2 293
<b>Age group</b>				
50-59	7.1	1 759	4.5	1 741
60-69	13.3	958	13.9	914
70-79	33.0	846	22.9	806
80+	52.1	331	31.4	311
<b>Residence</b>				
Urban	19.0	2 832	14.5	2 749
Rural	15.6	1 062	8.7	1 023
<b>Marital status</b>				
Never married	13.5	106	13.5	97
Currently married	13.6	2 118	10.1	2 068
Cohabiting	24.4	152	12.7	150
Separated or divorced	9.7	382	9.5	369
Widowed	28.9	1 133	19.5	1 086
<b>Wealth quintile</b>				
Lowest	26.7	629	15.6	587
Second	24.8	762	14.8	740
Middle	21.5	745	16.0	719
Fourth	11.2	805	13.5	792
Highest	10.1	951	6.9	933
<b>Total %</b>	<b>18.1</b>		<b>12.9</b>	

health and their teeth, which might be related to the availability and quality of dental help.

## 7.4 Health system coverage: cervical and breast cancer screening

Cancers of the cervix and breast are common cancers in women, with effective preventive health measures available to alter the course of disease. Russia has had a national cervical screening policy in place since the 1970s (Rogovskaya *et al.*, 2013). Efforts are ongoing to implement screening programs for breast cancer detection, (Zakharova, 2013; Sdvizhkov *et al.*, 2007). For early detection of different kinds of cancer, especially for women, there are widespread preventive measures in Russia, such as screening for breast and cervical cancer (Table 7.7).

Cancer screening programmes can also serve as a proxy for health service coverage. Health service coverage

reflects the extent to which those who need health care actually receive important health interventions. This is a key indicator for assessing and monitoring health systems.

Just 8% of women had not had a pelvic examination. This percentage was higher in older age groups: 10–12% of women aged 70–79 and 80-plus had not had a pelvic examination, compared with 5% among the 18–49 cohort. More than 90% of women aged 18–49 had had a pelvic examination with a pap smear, as had 98% of women aged 50–59.

The majority of women in the survey had been screened for cervical cancer in the three years prior to interview. Relatively low rates of screening were found at the oldest ages (80-plus), in rural compared to urban areas, and among the lowest wealth quintile. Such screening was more common among married and separated/divorced women than among the never married or widowed. Russian women undertake this examination

**Table 7.7 Mammography and cervical cancer screening among women aged 50-plus, percentage distribution by background characteristics, SAGE Russia**

Characteristic	Breast cancer screening	Number of women	Cervical cancer screening	Number of women
<b>Age group</b>				
50–59	55.6	963	97.6	955
60–69	38.0	573	95.8	564
70–79	29.8	592	89.2	562
80+	15.6	229	79.1	223
<b>Residence</b>				
Urban	44.6	1 718	94.2	1 671
Rural	31.3	640	90.7	634
<b>Marital status</b>				
Never married	39.1	84	70.6	82
Currently married	49.3	1 017	97.9	1 001
Cohabiting	51.0	68	88.0	68
Separated or divorced	52.9	221	96.8	222
Widowed	29.1	965	89.9	928
<b>Wealth quintile</b>				
Lowest	30.0	424	83.2	415
Second	45.9	492	93.8	488
Middle	37.7	483	95.1	475
Fourth	48.1	482	98.0	472
Highest	41.7	476	95.2	454
<b>Total %</b>	<b>41.0</b>		<b>93.3</b>	

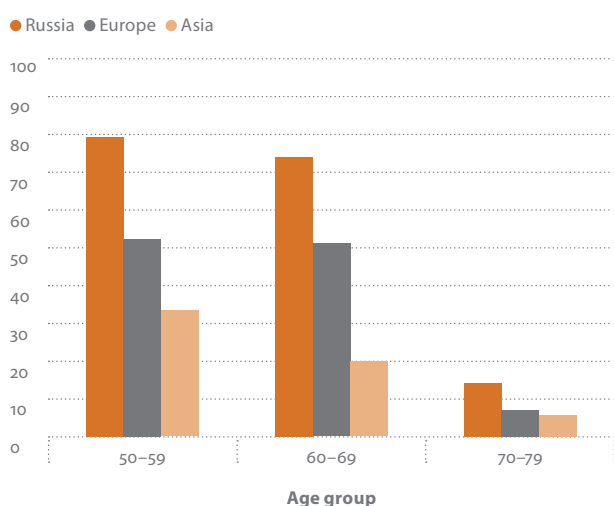
as often as those in Europe. However, in spite of the wide prevalence of pelvic examinations for cervical cancer, mortality rates at ages older than 65 from malignant neoplasms of the cervix are higher in Russia than in European countries. This is a problem for public health and medical care specialists alike.

Breast cancer screening by mammography, by contrast, was far less prevalent: although based on age patterns, seems to be improving. According to 2003 SAGE Wave o/WHS data in Russia, the majority of women (69.9%) had never been examined by mammography, and only 8.3% had had an examination in the last year (13-15 % among women younger than 60). Since that study there has been a significant expansion in the use of mammography for screening: about 40% of SAGE's female respondents aged 50-plus, and more than 65%

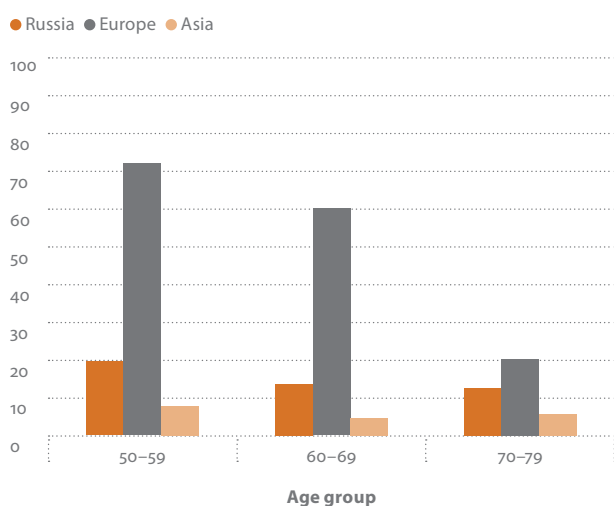
of women aged 50-59, had had a mammogram. Figures 7.3 and 7.4 compare the use of breast and cervical cancer screening in Russia with aggregate 2003 WHS data for Europe and Asia.

Incidence rates of breast cancer in Russia are significantly lower than in European countries, but mortality rates are similar (Maximova and Belov, 2012).

**Figure 7.3** Share of women examined to diagnose malignant neoplasm of uterine cervix (%)



**Figure 7.4** Share of women examined to diagnose breast cancer (mammography) (%)





## 8. Health Examination and Biomarkers

The addition of direct health examinations and biomarkers to measure the health status of the older population was an important methodological contribution to SAGE Wave 1. Biomarkers serve as intermediaries for chronic conditions and are critical for assessing improving the estimates of the prevalence of morbidity and poor health conditions. For example, blood pressure and pulse rate can provide information on risk for heart diseases; body mass index (BMI) and waist-hip circumference ratios are indicators of obesity, chronic metabolic disorders and fatty deposits; and, glycated hemoglobin can be used as a disease marker for diabetes.

This chapter presents the results of anthropometric measures of height and weight (used to calculate Body Mass Index (BMI)), hip and waist circumference, systolic and diastolic blood pressure and hypertension, pulse rate, lung function, near and distant vision, grip strength and gait speed.

### 8.1 Anthropometry

Anthropometry reflects the correlation among morpho-functional parameters, different biologically and

genetically dependent constitution types, elements of personal life-style and early life conditions.

#### 8.1.1 Height, weight and Body Mass Index

The data for men and women aged 50-plus reveal that both height and weight tended to be lower at older ages (Figure 8.1). The difference between height at ages 50-59 and at 80-plus was more than 5 centimetres, and the equivalent difference in weight more than 9 kilograms. A comparison of self-reported mean height and weight of Russian SAGE Wave 1/WHs (2003) respondents and WHs respondents from other countries shows that Russian women were practically the same height as their counterparts in European countries, whereas men were shorter than Europeans. WHs respondents from Asia (China, India) were of the smallest height (Maximova and Lushkina, 2010).

People who are underweight or obese have higher health risks and mortality rates than those who are of normal weight or even overweight. Body Mass Index (BMI) is used as an approximation of body composition, in particular body fat. BMI is calculated as weight in kilograms divided by height squared in metres ( $\text{kg}/\text{m}^2$ ).

**Figure 8.1** Mean height (cm) and weight (kg) in different age groups, SAGE Russia





A cut-off point of  $<18.5 \text{ kg/m}^2$  is used to define underweight; a BMI of  $\geq 25\text{--}29.9 \text{ kg/m}^2$  indicates overweight; and a BMI of  $\geq 30 \text{ kg/m}^2$  indicates obesity (WHO 1995).

Only a quarter of respondents had normal BMI status (Table 8.1), with almost 41% of the sample being overweight and 34% obese.

A higher percentage of men were more overweight than women (45.9% versus 37.6%), the reverse was true for obesity (women 40%, men 25%). The number of obese respondents was smaller at higher age groups and was the highest in the 50–59 age group (38.3%). Overweight

prevalence was higher in urban areas while the prevalence of obesity was higher in rural areas. Married respondents had the highest likelihood of being overweight, while separated/divorced individuals were most likely to be either obese (42.7%) or underweight (2.2%).

Overweight and obesity are traditional risk factors for cardiovascular diseases. The SAGE Russia data supports this proposition: hypertension, angina pectoris, and also diabetes and arthritis were more prevalent among those individuals who were overweight and especially obese. However, several diseases included in the study showed similar prevalence levels among people with

**Table 8.1** Body Mass Index (BMI) among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia

Characteristics	Body Mass Index (kg/m²)				Number
	Underweight (<18.5)	Normal (18.5–24.9)	Overweight (25.0–29.9)	Obese (≥30)	
Sex					
Male	1.1	27.8	45.9	25.2	1 313
Female	1.1	21.0	37.6	40.3	1 999
Age group					
50–59	0.7	21.5	39.5	38.3	1 548
60–69	0.9	22.0	43.2	33.9	818
70–79	2.1	26.9	41.9	29.1	714
80+	1.6	34.8	38.5	25.1	233
Residence					
Urban	1.2	23.9	44.2	30.7	2 409
Rural	0.9	23.3	31.9	44.0	904
Education					
No formal education	0	5.1	25.5	69.4	24
Less than primary	0	38.8	38.3	22.9	36
Primary	2.0	37.7	39.7	20.5	177
Incomplete secondary	2.2	22.6	46.1	29.1	646
Secondary	1.0	20.9	39.3	38.9	1 837
Higher	0	29.6	41.1	29.3	591
Marital status					
Never married	0	42.8	27.7	29.4	83
Currently married	0.9	23.5	42.7	32.9	1 846
Cohabiting	0.6	35.1	38.8	25.5	123
Separated or divorced	2.2	18.0	37.0	42.7	336
Widowed	1.4	22.9	40.2	35.6	920
Wealth quintile					
Lowest	2.0	25.3	40.4	32.3	514
Second	0.5	26.7	44.6	28.2	642
Middle	0.8	28.9	45.4	24.8	632
Fourth	2.1	15.5	38.6	43.7	715
Highest	0.3	23.5	36.6	39.6	810
Total (%)	1.1	23.7	40.9	34.3	
Total individuals (n)	37	786	1 354	1 136	

normal weight and overweight: chronic lung diseases, cataracts (with a slightly higher tendency visible among the obese) asthma, and edentulism. According to some studies, overweight is not always associated with health problems; older people with relatively higher BMIs have better functional indices of physical and mental activity (Poliakov and Tomazevska, 2011).

A comparison of overweight prevalence in Russia and European countries reveals generally similar rates, which are slightly lower among Russian men aged 50-79 and slightly higher for Russian women. There is, however, a significantly higher prevalence of obesity in Russia among both men and women (Figures 8.2 and 8.3). Yanovski (2011) found that only one-third of patients may respond to lifestyle counseling, with an associated weight loss of around 5%. Many obese persons are not able to lose enough weight to bring health benefits through changes in lifestyle alone, and need additional treatment.

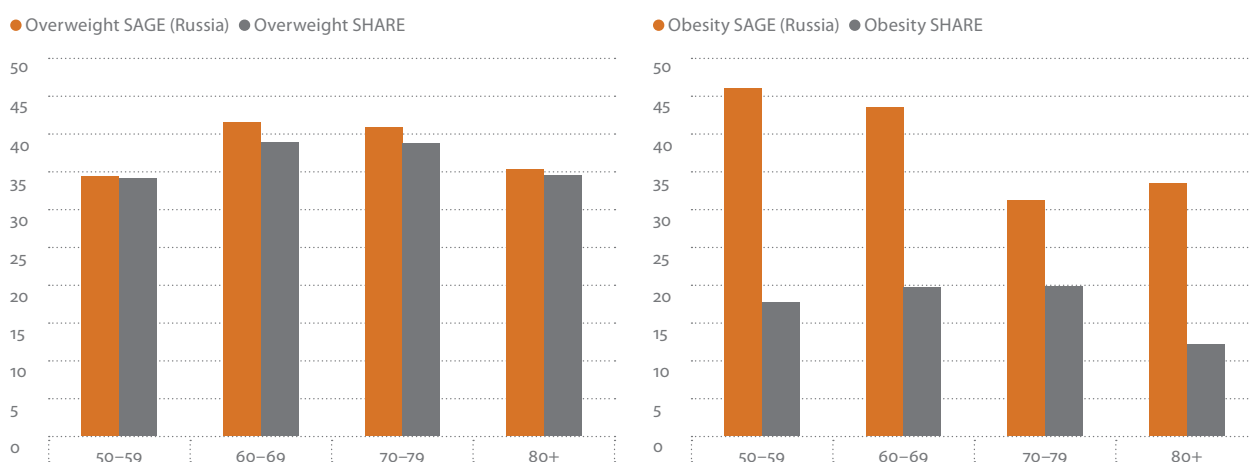
## 8.1.2 Waist and hip circumference and waist-hip ratio

Waist and hip circumference and the waist-hip ratio are used for evaluation of the risk of metabolic complications. The risk of metabolic complication was classified as follows:

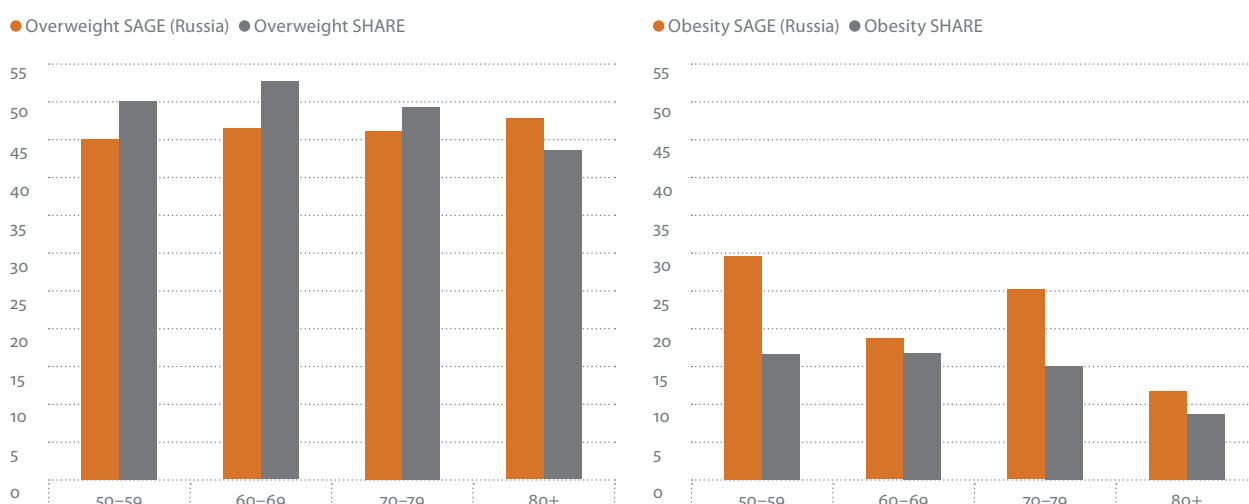
- Risk increased if waist circumference was greater than 94cm for men and 80cm for women.
- Risk increased substantially if waist circumference was greater than 102cm for men and 88cm for women.

Mean waist circumference for men in all age groups was significantly lower than the substantial risk threshold. For women, mean waist circumference was higher than 88, suggesting that many women are susceptible to the risk of metabolic complications (Figure 8.4). With increasing age, mean waist circumference in men was generally lower, but tended to be higher among women.

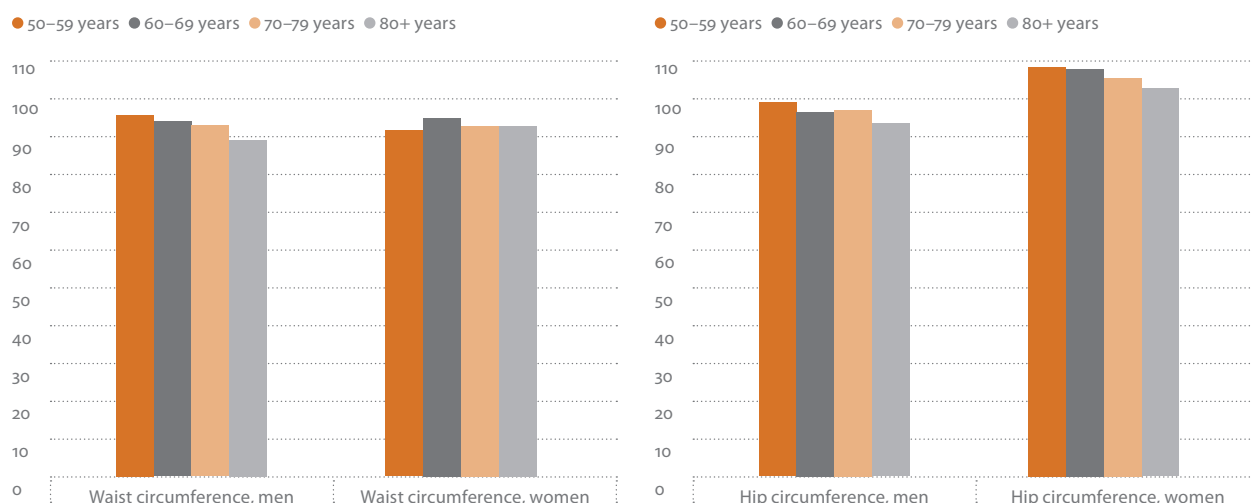
**Figure 8.2** Overweight and obesity prevalence among women in Russia (SAGE) and European countries (SHARE) by age, %



**Figure 8.3** Overweight and obesity prevalence among men in Russia (SAGE) and European countries (SHARE) by age, %



**Figure 8.4** Mean waist and hip circumference in different age groups (cm), SAGE Russia



**Table 8.2** Waist circumferences and risk, percent distribution by background characteristics, SAGE Russia

Characteristics	Waist circumference categories (%)			Number
	No risk	Increased risk	Substantial risk	
Age group				
50–59	32.9	25.3	41.8	1 357
60–69	28.0	22.4	49.6	728
70–79	27.6	20.2	52.2	577
80+	36.9	9.7	53.5	203
Sex				
Male	47.1	28.4	24.6	1 080
Female	21.1	18.8	60.0	1 785
Residence				
Urban	29.3	19.8	50.9	2 020
Rural	34.8	28.6	36.5	846
Education				
No formal education	24.5	10.5	64.9	23
Less than primary	14.4	20.6	65.1	35
Primary	36.6	21.0	42.4	144
Incomplete secondary	25.5	23.7	50.9	503
Secondary	31.9	22.8	45.3	1 653
Higher	32.9	21.2	45.9	506
Marital status				
Never married	30.3	18.5	51.2	70
Currently married	37.1	19.9	43.0	1 603
Cohabiting	33.9	18.0	48.1	72
Separated or divorced	23.5	45.9	30.6	310
Widowed	21.2	19.2	59.6	807
Wealth quintile				
Lowest	35.3	14.3	50.4	414
Second	31.8	21.7	46.5	471
Middle	30.7	22.2	47.1	554
Fourth	30.6	22.0	47.4	658
Highest	28.4	27.8	43.9	769
Total %	30.9	22.4	46.7	
Total individuals	885	642	1 337	

Mean hip circumference was smaller with advancing age among both men and women.

Table 8.2 shows the distribution of risk categories according to waist circumference by selected characteristics. The overall proportion of individuals with no additional risk was about 31%, of those with increased risk 22.4%, and of those with substantial risk 46.8%.

Women had a prevalence of substantial risk almost three times greater than that of men (60% versus 24.6%), and more than half of individuals living in urban areas had substantial risk compared to 36.5% of their rural counter-

parts. There was a wide difference in substantial risk between people with no education and those with higher education (64.9% versus 45.3%). Currently married individuals were most likely to be in the no risk category (37.1%), while widowed persons were least likely (21.2%).

Table 8.3 shows the level of risk according to waist-hip ratio (WHR). A WHR of greater than 0.90 for men and 0.85 for women was defined as high risk. According to this measure, 64% of the SAGE sample was at high risk, with a pattern of generally higher at older ages and with men at higher risk than women.

**Table 8.3** Waist-hip ratio and risk, percent distribution by background characteristics, SAGE Russia

Characteristics	Waist-hip ratio categories (%)		Number
	Low risk	High risk*	
Age group			
50-59	39.6	60.4	1 352
60-69	32.2	67.8	726
70-79	34.1	65.9	574
80+	30.2	69.8	202
Sex			
Male	25.1	74.9	1 077
Female	42.5	57.5	1 777
Residence			
Urban	34.2	65.8	2 011
Rural	40.2	59.8	843
Education			
No formal education	40.2	59.8	23
Less than primary	32.5	67.5	32
Primary	23.9	76.1	144
Incomplete secondary	29.3	70.7	501
Secondary	36.1	63.9	1 648
Higher	45.5	54.5	505
Marital status			
Never married	42.3	57.7	70
Currently married	37.1	62.9	1 599
Cohabiting	33.2	66.8	71
Separated or divorced	36.8	63.2	310
Widowed	33.1	66.9	801
Wealth quintile			
Lowest	38.0	62.0	414
Second	38.6	61.4	463
Middle	37.8	62.2	553
Fourth	37.5	62.5	656
Highest	30.6	69.4	768
Total %	35.9	64.1	
Total individuals	1 026	1 828	

\* WHR of >0.90 for men and >0.85 for women was defined as high risk.

## 8.2 Physiological measurements

### 8.2.1 Blood pressure and pulse

Mean systolic blood pressure at age 50-plus was 143mmHg, diastolic blood pressure was 88.6mmHg, and mean pulse rate was 76.1 beats per minute. Both mean systolic and diastolic blood pressure was higher in older age groups (Table 8.4), and was significantly lower among persons with the highest level of education, among never married persons, and among those in the highest wealth quintile.

Mean systolic and diastolic blood pressure (Figure 8.5) increased with age until the oldest age group (80-plus), where it was significantly lower than at ages 70-79. Mean systolic pressure among both men and women aged 60-plus was somewhat higher than the normal level of 140mmHg.

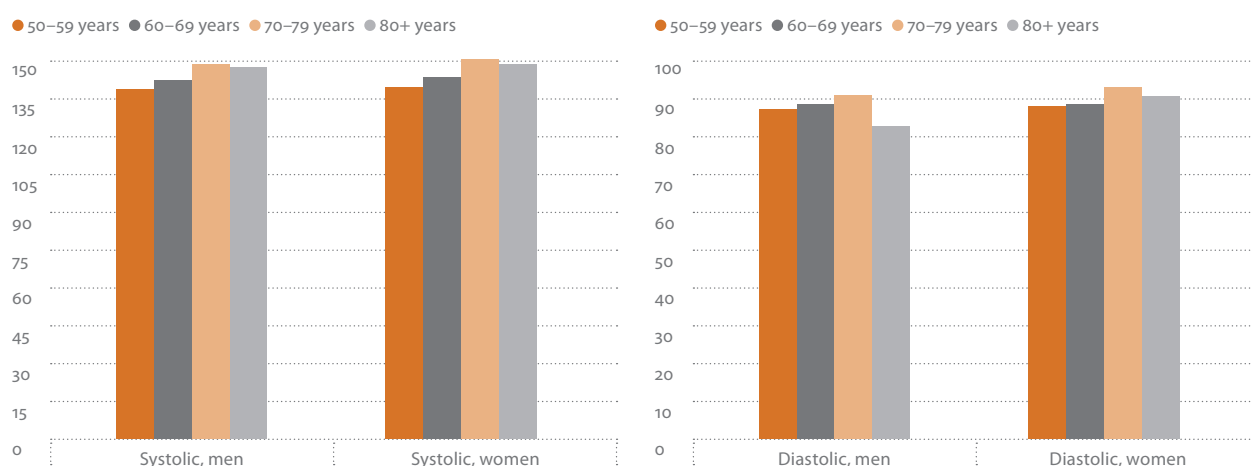
The share of individuals with systolic blood pressure higher than 140mmHg was 53.3%, and with diastolic blood pressure greater than 90mmHg was 46.6%. However, the overall prevalence of hypertension was 62.5%. This may be due to episodic rises of blood

**Table 8.4** Mean systolic and diastolic blood pressures and pulse rate by background characteristics, SAGE Russia

Characteristics	Mean systolic pressure (mmHg)	Mean diastolic pressure (mmHg)	Mean pulse rate (BPM)*	Number
<b>Sex</b>				
Male	141.3	87.5	76.0	1 463
Female	144.1	89.3	76.1	2 300
<b>Age group</b>				
50-59	138.9	87.2	75.5	1 701
60-69	142.8	88.1	75.1	927
70-79	150.0	91.9	77.8	819
80+	147.6	89.1	77.7	317
<b>Residence</b>				
Urban	142.1	88.8	75.8	2 737
Rural	145.5	88.0	76.7	1 026
<b>Education</b>				
No formal education	150.0	93.1	77.1	26
Less than primary	147.8	87.8	75.5	48
Primary	148.7	90.8	77.6	209
Incomplete secondary	147.3	90.4	78.2	759
Secondary	143.0	88.9	75.8	2 032
Higher	135.7	85.0	74	686
<b>Marital status</b>				
Never married	134.9	86.0	75.1	101
Currently married	141.6	88.2	75.4	2 042
Cohabiting	140.4	90.3	78.2	146
Separated or divorced	142.7	85.3	74.8	368
Widowed	146.8	90.4	77.5	1 093
<b>Wealth quintile</b>				
Lowest	144.8	90.3	77.3	610
Second	143.8	89.8	76	737
Middle	144.5	88.8	76.4	719
Fourth	144.1	89	76.6	773
Highest	139.1	85.9	74.6	924
<b>Total</b>	<b>143.0</b>	<b>88.6</b>	<b>76.1</b>	

\*BPM, beats per minute

**Figure 8.5** Age patterns for mean systolic and diastolic blood pressure (mmHg) by sex, SAGE Russia



**Table 8.5** Systolic, diastolic, and systolic or diastolic hypertension among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia

Characteristics	Hypertension (%)			Number
	Systolic (>140 mmHg)	Diastolic (>90 mmHg)	Systolic or diastolic (>140/90 mmHg)	
Age group				
50–59	43.4	40.1	53.9	1 629
60–69	53.9	45.6	62.4	880
70–79	67.2	60.3	76.8	786
80+	68.4	48.6	72.2	298
Sex				
Male	48.8	42.6	59.6	1 401
Female	56.1	49.1	64.4	2 192
Residence				
Urban	50.9	48.5	61.6	2 615
Rural	59.6	41.4	64.9	979
Education				
No formal education	72.1	64.2	79.6	26
Less than primary	67.3	45.7	82.8	40
Primary	67.3	53.0	75.6	196
Incomplete secondary	62.5	52.1	68.4	742
Secondary	53.3	48.1	64.4	1 945
Higher	36.5	32.9	43.8	641
Marital status				
Never married	31.9	34.2	46.7	95
Currently married	48.8	47.4	60.1	1,958
Cohabiting	57.7	52.3	62.2	130
Separated or divorced	59.0	26.4	63.6	354
Widowed	61.2	52.2	68.2	1 052
Wealth quintile				
Lowest	59.0	50.4	67.1	583
Second	56.0	51.5	67.0	705
Middle	57.5	45.6	64.5	694
Fourth	54.3	53.9	65.4	754
Highest	42.8	34.2	51.6	857
Total %	53.3	46.6	62.5	



pressure during observation, or because some patients were on treatment. Individuals in the lowest wealth quintile showed the highest prevalence of hypertension (67%), while the percentage in the highest quintile was 51.6% (Table 8.5). The same tendency was observed in connection with educational level, where better results were shown by respondents with higher education levels (perhaps due to differences in age structure among educational categories).

As noted above, the percentage aged 50-plus with elevated systolic or diastolic blood pressure was 62.5%. This is similar to levels found in American and Omani studies among persons aged 60-plus (Yoon, Osthega and Louis, 2010; Al-Riyami, 2010).

## 8.2.2 Lung function

Chronic obstructive pulmonary disease (COPD) had an overall prevalence among the study's respondents of 14%. Some 4.5% of respondents had mild COPD; 5.3% had moderate COPD; 2.7% had severe COPD; and 1.7% had very severe COPD. Mild COPD was more prevalent among women while higher levels of severity were more common among men. The well-established relationship between COPD and smoking was clearly demonstrated in this study: the highest prevalence of severe/very severe COPD was found among current smokers (6.3%, compared to 4% among those who had never smoked). Obese individuals were also more likely to have severe/very severe COPD than the non-obese (Table 8.6).

**Table 8.6** Chronic obstructive pulmonary disease, percent distribution by background characteristics, SAGE Russia

Characteristic	COPD severity (%)					Number
	None	Mild	Moderate	Severe	Very severe	
Sex						
Male	85.2	2.7	6.3	3.8	2.0	777
Female	86.3	5.5	4.7	2.1	1.5	1 174
Age group						
50–59	88.1	2.1	6.5	2.1	1.2	869
60–69	86.7	4.5	3.2	4.1	1.5	493
70–79	81.5	7.6	6.4	2.7	1.9	431
80+	83.1	7.7	2.7	1.9	4.6	158
Residence						
Urban	85.9	4.5	5.6	2.6	1.3	1 543
Rural	85.7	3.8	4.1	3.4	3.0	407
Wealth quintile						
Lowest	81.8	7.6	4.9	4.4	1.4	283
Second	80.1	5.7	4.2	6.5	3.4	365
Middle	87.4	4.1	6.3	1.2	1.0	405
Fourth	86.2	3.0	6.7	1.8	2.3	379
Highest	90.7	2.9	4.5	1.1	0.8	518
Tobacco use						
Current use	81.2	2.3	10.2	4.3	2.0	402
Use, not daily	100	0	0	0	0	12
No current use	85.2	5.0	5.4	2.8	1.6	201
Never used	87.2	5.0	3.9	2.3	1.7	1 327
Obesity						
<30kg/m² (no)	84.0	5.4	6.2	3.5	0.9	1 321
≥30kg/m² (yes)	92.6	2.3	3.3	1.4	0.5	548
Self-reported COPD						
No	86.6	3.9	5.2	2.8	1.5	1 651
Yes	81.9	6.4	5.9	2.6	3.1	291
Total %	85.9	4.4	5.3	2.7	1.7	
Total individuals (n)	1 675	85	104	54	33	

The overall prevalence of asthma was 2.6%, with a mild severity percentage of 73.6%. Moderate/severe asthma was more common among men than among women. Severe asthma tended to increase with age; rates were higher among the rural population, lower in the highest wealth quintile, and quite low among obese individuals (Table 8.7).

## 8.3 Measured performance tests

### 8.3.1 Vision (near and distance)

Around one-third of respondents indicated problems with distant vision, and 40% with near vision. Vision problems increased with age; rates were slightly higher in urban areas, and were notably low in the highest compared to other wealth quintiles (Table 8.8).

**Table 8.7** Asthma severity, percent distribution by background characteristics, SAGE Russia

Characteristic	Asthma severity (%)				Number
	None	Mild	Moderate	Severe	
Sex					
Male	13.4	65.3	12.7	8.6	707
Female	5.9	79.2	9.2	5.8	1 068
Age group					
50–59	9.3	69.5	14.4	6.8	789
60–69	7.6	77.7	8.4	6.2	459
70–79	9.9	75.2	7.4	7.5	382
80+	8.2	79.1	4.9	7.8	144
Residence					
Urban	8.7	72.8	12.0	6.5	1 403
Rural	9.7	76.9	5.2	8.3	372
Wealth quintile					
Lowest	8.6	70.3	12.3	8.7	253
Second	9.3	65.9	12.7	12.1	333
Middle	6.9	79.6	8.0	5.5	371
Fourth	10.1	72.1	11.0	6.7	338
Highest	9.4	77.2	9.9	3.5	479
Tobacco use					
Current use	16.2	55.5	16.6	11.7	358
Use, not daily	10.8	61.6	27.6	0	12
No current use	10.4	71.5	12.1	5.9	176
Never used	6.2	79.6	8.5	5.7	1 221
Obesity					
<30kg/m² (no)	6.5	74.3	11.6	7.5	1 187
≥30kg/m² (yes)	6.5	80.8	9.7	2.9	516
Self-reported COPD					
No	8.6	74.7	10.2	6.5	1 672
Yes	12.9	55.6	17.6	13.8	95
Total %	8.9	73.6	10.6	6.9	
Total individuals	158	1 307	188	122	

In the 30 days preceding interview, 50% of respondents indicated that they had no difficulty seeing and recognizing an object at arm's length, while 5% reported severe or extreme problems with vision. The percentage of persons without any visual difficulties decreased from 89.7% at age 18-49 to 30.0% at age 80-plus; even in this oldest age category, a significant percentage of men (28.6%) and women (30.7%) had no visual problems.

Similar figures were seen with regard to seeing and recognizing an object or a known person from a distance of about 20 meters: more than half of respondents (54.6%) had no difficulty and 5.5% had severe or extreme problems. At age 80-plus, more than one-fifth of both men and women reported no problem with distance vision, while 22% of women and 13% of men indicated severe problems. Two-thirds of persons aged

**Table 8.8** Low visual acuity among adults aged 50-plus, percent distribution by background characteristics, SAGE Russia

Characteristic	Low visual acuity			
	Distant vision cut-off $\leq 20/70$ (%)	Number	Near vision cut-off $\leq 20/70$ (%)	Number
<b>Sex</b>				
Male	23.7	1 071	41.5	1 114
Female	27.5	1 601	39.3	1 646
<b>Age group</b>				
50-59	19.4	1 189	34.2	1 240
60-69	23.7	654	35.5	679
70-79	32.9	599	46.8	601
80+	48.4	230	67.4	241
<b>Residence</b>				
Urban	26.3	2 064	41.8	2 136
Rural	25.0	608	34.6	624
<b>Education</b>				
No formal education	34.8	18	41.9	22
Less than primary	28.0	33	52.3	33
Primary	49.4	150	53.6	154
Incomplete secondary	39.4	530	55.9	538
Secondary	21.6	1 469	37.2	1 519
Higher	16.7	472	27.1	492
<b>Marital status</b>				
Never married	13.1	66	20.0	69
Currently married	24.4	1 524	38.3	1 580
Cohabiting	48.4	116	60.0	118
Separated or divorced	25.6	218	35.9	230
Widowed	27.1	746	44.2	761
<b>Wealth quintile</b>				
Lowest	27.4	448	38.3	462
Second	32.0	548	45.6	563
Middle	39.6	510	43.5	527
Fourth	21.4	548	45.8	570
Highest	12.4	617	29.0	638
<b>Total</b>	<b>26.0</b>		<b>40.2</b>	

50-plus used spectacles or contact lenses for distance vision, and about 30% for near vision. These numbers were slightly higher than those found in the 2003 SAGE Wave 6/WHS data. Based on comparative WHS data, Russian people experience vision problems more often than people in European countries, but are less likely to use spectacles or contact lenses.

### 8.3.2 Grip strength

Among adults aged 50-plus, mean grip strength was 30.8 kg, with levels significantly higher among men than among women. Grip strength decreased with age, and increased with educational level; it was slightly higher among the rural population (Table 8.9).

**Table 8.9** Mean maximum grip strength (kg) among adults aged 50-plus, by background characteristics, SAGE Russia

Characteristics	Mean maximum grip strength (kg)	Number
<b>Sex</b>		
Male	40.5	1 463
Female	24.3	2 300
<b>Age group</b>		
50–59	35.8	1 701
60–69	30.6	927
70–79	23.1	819
80+	20.1	317
<b>Residence</b>		
Urban	30.3	2 737
Rural	32.1	1 026
<b>Education</b>		
No formal education	19.8	26
Less than primary	18.3	48
Primary	22.4	209
Incomplete secondary	27.1	759
Secondary	31.9	2 032
Higher	34.9	686
<b>Marital status</b>		
Never married	28.9	101
Currently married	34.2	2 042
Cohabiting	32.7	146
Separated or divorced	33.1	368
Widowed	23.1	1 093
<b>Wealth quintile</b>		
Lowest	25.1	610
Second	28.0	737
Middle	27.8	719
Fourth	32.9	773
Highest	36.2	924
<b>Total</b>	<b>30.8</b>	

### 8.3.3 Gait speed

The overall mean time to walk a distance of 4 meters at a normal pace was 7.0 seconds (6.3s for men and 7.4s for women). At a rapid pace, the figures for men and women were 4.0 and 4.9 seconds, respectively. The mean time for both tests rose with advancing age, and was slightly higher among urban compared to rural residents (Table 8.10).

**Table 8.10** Mean time (in seconds) to walk 4 meters among adults aged 50-plus, by background characteristics, SAGE Russia

Characteristics	Mean time in seconds		Number
	Normal walking pace	Rapid walking pace	
Sex			
Male	6.3	4.0	1 463
Female	7.4	4.9	2 300
Age group			
50–59	6.0	3.9	1 701
60–69	7.2	4.8	927
70–79	8.4	5.5	819
80+	9.6	6.5	317
Residence			
Urban	7.3	4.7	2 737
Rural	6.3	4.3	1 026
Education			
No formal education	7.4	4.9	26
Less than primary	7.2	4.7	48
Primary	8.0	5.7	209
Incomplete secondary	7.6	5.0	759
Secondary	6.9	4.4	2 032
Higher	6.5	4.3	686
Marital status			
Never married	6.2	3.9	101
Currently married	6.5	4.3	2 042
Cohabiting	6.1	3.8	146
Separated or divorced	6.7	4.1	368
Widowed	8.4	5.6	1 093
Wealth quintile			
Lowest	7.1	4.7	610
Second	7.2	4.7	737
Middle	7.7	5.2	719
Fourth	7.0	4.5	773
Highest	6.5	4.1	924
Total	7.0	4.6	



## 9. Health Care Utilization and Health System Responsiveness

This section describes respondents' health-care use and associated costs as well as the responsiveness of the healthcare system. At present, medical care service use in Russia is measured through medical registration. SAGE provides new information disaggregated by various population characteristics, which is useful for policy-makers. In light of current financial issues, is health care expenditure that depletes household finances to critical levels and could tip the household into severe financial insecurity or poverty (defined as "catastrophic" expenditure).

This section will also describe and differentiate health care utilization results in terms of inpatient and outpatient services by selected demographic characteristics. Care from public and/or private facilities and any traditional or complementary medicine will also be discussed.

Finally, health care responsiveness can be used as a tool for evaluating the performance of general health care systems on a national level. It is related to both patient satisfaction and the interpersonal dimensions of quality of care. Responsiveness is impacted by interactions with the health system. A common set of eight domains were used to measure responsiveness and are presented here.

### 9.1 Health service use

Health care for older people should be safe, effective, patient-centered, timely and equitable. The health care workforce should have the capacity to meet the needs of older patients now and in the future.

According to SAGE data, most people aged 50-plus had contact with the healthcare system during the year prior to the survey; only 24% of the respondents had no such contact. The share of respondents with no contact

decreased with age, from 28.3% in the 50-59 age group to 18.8% at ages 70 and over.

A large majority of respondents reported the need for and receipt of medical care during their lives. 76.9% needed health care during the last 3 years, and another 18.3% needed care more than 3 years prior to interview. Among those who needed health care during the year before interview, 41.3% needed care less than one month prior, 50.2% needed care during the previous half a year, and about 8% during the previous 7-12 months. Practically all (97.6%) of those who needed medical care received it.

About 5% of persons aged 50-plus indicated that they had never needed medical care. This was more common among men, cohabiting people, those in the lowest wealth quintile, and the self-employed (Table 9.1).

Table 9.1 also shows the distribution of respondents aged 50-plus according to the type of health care received in the past three years. One-third were hospitalized (the highest share among rural residents and public sector workers), nearly half (46.4%) visited outpatient clinics, and about one-quarter did not have any contact with a medical service.

The self-assessment of health among those who reported never needing medical care (Figure 9.1) was much better compared to others, regardless of age. About 8% of people who said that they had never needed medical care nevertheless reported their health as bad.

The U.S. Health and Retirement Study (2004) revealed that more than 40% of Americans aged 85-plus and 34% of those aged 75-84 made hospital visits during period 2000-2002. In the same age groups among SAGE Russia respondents, 28% and 33% of men, respectively, and 24% and 20% of women, respectively, were hospitalized during the year prior to the study. Among Europeans



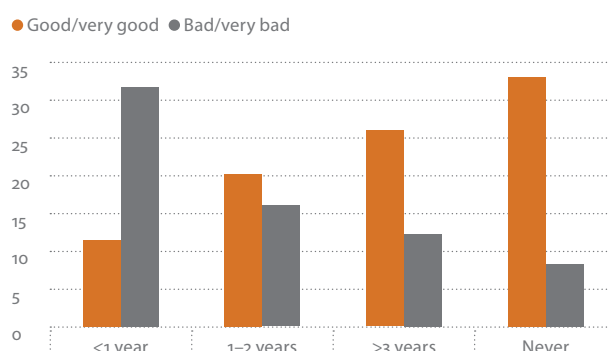
**Table 9.1** Need for health care in the past three years among adults aged 50-plus and type of care received, percent distribution by background characteristics, SAGE Russia

Characteristics	Needed health care				Health care received		
	>3 years ago	<3 years ago	Never needed	Number	Inpatient care (during 3 years)	Outpatient care (during a year)	Number
<b>Sex</b>							
Male	21.5	70.8	7.7	1 519	32.3	40.5	1 213
Female	16.2	80.8	3.0	2 378	28.9	49.8	2 083
<b>Age group</b>							
50–59	21.2	73.8	5.0	1 761	27.6	44.3	1 448
60–69	17.1	77.1	5.7	957	32.4	43.2	837
70–79	12.7	84.6	2.7	848	31.9	51.7	752
80+	20.0	73.3	6.7	331	32.7	52.5	259
<b>Residence</b>							
Urban	18.0	77.0	5.1	2 835	27.5	49.0	2 378
Rural	19.0	76.7	4.3	1 062	37.0	39.5	918
<b>Marital status</b>							
Never married	13.7	81.2	5.1	160	19.3	62.0	87
Currently married	19.9	75.7	4.4	2 123	27.6	46.3	1 771
Cohabiting	5.0	73.7	21.4	148	36.9	42.5	118
Separated or divorced	14.6	83.5	1.9	384	43.4	36.0	349
Widowed	18.6	77.0	4.4	1 133	30.4	49.1	968
<b>Wealth quintile</b>							
Lowest	24.1	65.6	10.4	629	27.4	51.6	451
Second	16.4	78.6	4.9	758	22.1	50.1	647
Middle	20.5	74.1	5.3	748	26.9	45.1	637
Fourth	16.9	80.3	2.8	807	37.8	42.9	712
Highest	15.2	82.3	2.5	954	33.9	44.6	849
<b>Employment status</b>							
Public sector	17.7	78.3	4.0	3 368	31.4	46.1	2 885
Private sector	25.3	66.7	8.1	337	17.3	47.2	271
Self employed	12.4	74.1	13.5	73	13.2	66.8	56
<b>Total (%)</b>	<b>18.3</b>	<b>76.9</b>	<b>4.8</b>		<b>30.2</b>	<b>46.4</b>	
<b>Total individuals (n)</b>	<b>711</b>	<b>2 997</b>	<b>189</b>	<b>3 897</b>	<b>995</b>	<b>1 528</b>	<b>3 297</b>

aged 50-plus in another large multi-country study, 14–15% were hospitalized during the previous 12 months (SHARE, 2004).

More than 80% of the SAGE respondents who needed medical care in the year prior to interview received it in outpatient clinics; one-quarter were hospitalized. Older adults used significantly more health care services than did younger ones. Relatively high rates of hospitalization occurred among those aged 70 and over, more often among men than women. Among the 5.3% of older adults who needed medical care but did not

**Figure 9.1** Self-assessment of health by period of medical care need (%), SAGE Russia



receive it, the main reasons for requesting medical care were high blood pressure (25.6%), pain in joints or acute conditions (17.1%), and heart problems (9.8%). Most respondents who did not need health care had no contact with a medical service, but 4.5% visited outpatient clinics, possibly for checkups.

When older adults needed health care, they received consultations most often in public outpatient clinics or public hospitals. In rural areas, however, 11% of older adults went to a pharmacy or dispensary, perhaps because it was difficult to get to a medical facility. Both outpatients and inpatients received medical care mainly in public facilities: only 3.9% of urban and 1.8% of rural respondents visited private doctors or private clinics.

The mix of private and public care use may be very different in other nations. In France, for example, patients can choose freely between public and private for-profit hospitals and more than one-third of all inpatient care and 56% of all surgery is provided by private hospitals (Or, 2009). In Spain, there are two networks: a public one representing 73% of total acute centers and 84% of total beds, and a private one involving 27% of centers and 16% of beds (Cots *et al.*, 2009).

## 9.1.1 Inpatient Care

More than 50% of respondents who received inpatient care in the previous 12 months received care for a non-

**Table 9.2** Type of condition for which inpatient care was obtained among adults aged 50-plus who received care in the previous 12 months, percent distribution by background characteristics, SAGE Russia

Characteristics	Chronic non-communicable condition	Acute condition	Other	Number
<b>Sex</b>				
Male	55.9	4.4	39.7	210
Female	48.5	2.9	48.6	349
<b>Age group</b>				
50–59	42.9	3.9	53.3	178
60–69	46.9	5.2	47.9	170
70–79	62.7	1.4	36.0	160
80+	59.5	3.2	37.3	51
<b>Residence</b>				
Urban	46.8	3.7	49.6	431
Rural	66.4	3.0	30.6	128
<b>Marital status</b>				
Never married	22.3	0.5	77.1	13
Currently married	57.9	4.5	37.6	286
Cohabiting	16.1	4.7	79.3	33
Separated or divorced	22.9	1.5	75.6	45
Widowed	56.6	2.4	41.1	181
<b>Wealth quintile</b>				
Lowest	38.3	6.3	55.4	88
Second	43.9	0.1	56.0	90
Middle	69.0	3.1	28.0	126
Fourth	52.6	2.6	44.8	127
Highest	46.8	5.2	48.0	127
<b>Total (%)</b>	<b>51.3</b>	<b>3.5</b>	<b>45.2</b>	
<b>Total individuals (n)</b>	<b>287</b>	<b>20</b>	<b>253</b>	<b>559</b>

communicable condition; 3.5% received it for an acute condition, and 45.2% for other conditions (Table 9.2). The percentage of hospitalized people with chronic non-communicable conditions generally increased with age, was the highest among people aged 70-plus and higher in rural dwellers.

When patients evaluated the outcome of their hospitalisation, about 80% indicated that their health improved as a result of the care received. Patients with depression were less likely (66.7%) to report improvement. Between 10% and 15% of all patients reported that their condition greatly improved, except for patients with asthma (5.5%). Between 2% and 4% of persons reported worse health after hospitalisation (less than

1% among patients with arthritis), and another 10%-12% indicated no change in health (7.3% among asthmatics). Prior to hospitalisation, 85% of patients expected improvement in their condition.

About 30% of SAGE respondents were hospitalized during the year prior to interview. Those with asthma were more likely (39.1%) to be hospitalized than were those with hypertension (22.6%) and arthritis (22.1%). Within conditions, some episodes or symptoms were more likely to lead to hospitalisation. For instance, individuals with chronic lung disease were hospitalized most frequently with acute conditions (5.4%) and breathing difficulties (17.9%); the latter problem was also reported as a reason for hospitalisation by asthmatics

**Table 9.3** Type of condition for which outpatient care was obtained among adults aged 50-plus who received care in the previous 12 months, percent distribution by background characteristics, SAGE Russia

Characteristics	Chronic non-communicable conditions	Acute diseases	Other	Number
<b>Sex</b>				
Male	53.0	5.5	41.5	769
Female	60.3	8.7	31.0	1 451
<b>Age group</b>				
50–59	50.9	11.3	37.8	898
60–69	57.8	8.0	34.2	561
70–79	63.6	2.9	33.5	563
80+	72.1	3.0	24.9	198
<b>Residence</b>				
Urban	59.0	8.1	32.9	1 642
Rural	54.2	6.3	39.5	578
<b>Marital status</b>				
Never married	63.9	3.2	33.0	69
Currently married	58.4	7.5	34.0	1 130
Cohabiting	52.6	16.6	30.8	74
Separated or divorced	35.9	8.6	55.5	254
Widowed	64.8	6.6	28.6	691
<b>Wealth quintile</b>				
Lowest	54.8	7.8	37.4	318
Second	68.3	4.4	27.4	415
Middle	61.6	8.0	30.5	420
Fourth	61.9	11.3	26.8	459
Highest	46.4	6.7	46.9	608
<b>Total (%)</b>	<b>57.8</b>	<b>7.6</b>	<b>34.6</b>	
<b>Total individuals (n)</b>	<b>1 282</b>	<b>169</b>	<b>769</b>	

(43.6%). Problems most likely to lead to surgery were cataracts (14%), angina, arthritis, chronic lung disease, asthma and hypertension (9-10%), and stroke and diabetes (5.8 – 6.4%).

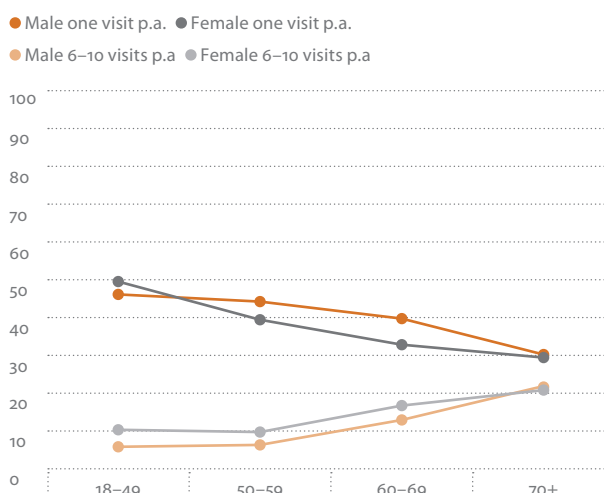
Between 70% and 75% of hospitalized SAGE respondents had a single stay in the hospital. Patients with asthma were more likely to have multiple admissions, and 11.1% were hospitalized three or more times during the year. The next highest level of multiple (three or more) admissions was seen among patients with stroke.

## 9.1.2 Outpatient care

About 60% of respondents who received outpatient care in the last 12 months received care for a chronic non-communicable condition; around 8% received care for an acute condition, and the remainder received care for some other condition. The likelihood of receiving outpatient care for chronic conditions was greater for women, and increased with advancing age (Table 9.3).

As indicated by Wolff *et al.* (2002), 18% of patients with one chronic disease in the US make more than 10 physician visits a year, compared to 61% of patients with three chronic diseases. The majority of respondents in SAGE Russia using public outpatient care in the 12 months preceding the interview made 1-3 visits to clinics. The percentage reporting only one visit decreased steadily with age (Figure 9.2). The percentage making six or more visits increased from about 9% at younger ages to 21% for the oldest age group. Among those aged 70-plus, 11.3% of men and 12.8% of women had 10 or more outpatient visits.

**Figure 9.2** Percent with selected number of outpatient visits for men and women by age group, SAGE Russia

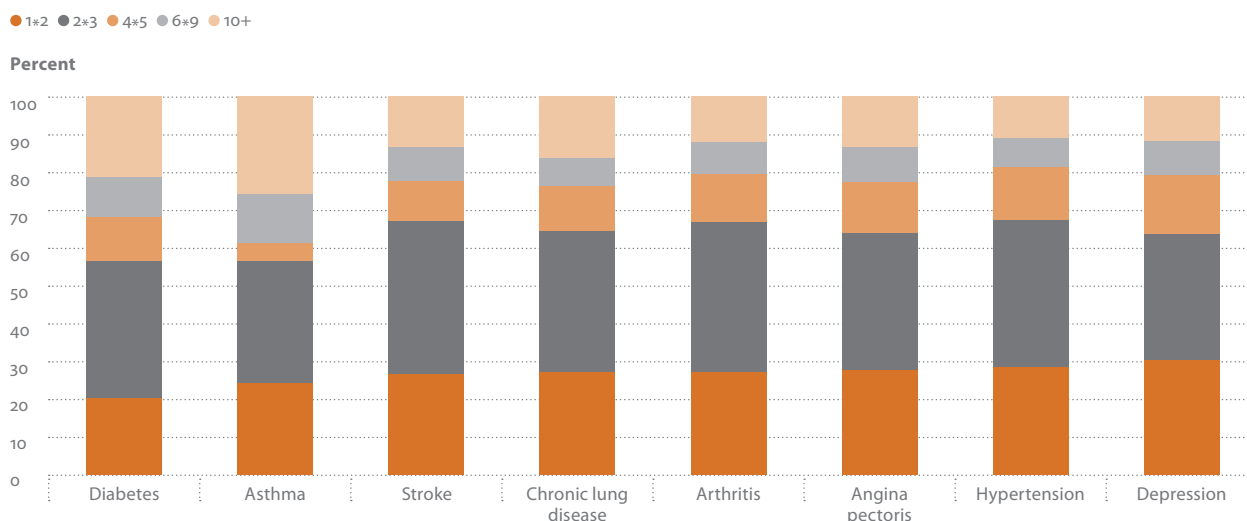


The proportion of people who made only one outpatient visit was significantly lower among persons with a few particular diseases – especially diabetes (20.2%) and asthma (24.1%) – than among all respondents. Among the former two groups, a third or more made more than six visits to medical care facilities in the last year, compared with 18–24% for people with other conditions (Figure 9.3).

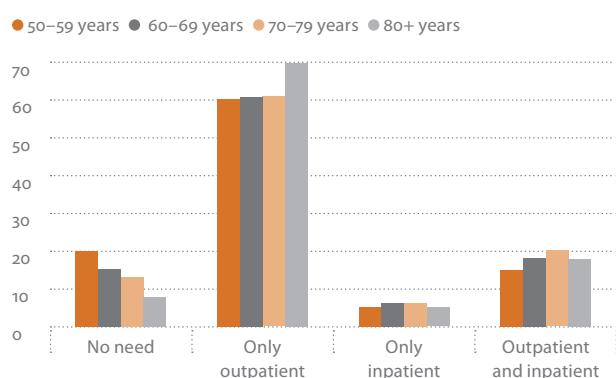
Seventy percent of SAGE respondents made their last outpatient contact in connection to a chronic (ongoing) condition, about 23% in connection to a new condition, and 2.4% in connection to both. During their last outpatient visit, about 6% had a routine check-up.

The distribution of the respondents aged 50-plus by place of medical treatment during the last year is shown in Figure 9.4

**Figure 9.3** Distribution of patients with selected diseases according to the number of outpatient clinic visits (%), SAGE Russia



**Figure 9.4** Place of medical treatment among respondents aged 50-plus (%), SAGE Russia



A majority of respondents (80-88% of men and 87-90% of women) with the chronic conditions surveyed by SAGE had contact with outpatient clinics in the last year; in the case of men with asthma, the proportion was 92.6%. More than 30% of such persons were hospitalized (43-47% of men with stroke, angina pectoris and diabetes; 35-46% of women with stroke and asthma). There were lower levels of hospitalisation among women with hypertension (26%) than among men with the same condition (35.1%). The lowest level of hospitalisation was among patients of both sexes with arthritis. Men with stroke and diabetes had higher levels of hospitalisation without a prior visit to outpatient clinics than women, suggesting a tendency to neglect conditions until they become critical.

Rural respondents reported significantly ( $t > 3$ ) lower levels of outpatient contact with medical care organizations compared with the urban population. At the same time, the share of respondents who were hospitalized was significantly higher in rural areas, as was the share that had no contact with medical care but needed it. These data suggest that it is difficult for some rural residents to access outpatient medical care.

Finally, outreach services appear to be addressing some needs for care: some 11% of urban and 18% of rural respondents indicated that during their most recent medical contact they received health care at home.

Medical advances and technologies may extend or improve life for older patients. In the future, more health care may be provided remotely, and older adults may have a better opportunity to monitor their conditions and communicate with health care providers from home.

## 9.2 Health system responsiveness

The performance of the general health care system at the national level was evaluated using indicators of health-care responsiveness. Health system responsiveness consists of eight domains, which may be divided into two groups (Table 9.4). The first part concerns respect for the individual, including dignity, privacy, autonomy (involvement in decision-making about personal health care), choice (of provider) and communication (with provider); the second part is patient-centered, including timeliness/prompt attention, social support, quality of care, infrastructure quality and access/selectiveness.

Health system responsiveness describe interactions between systems and individuals. SAGE collected information on respondents' impressions of their most recent inpatient and/or outpatient visit from seven of the dimensions in Table 9.4. Each dimension had one score. Factor analysis was applied to evaluate the total responsiveness score using factor scores. Responsiveness scores were converted to a range between 0 and 100, with a higher score reflecting better system responsiveness.

The mean health care responsiveness scores for outpatient and inpatient services were 68.4 and 63.1, respectively. Scores were higher for women and rural

**Table 9.4** Health system responsiveness domains

Group	Domain	Issue
Interpersonal	Dignity	Spoke respectfully
		Privacy
	Communication	Clear explanations
		Time for questions
	Autonomy	Treatment information
		Patient involvement
	Confidentiality	Talk privately
		Confidentiality of records
Structural	Choice of health care provider	Choice of provider
	Quality of basic amenities	Cleanliness
		Space
	Access to support	Family visit
		External contact
	Prompt attention	Travel time
		Waiting time

**Table 9.5** Mean health care responsiveness scores for inpatient and outpatient services, by background characteristics, SAGE Russia

Characteristic	Inpatient score (mean)	Number of respondents	Outpatient score (mean)	Number of respondents
<b>Sex</b>				
Male	61.5	192	66.8	665
Female	64.1	303	69.2	1 164
<b>Age group</b>				
50–59	66.5	154	69.4	809
60–69	60.3	155	67.9	453
70–79	62.8	142	67.5	432
80+	61.7	44	66.2	134
<b>Residence</b>				
Urban	62.3	380	66.6	1 370
Rural	65.6	114	73.7	459
<b>Marital status</b>				
Never married	66.5	11	68.5	52
Currently married	64.2	256	67.9	968
Cohabiting	63.4	30	68.1	60
Separated or divorced	55.2	43	70.9	219
Widowed	63.1	155	68.2	529
<b>Wealth quintile</b>				
Lowest	55.4	75	65.5	236
Second	62.3	83	67.7	340
Middle	66.7	113	67.9	349
Fourth	64.1	110	68.4	380
Highest	64.2	113	70.4	525
<b>Total (%)</b>	<b>63.1</b>		<b>68.4</b>	
<b>Total individuals (n)</b>		<b>494</b>		<b>1 829</b>

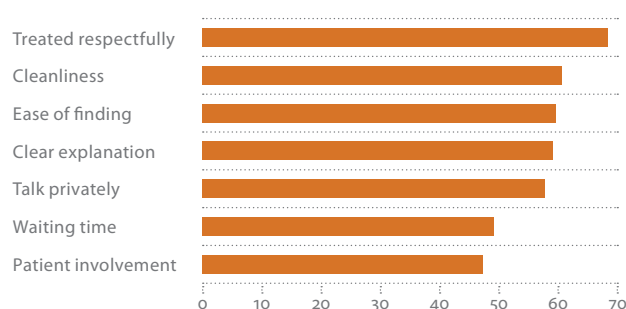
respondents, and the score for outpatient services increased slightly with increasing wealth quintile (Table 9.5).

Most respondents who had been hospitalized evaluated conditions in the hospital as good or even very good. The lowest level of satisfaction (47.2%) was reported with regard to patient involvement in decisions (Figure 9.5). All patients with the chronic conditions surveyed by SAGE were less likely to give positive ratings: for example, scores for waiting time ranged from 46.1–52.9% and for cleanliness, 42.6–48.4%.

WHO's World Health Survey (WHS, the same as SAGE Wave 0 in Russia) data suggests that the older popu-

lation in Russia is more inclined to reconcile problems with health care than is true in other countries (Maximova and Lushkina, 2011). A high level of dissatis-

**Figure 9.5** Percent of respondents rating hospital conditions as good or very good (%), SAGE Russia





**Table 9.6** Percentage of respondents with health insurance coverage (mandatory, voluntary, both and none), by background characteristics, SAGE Russia

Characteristics	Mandatory	Voluntary	Mandatory and voluntary	None	Number
<b>Residence</b>					
Urban	98.0	0.8	0.8	0.5	2 856
Rural	99.5	0.2	0.1	0.3	1 073
<b>Wealth quintile</b>					
Lowest	96.7	2.7	0.1	0.5	634
Second	98.8	0.7	0.3	0.2	769
Middle	98.7	0.1	0	1.2	752
Fourth	98.9	0.1	0.6	0.3	809
Highest	98.4	0.1	1.5	0	964
<b>Total (%)</b>	<b>98.4</b>	<b>0.7</b>	<b>0.6</b>	<b>0.4</b>	
<b>Total individuals (n)</b>	<b>3 865</b>	<b>25</b>	<b>22</b>	<b>17</b>	<b>3 929</b>

faction was most likely to be reported by patients with relatively high levels of material wellbeing. Among persons aged 60-plus, 16% felt they were treated worse because of their age, and 14% because of their material conditions. These levels were significantly lower than in other European countries that participated in the WHS (Maximova and Lushkina, 2009).

### 9.3 Health insurance

Health insurance is mandatory in Russia, so the risk of catastrophic expenditures is not high. However, insurance is in some cases insufficient for certain surgical procedures and expensive medications. According to Russian law, a patient pays for medications prescribed by a doctor in conjunction with treatment at an out-patient clinic; however, several categories of the population (including all people treated in inpatient clinics and those who are hospitalized) receive all medications covered by mandatory health insurance free of charge.

Among persons aged 50-plus, voluntary insurance coverage was low: fewer than 1% had voluntary insurance only, and fewer than 1% had a combination of voluntary and mandatory (Table 9.6). These latter categories were more common among the urban population. The absence of any kind of insurance was reported by only 0.4% of respondents.<sup>1</sup>

<sup>1</sup> According to the HOPE data, for example, around 30% of Austrian citizens have private health insurance in addition to statutory insurance ([www.hope.be](http://www.hope.be)).



## 10. Well-Being and Quality of Life

Life expectancy around the world rose by about two decades during the past half century. This increase has been associated with economic growth and rising levels of happiness globally. An increased interest from scientists in studying happiness and its relationship to health and health-related outcomes on the one hand, and economic development on the other, has also been associated with increasing attention to measures of subjective well-being by policy makers.

Well-being and quality of life encompass subjective individual feelings about physical health, psychological state, degree of independence, social relationships, personal beliefs, and environment. Psychologists, sociologists, economists and others have tried to quantify measurement of this inherently subjective topic using various concepts such as well-being, subjective well-being, happiness and life satisfaction.

A problem may arise from the fact that answers to questions about life satisfaction are global retrospective judgments which in most cases are constructed only when asked and are determined in part by the respondent's current mood, memory, and immediate context. Considerations of the effects of context, mood, and other time-bound factors indicate certain limits to the reliability of standard life satisfaction questions, but these limits are not necessarily grounds for dismissing a standard method altogether.

The validity of subjective measures of well-being also can be assessed in part by considering the pattern of their correlations with other characteristics of individuals. There have been documented correlations between measures of life satisfaction and various objective physiological and medical criteria. For example, findings from neuroscience research lend some support to the view that life satisfaction measures are related to individuals' emotional states. In general, variables that are associated with low life satisfaction and happiness

include recent negative changes of circumstances, chronic pain, and unemployment (especially related to redundancy).

There is a well-known interplay between happiness/subjective well-being/life satisfaction and health. The eight-item WHO Quality of Life (WHOQOL) tool was used to assess evaluative well-being, combined with an adapted version of the Day Reconstruction Method (Kahneman 2006) used to assess experienced wellbeing in SAGE Russia.

### 10.1 Happiness and well-being

Experienced happiness is often measured using the Experience Sampling Method (ESM), where respondents are prompted at random intervals to record their feelings and activities (Csikszentmihalyi 1987; Stone 1999). A reasonable approximation of this gold standard ESM technique is the Day Reconstruction Method (DRM) combining experiential and time use assessments. The methodology entails asking participants to think about the preceding day, break it down into episodes and then describe each episode in terms of the activity engaged in, the accompanying positive and negative emotions, the amount of control the respondent had over the activity and the context in which the activity was carried out.

The DRM is intended to increase the accuracy of emotional recall (Kahneman 2004). A composite score is generated for the DRM and is presented as a U-index (Table 10.1), which is the average amount of time people spend in an unpleasant state in a given day (Kahneman 2004).

Peoples' emotional experiences while they are engaged in different activities or under different circumstances

can be summarized. Moreover, individuals may interpret and use response categories differently. That is why an index is useful here, including one called the U-index (for “unpleasant” or “undesirable”), which overcomes this problem. The U-index measures the proportion of time (in a given day) an individual spends in an unpleasant state. The U-index can be computed for individual or averaged over a sample of individuals.

**Table 10.1** Mean U-Index among adults aged 50-plus, by background characteristics, SAGE Russia

Characteristics	Mean U-index score	Number
<b>Sex</b>		
Male	0.011	1 463
Female	0.026	2 300
<b>Age group</b>		
50–59	0.014	1 701
60–69	0.028	927
70–79	0.021	819
80+	0.029	317
<b>Residence</b>		
Urban	0.022	2 737
Rural	0.015	1 026
<b>Education</b>		
No formal education	0.046	26
Less than primary	0.029	48
Primary	0.008	209
Incomplete secondary	0.024	759
Secondary	0.018	2 032
Higher	0.024	687
<b>Marital status</b>		
Never married	0.030	101
Currently married	0.019	2 042
Cohabiting	0.012	146
Separated or divorced	0.031	368
Widowed	0.019	1 093
<b>Wealth quintile</b>		
Lowest	0.032	610
Second	0.023	737
Middle	0.019	719
Fourth	0.017	773
Highest	0.014	924
<b>Total</b>	<b>0.020</b>	

Those who spend a greater fraction of their time in an unpleasant state also tend to report less satisfaction with their lives as a whole.

The mean U-index among SAGE respondents aged 50-plus is shown in Table 10.1. On average, women and urban dwellers spent a larger portion of their day with negative emotions or concerns (worried, irritated, rushed) than men and rural dwellers, respectively. No clear age or education gradients emerged, however, those aged 60–69 and 80+ spent more time in an unpleasant state. Partnered and wealthier respondents spent less time in an unpleasant state.

## 10.2 Quality of life and satisfaction

The study of quality of life is important because many or most older people are in good or moderate health and capable of participating in a variety of activities (Nosikov and Gudex, 2003).

In SAGE, the 8-item WHOQoL instrument was used to measure evaluative well-being. Evaluative well-being or life satisfaction is often measured with single questions such as, “All things considered, how satisfied are you with your life as a whole these days?” or “Taking all things together, these days, would you say you are very happy, happy, neither happy nor unhappy, unhappy or very unhappy?”. These types of overall satisfaction questions can also be asked of specific domains such as health, living environment, and other areas of life. Life satisfaction is expected to be fairly stable over short durations of time (from week to week). WHO defined quality of life as “the individual’s perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (WHO 1996). The important feature of this definition is that quality of life is a matter of the individual’s perception of the life that s/he is leading. Based on this definition, it was decided that a multidimensional tool was needed to assess quality of life. WHOQoL has been developed through a collaborative effort between international partners, including in both developed and developing country contexts. It has been used in many different study populations, including a special adaptation for older adults as part of a study funded by the European Commission (Power 2005; Schmidt 2006). The measure places primary importance on the perception of the individual and their perception of their own quality of life. It has well established psychometric properties,

including the eight-item short version, and has been shown to have good cross-cultural performance (Power 2005; Schmidt 2006). The 8-item version used in SAGE was shown to have good cross-cultural performance (da Rocha 2012).

The final scores were rescaled from 0 to 100, where a lower score indicates better quality of life. Mean WHO-

**Table 10.2 Mean WHOQoL scores among adults aged 50-plus, by background characteristics, SAGE Russia**

Characteristics	Mean WHOQoL score*	Number
<b>Sex</b>		
Male	47.1	1 463
Female	50.6	2 300
<b>Age group</b>		
50–59	46.4	1 701
60–69	49.3	927
70–79	52.8	819
80+	55.3	317
<b>Residence</b>		
Urban	49.3	2 737
Rural	49.1	1 026
<b>Education</b>		
No formal education	61.0	26
Less than primary	60.6	48
Primary	53.6	209
Incomplete secondary	51.1	759
Secondary	49.0	2 032
Higher	45.5	686
<b>Marital status</b>		
Never married	53.6	101
Currently married	47.8	2 042
Cohabiting	46.6	146
Separated or divorced	49.2	368
Widowed	52.3	1 093
<b>Wealth quintile</b>		
Lowest	52.8	610
Second	50.8	737
Middle	49.7	719
Fourth	50.0	773
Highest	44.7	924
<b>Total</b>	<b>49.3</b>	

\* WHOQoL scores range from 0 to 100, where a lower score reflects better quality of life.

QoL scores for adults aged 50-plus are presented in Table 10.2. The mean overall score was 49.3, with generally slight fluctuations by demographic and socio-demographic group. Scores showed a gradient by age, education, and wealth quintile.

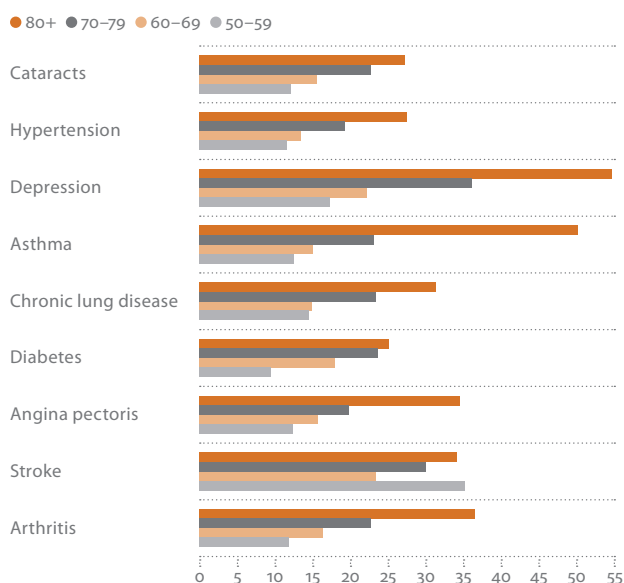
One SAGE question asked people to summarize their quality of life as a whole, taking into account satisfaction with health, personal relationships, and conditions of living. More than half of respondents indicated that they were satisfied with their life (60.9% of men and 54.4% of women). Another 4.1% of men and 2.5% of women answered that they were very satisfied, while 10% of men and 11.5% of women reported dissatisfaction, and small shares (1.5% and 1.7%) said they were very dissatisfied.

A majority of men and women (60–67%) in both urban and rural areas reported moderate satisfaction with their quality of life. Urban citizens were somewhat more likely than rural dwellers to estimate their quality of life as good, but equally likely to estimate quality of life as bad and very bad. As in many other self-assessments, women are less likely to report good life quality and more likely to report their quality of life as bad and very bad.

Overall, a significant share of respondents suffering from the chronic health conditions surveyed by SAGE were satisfied with their life and indicated that they used the necessary medicines to control the condition and its symptoms. Perhaps unsurprisingly, however, such respondents were less likely to be satisfied with their life than the survey respondents as a whole. The presence of any disease decreased the likelihood of positive self-assessment of life, but poor quality of life was reported especially among respondents with stroke and depression (Figure 10.1). Significant shares of ill respondents reported dissatisfaction with their overall quality of life, rising from 13–18% at ages 18–49 to 24–35% at ages 80 and older.

In particular, respondents with the conditions surveyed by SAGE indicated more often than the survey respondents as a whole that they had little or no energy for everyday activities. This was the case for about 30% of people aged 70–79 and 40% for those aged 80 or older. The level among younger respondents was 11–14%, and much lower among those with hypertension (3.7%) and angina pectoris (6.7%) than other conditions. Those with these two diseases may have had mild symptoms that did not limit life activities at this age—ironically, a particular danger associated with these diseases, since the absence of major symptoms may lead to complacency in seeking treatment.

**Figure 10.1** Persons evaluating their quality of life as bad or very bad, by disease (%), SAGE Russia



Looking at material well-being and living conditions, 29.5% of all respondents were satisfied or very satisfied with their living conditions and felt they had enough money to meet their needs (completely or mostly). On the other hand, 6.3% of persons indicated both dissatisfaction with living conditions and not having enough money to meet their needs, while most of the rest of the study's respondents reported different combinations of such assessments. These groups differed in their evaluations of overall health (Figure 10.2) and satisfaction with life (Figure 10.3).

Perhaps unsurprisingly, conditions of life were strongly associated both with health evaluations and with life satisfaction as a whole. In the group with the best living conditions, most respondents (83.6%) were satisfied or very satisfied with their lives, whereas this share was only 9.5% among those with the worst living conditions. By the same token, the share of respondents who evaluated their health as good or very good decreased as dissatisfaction with money and living conditions increased, while the likelihood of self-reported bad or very bad health increased as life conditions worsened (Figure 10.2). The proportion of respondents evaluating their quality of life positively was also higher at all ages among those who were working, compared with those who were not working and receiving a pension.

Lack of financial resources to meet their needs was a large problem for respondents suffering from the conditions surveyed by SAGE. Half or more of such persons at ages 18-49 were dissatisfied with their financial situation, compared with about 30-40% at older ages and 22-35% among those aged 80-plus.

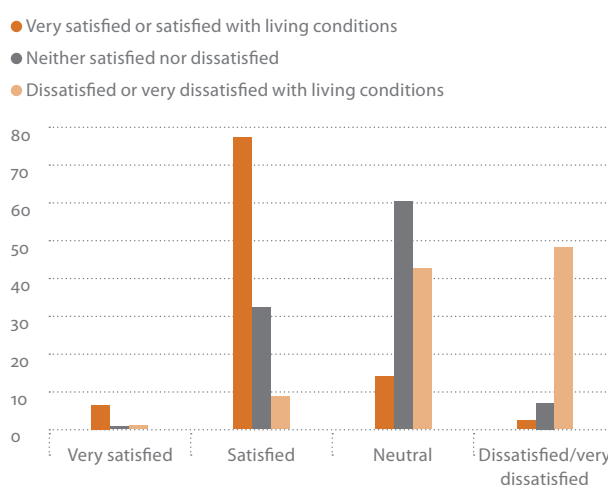
Many such respondents also reported dissatisfaction with their living conditions, especially in the 18-49 age group, where 20-28.6% were dissatisfied or very dissatisfied (34.1% for those with arthritis). Levels of dissatisfaction with living conditions were lower among older age groups (15-20%) except for people with depression.

Quality of life was also associated with age; the proportion of persons who were very satisfied or satisfied with life decreased with advancing age among both men and women. This trend was particularly visible among respondents suffering from the conditions surveyed by SAGE: at 80-plus, 25-36.4% of such respondents evaluated their quality of life as bad and very bad. Poor life quality at the oldest ages was particularly visible among those with asthma and depression. Younger age groups usually had the lowest level of negative answers, except for those with stroke.

**Figure 10.2** Percent distribution (%) of overall life satisfaction by three self-reported health categories, SAGE Russia



**Figure 10.3** Percent distribution (%) of satisfaction with living conditions by satisfaction with financial situation, SAGE Russia







## 11. Emerging Policy Issues for Older Adult Populations

The findings from SAGE reveal numerous aspects of health and well-being among older people, including the prevalence of various diseases, the use of medical care, and material well-being. These findings are important for policymaking in Russia, both for improving the current situation of older people and for addressing future needs in the context of rapid population ageing.

Epidemiological and demographic transitions generate complex problems involving non-communicable diseases, mental health, and injuries. New medical technologies are increasingly available in Russia, accompanied by growing health care costs and rising public expectations regarding medical care. It is necessary to raise medical care to a new level, not only for effective and high-quality primary care but for all aspects of health services and the environment.

The findings from SAGE are useful not only for understanding patterns of health among older people, but also for evaluating needs for public policy interventions to promote long and healthy lives. Moreover, they provide the opportunity to compare health risks, determinants and access to medical care among countries, and to transmit experience, research innovations, and knowledge of modern medical technologies around the world.

### 11.1 Madrid International Plan of Action on Ageing

It is now more than 10 years since the declaration of the Madrid International Plan of Action on Ageing, and it is time to evaluate the effect of actions and the degree of implementation in different parts of the world. The Madrid Plan emphasizes that health promotion activities, disease prevention throughout the life course, and equal access for older people to health care and services

are the cornerstone of healthy ageing. It recommends measures to provide universal and equal access to primary health care, and to establish community health programs for older persons. The Madrid Plan also calls for the elimination of discrimination in access to health care based on age or other characteristics.

The Madrid International Plan of Action on Ageing played a special role in creating the conceptual basis for a wider understanding of ageing as a process touching all spheres of life. In Russia, steps are being taken to assess the influence of ageing on the prospects for demographic, social and economic development.

### 11.2 National and regional policies on ageing

Russia is geographically, historically, culturally and politically a part of Europe as well as a part of Asia and the Pacific region. Therefore, Russia implements not only the Madrid International Plan of Action on Ageing but also the Asia and Pacific Regional Implementation Strategy for the Madrid Plan adopted in 2002 at the UNECE Ministerial Conference on Ageing (Country Report of Russia, 2007).

The Russian Federation's social policies with respect to older people are part of overall State social policy and are interconnected in all stages of preparation, approval and implementation. Russian legislation ensures equal treatment for older peoples in terms of human rights and freedoms, access to medical care, social protection, medico-social preventive measures and rehabilitation, education and professional training, participation in paid or voluntary activities, and consumer rights. Nevertheless, there remains scope for further enhancing legal regulations directly concerning older people.



**Table 11.1 Madrid International Plan of Action on Ageing, 2002\***

<b>Advancing health and well-being into old age</b>
<b>Health promotion and well-being throughout life:</b> <ul style="list-style-type: none"> <li>● Reduction of the cumulative effects of factors that increase the risk of disease and consequently potential dependence in older age.</li> <li>● Development of policies to prevent ill-health among older persons.</li> <li>● Access to food and adequate nutrition for all older persons.</li> </ul>
<b>Universal and equal access to health-care services:</b> <ul style="list-style-type: none"> <li>● Elimination of social and economic inequalities based on age, gender or any other ground, including linguistic barriers, to ensure that older persons have universal and equal access to health care.</li> <li>● Development and strengthening of primary health-care services to meet the needs of older persons and promote their inclusion in the process.</li> <li>● Development of a continuum of health care to meet the needs of older persons.</li> <li>● Involvement of older persons in the development and strengthening of primary and long-term care services.</li> </ul>
<b>Training of care providers and health professionals:</b> <ul style="list-style-type: none"> <li>● Provision of improved information and training for health professionals and para-professionals on the needs of older persons.</li> <li>● Initiation and promotion of education and training programmes for health professionals, social care professionals and informal care providers in the services for and care of older persons, including gerontology and geriatrics, and support all countries, in particular developing countries, in these efforts.</li> <li>● Expansion of professional education in gerontology and geriatrics, including through special efforts to expand student enrolment in geriatrics and gerontology.</li> </ul>
<b>Mental health needs of older persons:</b> <ul style="list-style-type: none"> <li>● Development of comprehensive mental health-care services ranging from prevention to early intervention, the provision of treatment services and the management of mental health problems in older persons.</li> <li>● Promotion of public information about the symptoms, treatment, consequences and prognosis of mental diseases.</li> <li>● Provision of mental health services to older persons residing in long term care facilities.</li> </ul>
<b>Older persons and disabilities:</b> <ul style="list-style-type: none"> <li>● Maintenance of maximum functional capacity throughout the life course and promotion of the full participation of older persons with disabilities.</li> <li>● Provision of physical and mental rehabilitation services for older persons with disabilities.</li> <li>● Creation of age-friendly standards and environments to help prevent the onset or worsening of disabilities.</li> </ul>
<b>Ensuring enabling and supportive environments</b>
<b>Housing and the living environment</b> <ul style="list-style-type: none"> <li>● Promotion of “ageing in place” in the community with due regard to individual preferences and affordable housing options for older persons.</li> <li>● Improvement in housing and environmental design to promote independent living by taking into account the needs of older persons in particular those with disabilities.</li> <li>● Improved availability of accessible and affordable transportation for older persons.</li> </ul>
<b>Care and support for caregivers:</b> <ul style="list-style-type: none"> <li>● Provision of a continuum of care and services for older persons from various sources and support for caregivers.</li> <li>● Support for the care-giving role of older persons, particularly older women.</li> </ul>
<b>Neglect, abuse and violence:</b> <ul style="list-style-type: none"> <li>● Elimination of all forms of neglect, abuse and violence of older persons.</li> <li>● Creation of support services to address elder abuse.</li> </ul>
<b>Images of ageing:</b> <ul style="list-style-type: none"> <li>● Enhancement of public recognition of the authority, wisdom, productivity and other important contributions of older persons.</li> </ul>

\* Selected aspects concerning health, health care and environment

Measures to support the health, welfare and social well-being of older Russian citizens, including the conditions for their participation in social life, assistance and care, are included in the Program on Socio-Economic Development of the Russian Federation. Russia has a positive experience with implementing the National Program for Older People (under the Federal “Older

Generation” programme). National and state policies on ageing also reflect the obligation to render assistance to those people who are unable to work and/or disabled. Older people are provided with pension allowances and other benefits necessary for decent living. One particular issue concerning older persons who are able to work is how to identify their needs for labor and

work; a programme of labor consultations for people at pre-pension and pension ages now exists.

In view of their significant differences in geography, environment and climate, and ethno-cultural characteristics, regions of Russia can define their own public health and budgetary priorities in the sphere of ageing. The “Older Generation” programme is now developed at the regional level<sup>1</sup>. Program features include better coordination of different levels of health and medical care, including home care, special checkups in outpatient clinics, and nurses in inpatient clinics where necessary; implementation of alarm buttons at home for urgent needs; programs for leisure time involving physical activity and computer literacy; and, the improvement of home conditions.

An important aspect of activities on ageing in Russia is solving concrete emerging problems at the regional level with the help of a general conceptual platform. Programs for the social protection of older people have their own spheres of application and particularities that depend on the specific needs of older people and the availability of resources for achieving goals.

### 11.3 Emerging research issues

Understanding ageing and its determinants is crucial to the strategic development of public health policies. The ageing of Russia’s population has accelerated during the period of reforms in recent decades and continues against a background of positive trends in demography, economic growth, poverty reduction, pension allowances, income growth, and labor market sustainability.

To enhance existing information about older people’s health, the Ministry of Health and Social Development since 2010 has included data in its statistical reports about morbidity and health care utilization for each outpatient and inpatient clinic in every region of the country, with a special focus on people of pension age (women aged 55 or older and men aged 60 or older). These data, however, are incomplete insofar as they do not include information from private clinics and clinics of other departments.

For the support of older people in terms of health care and well-being at the state and regional levels, a wide spectrum of research in different fields (especially public health) is necessary. Research should focus on health parameters such as morbidity (incidence and prevalence of key diseases), pathological symptoms in different age and social groups, causes of death (especially premature death), and co-morbid pathological conditions and complications, as well as on the especially healthy members of the older population. Other emphases should include:

- Age trends in decreased functioning of sensory organs, mobility and other parameters;
- Needs of the older population for different kinds of medical and social care and the ability to access them;
- Life expectancy at different ages in various social groups;
- Older peoples’ financial abilities and opportunities to meet their needs; and,
- Satisfaction with life and living conditions.

It will be critical for the Russian public health system to compare not only demographic trends but also the incidence and prevalence of morbidity rates with those of other countries where life expectancy is significantly higher. This will be crucial for understanding the origin of pathologies as a common phenomenon, and also will enable the assessment of particular methods of treatment and support for health conditions in developed countries.

The main purpose of SAGE is to examine patterns and dynamics of age-related changes in health and well-being using longitudinal follow-up of a cohort as it ages, and to investigate socioeconomic consequences of these changes. The results of this investigation have not only scientific but also practical importance for the care of the older population. Moreover, results of this study raise several philosophic and world-view questions about population ageing: is it a naturally determined process? Does it represent the fate of humanity? Is it a reversible phenomenon or an inevitable trend? The findings underscore that changes in population structure require adjustments to new circumstances in the fields of public health and social assistance.

<sup>1</sup> For regions included in SAGE, see, for example, Sverdlovsk *oblast'*, [http://minszn.midural.ru/off\\_projects/starp](http://minszn.midural.ru/off_projects/starp), Krasnodar - <http://www.sznkuban.ru/projects2>; Omsk <http://www.gubernator.omsportal.ru/governor/news/2011/03/09/1299676574012.html>; Nizhegorod, <http://www.kro.omsu-nnov.ru/?id=13597>

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# Appendices

## Appendix 1

### WHO Disability Assessment Scale (WHODAS-12 item)

In the last 30 days, how much difficulty did you have . . . *	
1	. . . in standing for long periods (such as 30 minutes)?
2	. . . in taking care of your household responsibilities?
3	. . . in learning a new task, for example, learning how to get to a new place?
4	. . . in joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can?
5	. . . concentrating on doing something for 10 minutes?
6	. . . in walking a long distance such as a kilometer (or equivalent)?
7	. . . in washing your whole body?
8	. . . in getting dressed (including, for example, putting on your shoes and socks)?
9	. . . with people you do not know?
10	. . . in maintaining a friendship?
11	. . . in your day to day work?
12	In the last 30 days, how much have you been emotionally affected by your health condition(s)?

\* Response scale: 1 = none; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme/cannot do.

## Appendix 2

### ADL and IADL items

In the last 30 days, how much difficulty did you have . . . *	
ADL	
1	... in sitting for long periods?
2	... walking 100 meters?
3	... standing up from sitting down?
4	... in standing for long periods (such as 30 minutes)?
5	... with climbing one flight of stairs without resting?
6	... with stooping, kneeling or crouching?
7	... picking up things with your fingers (such as picking up a coin from a table)?
8	... in extending your arms above shoulder level?
9	... concentrating on doing something for 10 minutes?
10	... in walking a long distance such as a kilometer (or equivalent)?
11	... in washing your whole body?
12	... in getting dressed (including, for example, putting on your shoes and socks)?
13	... with carrying things?
14	... with moving around inside your home (such as walking across a room)?
15	... with eating (including cutting up your food)?
16	... with getting up from lying down?
17	... with getting to and using the toilet?
IADL	
1	... in taking care of your household responsibilities?
2	... in joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can?
3	... in your day to day work?
4	... with getting where you want to go, using private or public transport if needed?
5	... getting out of your home?

\* Response scale: 1 = none; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme/cannot do.

Recoded: (1, 2, 3) = no deficiencies; (4, 5) = yes, deficiencies.



## Appendix 3

### Education mapping

Education levels by country, based on UNESCO 1997 international classification scheme		
SAGE Code	Description	Ghana
	Q0409, Q1016, Q1028, Q1032	
0	No formal schooling	None
1	Less than primary school	1 to 5
2	Primary school completed	6
3	Secondary school completed	7 to 9
4	High school (or equivalent) completed	10 to 13 (i.e., old middle school)
5	College/Pre-university/University completed	14 to 16
6	University post-graduate degree completed	17 to 21

See ISCED97 classification scheme

[www.uis.unesco.org/Library/Documents/isc97-en.pdf](http://www.uis.unesco.org/Library/Documents/isc97-en.pdf)

### Occupation coding

For Q1027, Q1031 and Q1510 of the SAGE Individual Questionnaire

ILO International Standard Classification of Occupations (ISCO-88)

The revised International Standard Classification of Occupations (ISCO-88) provides a system for classifying and aggregating occupational information obtained by means of population censuses and other statistical surveys, as well as from administrative records.

“In collecting and processing statistics classified by occupation, . . . each country should ensure the possibility of conversion into the ISCO-88 system, to facilitate international use of occupational information.” Thus, ISCO-88 is one of the standards of international labour statistics.

What follows below are the descriptions and codes for the major occupation groups and their breakdowns. A file was provided to the PI that provides additional background and explanation for ISCO-88. Additional information about coding can be found at: [www.ilo.org/public/english/bureau/stat/isco/index.htm](http://www.ilo.org/public/english/bureau/stat/isco/index.htm)

The major groups and the breakdowns within each major group are provided below. It also provides an estimation of the skill levels needed for each major group. This document provides the codes and coding techniques for Q1027, Q1031 and Q1510 in the SAGE Individual Questionnaires.

### ISCO-88 major groups with number of sub-groups and skill levels

Major groups	Sub-major groups	Minor groups	Unit groups	ISCO skill level
1. Legislators, senior officials and managers	3	8	33	–
2. Professionals	4	18	55	4th
3. Technicians and associate professionals	4	21	73	3rd
4. Clerks	2	7	23	2nd
5. Service workers and shop and market sales workers	2	9	23	2nd
6. Skilled agricultural and fishery workers	2	6	17	2nd
7. Craft and related trades workers	4	16	70	2nd
8. Plant and machine operators and assemblers	3	20	70	2nd
9. Elementary occupations	3	10	25	1st
10. Armed forces	1	1	1	–
<b>Totals</b>	<b>28</b>	<b>116</b>	<b>390</b>	

## Appendix 4

### Text describing the income or wealth quintiles (permanent income)

Income quintiles were derived from the household ownership of durable goods, dwelling characteristics (type of floors, walls and cooking stove), and access to services such as improved water, sanitation and cooking fuel. Durable goods included number of chairs, tables or cars, and if, for example, the household has electricity, a television, fixed line or mobile phone, a bucket or washing machine. A total of 21 assets were included with overlaps and differences in the asset lists by country.

The results were recoded into dichotomous variables taking the value of 0 if the household did not possess or have access to the good or service, and 1 if it did. The data set was then reshaped, as though each household had multiple observations for wealth (each item being one observation), and was fit as a pure random effect model based on these multiple items per household. The result provides indicator specific thresholds on the latent income scale such that a household is more likely to respond affirmatively than not when its permanent income exceeds this threshold. This “asset ladder” was generated and it is country-specific. Using a Bayesian post-estimation (empirical Bayes) method, households were arranged on the asset ladder, where the raw continuous income estimates are transformed in the final step into quintiles.

The resulting estimates of household permanent income can be compared to the reported income and total household expenditure. Though the correlation coefficients are not very high (both the Pearson and Spearman correlations are less than 0.5) there is a systematic ‘upper left triangular’ relationship across all countries. Namely, as self-reported income or expenditure increases, our permanent income estimate increases as well. However, our estimates can be high even when self-reported income or expenditure is low, which supports the well-known under-reporting or inadequacies of using income or expenditure indicators as opposed to wealth based on permanent income.

### Text describing health score

Valid, reliable, and comparable health measures are essential components to inform clinical practice and health policy. The health module in SAGE included a self-assessment of health consisting of two to three questions pertaining to each of eight health domains (mobility, affect, cognition, self-care, pain, sleep/energy, interpersonal relations and vision). When deriving the SAGE health score, we used the 16 self-reported health state questions in Section 2000 of the questionnaire: Q2002-05, Q2007, Q2008, Q2010-13, Q2016-19, Q2023, and Q2024. Respondents could answer using a five-point scale, from 1=None; 2=Mild; 3=Moderate; 4=Severe; 5=Extreme/Cannot do. As this scale is an ordinal scale, we used an ordinal extension of the Rasch model, the Rating scale model in Winsteps, that keeps the thresholds fixed across items. The item Infit statistics were between 0.7 and 1.3 except for the vision domain, where it was slightly above 1.3. Based on the dimensionality map and the residual correlations, no significant second dimension was found. The item probability curves did not show any disordered threshold. Significant DIF (Differential Item Functioning) was found by country for which adjustments have not yet been made in the current results. The results were rescaled to 0 to 100 where zero is worst health and 100 is best health.

