



GHANA

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



WHO SAGE WAVE 1

The Study on global AGEing and adult health (SAGE) is part of a Longitudinal Survey Programme in WHO's Multi-Country Studies unit. The main SAGE surveys compile 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. Each country's national report is a descriptive summary of results, including this report of SAGE Wave 1. Wave 2 will be implemented in 2013 and Wave 3 in 2015. More information is available at: www.who.int/healthinfo/sage



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

The Ghana National Report

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Preface

The older adult population of a country forms a vital human resource. Older persons provide a bank of wisdom, experience and life skills for the younger population. Ghana, like most low and middle income countries, is experiencing progressive increases in the percentage of the older population. As Ghana strives towards socio-economic development with improved education, health, social infrastructure and technology, overall survival of its citizens is certain to improve. The population of those aged 60 years and above in Ghana is projected to double from 6.0% in 2011 to 11.9% in 2050. Despite the increasing older adult population, the social and health care needs of this segment of the population have not received the attention it deserves.

It is against this background that the Ministry of Health welcomes this large nationwide study on health of the older adults conducted in 2007 with the support of the World Health Organization (WHO) and other partners. The study was comprehensive in examining risk behaviour (alcohol, tobacco, indoor air pollution), access to water and sanitation, self-reported current overall health status and past medical history, and objectively measured health status (body mass index, blood pressure, lung function, visual acuity, grip strength, and mobility time in walking a 4 metres distance). The survey also investigated access to needed care, utilization of outpatient and inpatient care, health insurance coverage, household health care expenditure and the responsiveness of the health care system. Besides the usual demographic parameters of age, sex and rural-urban residence, this survey also analysed the various health parameters by wealth expenditure quintiles.

This study involving 4,307 respondents, confirmed a number of observations from previous studies thereby suggesting high validity of the results. For example, that access to safe drinking water was better for urban households than for rural households (95% vs. 75%).

Access to sanitation was much lower in both urban (19%) and rural (11%) households. On the other hand, there were some surprises. Only 25% reported low levels of physical activity. The prevalence of current tobacco use among women (5.1%) was among the highest ever observed in Ghana.

The overall self-assessed health status was fair. Only about 41% of the sample rated their own health as very good or good; 17% rated their own health as very bad or bad. Self-assessed health status was worse in the oldest age groups (70+ years). The most commonly reported health problems were hypertension, arthritis and cataracts. The prevalence of hypertension in this sample aged 50 years and older was 55%; 14% of respondents had severe hypertension. The prevalence of overweight or obesity was 30%. Women were more likely to be overweight or obese than men (35% vs. 25%).

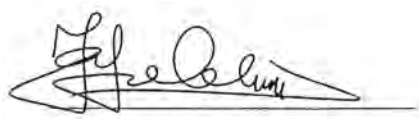
Several risky health behaviours were observed. More than two-thirds (69%) of respondents reported consuming inadequate amounts of fruits and vegetables daily and 10% reported that they currently used a tobacco product. Men were three times as likely as women to be current tobacco users. The proportion who reported heavy alcohol consumption was 3%.

About 97% of respondents said they had needed health care in recent years. Of these, 71% actually received care. Inpatient care covered twice as many chronic non-communicable diseases as acute diseases. In terms of quality of care, respondents rated the responsiveness of inpatient care as 73% and outpatient care as 66%. Two indicator conditions were used to assess health services coverage and preventive health measures: breast and cervical cancer screening. Only 3% of women reported access to cervical cancer screening through Pap smear while 3% reported access to breast cancer screening through mammography.

Overall, only about a quarter of persons in enumerated households had health insurance cover. A significant proportion of respondents were probably poor – 59% were rural residents, 26% were widowed, 29% were currently not working and 37% were in the lowest or poorest two income quintiles. The main reasons for discontinuation of work were health problems and old age. Rural and poor households were the most likely to agree that health expenditures have made them poorer.

These findings lend support for a specific national multi-sectoral policy on ageing. The aged are not benefiting from the NHIS coverage as they should. More effort would be put into streamlining the implementation of the NHIS so that the elderly population benefits. The recent passage of the Disability Law provides some social benefits for our aged population. Besides the recent passage of the Patient Charter, the Ministry of Health will continue to work to fill in the quality of care gaps so that health services become friendlier to the elderly populations in particular. It is also very important for us to target interventions to the youth so that they carry healthy lifestyles through to old age. The Ministry of Health will work with her partners to ensure that this study is repeated every five to ten years so that the effect of our current interventions can be periodically evaluated.

I would like to thank the University of Ghana for conducting this study and to thank the WHO and other partners for funding this study.



Hon. Joseph Yiekeh Kyire (MP)
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Accra

16 May 2011



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We thank all Ghanaians who participated in this study, your time and contributions are extremely valuable.

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Overview of results

The World Health Organization's Study on global AGEing and adult health (SAGE) evolved from the 2003 World Health Survey (WHS), which was organized as a collaboration between WHO, the Ministry of Health through the National Health Research Unit and the University of Ghana Medical School through the Department of Community Health. The WHS in Ghana is also SAGE Ghana Wave 0.

SAGE Wave 1 was carried out in Ghana and five other countries, China, India, Mexico, the Russian Federation and South Africa, between 2007 and 2010. The goal of SAGE is to strengthen, gather, process and manage data on older persons and to respond to identified needs via policy, planning and research. A nationally representative sample of adults aged 50-plus was used in Ghana. Respondents were interviewed about their household and related characteristics, socio-demographics, income and work history, perceived health status, risk factors and preventive health behaviours, chronic conditions and health services coverage, health care utilization, subjective well-being and quality of life, and social networks. In addition, anthropometric measurements, blood pressure, lung function and visual acuity were recorded, and Dry Blood Spots (DBS) for biomarkers collected. Respondents also completed objective health tests (for example, grip strength, cognition tests and timed walks over a 4-metre distance). Interviews and data entry were undertaken between May 2007 and June 2008.

Household and individual characteristics

The total **household population** was 27 988 from 5 266 households. The number of men was 13 196 (47%) with a ratio of 89 males per 100 females. The population aged 50 years and older formed 21% of the household popu-

lation. Households were evenly spread between urban and rural locations. Only a quarter of household members had insurance cover, with slightly higher coverage for women (28%) compared to men (25%).

The mean **household size** was 5.4 persons. More single-person households were located in urban areas, while more large households were found in rural areas. There were more male heads of household (58%) compared to women (42%). Male heads of households were more common in rural areas, while female heads of households were more common in urban localities. More female heads of household were in the low-income quintile. The main income earner followed the same pattern as the sex of the head of household. Single-person households were more common in the low-income quintile, while large household sizes were more common among households in the highest income quintile. The most common living arrangement was a two-generation arrangement with parent/child or grandparent/grandchild. However, 9% of households in the sample were single-person households consisting of a person aged 50-plus years.

Fifty-two percent of **individual respondents** were men, and over 1400 of the 4307 total respondents were aged 70-plus years. Fifty-eight percent of respondents were currently married. The currently married figure for men was 84%, compared to 30.1% for women. Nearly half of women were widowed, compared to only 7% of men. Fifty-four percent of respondents had no formal education. The distribution of mother tongue and ethnicity by sex was similar. A majority of respondents were from the Akan-speaking group (50%) by mother tongue and were of Akan ethnicity (49%). The next most common mother-tongue group was Ewe (12%), with the Ga-Adangbe speakers forming the third largest group (9%). The positions of the Ewe and Ga-Adangbe groups were reversed for ethnicity.

Income, consumption, transfer and retirement

More men were currently working in formal employment (73%) than women (65%), while more women have never worked (2%) than men (1%). The number of respondents employed decreased as age increased; however, as many as 35% of those aged 80+ were currently working. More rural residents were working (75%) than urban residents (60%), and more urban residents had never worked (2%) than rural dwellers (1%).

More men were in **public or private sector employment** than women. Slightly more women were self-employed than men (52% and 48%, respectively). Employment rates dropped with increasing age, yet a sizeable percentage in the public sector of those aged 80+ years continued to work (7%). More urban residents were in public and private sector employment, while rural residents were more likely to be in the informal sector or self-employed.

The mean age for retirement/work stoppage was 61.4 years for men and 61.8 years for women. The mean age for retirement/work stoppage for urban and rural residents was 60.7 and 62.6 years, respectively. Widowed respondents were considerably older at age of work stoppage/retirement than other respondents.

The main **reasons for the discontinuation of work** for both sexes were health-related issues and old age (men, 77% and women, 87%). Respondents aged 50–59 years had the highest prevalence of those who discontinued work due to being laid off or that they could not find a job. More of the urban aged also discontinued work due to being laid off or because they could not find a job than their rural counterparts (7% compared to 2%, respectively). The lowest income quintile had the highest prevalence of work discontinuation (8%) as a result of homemaker-/family-related issues.

Men had higher numbers in all the **occupational groups** than women, except those for elementary occupations. However, relatively higher numbers of women were among the skilled agricultural and fishery workers and craft and craft-related workers. More urban residents were in skilled labour occupation categories (classifications 1 through 5, see Appendix 3), while as many as 80% of rural residents were involved in agricultural and fishery work. Respondents in the higher income quintiles (Q3, Q4 and Q5) were in occupation categories that required more learned skills (1–5), while the lower quintiles comprised more agricultural and fishery workers.

Most **cash and non-cash inflows** into households were from family and kin (91%). More households reported receiving physical assistance from the community (15%) than from family and kin (11%). Monetary and non-monetary transfers *out of* households were most often to family and kin not living in the dwelling.

Households in the richest income group **spend the most on health services** in absolute terms; however, households in the poorest income group spent the most when accounting for capacity to pay. Catastrophic expenditure and subsequent impoverishment is more likely to occur in lower income groups and more so in households with a senior member aged 50 years or older. Poorer households resort to selling personal items to finance health care. In relative terms, the rich and urban households spend more on inpatient services whilst the poor spend more on drugs and traditional health services.

Risk factors and health behaviour

The prevalence of current **daily tobacco use** was 7.6% and was higher among men, rural residents, those with no education, the never married and the poorest income quintile. Prevalence of having never smoked was higher for women, urban residents, those with higher education, the separated/divorced and widowed, and those in the higher income quintiles.

In general, 58% were **lifetime abstainers from alcohol**, and more urban residents were lifetime abstainers from alcohol (64%) than rural residents (54%). There was generally lower **alcohol use** with increasing age among respondents. Men showed higher rates of alcohol use in all categories than women. Those who had completed secondary and high school education had the highest prevalence of frequent heavy drinkers, while those with no formal education had the lowest prevalence of alcohol use and the highest prevalence of lifetime abstainers (65%).

Over two-thirds of both men and women had **insufficient intake of fruits and vegetables** in their diets and this worsened marginally with increasing age: from 66% in the 50–59 years group to 71% in the 70+ year group. Insufficient intake of fruits and vegetables was slightly worse for rural residents (70%) than urban (67%) and there was a clear gradient of worsening dietary intake of fruits and vegetables in the household income quintiles. Insufficiency was worst in the lowest income group (75%) and improved to 63% in the highest income group.

More men (66%) engaged in high-level **physical activity** than women (59%), while high levels of physical activity decreased with age, from 70% in the 50–59 year group to 47% in the 80+ year group. Rural residents showed higher levels of physical activity (74%) than their urban counterparts (46%).

More urban households had **improved sources of domestic water and sanitation** (95% and 19%, respectively) than rural households (75% and 11%, respectively). The highest income quintile households had the best access to improved sources of water and sanitation, with a gradient from the lowest to the highest income quintile groups. About one-fifth of all rural households spent more than 30 minutes getting to the source of their drinking water, versus 10% of urban households. Those in the highest income groups had easier **access to drinking water** than lower income households; 21% of Q1 spent more than 30 minutes accessing drinking water, compared to 14% of Q5.

Many rural and urban households have a considerable burden from indoor air pollution. Almost all rural households (99%) **used solid fuel** and only 0.9% used clean fuel. Seventeen percent of urban households used clean fuel. Use of clean and solid fuel by households showed clear gradients with respect to household income quintiles: the use of clean fuel was highest in wealthier households (32%) and lowest in the poorest households (0.7%). The poorest households had the highest prevalence (99%) of solid fuel use while the wealthiest had the lowest (68%). Most households (77%) either cooked outside or in a separate building used as a kitchen.

Health state

Respondents were asked to rate their “**overall health today**” and their level of difficulty with “**household and work activities over the last 30 days**”. Women rated their health worse than men and an age gradient was observed for both measures. Also almost a quarter (25%) of urban dwellers reported no difficulties, compared to about 16% of rural dwellers. Respondents with higher levels of income reported better self-reported health and lower levels of difficulties with daily activities, although this finding was somewhat in contrast with the results on the prevalence of chronic conditions, which turned out to be higher among the richest group.

A single mean **health score** derived from eight health domains and scaled from zero (poorest health) to 100

(best health) generally showed higher values for men (56) and urban residents (59) than women (51) and rural residents (48). Health decreased as age increased, and decreased as income levels decreased. The mean health score for the 50–59 age group was 58% compared to 39% for those in the 80-plus age group, and was 58 for respondents in the wealthiest income quintile compared to 44 in the poorest quintile.

Looking at health levels in those respondents who reported providing care or support women had higher caregiving levels and lower health scores than men. Those in the higher income quintiles provided more caregiving/support to households in most of the support areas (financial, social/emotional, health, physical and personal).

Morbidity and interventions

In most countries, including Ghana, the contribution from chronic conditions to the overall burden of disease is increasing. This section presents results for *arthritis, stroke, angina, diabetes mellitus, chronic lung disease, asthma, depression, hypertension and edentulism* and also covers injuries, reported cataract surgery, and cervical and breast cancer screening. Four conditions (arthritis, angina, asthma and depression) used both self-report and a set of symptoms with diagnostic algorithm to calculate prevalence and assess concurrence. Self-reported prevalence rates are presented here, unless otherwise noted.

Arthritis: The overall prevalence of arthritis was 14%, including 12% in men and 16% in women. Prevalence increased with increasing age, from 9% in the 50–59 year old group to a high of 22% in the 80+ year old group. Urban residents had higher prevalence by self-report, but had lower symptom-based prevalence than rural residents.

Stroke: The prevalence of stroke was 3% among respondents, slightly lower for men than women. Stroke prevalence increased with age; however, the 80+ year group had the lowest levels of current (35%) and chronic ongoing (50%) therapy. Urban residents had higher prevalence and were also more likely to receive current and chronic therapy than rural residents.

Angina: The overall prevalence of angina was 4%, including 3% in men and 4% in women. Symptom/algorithm-based diagnosis was also more common among women than men and showed higher prevalence

with increasing age, from 2% in the 50-59 year old to a high of 5% in the 70-79 year old group. The urban aged had similar self-reporting rates, but lower symptom-based assessment than the rural aged and received higher current and chronic therapy for angina.

Diabetes: Four percent of all respondents reported being diagnosed with diabetes. For men the prevalence was 3%, and was 4% in women. Diabetes increased with age, from 3% in the 50-59 year old group to 4% in the 70-79 year old group. Respondents in the poorest income quintile had a lower rate of diabetes and but also, more than 50% were not currently on any treatment.

Asthma: Three percent of respondents reporting an asthma diagnosis, with no difference between older men and women. It was marginally more common in women than men when assessed by both self-report and through symptom-reporting/algorithm diagnosis. However, women were more likely to be receiving treatment than men.

Depression: The prevalence of depression by self-report was 2%, with 1% of men and 3% of women reporting being diagnosed. Prevalence rates based on symptom/algorithm-based diagnosis was also more common among women (12%) than men (7%). The self-reported prevalence increased with increasing age, from 0.6% in the 50-59 year old group to a high of 5% in the 80+ year old group. Despite the higher prevalence of depression among women, men were more likely to be on current and chronic ongoing treatment for this illness than women. Urban residents had slightly higher self-reported and symptom-based prevalence than rural residents (rural residents, however, were more likely to get treatment).

Hypertension: The self-reported prevalence of hypertension was 14%. Among men, prevalence was 11% and was 17% in women. Prevalence increased with age, from 12% in the 50-59 year old group to 18% in the 70-79 year old group. Even though women have higher prevalence, men received more current and chronic treatment for hypertension. The prevalence in urban residents was 23% which was nearly three times more than that reported in rural residents (8%). Urban residents were more likely to receive treatment than rural residents.

Injuries: The reported prevalence of road traffic accident with injury was 2%. Men reported lower rates (1%) than women (2%), with the prevalence of resulting disability at 16% in men and higher (29%) in women.

Urban residents had higher rates of road-traffic accidents with injuries and road-traffic accidents with disability than rural residents. The highest prevalence of road traffic accidents with injuries was in the 60-69 year old group (2%) and the lowest was in the 80+ year group (0.7%). The 60-69 year old group also had the highest prevalence of road traffic accidents resulting in disability (26%).

Regarding all other types of accidents including falls, women had higher prevalence than men for accidents with injury (6% compared to 5%) and accidents with disability (27% compared to 16%). Rural residents reported more accidents with resulting injury and/or disability than urban residents. Those in the 70-79 and 80+ year old groups had higher prevalence of other accidents with injuries and disabilities.

The prevalence of edentulism was 3% and for cataracts was 5%. Prevalence was higher for women than men for both **edentulism and cataracts**, and both conditions increased with age. Urban residents had higher rates than rural residents for these conditions. Significant statistical differences existed between age groups and place of residence for both conditions.

About 4% of women reported having undergone breast cancer screening and 11% as having had cervical cancer screening. Self-reported **breast and cervical cancer screening** was higher in the higher income quintiles (Q4 and Q5) than the lower quintiles and also showed a gradient: the rates for screening decreased as age increased (highest in the 50-59 year group and lowest in the 80+ year group).

Health examination

Ten percent of respondents were obese, 20% overweight and 15% underweight. Women were more likely to be obese or overweight than men. The proportion of obese respondents among women was twice that for men. Obesity and overweight were also more common among separated/divorced and widowed respondents. In contrast, respondents living in rural areas and belonging to the poorest income quintile reported higher underweight levels.

A substantially increased risk of metabolic complication, based on waist circumference measurements, was carried by women, urban dwellers, those separated/divorced or widowed and by those in the highest income

group. Similarly, a high risk of metabolic complication based on waist-hip ratio was carried by women and the separated/divorced and widowed.

Health care utilization and health system responsiveness

In the three years prior to interview, 83% of respondents reported needing health care. More women needed care than men (86% compared to 80%, respectively). A total of 62% of women received outpatient care, compared to 55% of men. Eleven percent of women and 13% of men had an overnight stay in a health care facility.

The proportion of respondents who needed health care in the last three years increased with increasing age. The proportion receiving outpatient or inpatient care was also related to the age of the respondent: older respondents were more likely to have needed and received inpatient or outpatient care. Fifteen percent of those aged 70+ years received inpatient care in the last three years compared to 11% in the 18-49 year old group. Also, 64% of the 70+ year group received outpatient care in the last three years compared to 54% in the 18-49 year old group. Urban residents needed more care and received both more inpatient and outpatient care in the last three years than rural residents.

The proportion of respondents who needed care was positively related to income quintile. More respondents in the highest income quintile needed care and also received more care compared to those in the lowest income quintile; nearly half of the respondents in the lowest quintile did not receive care, compared to only 22% of respondents in the highest income quintile.

The number of those not needing care was higher among respondents who worked in the private sector. In the last three years, more public sector respondents needed care compared to those who had retired. Fewer public sector respondents stated that they did not receive care (24%) compared to those who had retired, of whom 47% stated that they did not receive care.

Respondents who received the lowest inpatient care were the retired, those in the lowest income quintile, those in rural areas, those in the 50–59 year old group, the widowed and women.

The responsiveness of a health care system can be used to assess individual experiences as well as to evaluate

systems at a population level. Mean **health system responsiveness** scores for inpatient and outpatient services were higher for men and rural respondents. Responsiveness of the inpatient care systems was highest in the 70+ year old group, while for outpatient services the mean scores did not vary much by age.

Well-being and quality of life

Positive affective states are associated with longer survival and reduced risk of disease, with recent evidence about subjective well-being (SWB) and aging suggests a U-shaped pattern; lower in middle age and higher in earlier and later life.

Quality of life in Ghana was worse in women than men, and worsened with increasing age. Rural dwellers also reported poorer quality of life than their urban counterparts. A wide difference was seen between respondents belonging to the poorest income quintile (worse) and the richest quintile. Women and city dwellers also reported spending more time in an unpleasant state during an average day. Negative affect was more consistent over all age groups than positive affect. Positive affect was highest in the younger and older age groups, and lowest in middle age.

Mortality

There were 113 households with deaths in the previous 24 months among households interviewed. Eighty-five of the deaths had occurred among the 2003 World Health Survey households and 38 deaths among the additional new SAGE Wave 1 households. Verbal autopsy was conducted for each of the identified cases of deaths.



1. Introduction

1.1 Global ageing

Trends in demographic ageing have been increasing in all regions of the world. Table 1.1 displays global trends in ageing in six regions of the world (Asia, Europe, Latin America/Caribbean, North America, Oceania and sub-Saharan Africa).

The older adult population has increased steadily since 1950 in all six regions shown in Table 1.1. The highest overall proportion is in Europe, where by 2050 the aged proportion is estimated to be 36.6%. For Asia, Latin America and North America, projections indicate that increases will bring the proportion of the aged to between 22% and 27% by 2050, and in sub-Saharan Africa the projected population of the aged will be 10.2%. Globally, low fertility and mortality rates are contributing to a rapid increase in older populations, with significant sex differences in the composition of the older adult population. For example, in 1950, 56% of the population in sub-Saharan Africa aged 60+ years was made up of women. This proportion is expected to drop to 53% by 2050; however, the number of women in this region continues to far exceed the number of men in older age groups. This has significant implica-

tions for gender-based considerations in terms of global policies on ageing.

1.2 Emerging health and social trends of ageing

Global health trends show an increasing burden of non-communicable diseases and in low- and middle-income countries there is a double burden of disease, with high levels of both communicable and non-communicable diseases.

Given the demographic trends of rapid increases in older persons in all populations of the world, the significance of chronic diseases among the ageing population and the implications for the quality of life of the older adult population is increasing. This has implications for health care provision, as well as social and economic security issues for the older population.

The WHO's 2004 Global Burden of Disease Update provides evidence of the changing trends in disease patterns of the world, with significant increases in non-communicable diseases among both the general

Table 1.1 Global trends in ageing (regional estimates of the United Nations), 1950–2050

| Region | Per cent of population aged 60 years or older | | | | |
|-------------------------|---|------|------|------|------|
| | 1950 | 1975 | 2000 | 2025 | 2050 |
| Asia | 6.7 | 6.6 | 8.6 | 14.8 | 24.4 |
| Europe | 12.1 | 16.5 | 20.3 | 27.3 | 33.6 |
| Latin America/Caribbean | 5.6 | 6.5 | 8.4 | 14.9 | 25.0 |
| Northern America | 12.4 | 14.6 | 16.3 | 24.7 | 27.0 |
| Oceania | 11.2 | 11.0 | 13.4 | 19.1 | 23.5 |
| Sub-Saharan Africa | 5.2 | 4.8 | 4.8 | 5.5 | 8.3 |

Source: (UNPD 2011).¹

population and the older population. In Ghana, communicable, maternal, perinatal and nutritional conditions caused 60% of all mortalities; non-communicable diseases caused 34% of all mortalities; and injuries constituted 6% of all mortalities². With regard to the non-fatal disease burden, communicable, maternal, perinatal and nutritional conditions constituted 53%, non-communicable diseases 41% and injuries 6%² (Figure 1.1). This indicates that the Ghanaian population suffers a double burden of high rates of both communicable and non-communicable diseases.

1.3 Ageing situation

With regard to the countries that participated in the SAGE survey, similar patterns of increases in the older

population have been observed from 1950 through 2050. The highest projected increase in the older population by 2050 is in Russia, followed by China (see Table 1.2). India and Mexico have projected older population levels of 20–24%. South Africa and Ghana, the two African countries included in the survey, have the lowest projected older population of around 14%, but this is well above the regional average.

Data from the 2000 National Population Census project the population of older persons (60+ years) to be 6.9% by the year 2015. However, the proportion of older persons as calculated from the Ghana Demographic and Health Survey of 2008³ was 7.4%. In all 10 administrative regions of Ghana, trends in the proportion of the older population since the 2000 national census have been increasing, with minor regional differences, as shown in Table 1.3.

Table 1.2 Population ageing trends in SAGE sites, 1950–2050

| Country | Per cent of population aged 60 years or older | | | | |
|--------------|---|------|------|------|------|
| | 1950 | 1975 | 2000 | 2025 | 2050 |
| China | 7.5 | 7.2 | 10.2 | 20.2 | 33.9 |
| Ghana | 4.1 | 4.5 | 5.2 | 7.2 | 11.9 |
| India | 5.4 | 5.6 | 6.7 | 11.0 | 19.1 |
| Mexico | 5.4 | 5.6 | 7.5 | 14.2 | 25.8 |
| Russia | 9.2 | 13.6 | 18.4 | 24.0 | 31.2 |
| South Africa | 6.0 | 5.2 | 5.9 | 10.5 | 14.8 |

Source: UN Population Division 2011¹

Table 1.3 Population ageing trends in Ghana: % of population aged 60+ years, 2000–2015

| Sub-national (region/province/state) | 2000 | 2005 | 2010 | 2015 |
|--------------------------------------|------------|------------|------------|------------|
| Western | 5.4 | 5.5 | 5.7 | 6.0 |
| Central | 7.1 | 7.2 | 7.4 | 7.7 |
| Greater Accra | 5.0 | 5.1 | 5.2 | 5.4 |
| Volta | 8.1 | 8.3 | 8.5 | 8.8 |
| Eastern | 7.6 | 7.8 | 8.0 | 8.3 |
| Ashanti | 6.6 | 6.7 | 6.9 | 7.2 |
| Brong Ahafo | 5.5 | 5.6 | 5.8 | 6.0 |
| Northern | 5.9 | 6.0 | 6.2 | 6.4 |
| Upper East | 8.0 | 8.4 | 8.6 | 9.0 |
| Upper West | 8.1 | 8.3 | 8.5 | 8.9 |
| National average | 6.5 | 6.5 | 6.7 | 6.9 |

Source: 2000 National Population Census⁴

1.4 Ghana's sociodemographic characteristics

Ghana has undertaken four censuses since independence in 1957. The first was conducted in 1960, recording a population of 6.7 million. The 1970 census reported Ghana's population as 8.6 million, with an intercensal growth rate of 2.4% per annum. The 1984 and 2000 censuses put the population at 12.3 million and 18.9 million, respectively, with an average growth rate of 2.7% per annum between the two census periods.⁴

The population density per square kilometre has more than doubled from 36 persons in 1970 to 79 persons in 2000. The proportion of urban population has increased significantly from 29% of the national total in 1970 to 44% in 2000.⁴

The sex ratio for the total population has fallen slightly over the last 30 years from 98.5 males per 100 females in 1970 to 97.9 in 2000. The proportion of the population under 15 years, however, has decreased from 47% in 1970 to 41% in 2000, while the proportion of persons aged 65 years and older increased from less than 4% to slightly more than 5% over the same period. The changes observed in the age structure may be attributed to declining fertility and improvements in the health conditions of the people. Life expectancy at birth has increased from 50 years in 1984 to 55 years in 2000 for males and from 54 years to 60 years over the same period for females.³

Table 1.4 provides estimates of selected socio-demographic indicators for Ghana from domestic data sources.³⁻⁵

The socio-demographic characteristics for Ghana based on domestic data sources in Table 1.4 are compared with the other SAGE countries in Table 1.5 using international data sources.

Ghana's fertility rates and mortality rates have been falling gradually over the years, and this is accompanied by an increase in the size of the older population. However, Ghana suffers a double burden of continuing high impact on population health from communicable diseases and increasing burden of non-communicable diseases causing deaths and a non-fatal disease burden (see Figure 1.1). Health policies for the older persons in the country will need to consider measures to reduce the burden of communicable and non-communicable conditions especially among the older populations.

1.5 Ghana's ageing issues and policy goals

1.5.1 Structure of the health system in Ghana

The health of Ghanaians is the responsibility of the Ministry of Health and the Ghana Health Service (GHS). The Ghana Health Service and Teaching Hospital Act No. 525 of 1996 set up the GHS as part of health sector reforms. This can be likened to designating a new public corporation or company to be charged with the implementation of services in government health facilities at the regional, district and sub-district levels.

Table 1.4 National estimates of selected socio-demographic indicators in Ghana (local data sources)

| Socio-demographic indicators | National values | Source of data |
|---------------------------------------|-----------------|-----------------------|
| Total population | 24 233 431 | National Census, 2010 |
| Male population | 11 801 661 | National Census, 2010 |
| Female population | 12 421 770 | National Census, 2010 |
| Annual population growth rate | 2.4 % | National Census, 2010 |
| Urban population (%) | 44% | National Census, 2000 |
| Dependency ratio (0–14 and 65+/15–64) | 0.85 | National Census, 2000 |
| Crude birth rate | 30.8/1 000 | GDHS, 2008 |
| Total fertility rate (15–49 years) | 4.0 | GDHS, 2008 |
| Population by broad age groups (%) | | National Census, 2000 |
| 0–14 | 40.7 | |
| 15–49 | 45.5 | |
| 50–59 | 13.6 | |
| 60+ | 7.4 | |

Table 1.5 Selected sociodemographic indicators for countries participating in the WHO SAGE survey countries (international data sources)*

| | Year | China | Ghana | India | Mexico | Russia | South Africa |
|---|-------------------|-----------|--------|-----------|---------|---------|--------------|
| Population (,000) | 2010 | 1 341 335 | 24 392 | 1 224 614 | 113 423 | 142 958 | 50 133 |
| Male (,000) | 2010 | 696 341 | 12 409 | 632 547 | 55 933 | 66 135 | 24 824 |
| Female (,000) | 2010 | 644 994 | 11 983 | 592 068 | 57 490 | 76 824 | 25 309 |
| Sex ratio (M/100F) | 2010 | 108.0 | 103.6 | 106.8 | 97.3 | 86.1 | 98.1 |
| Sex ratio at age 60 (M/100F) | 2010 | 94.2 | 94.2 | 91.8 | 86.7 | 51.6 | 68.9 |
| Population by broad age (%) | 2010 | | | | | | |
| 0–14 | | 19.5 | 38.6 | 30.6 | 29.1 | 15.0 | 30.1 |
| 15–59 | | 68.2 | 55.5 | 61.8 | 61.9 | 67.1 | 62.5 |
| 60–79 | | 11.0 | 5.4 | 6.9 | 7.7 | 14.9 | 6.8 |
| 80+ | | 1.4 | 0.5 | 0.7 | 1.3 | 2.9 | 0.6 |
| Average annual population growth rate (%) | 2005–2010 | 0.51 | 2.39 | 1.43 | 1.26 | -0.12 | 0.96 |
| Urban population (%) | 2010 | 49.2 | 51.2 | 30.9 | 77.8 | 73.7 | 61.5 |
| Older adult literacy rate (%) (population 65+ who can read and write)** | Between 2000–2010 | – | 29.5 | 35.2 | 71.5 | 97.6 | 56.4 |

Source: *UN Population Division 2011. **UNICEF 2012,⁶

<http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=2107>

The GHS is directly responsible for health care delivery in the country. Its operations are supervised by a council that reports directly to the Ministry of Health (MOH). The health system incorporates services provided by many partners, including private sector health systems comprising self-financing and faith-

based health facilities (missions), quasi-government organizations, non-governmental organizations (NGOs), and civil society organizations (CSOs). It also works with traditional providers, alternative medicine and faith healers, who provide services to many Ghanaians.

Figure 1.1 Broad burden of disease groups as cause of mortality and morbidity in Ghana from the Global Burden of Disease update, 2004 (in percentages)

- Group I: communicable, maternal, perinatal, and nutritional conditions
- Group II: non-communicable diseases
- Group III: injuries



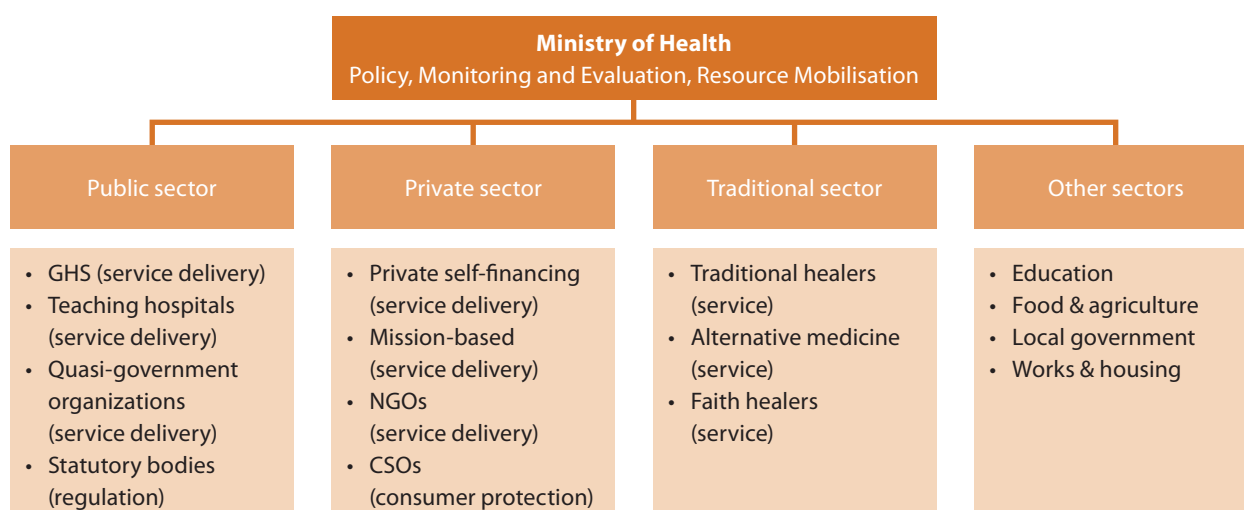
Source: WHO Department of Health Statistics and Information Systems, 2008⁸

Finally, the MOH works with other sectors such as education, agriculture, water, works and housing, and local government for efficient service delivery, as indicated in Figure 1.2.

The health system is classified on the basis of the type of services provided to patients. It consists of national, regional, district, sub-district and community health systems. At the apex of the health service hierarchy is the national referral hospital (Korle-Bu Teaching Hospital) and other teaching hospitals, followed by regional hospitals in the regional capitals of the country, then district hospitals in almost all 135 district capitals, sub-district health posts or health centres, and, finally, community-level health facilities (Community-based Health Planning and Services, CHPS).

National and regional hospitals are all public health facilities. However, at the district level, some health facilities are privately owned or belong to missions or quasi-governmental organizations.

Figure 1.2 Structural relationship and key functions of the Ghanaian health sector



1.5.2 Selected indicators on health expenditure, mortality and health outcomes for Ghana

The total expenditure on health in Ghana as a percentage of gross domestic product (GDP) is 6%, while government expenditure on health makes up 5.5% of total government spending (see Table 1.6). Private expenditure on health as a percentage of total spending on health is quite high (64%), of which 79% of private spending on health is OOP expenditure⁹.

Table 1.6 Selected indicators of health expenditure and health infrastructure in Ghana

| Health status indicators | |
|--|-------|
| Total expenditure on health (% of GDP) | 6.0 |
| General government expenditure on health (% of total expenditure on health) | 36.1 |
| Private expenditure on health (% of total expenditure on health) | 63.9 |
| General government expenditure on health (% of total government expenditure) | 5.5 |
| External resources for health (% of total expenditure on health) | 78.9 |
| OOP health expenditure per capita (in Cedis) | 29 |
| Physicians and surgeons (national total) | 2 200 |
| Dentists and dental surgeons (national total) | 46 |
| Public health physicians (national total) | 60 |
| Trained geriatricians (national total) | – |
| % of births delivered in medical institution | 57 |
| % of deliveries assisted by health professional(s) | 59 |
| % of children fully immunized | 79 |

Source: World Health Statistics 2008¹⁰, WHO Global Health Expenditure Database 2012¹¹, GDHS 2008³

The distribution of selected specialties of doctors providing health services in public facilities is included in Table 1.6.

The health services in Ghana continue to make moderate improvements in some health outcome indicators, including immunization coverage, deliveries in health facilities, and deliveries assisted by skilled health care professionals, as seen in Table 1.4a.

Selected health indicators for Ghana are shown in Table 1.7.

Table 1.7 Selected indicators of mortality and health outcomes for Ghana, 2007/8

| Health indicator | Sex | Estimated value |
|--|--------|-----------------|
| Life expectancy at birth (in years) | Male | 60 |
| | Female | 64 |
| | Both | 62 |
| Healthy life expectancy at birth (in years) | Male | 49 |
| | Female | 50 |
| | Both | 50 |
| Infant mortality rate per 1 000 live births | Male | 54 |
| | Female | 48 |
| | Both | 51 |
| Under-5 mortality rate per 1 000 live births | Male | 81 |
| | Female | 71 |
| | Both | 76 |
| Crude death rate per 1 000 population | Male | 11 |
| | Female | 11 |
| | Both | 11 |

Source: World Health Statistics 2010¹², National Health Accounts 2007¹³

1.5.3 Ageing and related policy initiatives in Ghana

In Ghana, the implications of ageing and related policy initiatives are enormous. The increasing size of the older population has implications for many sectors of the Ghanaian economy, including health services, social services, housing, transportation and agriculture, because these sectors become overburdened due to heavy demand on their services from an increasingly ageing population.

The national policy goal is to provide a framework that is capable of transforming and improving the lives of older persons in Ghanaian society. The vision is to achieve the overall social, economic and cultural reintegration of older persons into mainstream society, and to enable them to participate fully in the national development process and to promote active ageing with adequate security and dignity. Ghana currently has a draft national ageing policy that is yet to be approved by the cabinet.

The policies and strategies that will be promoted and pursued by government to improve the living standards of older persons in Ghana include:

- upholding the fundamental human rights of older persons;
- ensuring the active participation of older persons in society and development;
- reducing poverty among older persons;
- improving the health, nutrition and well-being of older persons;
- improving the housing and living environment of older persons;
- strengthening the family and community to provide support to older persons;
- improving income security and enhanced social welfare for older persons;
- providing adequate attention to gender variations in ageing;
- strengthening research, information gathering, processing and management of data on older persons;
- enhancing the capacity to formulate, implement, monitor and evaluate policies on ageing; and,
- improving financing strategies to ensure the sustainability of the implementation of policies and programmes for older persons.

In the Ghanaian health care system, persons above 70 years of age are automatically put on the National

Health Insurance Scheme and access health services are free at the point of use. Socially, the government's Growth and Poverty Reduction Strategy has a Livelihood Empowerment Against Poverty (LEAP) component that provides basic monetary support for poor and vulnerable members of the population, including the aged.

1.6 Ageing-related studies, data and policy gap

Information on the older population in Ghana is generally obtained from national census and other national surveys (demographic and health surveys and living standard surveys.) There is, however, a paucity of data from studies and surveys on the aged specifically. The census and other national surveys, although very useful, have limited periodicity of data collection and detail on the older population. There is currently only a draft national policy and implementation plan on the aged, developed by the Ministry of Employment and Social Welfare, which is awaiting cabinet approval. It will therefore be necessary to carry out the SAGE survey in Ghana to complement the existing ageing data sources for monitoring policy goals and programmes. Longitudinal ageing and adult health data are gathered by the SAGE survey in order that trends and changes in health and well-being can be monitored.

Data and information on the older population in Ghana from the SAGE survey will greatly complement the information from the national census and other national surveys, fill gaps in data on the aged, and help shape policy development and implementation plans for activities and programmes geared towards improving the quality of life of the aged in Ghana.

Additionally, linkages of national-level SAGE data to the INDEPTH sites in Ghana (Navarongo, Kintampo and Dodowa) and the Accra Women's Health Study will further bridge the gaps in strengthening, gathering, processing and managing data on older persons that are responsive to the needs of the older population in terms of policy, planning, implementation and research.

1.7 SAGE global coverage and WHS

The World Health Organization's (WHO) SAGE survey evolved from the World Health Survey (WHS) of 2002–2004 in Ghana, which was organized as a collaboration

between WHO, the Ministry of Health through the National Health Research Unit, and the University of Ghana Medical School through the Department of Community Health. The rationale for the WHS was based on the need for timely, reliable information to improve the health of the population, the need for high-quality information on the input and outcome of health systems for evidence-based programmes, and the desire to supplement routine health information systems.

The WHS forms the baseline (Wave 0) for the SAGE survey in Ghana, India, Mexico and the Russian Federation. Similarly, data from the SAGE–INDEPTH collaboration will produce longitudinal data from field sites in Ghana, South Africa and India by 2013. The SAGE survey is a longitudinal study projected to continue for the next 5–10 years. The unit of analysis for the SAGE survey is the household and the target universe is the population living within individual households in the entire territory of Ghana.

The major interests of the WHS was to produce poverty maps in terms of identifying where the poor resided, their health status, their access to health care services and their utilization of such services. The SAGE survey aims to further obtain reliable, valid and comparable data on levels of health in a range of key domains for older adult populations, build linkages with other national and cross-national ageing studies, and to provide a public-access information base for evidence-based policy debate among all stakeholders.

1.8 SAGE goals and objectives

The goal of the SAGE survey is generally to strengthen, gather, process and manage data on older persons and to respond to health needs (policy, planning and research) with the following specific objectives to:

- obtain reliable, valid and comparable data on levels of health in a range of key domains for older adult populations;
- examine the patterns and dynamics of age-related changes in health using a longitudinal design;
- supplement and cross-validate self-reported measures of health and the anchoring vignette approach to improving the comparability of self-reported measures through measured performance tests for selected health domains;
- collect data on health examinations and biomarkers in order to improve the reliability of data on mor-

bidity and risk factors, and monitor the effects of interventions;

- follow-up on intermediate outcomes, monitor trends, examine transitions and life events, and address relationships between determinants and health and health-related outcomes;
- develop a mechanism to link survey data to data from demographic and health surveillance sites (INDEPTH sites);
- build linkages with other national and cross-national ageing studies; and,
- provide a public-access information base for evidence-based policy debate among all stakeholders.

1.9 Dissemination

The SAGE survey will provide a national report for Ghana. Individual national reports for all the countries involved in the survey will be produced, as well as cross-national reports on all the countries involved in the survey.

Various reports and publications on pertinent health and policy issues pertaining to the aged will be produced and disseminated based on the SAGE survey findings. These issues may have country-specific themes and cross-national or global themes in order to inform policy and ultimately improve the quality of life of the older population.

The SAGE national report will be structured to present data on the main dimensions of the health, social and economic conditions of the older population in Ghana and will highlight the salient features of poor/rich differences and the differences in access to health care services and particular social and economic issues confronting the older population. All results will be broken down by standard sociodemographic characteristics (age, sex, education, rural/urban location, marital status and income quintiles).

In view of the need to address the main policy issues arising from this survey, detailed analysis and technical reports on the survey results will be presented later for the sub-national, national, regional and international levels within and across the modules of the survey.

Reports and publications on countries participating in the SAGE survey and WHS/SAGE databases will be available on the WHO website – www.who.int/healthinfo/sage¹⁴ – and results/summary tables will be available or published online as part of dissemination activities.



2. Methodology

2.1 Sampling design, implementation and size

The sampling method used for the Ghana SAGE Wave 1 was based on the design for the World Health Survey, 2003¹⁵, in which the primary sampling units (PSUs) were stratified by region and location (urban/rural). Selection of the PSUs was based on proportional allocation by size. Each enumeration area (EA) was selected independently within each stratum. In the WHS/SAGE Wave 0, a total of 6 000 households were to be interviewed and therefore 300 EAs were selected nationwide (see Figure 2.1). Twenty households were to be randomly selected in each EA using systematic sampling. The number of EAs per region was based on the population size of the region. For SAGE Wave 1, a total of 5 000 50+ respondents and 1 000 18–49-year-old respondents were required and therefore 250 EAs out of the 298 EAs of the WHS/SAGE Wave 0 were used based on the availability of

respondents aged 50+ years within the EAs. Enumeration areas with no 50+ individuals were not included.

Within each EA, 20 households with one or more 50+ individuals and four households with members aged 18–49 were to be selected. All respondents aged 50+ within households with over 50s from the WHS were automatically selected and additional households with members aged 50+ years were randomly selected to make a total of 20 households for each EA. The four households of the 18–49 years age group were randomly selected from the WHS/SAGE Wave 0 households list per EA. All the 50+ year olds within the selected households were to be interviewed together with the four identified under-50 respondents. The number of households and individuals selected from each urban and rural PSUs is shown in Table 2.1. Field work and data entry were undertaken between May 2007 and June 2008. All data in tables are from this period, unless otherwise indicated.

Table 2.1 PSU coverage: Number of rural and urban enumeration areas selected for WHS and covered in SAGE

| Sub-national (region/province/state) | Number of PSUs | | | |
|---|-----------------|------------|-------------|------------|
| | WHS/SAGE Wave 0 | | SAGE Wave 1 | |
| | Rural | Urban | Rural | Urban |
| Ashanti | 27 | 30 | 22 | 21 |
| Brong Ahafo | 18 | 10 | 15 | 10 |
| Central | 16 | 9 | 15 | 9 |
| Eastern | 22 | 12 | 17 | 11 |
| Greater Accra | 6 | 40 | 5 | 24 |
| North | 21 | 8 | 20 | 6 |
| Upper East | 13 | 2 | 13 | 2 |
| Upper West | 7 | 2 | 6 | 2 |
| Volta | 19 | 7 | 16 | 7 |
| Western | 20 | 11 | 20 | 9 |
| Total | 169 | 131 | 149 | 101 |

Table 2.2 Final samples of households and individual respondents in SAGE Wave 1

| Sub-national (region) | Follow-up from WHS/SAGE Wave 0 for Wave 1 sample | | | | New in SAGE Wave 1 | | | | Total HH | Total Indivl. |
|--------------------------|---|---------|-------|--------|--------------------|--------|-------|--------|-------------|------------------|
| | Urban | | Rural | | Urban | | Rural | | | |
| | HH | Indivl* | HH | Indivl | HH | Indivl | HH | Indivl | | |
| Ashanti | 124 | 32 | 141 | 36 | 350 | 355 | 236 | 238 | 851 | 847 |
| Brong Ahafo | 83 | 22 | 130 | 50 | 131 | 139 | 178 | 183 | 522 | 528 |
| Central | 64 | 33 | 110 | 52 | 146 | 157 | 229 | 240 | 549 | 566 |
| Eastern | 63 | 31 | 116 | 43 | 145 | 162 | 287 | 330 | 611 | 693 |
| Greater Accra | 109 | 29 | 21 | 5 | 402 | 435 | 72 | 72 | 604 | 636 |
| North | 55 | 12 | 146 | 44 | 37 | 40 | 229 | 248 | 467 | 497 |
| Upper East | 18 | 4 | 114 | 38 | 27 | 32 | 151 | 198 | 310 | 402 |
| Upper West | 8 | 2 | 32 | 12 | 38 | 44 | 97 | 107 | 175 | 197 |
| Volta | 55 | 24 | 141 | 63 | 117 | 126 | 213 | 236 | 526 | 561 |
| Western | 60 | 17 | 150 | 54 | 145 | 145 | 299 | 303 | 654 | 644 |
| Total | 639 | 206 | 1101 | 397 | 1538 | 1635 | 1991 | 2155 | 5269 | 5571 |

* HH=household; Indivl=Individual

A total of 30 interviewers and supervisors were trained in two phases. Initially, the full survey team was trained for 10 days centrally in Accra with support from WHO Geneva. Three teams were subsequently formed and assigned to regions and then were retrained in the field. Table 2.2 describes the number of household and individual questionnaires completed by region

2.2 Questionnaires

Six types of questionnaires were used in the SAGE study (see Table 2.3). The respondents were selected in advance and interviewers visited their homes for interviews and measurements. A household questionnaire and individual questionnaire were administered to each respondent. In follow-up households reporting a death in the past two years, a verbal questionnaire was completed. If a respondent was found to be incapable of answering the individual questionnaire, a proxy questionnaire was completed. Within a PSU, two respondents were to be randomly selected for re-test and one for proxy validation. In all, each PSU was to have 20 completed interviews for 50+ years respondents (household and individual), four interviews for the 18-49 years respondents, two re-test questionnaires, one proxy validation questionnaire and verbal autopsy question-

naires where applicable. One of the 251 selected PSUs was not used. This was because the EA which was expected to be located at Korle Bu Teaching hospital could not be traced.

The household and individual questionnaires were translated into three local languages (Akan Twi, and Ga) and used for training. Back translations were also done before use. However, the questionnaire used for the survey was printed in English. Interviewers were given appendices to illustrate various items, response options and concepts. In addition, instruments for blood pressure, height, weight, waist and hip measurements, spirometry, visual acuity (near and distance using tumbling E charts), and stopwatches (to time measured walk) were provided. Blood spots were obtained via finger prick, labelled and stored for future analyses.

Local modification for educational status

In the household and individual questionnaires, the “High school completed” response was considered equivalent to “Middle school completed” because pre-1980s, Ghana did not have a high school category. These were mapped to the International Standard Classification of Education¹⁶. The common local languages and ethnic groupings were used.

Table 2.3 Questionnaire types and description of contents

| Questionnaire type | Domain | Wave 1 measures |
|----------------------------|--|--|
| Household | Household identification, contact and sampling details | Identification and contact details; structure of household; dwelling characteristics; improved water, sanitation and cooking facilities |
| | Transfers and support networks | Family, community and government assistance into and out of the household; informal personal care provision/receipt |
| | Assets, income and expenditure | List of household assets; sources and amount of household income; improved household expenditure on food, goods and services, health care |
| | Household care and health insurance | Persons in household needing care; mandatory and voluntary health insurance coverage |
| Individual | Sociodemographic characteristics | Sex; age; marital status; education; ethnicity/background; religion; language spoken; area of residence; employment and education of parents; childhood residence, migration |
| | Work history and benefits | Length of time worked; reasons for not working; type of employment; mode of payment; hours worked; retirement |
| | Health states and descriptions | Overall self-rated health; eight self-rated health domains (affect, mobility, sleep/energy, cognition, interpersonal activities, vision, self-care and pain (plus breathing in ZAF)); 12-item WHO Disability Assessment Schedule, Version 2 (WHODAS-II); activities of daily living (ADLs); instrumental activities of daily living (IADLs); vignettes on health state descriptions |
| | Anthropometrics, performance tests and biomarkers | Measured blood pressure; self-report and measured height and weight; measured waist and hip circumference; timed walk; near- and distant vision tests; grip strength, executive functioning (verbal recall, digit span forwards and backwards, verbal fluency); spirometry; non-fasting fingerprick blood sample (stored at -20°C) as dried blood spots |
| | Risk factors and preventive health behaviours | Smoking; alcohol consumption; fruit and vegetable intake; physical activity (GPAQ) |
| | Chronic conditions and health services coverage | Self-reported and symptomatic reporting of arthritis; stroke; angina (Rose Questionnaire); asthma; and, depression (ICD-10, DSM-IV). Self-reporting of diabetes; chronic lung disease; hypertension; cataracts; oral health (edentulism); injuries; cervical and breast cancer screening |
| | Health care utilization | Past need for health care; reasons for health care or for not receiving health care; inpatient and outpatient health care: number of admissions / visits within the past 3 years (inpatient) or 1 year (outpatient); reasons for admission / visit; details of hospital or provider; costs of hospitalization or health care visit; satisfaction with treatment; health system responsiveness; vignettes for responsiveness of health services |
| | Social cohesion | Community involvement and social networks; perceptions of other people and institutions; safety in local area; stress; interest in politics and perceptions of government |
| | Subjective well-being and quality of life | Perceptions about quality of life and well-being; 8-item WHO Quality of Life measure (WHOQoL); Day Reconstruction Method (DRM) |
| | Impact of caregiving | Household members needing care; type of care required; length of time spent on care; costs of care; impact of providing care on career well-being |
| Proxy | IQ Code | IQ Code; |
| | Health state descriptions | All measures described above for individual data |
| | Chronic conditions | All measures described above for individual data |
| | Health care utilization | All measures described above for individual data |
| Proxy validation | Quality control measure | Supervisor checks that proxy interview warranted and completed |
| Retest | Quality control measure | Selected key variables for household and individual questionnaires repeated up to one week after initial interview. |
| Mortality (verbal autopsy) | Deaths and cause of death | Verbal Autopsy for all deaths within past 24 months in households |

Note: Section 9000 of the individual questionnaire allowed the interviewer to document observations during the interviews.

2.3 Health and biomarker measurements

In addition to self-reports on health and well-being, direct health examination and biomarker measurements (blood samples, anthropometric measurements and performance tests) were included in the survey. Informed consent was obtained from each respondent for interviews, measurements and blood samples.

2.4 Geodata

The location's GPS data were taken in front of respondents' houses with a minimum of five satellites available to be accepted for readings to be accurate. Sampling distributions and clustering are available in Figure 2.1. These geo-data could be used for future analysis (for example, distance to health care facilities, finding respondents for the next round of data collection, finding respondents for validation studies/sub-studies).

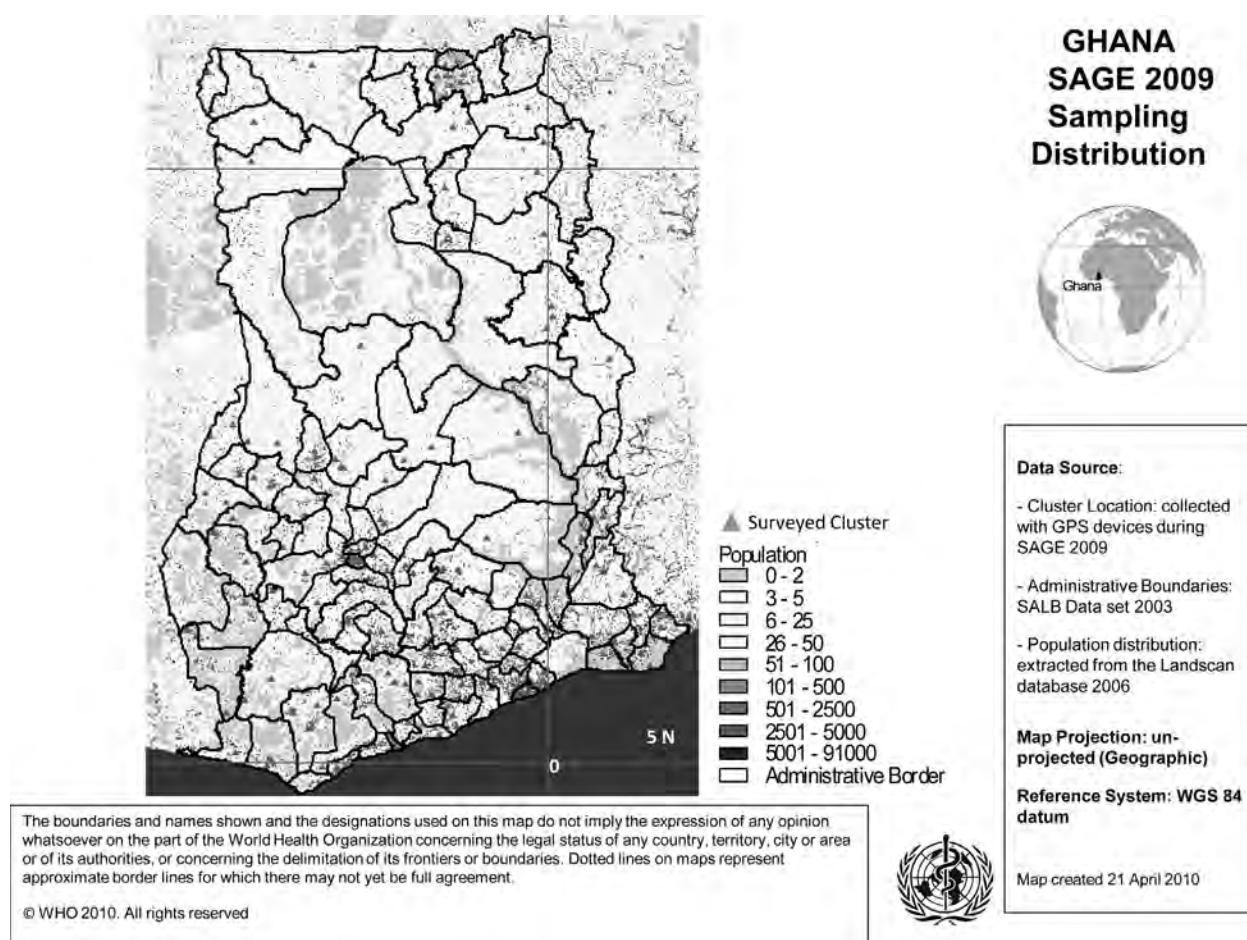
2.5 Data collection procedures

SAGE data collection was done manually during face-to-face interviews in respondents' homes. In urban areas, some respondents were contacted by telephone for re-contacts. A team consisted of four interviewers and one supervisor assigned to one PSU. Each interviewer was to complete interviews with two respondents per day, and was to approach households up to three times to locate respondents. The supervisors conducted editing and also completed the blood sample collection, blood pressure measurements and spirometry. Re-test interviews were to be done within seven days. Completed questionnaires were organized and documented centrally before data entry. Two centres were organized in Ghana for data entry and then the final product was transferred to Geneva.

2.6 Survey metrics and data quality

The SAGE Wave 1 questionnaire borrowed heavily from WHS/SAGE Wave 0 instruments. Survey metrics

Figure 2.1 Distribution of EAs for SAGE Wave 1



for Wave 0 were generated for all 70 participating countries, including Ghana. Survey metrics for the new modules/questions in Wave 1 were generated, along with an assessment of accuracy of age reporting and response rates as a measure of the representativeness of the population of interest.

Response rates are a common metric to assess survey quality. The number of households completed by region is presented in Table 2.4 together with male/female ratios, to give a sense of the spread of interviews around the country. The three northern regions had more men than women compared to the rest of the regions. Volta region and Greater Accra regions had relatively more women than the national average.

Table 2.5 displays the number of individual questionnaires and proxy questionnaires completed. The proxy interviews were done on behalf of individuals found to be incapable of comprehending the questions as a result of being too old or ill or of low IQ. In that case, family members who are believed to know the individual are selected to complete the proxy questionnaires. Again, based on the male to female ratios, it was concluded that more women were not included in the sample from the three northern Regions. The predominant religion for the Northern regions is Islam and this could explain the difficulty of interviewing women. A total of 214 retest interviews were conducted as well as 16 proxy validations – both for quality control purposes. Verbal autopsy interviews were conducted for the deaths identified during the survey and they are yet to be analysed.

Table 2.4 Number of household interviews completed and household male/female (M/F) ratios

| Sub-national (region) | Household interviews | M/F |
|-----------------------|----------------------|-------------|
| Ashanti | 836 | 0.89 |
| Brong Ahafo | 509 | 0.90 |
| Central | 543 | 0.86 |
| Eastern | 607 | 0.87 |
| Greater Accra | 591 | 0.84 |
| North | 460 | 1.07 |
| Upper East | 309 | 1.08 |
| Upper West | 170 | 1.19 |
| Volta | 517 | 0.82 |
| Western | 635 | 0.88 |
| Total | 5 177 | 0.92 |

Response rates are an indicator of survey quality and important indicators of the likelihood of non-response bias. The response rates (RR) here are generated for both the household (HH) questionnaire and the individual questionnaire.

The response rate in general was very high especially for the households compared to the individual questionnaires. The range for the household questionnaires was between 97.1% and 99.7% (Table 2.6). For the individual, the response rate ranged between 92.1% for women and 97.0% for men.

During the debriefing of the survey team, it was reported that some of the equipment was faulty; some respondents could not blow into the spirometers; the rainy season affected the work in some places; and, in the EAs that were sparsely populated, locating respondents was a substantial challenge.

2.6.2 Age reporting Myers blended index

Age is an important study variable in demography and epidemiological studies. Misstatement of age is one example of content error in census and surveys. Age heaping is a common phenomenon and is considered to be a measure of data quality and consistency¹⁷. The approximation of age manifests itself in the phenomenon of age heaping in self-reported or proxy age data.

In this report, age heaping and digit preference were calculated using Myers' blended index. Myers' blended

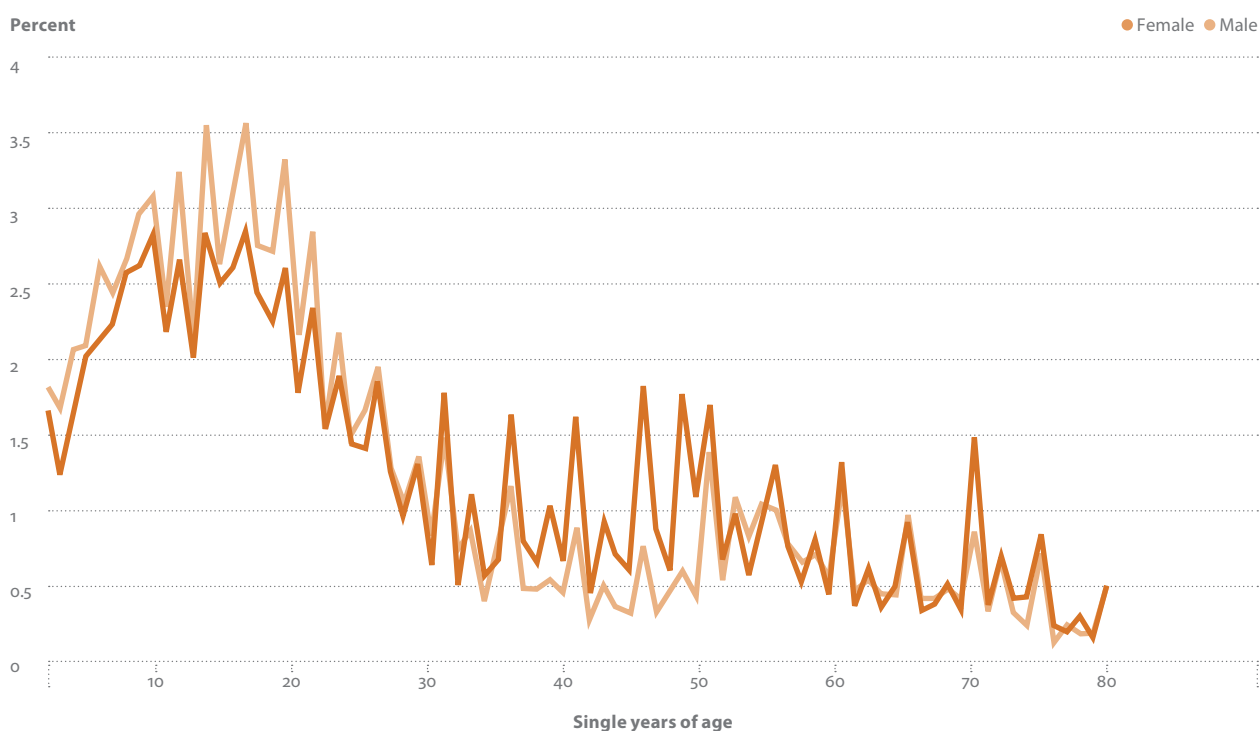
Table 2.5 Number of individual and proxy interviews completed, and M/F ratios

| Sub-national (region/ province/state) | Individual | Proxy | M/F |
|---------------------------------------|--------------|-----------|-------------|
| Ashanti | 826 | 3 | 0.96 |
| Brong Ahafo | 517 | 1 | 1.06 |
| Central | 566 | 0 | 0.74 |
| Eastern | 647 | 3 | 0.98 |
| Greater Accra | 628 | 3 | 0.93 |
| North | 480 | 3 | 1.95 |
| Upper East | 352 | 2 | 1.95 |
| Upper West | 174 | 0 | 2.3 |
| Volta | 502 | 1 | 0.83 |
| Western | 637 | 0 | 0.98 |
| Total | 5 329 | 16 | 1.06 |

Table 2.6 Household and individual response rates by selected background characteristics

| Characteristics | HH response rate | HHS contacted | Individual* response rate | Individuals contacted |
|------------------------|------------------|---------------|---------------------------|-----------------------|
| Age group | | | | |
| 18–49 | 99.2 | 989 | 95.8 | 792 |
| 50–59 | 99.7 | 1 535 | 93.4 | 1 695 |
| 60–69 | 99.8 | 1 059 | 95.4 | 1 162 |
| 70–79 | 99.9 | 891 | 95.0 | 981 |
| 80+ | 99.7 | 382 | 94.9 | 449 |
| Sex | | | | |
| Male | 99.6 | 3 131 | 97.0 | 2 751 |
| Female | 99.6 | 2 028 | 92.1 | 2 594 |
| Residence | | | | |
| Urban | 97.1 | 2 177 | 94.0 | 2 204 |
| Rural | 98.4 | 3 092 | 95.0 | 3 144 |
| Income quintile | | | | |
| Q1 (lowest) | 99.9 | 1 027 | 95.7 | 1 031 |
| Q2 | 100 | 1 027 | 94.7 | 1 055 |
| Q3 | 99.9 | 1 027 | 94.9 | 1 051 |
| Q4 | 100 | 1 027 | 94.8 | 1 097 |
| Q5 (highest) | 100 | 1 027 | 93.1 | 1 104 |

* Individual here includes both individual and proxy interviews.

Figure 2.2 Age heaping using Myers' blended method for household members in SAGE-Ghana

Source: SAGE 2007–2010



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. In this report, Myers’ blended index is used to evaluate the quality of data¹⁸. Myers’ blended index is calculated for ages 10 and above and shows the excess or deficit of people in ages ending in any of the 10 digits expressed as percentages. It is based on the assumption that the population is equally distributed among the different ages. Myer’s blended index is the absolute value sum of percentage differences between the reported and expected age distribution. It ranges from 0 to 99, 0 meaning no age heaping and 99 meaning all ages are reported with the same terminal digit. If Myers’ blended index is over 60, age heaping is very severe and the data quality is poor.

Figure 2.2 shows the Myers’ blended index for household members in SAGE Ghana. Myers’ blended index is 11.9, which indicates that a minimum of 11.9% of the population reported ages with an incorrect final digit. The index value is very low with some evidence of heaping on end digits 0 and 5.



3. Household and individual characteristics

3.1 Household characteristics

3.1.1 Sociodemographics of household population

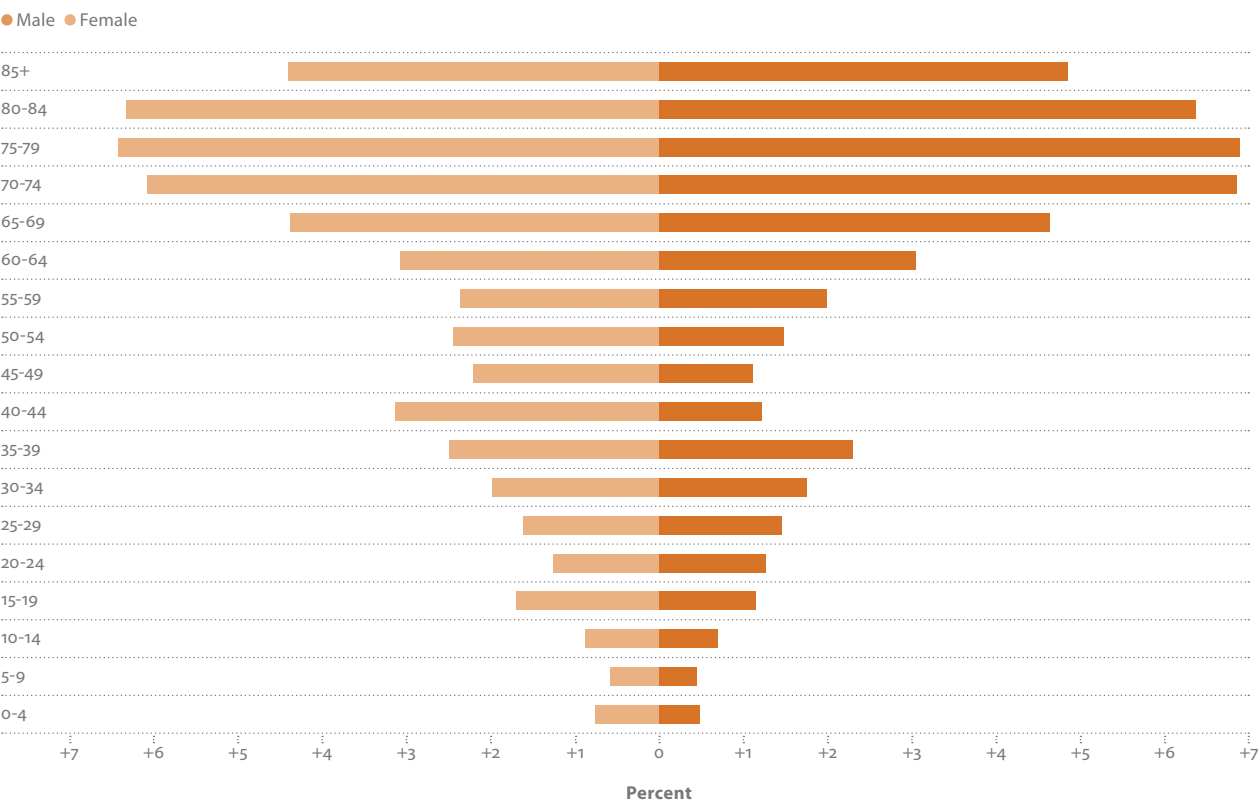
The total number of persons listed in SAGE households was 27 988 of all ages, with 13 196 (47.1%) being men and 14 792 being women (Table 3.1). The male: female sex ratio was 1:1.12. A total of 34% of the household population was under the age of 15 years and 21% was older than 60 years. A graphic representation, as a population pyramid, provides a better sense of the household population surveyed (Figure 3.1). Half of the

population was located in urban areas, with a higher proportion of men being in rural areas compared to the proportion of women.

Sixty per cent of household members were classified as never married, not cohabitating or not eligible (being children). The proportion currently married was 26.8%, while 1.6% of respondents were cohabiting, 4.2% were separated/divorced and 6.1% were widowed.

In general, the educational status of men was higher than that of women. The percentage of men with no formal schooling was lower (23.6%) than that for women (33.6%). At the primary school level, there was very little

Figure 3.1 Population pyramid based on sampled household population*



*Note: Sample size may differ slightly from Table 3.1.

Source: SAGE-Ghana, 2007-2010

Table 3.1 Household population by age, residence, marital status, educational attainment and care issues by sex

| Characteristics | Male (%) | Female (%) | Total (%) | N |
|---|---------------|---------------|------------|---------------|
| Age group | | | | |
| 0–4 | 9.7 | 7.9 | 8.8 | 2 450 |
| 5–9 | 12.8 | 11.7 | 12.2 | 3 407 |
| 10–14 | 14 | 12.1 | 13 | 3 636 |
| 15–19 | 14.5 | 11.8 | 13.1 | 3 652 |
| 20–24 | 10.3 | 9.0 | 9.6 | 2 689 |
| 25–29 | 6.6 | 6.2 | 6.4 | 1 777 |
| 30–34 | 4.3 | 4.6 | 4.4 | 1 239 |
| 35–39 | 3.0 | 4.6 | 3.9 | 1 076 |
| 40–44 | 2.2 | 4.3 | 3.4 | 936 |
| 45–49 | 2.4 | 5.8 | 4.2 | 1 177 |
| 50–54 | 4.9 | 4.9 | 4.9 | 1 360 |
| 55–59 | 4.0 | 3.9 | 3.9 | 1 096 |
| 60–64 | 3.1 | 3.1 | 3.1 | 861 |
| 65–69 | 2.6 | 2.5 | 2.5 | 709 |
| 70–74 | 2.4 | 3.2 | 2.8 | 789 |
| 75–79 | 1.4 | 1.7 | 1.6 | 443 |
| 80+ | 1.8 | 2.6 | 2.2 | 620 |
| Total | 100 | 100 | 100 | 27 916 |
| Residence | | | | |
| Urban | 47.3 | 51.6 | 49.6 | 13 878 |
| Rural | 52.7 | 48.4 | 50.4 | 14 110 |
| Education status | | | | |
| No formal schooling | 23.6 | 33.6 | 28.9 | 8 078 |
| Less than primary school | 34.4 | 32.1 | 33.2 | 9 297 |
| Primary school completed | 19.1 | 17.6 | 18.3 | 5 133 |
| Secondary school completed | 11.0 | 8.5 | 9.7 | 2 711 |
| High school (or equivalent) completed | 8.7 | 6.2 | 7.4 | 2 065 |
| College/university completed | 2.5 | 1.3 | 1.8 | 513 |
| Postgraduate degree completed | 0.2 | 0.1 | 0.1 | 40 |
| Marital status | | | | |
| Never married (and not cohabiting and children) | 67.7 | 53.7 | 60.3 | 16 882 |
| Currently married | 26.3 | 27.3 | 26.8 | 7 504 |
| Cohabiting | 1.0 | 2.2 | 1.6 | 454 |
| Separated/divorced | 2.4 | 5.8 | 4.2 | 1 176 |
| Widowed | 1.6 | 10.1 | 6.1 | 1 714 |
| Insurance cover | | | | |
| Mandatory | 1.3 | 1.5 | 1.4 | 394 |
| Voluntary | 22.9 | 25.4 | 24.2 | 6 784 |
| Both | 1.0 | 1.2 | 1.1 | 311 |
| None | 74.8 | 71.9 | 73.2 | 20 499 |
| Total population, all ages | 13 196 | 14 792 | | 27 988 |

Note: Age grouping is truncated at age 84 and therefore total is 27 917 and for some categories in the cross table, the total of the sub groupings may differ from 27 988 on account of missing data on the other variable.

difference between the sexes, but the gap between the proportion of men and women with higher education increased with increasing levels of education.

Only a quarter of respondents had insurance cover, which was mostly voluntary. Women had relatively higher cover (28.1%) compared to men (25.2%).

3.1.2 Household size, household head and main income earner

Table 3.2 presents the results of household size distribution, household head type, and main income earner type of the sample households by urban/rural location.

The distribution of households according to locality was uniform. About 52% of single-person households were located in urban areas, while only 43% of the larger household sizes were located in urban areas. The mean number of persons per household was 5.3 for urban areas and 5.6 for rural areas (5.4 persons, overall).

Household heads were classified into four groups by age and sex. Three hundred and sixty-one households had

younger women (aged 18-49) as heads and 64.3% of younger woman-headed households were found in urban areas. Having a man, whether younger or older (aged 50-plus), as head of household was more common in rural areas.

A woman as main income earner was more common in urban areas. Sixty-seven percent of households that had younger women as the main income earners were located in urban areas, while 54.7% of households with older women as the main income earners were also in urban areas. The reverse was the case with households that had men as the main income earners.

Single-person households were more common among the lower income quintiles, while large household sizes were more common among the highest income quintiles. In general, there was a relationship between household size and income quintile in which the household was located or assigned.

The category of head of household, in terms of being younger or older and by sex, did not seem to be related to income quintile. However, older men as heads of households tended to be more common in the highest income quintile.

Table 3.2 Household size, household head type and main income earner type, by urban/rural location

| Characteristics | Urban (%) | Rural (%) | N |
|---------------------------------------|--------------|--------------|--------------|
| Household size (persons) | | | |
| 1 | 51.5 | 48.5 | 562 |
| 2-5 | 52.1 | 47.9 | 2 439 |
| 6-10 | 50.4 | 49.6 | 1 799 |
| 11+ | 42.8 | 57.2 | 358 |
| Mean household size | 5.3 | 5.6 | – |
| Household head | | | |
| Younger woman (YW, aged 18-49) | 64.3 | 35.7 | 361 |
| Older woman (OW, aged 50+) | 55.3 | 44.7 | 1 753 |
| Younger man (YM, aged 18-49) | 42.5 | 57.5 | 655 |
| Older man (OM, aged 50+) | 47.6 | 52.4 | 2 352 |
| Mean age of household head | 58.4 | 59.4 | – |
| Main income earner | | | |
| YW, aged 18-49 | 67.4 | 32.6 | 502 |
| OW, aged 50+ | 54.7 | 45.3 | 1 406 |
| YM, aged 18-49 | 41.9 | 58.1 | 740 |
| OM, aged 50+ | 46.8 | 53.2 | 2 154 |
| Mean age of main income earner | 55.4 | 56.9 | – |
| Total HHs | 2 620 | 2 538 | 5 158 |

Table 3.3 Household size, household head type and main income earner type, by income quintile*

| Characteristics | Q1 (%) | Q2 (%) | Q3 (%) | Q4 (%) | Q5 (%) | N |
|---------------------------------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Household size (persons) | | | | | | |
| 1 | 30.6 | 27.5 | 21.8 | 14.1 | 6.0 | 554 |
| 2–5 | 17.9 | 18.6 | 18.9 | 22.2 | 22.3 | 2 430 |
| 6–10 | 13.4 | 15.7 | 19.0 | 23.0 | 28.9 | 1 790 |
| 11+ | 11.5 | 18.0 | 20.2 | 19.6 | 30.6 | 356 |
| Mean household size | 2.2 | 2.3 | 2.4 | 2.4 | 2.6 | – |
| Household head | | | | | | |
| YW, aged 18–49 | 15.6 | 21.2 | 21.6 | 22.3 | 19.4 | 359 |
| OW, aged 50+ | 20.4 | 20.7 | 19.2 | 21.0 | 18.8 | 1 753 |
| YM, aged 18–49 | 15.5 | 19.0 | 20.4 | 21.3 | 23.9 | 652 |
| OM, aged 50+ | 15.7 | 16.5 | 18.8 | 21.8 | 27.2 | 2 349 |
| Mean age of household head | 60.8 | 59.3 | 58.7 | 58.3 | 58.6 | – |
| Main income earner | | | | | | |
| YW, aged 18–49 | 15.0 | 18.2 | 19.9 | 24.9 | 22.0 | 502 |
| OW, aged 50+ | 19.6 | 21.5 | 18.8 | 20.6 | 19.5 | 1 406 |
| YM, aged 18–49 | 16.6 | 18.7 | 20.1 | 19.9 | 24.6 | 736 |
| OM, aged 50+ | 15.0 | 16.5 | 19.0 | 22.3 | 27.2 | 2 152 |
| Mean age of main income earner | 57.2 | 57.0 | 56.1 | 55.4 | 56.0 | – |
| Total HHs | 885 | 950 | 991 | 1 100 | 1 203 | 5 130 |

* Income quintile Q1 is the lowest (poorest) and Q5 the highest (wealthiest).

An older man as the main income earner was found to be more common among the highest income quintile. Twenty-seven per cent of households headed by older men were among the highest income quintile (Table 3.3). The mean age of the main income earner was virtually the same when compared by urban or rural location or by income quintile of the household.

3.1.3 Living arrangements (living alone, multigenerational household)

Four hundred and sixty-nine households out of the total 5 157 (1.0%) had respondents living alone. These single-person households were evenly split by location. Forty-nine percent were located in urban areas, while 50.4% were located in rural areas (Table 3.4). Two-person households with respondent and spouse were found among 37 households and 51.3% were in rural areas. In 67 households, there were two persons both aged 50-plus years

In terms multigenerational living arrangements, the most common living arrangement was a two-generation household consisting of parent/child or grandparent/child. This occurred in 2 290 (44.4%) households out of the 5 157 surveyed (Table 3.4). Skip-generation arrangements were more common in rural areas, while three-generation arrangements occurred evenly in both urban and rural areas. 174 households consisted of a married couple without children (one generation).

Single-person households were found more among the lowest income quintiles (Table 3.5). Less than 20% of single-person households were found among the fourth or fifth income quintiles. In contrast, more households with respondent and spouse were in the high and highest income quintiles. One-generation households were evenly spread among the income quintiles, while skip-generation households were more common among lower income quintiles. Three-generation households were among the highest income quintiles.

Table 3.4 Household living arrangement type by urban/rural location

| Characteristics | Urban (%) | Rural (%) | N |
|---|--------------|--------------|--------------|
| Living arrangements | | | |
| Single-person HH, with person aged 50+ | 49.6 | 50.4 | 470 |
| 50+ HH, with only respondent and spouse (spouse can be younger than 50) | 48.7 | 51.3 | 37 |
| 50+ HH with respondent and spouse both aged 50+ | 37.6 | 62.4 | 67 |
| Multigenerational HHs* | | | |
| One-generation | 46.5 | 53.5 | 174 |
| Two-generation | 50.5 | 49.5 | 2 290 |
| Skip-generation | 48.9 | 51.1 | 317 |
| Three-generation | 50.3 | 49.7 | 1 474 |
| Total HHs | 2 620 | 2 537 | 5 157 |

*Generations are calculated from the household roster: one = e.g. a married couple without children; two = e.g. parent/child or grandparent/child; three = e.g. grandparent/parent/child; skip-generation = e.g. grandparent/grandchild. Note: Skip-generation households are a type of two-generation household and were not included in the column totals.

Table 3.5 Household living arrangement type: living alone, multigenerational HHs and skip-generation HHs, by income quintile*

| Characteristics | Q1 (%) | Q2 (%) | Q3 (%) | Q4 (%) | Q5 (%) | N |
|---|------------|------------|------------|--------------|--------------|--------------|
| Living arrangements | | | | | | |
| Single-person HH, with person aged 50+ | 33.3 | 27.3 | 20.5 | 13.6 | 5.4 | 470 |
| 50+ HH, with only respondent and spouse (spouse can be younger than 50) | 15.1 | 11.9 | 31.5 | 22.4 | 19.1 | 37 |
| 50+ HH with respondent and spouse both aged 50+ | 17.4 | 14.0 | 22.1 | 23.9 | 22.6 | 67 |
| Multigenerational HHs | | | | | | |
| One-generation | 15.7 | 14.0 | 23.7 | 25.3 | 21.4 | 174 |
| Two-generation | 15.8 | 17.6 | 18.3 | 21.5 | 26.8 | 2 283 |
| Skip-generation | 28.6 | 25.4 | 20 | 16.7 | 9.2 | 316 |
| Three-generation | 12.9 | 16.2 | 20.1 | 24.5 | 26.2 | 1 465 |
| Total HHs | 885 | 950 | 991 | 1 100 | 1 203 | 5 130 |

* Income quintile Q1 is the lowest (poorest) and Q5 the highest (wealthiest).

3.1.4 Household head characteristics

Table 3.6 highlights how income status varies by household socioeconomic characteristics (including, for example, households headed by older females versus males or younger females). The box opposite describes the notion of permanent income and the methodology used to measure it, based on household assets.

Fifty-three percent of male household heads were located in rural areas, while 56.9% of female heads of

- Income quintiles were derived from the household ownership of durable goods, dwelling characteristics, and access to services such as improved water, sanitation and cooking fuel.
- A total of 21 assets were included.
- 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.
- Using a Bayesian post-estimation (empirical Bayes) method, households were arranged on the asset ladder, where the raw continuous income estimates are transformed into quintiles in the final step.

Table 3.6 Selected household sociodemographic characteristics by sex of household head

| Characteristics | Male (%) | Female (%) | Total (%) | N |
|-----------------------------------|--------------|--------------|-----------|--------------|
| Age group of HH head | | | | |
| 18–29 | 2.2 | 1.5 | 1.9 | 101 |
| 30–39 | 8.2 | 5.8 | 7.2 | 379 |
| 40–49 | 11.3 | 9.8 | 10.7 | 564 |
| 50–59 | 34.8 | 29.6 | 32.6 | 1 719 |
| 60–69 | 22.3 | 22.7 | 22.4 | 1 181 |
| 70–79 | 15.0 | 22.4 | 18.0 | 950 |
| 80+ | 6.3 | 8.2 | 7.1 | 371 |
| Residence | | | | |
| Urban | 46.5 | 56.9 | 50.8 | 2 674 |
| Rural | 53.5 | 43.1 | 49.2 | 2 591 |
| Education of HH head | | | | |
| No education | 34.2 | 55.3 | 42.9 | 2 247 |
| Less than primary school | 10.0 | 14.3 | 11.8 | 617 |
| Primary school completed | 14.3 | 10.7 | 12.8 | 672 |
| Secondary education complete | 10.2 | 4.2 | 7.8 | 407 |
| High school (or equiv.) completed | 25.6 | 13.7 | 20.7 | 1 084 |
| College/university completed | 5.1 | 1.7 | 3.7 | 196 |
| Postgraduate degree completed | 0.6 | 0 | 0.4 | 19 |
| Income quintile | | | | |
| Q1 (lowest) | 15.7 | 19.6 | 17.3 | 907 |
| Q2 | 17.0 | 20.8 | 18.6 | 976 |
| Q3 | 19.1 | 19.6 | 19.3 | 1 016 |
| Q4 | 21.7 | 21.2 | 21.5 | 1 128 |
| Q5 (highest) | 26.5 | 18.9 | 23.4 | 1 228 |
| Total HHs | 3 093 | 2 173 | – | 5 266 |

households were located in urban areas. The distribution of household head by sex and age showed more older female heads than older male heads. Twenty-two percent and 8.2% of women were aged 70–79 and 80-plus, respectively, while for men, the corresponding figures were 15.0 and 6.3, respectively. Fifty-five percent of female heads of household had no education, compared to only 34.2% of male heads of household. The prevalence of higher level educational status was greater among men than women, with 5.1% of men compared to 1.7% of women having completed college or university. The distribution of income quintiles among the heads of household showed that more women were in the lowest income quintile (19.6%) than men (15.7%). There were fewer female heads of household

(18.9%) compared to male heads of household (26.5%) in the highest income quintile.

3.2 Individual respondents

3.2.1 Age and sex distribution and location

The distribution of individual respondents by age is similar by sex, even through the oldest age group. For example, the sample consisted of 40.6% of men/38.8% of women in the 50–59 age group and 10.2% of men/9.1% of women in the 80+ age group (Table 3.7). The oversample of the older adult population

Table 3.7 Selected sociodemographic characteristics of individual respondents by sex

| Characteristics | Male (%) | Female (%) | Total (%) | N |
|------------------------------------|----------|------------|-----------|-------|
| Age group | | | | |
| 50–59 | 40.6 | 38.8 | 39.7 | 1 712 |
| 60–69 | 26.9 | 28.1 | 27.5 | 1 184 |
| 70–79 | 22.3 | 24.0 | 23.1 | 993 |
| 80+ | 10.2 | 9.1 | 9.7 | 418 |
| Residence | | | | |
| Urban | 40.7 | 41.5 | 41.1 | 1 770 |
| Rural | 59.3 | 58.5 | 58.9 | 2 537 |
| Marital status | | | | |
| Never married (and not cohabiting) | 1.2 | 1.3 | 1.3 | 54 |
| Currently married | 83.6 | 30.1 | 58.2 | 2 505 |
| Cohabiting | 1.1 | 0.6 | 0.8 | 36 |
| Separated/divorced | 7.1 | 19.2 | 12.8 | 553 |
| Widowed | 6.5 | 48.3 | 26.4 | 1 135 |
| Education | | | | |
| No education | 43.4 | 65.5 | 54 | 2 309 |
| Less than primary school | 10.1 | 10.7 | 10.4 | 443 |
| Primary school completed | 12.3 | 9.4 | 10.9 | 468 |
| Secondary education completed | 5.8 | 2.1 | 4.0 | 172 |
| High school (or equiv.) completed | 23.3 | 10.4 | 17.1 | 732 |
| College/university completed | 4.8 | 1.9 | 3.4 | 147 |
| Postgraduate degree completed | 0.3 | 0.1 | 0.2 | 7 |
| Income quintile | | | | |
| Q1 (lowest) | 16.3 | 20.4 | 18.2 | 785 |
| Q2 | 17.2 | 21.1 | 19.1 | 821 |
| Q3 | 19.6 | 21.4 | 20.5 | 880 |
| Q4 | 21.5 | 19.7 | 20.7 | 889 |
| Q5 (highest) | 25.3 | 17.4 | 21.6 | 927 |
| Religion | | | | |
| None | 6.1 | 3.5 | 4.9 | 211 |
| Buddhism | 0.4 | 0.2 | 0.3 | 13 |
| Chinese traditional religion | 0.1 | 0.2 | 0.1 | 6 |
| Christianity | 64.5 | 74.8 | 69.4 | 2 986 |
| Hinduism | 0.1 | 0 | 0 | 2 |
| Islam | 18.9 | 12.4 | 15.8 | 680 |
| Judaism | 0 | 0 | 0 | 2 |
| Primal indigenous | 9.2 | 8.4 | 8.8 | 380 |
| Other | 0.3 | 0.2 | 0.2 | 11 |

| Characteristics | Male (%) | Female (%) | Total (%) | N |
|---------------------------------|--------------|--------------|-----------|--------------|
| Language (mother tongue) | | | | |
| Akan | 47.1 | 52.7 | 49.8 | 2 142 |
| English | 1.2 | 1.7 | 1.5 | 62 |
| Ewe | 11.4 | 13.0 | 12.2 | 523 |
| Ga-Adangbe | 8.5 | 9.0 | 8.7 | 376 |
| Gruma | 1.0 | 0.7 | 0.9 | 37 |
| Grusi | 1.4 | 0.7 | 1.1 | 46 |
| Guan | 1.2 | 1.3 | 1.3 | 55 |
| Mande-Busanga | 1.5 | 1.0 | 1.3 | 55 |
| Mole-Dagbon | 3.3 | 2.7 | 3.0 | 130 |
| Other | 23.3 | 17.0 | 20.3 | 875 |
| Ethnicity | | | | |
| Akan | 45.5 | 52.2 | 48.7 | 2057 |
| Ewe | 6.8 | 7.7 | 7.2 | 305 |
| Ga-Adangbe | 10.1 | 10.9 | 10.5 | 442 |
| Gruma | 5.4 | 5.9 | 5.7 | 239 |
| Grusi | 1.4 | 0.6 | 1.0 | 44 |
| Guan | 1.4 | 1.4 | 1.4 | 58 |
| Mande-Busanga | 1.6 | 1.3 | 1.5 | 63 |
| Mole-Dagbon | 3.1 | 2.0 | 2.6 | 109 |
| Other | 24.6 | 17.8 | 21.4 | 904 |
| Total respondents | 2 259 | 2 048 | – | 4 307 |

is an intentional product of the sampling plan. Forty-one percent of individuals are urban dwellers. The proportion of men was almost the same as women in urban areas (40.7% versus 41.5%).

3.2.2 Marital status

Fifty-eight percent of individual respondents are currently married. However, considerable differences in the sex distribution of marital status exist, where 83.6% of men and just 30.1% of women are currently married. Nearly half of the women were widowed, compared to only 6.5% of the men.

3.2.3 Education

Fifty-four percent of respondents had no formal education, again with considerable sex differences. Over 65% of women had no education, compared to 43.4%

of men. Men and women had comparable levels of “less than primary school” education. At higher levels, the differences between the two sexes become pronounced. For men, 5.8% and 4.8% had completed secondary school and college/university, respectively, while for women, the figures were 2.1% and 1.9%, respectively.

3.2.4 Religion, ethnicity and language

Christians form the majority religious affiliation at 69.4%, while 15.8% of respondents reported following the religion of Islam. Most women (76.2%) and men (64.5%) are Christians. Muslims constituted 18.9% of men compared to 12.4% of women. Traditional religion and no religion formed 8.8% and 4.9% of the overall sample, respectively.

The distributions of mother tongue and ethnicity by sex are similar. A majority of respondents are from the Akan-speaking group (49.8%) by mother tongue and



are of Akan ethnicity (48.7%). The next most common language group is Ewe (12.2%), with the Ga-Adangbe speakers forming the third largest group (8.7%). The positions of the Ewe and Ga-Adangbe groups are reversed for ethnicity. Respondents who speak Gruma, Grusi, Mande-Busanga and Mole-Dagbon, the languages of the three northern regions (Northern, Upper East and Upper West), make up 6.3% of the sample. However, with respect to ethnicity, respondents from these three regions make up 10.6%.



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 section presents results on household/individual respondents' economic conditions, including, employment status and income, work history, and consumption. It also describes results about retirement issues, social and economic transfers, catastrophic health spending, types of care given, and its impact.

4.1 Work history

This module was included in the questionnaire to assess whether the respondent has ever worked for pay, the type of work, place of work and for how long the respondent worked. It also asks about the age at which the respondent started working, and if no longer working, the age at which the respondent stopped working and why. The reported occupation was written down verbatim by the interviewer, then coded and mapped to an international occupation classification scheme (ISCO-88 - International Labour Organization, refer to Appendix 4).

Past and current work status by background characteristics of respondents

Overall, 69% of respondents aged 50-plus were currently working, while 29% were currently not working, having

worked in the past. Only 1.6% of the respondents had never worked (Table 4.1). More older men were currently working (72.6%) than older women (65.3%), while more women had never worked (1.9%) compared to (1.3%) male respondents. With respect to age, the number of older adults who were in employment decreased as age increased, from a high of 85.4% in the 50-59 year group to 35.4% in the 80+ age group. It is interesting to note the high proportion of those aged 80+ years who were currently working. More adults in the oldest age groups were not working: 63.2% in the 80+ years group, compared to 13.5% in the 50-59 year group. More older adults in rural areas were working (75.3%) compared to their urban counterparts (60.2%), and more of the older urban dwellers (2.6%) had never worked compared to their rural counterparts (1.2%).

The pattern of educational level as it related to work history showed that relatively fewer respondents with no education as well as those with University/College and Postgraduate degrees completed were currently working (65% - 68%), versus 73% - 76% of the rest. However, for those who have never worked, the proportion was lower in those with no education (2.1%) than among those who had completed high school (0.4%). The respondents in the highest income quintile (Q5) had the lowest proportion of those who were currently working (64.2%) and the highest for those who were not working (34.6%).

The compulsory retirement age in most formal employment in Ghana is 60 years¹⁹. The mean age for retirement/work stoppage for male SAGE respondents was 61.8 years and that for women was 63.4, that for the urban older adults was 59.7 and for rural dwellers was 65.4 years (Table 4.2). Mean age at retirement was related to age of the respondent. For the respondents in the age group 50-59 years, the mean age at retirement was 47.3 years while respondents aged 80+ years had

Table 4.1 Past and current work status by selected background characteristics

| Characteristics | Ever worked (%) | | Never worked (%) | N |
|-----------------------------------|-------------------|-----------------------|------------------|-------|
| | Currently working | Currently not working | | |
| Sex | | | | |
| Male | 72.6 | 26.1 | 1.3 | 2 244 |
| Female | 65.3 | 32.8 | 1.9 | 2 039 |
| Age group | | | | |
| 50–59 | 85.4 | 13.5 | 1.1 | 1 703 |
| 60–69 | 70.3 | 27.7 | 2.0 | 1 180 |
| 70–79 | 53.6 | 44.2 | 2.2 | 987 |
| 80+ | 35.4 | 63.2 | 1.4 | 413 |
| Residence | | | | |
| Urban | 60.2 | 37.7 | 2.2 | 1 755 |
| Rural | 75.3 | 23.5 | 1.2 | 2 528 |
| Education | | | | |
| No education | 65.0 | 33.0 | 2.1 | 2 301 |
| Less than primary school | 75.5 | 22.2 | 2.3 | 445 |
| Primary school completed | 74.7 | 24.1 | 1.1 | 465 |
| Secondary education completed | 76.3 | 23.2 | 0.6 | 170 |
| High school (or equiv.) completed | 73.1 | 26.5 | 0.4 | 728 |
| College/university completed | 67.3 | 31.2 | 1.5 | 147 |
| Postgraduate degree completed | 67.9 | 32.1 | 0 | 7 |
| Income quintile | | | | |
| Q1 (lowest) | 71.6 | 25.8 | 2.6 | 779 |
| Q2 | 68.3 | 30.1 | 1.6 | 818 |
| Q3 | 71.4 | 27.4 | 1.2 | 880 |
| Q4 | 70.6 | 27.7 | 1.7 | 884 |
| Q5 (highest) | 64.2 | 34.6 | 1.2 | 917 |
| Total respondents | 2 962 | 1 256 | 69 | 4 283 |

mean age of retirement of 75.3 years. Rural dwellers and widowed respondents had older retirement ages on average than their counterparts, otherwise, no clear patterns emerged for the mean age of retirement by the selected sociodemographic variables in Table 4.2.

Health-related issues and old age were the major reasons for the discontinuation of work by both sexes (men, 77.0% and women, 86.9%)(Table 4.2). Those in the 50–59 age group had the highest prevalence among those who discontinued work due to being laid off or could not find a job. More urban dwellers also discontinued work due to being laid off or could not find a job than the rural residents (6.9% compared to 2.3%, respectively).

The highest income quintile had the highest proportion of work discontinuation (6.0%) as a result of being laid off or could not find a job.

4.2 Income and transfers (household level)

Reliable income data are notoriously difficult to obtain in household health surveys. SAGE Wave o in Ghana relied on income estimates derived from household assets, dwelling characteristics and reported income/ consumption – and converted into wealth/income

Table 4.2 Mean age of retirement/work stoppage and reasons for discontinuation of work by age, sex, location and income quintile according to occupational categories

| Characteristics | Mean age of retirement/ work stoppage | Reasons for discontinuation (%) | | | | N |
|--------------------|--|---|---|---|----------------------|-------|
| | | Homemaker/ family-related (1, 6, 7, 8) | Health, old age-related/ retired (5, 9) | Laid off, cannot find job (2, 3, 10) | Others (4, 11,12) | |
| Sex | | | | | | |
| Male | 61.8 | 4.1 | 77.0 | 8.1 | 10.7 | 556 |
| Female | 63.4 | 4.8 | 86.9 | 1.8 | 6.6 | 633 |
| Age group | | | | | | |
| 50–59 | 47.3 | 11.4 | 50.4 | 16.4 | 21.8 | 212 |
| 60–69 | 56.9 | 5.4 | 80.6 | 4.6 | 9.9 | 310 |
| 70–79 | 66.5 | 2.7 | 91.6 | 1.8 | 3.9 | 418 |
| 80+ | 75.3 | 0.5 | 95.9 | 0.3 | 3.3 | 249 |
| Residence | | | | | | |
| Urban | 59.7 | 5.4 | 78.2 | 6.9 | 9.5 | 622 |
| Rural | 65.4 | 3.5 | 86.8 | 2.3 | 7.4 | 567 |
| Marital status | | | | | | |
| Not married | 51.9 | 7.9 | 92.1 | 0 | 0 | 19 |
| Currently married | 60.4 | 4.3 | 76.7 | 7.4 | 11.6 | 576 |
| Cohabiting | 59.6 | 32.4 | 67.6 | 0 | 0 | 6 |
| Separated/divorced | 58.6 | 5.3 | 81.5 | 3.8 | 9.4 | 152 |
| Widowed | 66.3 | 3.9 | 89.7 | 1.7 | 4.7 | 430 |
| Income quintile | | | | | | |
| Q1 | 62.6 | 7.5 | 80.1 | 4.2 | 8.2 | 188 |
| Q2 | 61.8 | 3.8 | 85.9 | 3.6 | 6.7 | 226 |
| Q3 | 66.1 | 4.7 | 82.8 | 5.7 | 6.8 | 231 |
| Q4 | 61.0 | 4.7 | 85.1 | 3.2 | 7.0 | 237 |
| Q5 | 62.3 | 2.8 | 78.5 | 6.0 | 12.7 | 303 |
| Total respondents | 62.9 | 53 | 972 | 56 | 101 | 1 185 |

Note: The figures 1-12 represent codes used in the questionnaire to describe 'reasons for not currently working'. 1= homemaker/caring for family; 2=cannot find job; 3=do voluntary work; 4=in studies/training; 5=health problems/disability; 6=have to take care of family member; 7=do not have the economic need; 8=my family/spouse doesn't want me to work; 9=retired/too old to work; 10=laid off/made redundant; 11= seasonal work; 12=vacation/sick leave/voluntary and temporary time off.

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 inter-relationship between health and wealth are essential for examining changes and trends in health and well-being over time.

Employment type (public sector, private sector, self-employed and informal employment)

Beginning with work history and occupation, as proxies for social standing, SAGE begins to define the contributions of social status to health. In general, 10.5% of respondents were in public sector employment, 3.9% were in private sector employment, 78.3% in self-employment and 7.3% in informal employment (Table 4.3). Some clear gradients by sex, wealth quintile

Table 4.3 Selected background characteristics by employment type

| Characteristics | Employment type (%) | | | | N |
|------------------------------|---------------------|----------------|---------------|---------------------|-------|
| | Public sector | Private sector | Self-employed | Informal employment | |
| Sex | | | | | |
| Male | 15.3 | 5.8 | 72.0 | 7.0 | 2 209 |
| Female | 5.2 | 1.9 | 85.3 | 7.6 | 1 996 |
| Age group | | | | | |
| 50–59 | 12.3 | 4.8 | 76.3 | 6.6 | 1 679 |
| 60–69 | 9.1 | 3.8 | 79.1 | 8.1 | 1 157 |
| 70–79 | 10.1 | 2.9 | 78.9 | 8.1 | 962 |
| 80+ | 7.9 | 3.1 | 83.2 | 5.8 | 408 |
| Residence | | | | | |
| Urban | 18.2 | 7.4 | 68.7 | 5.8 | 1 712 |
| Rural | 5.2 | 1.5 | 85.0 | 8.3 | 2 493 |
| Marital status | | | | | |
| Never married | 13.3 | 2.4 | 74.8 | 9.4 | 54 |
| Currently married | 13.3 | 4.7 | 74.9 | 7.1 | 2 447 |
| Cohabiting | 16.2 | 12.1 | 63.6 | 8.1 | 36 |
| Separated/divorced | 10.1 | 4.7 | 78.8 | 6.5 | 545 |
| Widowed | 4.2 | 1.6 | 86.2 | 8.1 | 1 100 |
| Income quintile | | | | | |
| Q1 (lowest) | 2.1 | 2.3 | 87.4 | 8.3 | 761 |
| Q2 | 5.8 | 2.5 | 83.5 | 8.3 | 806 |
| Q3 | 5.5 | 3.0 | 83.7 | 7.8 | 863 |
| Q4 | 14.0 | 3.2 | 75.1 | 7.6 | 867 |
| Q5 (highest) | 23.3 | 8.0 | 64.3 | 4.4 | 902 |
| Total respondents, N and (%) | 443 (10.5) | 165 (3.9) | 3 303 (78.3) | 306 (7.3) | 4 205 |

and residence location are evident in the results presented in Table 4.3.

More men were in public and private sector employment than women (about three quarters were men and only a quarter were women). However, amongst the self-employed, a slightly higher percentage were women (51.7% versus 48.5% in men). About equal proportions of men (50.3%) and women (49.7%) were in informal employment.

More of the younger (aged 50–59) and urban dwelling respondents were in public and private sector employment, while the oldest age group and rural dwellers worked in the informal sector or were self-employed.

Wealthier respondents (Q5 and Q4) had much higher proportions working in the public and private sectors than the poorer income quintiles. Respondents in the three lowest income quintiles had higher proportions self-employed or working in the informal sector.

Table 4.4 describes the background characteristics of individual respondents by occupation category. The International Labour Organization's Revised International Standard Classification of Occupations²⁰, was used for SAGE, with the major groupings listed in Table 4.4. Fifty-seven percent of the respondents were skilled agricultural and fishery workers category 6), while 23.7% were in elementary occupations (9). Professionals formed 3.7% of the respondents (2). Men had higher rates in all

Table 4.4 Selected background characteristics by occupation category

| Characteristics | Occupation category (%) | | | | | | | | | N |
|--------------------|-------------------------|------|------|------|------|-------|------|------|------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Sex | | | | | | | | | | |
| Male | 77.1 | 66.0 | 72.8 | 80.7 | 71.5 | 56.3 | 57.9 | 77.1 | 29.2 | 2 133 |
| Female | 23.0 | 34.0 | 27.2 | 19.3 | 28.5 | 43.7 | 42.1 | 22.9 | 70.8 | 1 969 |
| Age group | | | | | | | | | | |
| 50–59 | 25.9 | 53.2 | 48.1 | 42.7 | 60.2 | 36.6 | 38.1 | 47.5 | 45.5 | 1 653 |
| 60–69 | 35.3 | 34.1 | 17.3 | 29.4 | 16.8 | 27.8 | 32.3 | 29.7 | 25.6 | 1 127 |
| 70–79 | 38.8 | 11.6 | 30.0 | 21.5 | 20.9 | 24.7 | 21.9 | 18.1 | 19.5 | 934 |
| 80+ | 0 | 1.2 | 4.7 | 6.4 | 2.1 | 11.0 | 7.7 | 4.8 | 9.5 | 388 |
| Residence | | | | | | | | | | |
| Urban | 85.6 | 59.0 | 74.9 | 83.9 | 78.1 | 19.8 | 69.7 | 56.3 | 66.3 | 1 643 |
| Rural | 14.4 | 41.0 | 25.1 | 16.1 | 21.9 | 80.2 | 30.3 | 43.7 | 33.7 | 2 458 |
| Marital status | | | | | | | | | | |
| Never married | 0 | 0 | 1.5 | 1.0 | 6.3 | 1.3 | 1.0 | 3.0 | 1.2 | 52 |
| Currently married | 68.2 | 76.9 | 72.1 | 59.6 | 62.4 | 61.3 | 58.0 | 72.5 | 44.2 | 2 372 |
| Cohabiting | 0 | 2.3 | 0 | 4.0 | 1.3 | 0.7 | 0.4 | 0.9 | 1.1 | 36 |
| Separated/divorced | 31.8 | 9.9 | 12.9 | 22.3 | 16.0 | 11.2 | 14.3 | 11.3 | 16.8 | 537 |
| Widowed | 0 | 11.0 | 13.6 | 13.1 | 14.0 | 25.6 | 26.3 | 12.3 | 36.8 | 1 084 |
| Income quintile | | | | | | | | | | |
| Q1 (lowest) | 5.4 | 2.3 | 2.1 | 2.3 | 9.4 | 24.4 | 11.6 | 14.2 | 12.0 | 750 |
| Q2 | 3.5 | 5.2 | 2.0 | 10.0 | 9.3 | 22.6 | 19.1 | 14.7 | 17.6 | 792 |
| Q3 | 13.3 | 11.0 | 10.7 | 16.8 | 15.2 | 24.0 | 20.3 | 14.0 | 16.6 | 848 |
| Q4 | 10.7 | 29.4 | 24.0 | 20.6 | 38.3 | 17.9 | 22.2 | 29.9 | 24.4 | 851 |
| Q5 (highest) | 67.2 | 52.2 | 61.2 | 50.4 | 27.8 | 11.1 | 26.8 | 27.2 | 29.4 | 855 |
| Total respondents | 38 | 152 | 89 | 78 | 69 | 2 377 | 258 | 78 | 976 | 4 101 |

Notes: 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.

the occupational groups than women, except in the category of elementary occupations (9). However, even though men still had higher rates among the skilled agricultural/fishery workers and craft/related trades workers, relatively higher rates were apparent for women in these two occupation categories (43.7% and 42.1%, respectively).

More of those in the higher skilled occupation categories (1–5) were located in urban areas. This could be related to compulsory retirement ages in formal employment arrangements, where businesses are typically centered in urban areas, and rural return migration patterns in retirement, but is also a true reflection of

the dominance of agriculture as an occupation in rural Ghana. For example, 80% of older adults in rural areas are skilled agricultural/fishery workers, as opposed to 20% of those in urban areas.

Older adults in the upper three income quintiles (Q3, Q4 and Q5) had higher rates employed in the top five occupational groups (1–5), while the lower two income groups (Q1 and Q2) had very low rates for these occupational groups. The lower income quintiles, however, had higher numbers of agricultural and fishery workers. More vulnerable groups, such as widowed respondents, had a high number in occupational category 9 (elementary occupations).

Table 4.5 Mean monthly household income and income sources by selected background characteristics of individual respondents

| Characteristics | Income sources (% distribution) | | | | | Mean monthly income (in old cedi) | N |
|--------------------------|---------------------------------|----------------------|----------------------|--------------------------------|-------|--------------------------------------|------|
| | Wage, salary | Trading, business | Pension, benefits | Rental, interest, dividends | Other | | |
| Sex | | | | | | | |
| Male | 33.8 | 66.1 | 9.2 | 9.0 | 2.3 | 1 500 639 | 2950 |
| Female | 26.6 | 67.8 | 3.1 | 8.6 | 1.4 | 1 029 799 | 2077 |
| Residence | | | | | | | |
| Urban | 32.7 | 64.9 | 9.6 | 12.6 | 3.0 | 1 654 434 | 2550 |
| Rural | 20.3 | 66.2 | 3.5 | 4.6 | 0.7 | 892 519 | 2493 |
| Marital status | | | | | | | |
| Never married/cohabiting | 35.8 | 51.9 | 0 | 5.9 | 3.6 | 830 806 | 123 |
| Currently married | 32.4 | 69.7 | 8.3 | 8.5 | 2.0 | 1 538 538 | 2936 |
| Cohabiting | 30.0 | 70.7 | 1.2 | 10.8 | 0 | 6 839 103 | 77 |
| Separated/divorced | 22.3 | 62.3 | 6.8 | 8.8 | 3.3 | 787 655 | 704 |
| Widowed | 15.1 | 63.5 | 4.0 | 9.9 | 0.8 | 730 818 | 1159 |
| Income quintile | | | | | | | |
| Q1 (lowest) | 18.1 | 54.6 | 2.3 | 1.2 | 0.6 | 425 335 | 872 |
| Q2 | 19.6 | 66.5 | 2.6 | 2.8 | 0.3 | 1 256 378 | 935 |
| Q3 | 22.3 | 71.9 | 3.6 | 5.0 | 0.6 | 737 318 | 975 |
| Q4 | 27.7 | 73.9 | 6.8 | 11.2 | 1.3 | 1 036 928 | 1072 |
| Q5 (highest) | 43.7 | 67.2 | 16.0 | 20.6 | 5.8 | 2 742 271 | 1169 |
| Total | 26.6 | 65.5 | 6.6 | 8.7 | 1.9 | 1 281 518 | 5043 |

Mean monthly income and sources of income for the households of the respondents were based on self-report, with a mean monthly household income of c1,281,518 old cedis (Table 4.5). A large difference was seen in households where a man was interviewed (mean monthly income of c1,500,639 old cedis) compared to a female respondent (c1,029,799 old cedis). The mean monthly income for households in rural areas (c892,519) was about half that of urban households (c1,654,434). Currently married respondents' households had mean monthly income about twice that of households with separated/divorced respondents. The small number of cohabiting respondents (77) had a high mean monthly income of c6,839,103 old cedis. Households of widowed respondents had the lowest mean monthly income (c730,818 old cedis).

Households in the highest income quintile had mean monthly incomes of about seven times that for the households in the lowest quintile. The sources of monthly income were mostly from trading and business, followed by wages and salary, then pension benefits, rental/

interest/dividends or others. Many more men and urban dwellers reported wages/salary, pension benefits and rental income/interest/dividends as income sources compared to women and rural respondents. There was a clear distinction between respondents from the highest and lowest income quintiles. In particular, wealth generated more wealth, with about 21% of respondents in the wealthiest quintile reporting rental income/interest/dividends as a source of monthly income compared to only 1% of respondents in the lowest income quintile. Sixteen percent of respondents in the highest income quintile report pension benefits compared to 2% for the lowest income quintile. For wages and salary, it was 44% and 18% for the wealthiest and poorest respondents, respectively.

A question about sufficiency of income resulted in only 11.2% of respondents believing that the total household income provided enough money to cover daily living needs and obligations; 6% of the households reported their financial situation as very good or good, versus a 63% who reported a bad/very bad situation.

Financial and non-monetary transfers into and out of households by source

Most transfers into the household were monetary and came from family and kin (90.9%), followed by that from the government (81.7%) and then the community (63.8%) (Table 4.6). The biggest non-monetary contributors to households were also from family and kin (51.6%) and the least from the government (24.3%). Fifteen percent of households received physical/personal assistance from the community as opposed to 11.1% from family and kin.

The largest transfers out of the household in both monetary and non-monetary terms were to family and kin (83.3% and 58.4%, respectively). However, transfers out of households in terms of assistance were extended more to the community (9.3%) than to family and kin (7.5%).

The mean highest value of money transfers into the household was from family and kin, followed by those from the community, and then the government. The highest non-monetary transfer into households was from family and kin, and least from the community. Family and kin also offered more assistance (6.5 average hours per week) than the community (5.5 average hours per week).

The mean value of transfers out of the household in both monetary and non-monetary terms was higher

to family and kin than to the community. Also, assistance provided to persons outside of the households was extended more to the family and kin (12.1 average hours per week) than to the community (7.1 average hours per week).

4.3 Consumption (household expenditure)

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

Table 4.6 Distribution of transfers into and out of households, by source (family and kin, community and government) and type

| Source | Transfers (%) | | | | | | | |
|----------------|---------------|--------------|------------|-------|-----------|--------------|------------|-------|
| | Into HH | | | | Out of HH | | | |
| | Monetary | Non-monetary | Assistance | N | Monetary | Non-monetary | Assistance | N |
| Family and kin | 90.9 | 51.6 | 11.1 | 2 118 | 83.3 | 58.4 | 7.5 | 1 344 |
| Community | 63.8 | 46.7 | 14.9 | 177 | 73.9 | 55.1 | 9.3 | 506 |
| Government | 81.7 | 24.3 | – | 301 | – | – | – | – |

Table 4.7 Mean money transfers into and out of households by source (family and kin, community and government)

| Source | Mean transfers, by source | | | | | | | |
|----------------|---------------------------|---|-----------------------------|-------|------------------------|---|-----------------------------|-------|
| | Into HH | | | | Out of HH | | | |
| | Monetary (old cedis c) | Non-monetary (estimated value in old cedis c) | Assistance (hours per week) | N | Monetary (old cedis c) | Non-monetary (estimated value in old cedis c) | Assistance (hours per week) | N |
| Family and kin | 1 450 561 | 593 336 | 6.5 | 2 118 | 1 119 219 | 476 970 | 12.1 | 1 344 |
| Community | 785 266 | 154 287 | 5.5 | 177 | 407 079 | 224 751 | 7.1 | 506 |
| Government | 252 570 | 417 857 | – | 301 | – | – | – | – |

Table 4.8 Distribution of health expenditures and impacts on the household (in local currency or as %), by household characteristics

| | Mean HH EXP (¢) | % Poor | % Impoverished | % Catastrophic | OOP%EXP | OOP non-subsistence spending (%) | Mean OOP (¢) |
|--------------------------------------|------------------|-------------|----------------|----------------|------------|----------------------------------|----------------|
| Catastrophic | | | | | | | |
| No | 2 449 155 | 38.4 | 2.0 | – | 3.8 | 9.0 | 68 723 |
| Yes | 1 482 093 | 49.2 | 22.9 | – | 27.8 | 62.3 | 686 914 |
| Poor | | | | | | | |
| No | 3 473 614 | – | 7.0 | 9.0 | 7.2 | 13.3 | 201 983 |
| Yes | 619 392 | – | – | 13.3 | 5.1 | 16.9 | 31 792 |
| Insurance | | | | | | | |
| No | 2 472 090 | 42.2 | 5.0 | 12.5 | 7.0 | 16.9 | 115 090 |
| Yes | 2 177 963 | 36.0 | 3.2 | 8.2 | 5.5 | 11.8 | 160 883 |
| Residence | | | | | | | |
| Rural | 2 334 306 | 53.7 | 4.2 | 12.1 | 6.0 | 15.8 | 115 516 |
| Urban | 2 357 217 | 25.6 | 4.3 | 9.3 | 6.8 | 13.6 | 153 554 |
| Expenditure quintile | | | | | | | |
| Lowest | 455 743 | 100 | 0 | 16.1 | 5.0 | 18.3 | 21 942 |
| Second | 795 378 | 97.5 | 1.6 | 10.4 | 5.3 | 15.4 | 42 566 |
| Middle | 1 151 827 | 0 | 17.2 | 12.1 | 6.3 | 15.5 | 78 348 |
| Fourth | 1 596 287 | 0 | 1.4 | 7.5 | 6.6 | 12.7 | 111 079 |
| Highest | 7 731 083 | 0 | 0.9 | 7.3 | 8.6 | 11.6 | 419 821 |
| Household member aged 50-plus | | | | | | | |
| No | 3 249 097 | 36.2 | 2.9 | 8.6 | 5.6 | 13.0 | 219 544 |
| Yes | 2 191 637 | 40.1 | 4.5 | 11.0 | 6.5 | 15.0 | 120 256 |
| Total | 2 345 884 | 39.5 | 4.2 | 10.7 | 6.4 | 14.7 | 134 739 |

Notes: EXP = expenditure; OOP%EXP = Out of pocket health payments as a share of total household expenditure.

about 25 million households or more than 100 million individuals are pushed into poverty by the need to pay for health services²¹. Older people are more susceptible to catastrophic health expenditure and as the 60-plus population of Ghana is projected to double by the year 2050, moving away from out-of-pocket health care payments to pre-payment mechanisms would be an essential component of health care finance planning.

The average out of pocket household spending on health services in Ghana was ¢134,739 per month, which was 6.4% of total household monthly expenditure and 14.7% of household capacity to pay (that is, discretionary or non-subsistence spending)(Table 4.8). Medications accounted for 63% of the total out-of-pocket payments, outpatient services 12.2%, other services 10.7%, inpatient services 7.6%, traditional care 3.8% and the remainder

for long-term care, ambulance services and health aids (Table 4.9, Figure 4.1).

Twenty-seven percent of households financed health care from savings and 33.6% had to borrow or sell personal items (Table 4.10). The poverty line was based on the share of total expenditure spent on food and is set at the median of the country. Based on the poverty line of ¢392,329 per adult per month, 39.5% of households were poor and 4.2% of households became impoverished after health payments.

Out-of-pocket health payments varied markedly across income groups. Household monthly out-of-pocket health payments were less than ¢22,000 for the poorest but in excess of ¢400,000 for the richest (Table 4.8). Out-of-pocket health payments as a share of total

Figure 4.1 Components (%) of out-of-pocket health payments

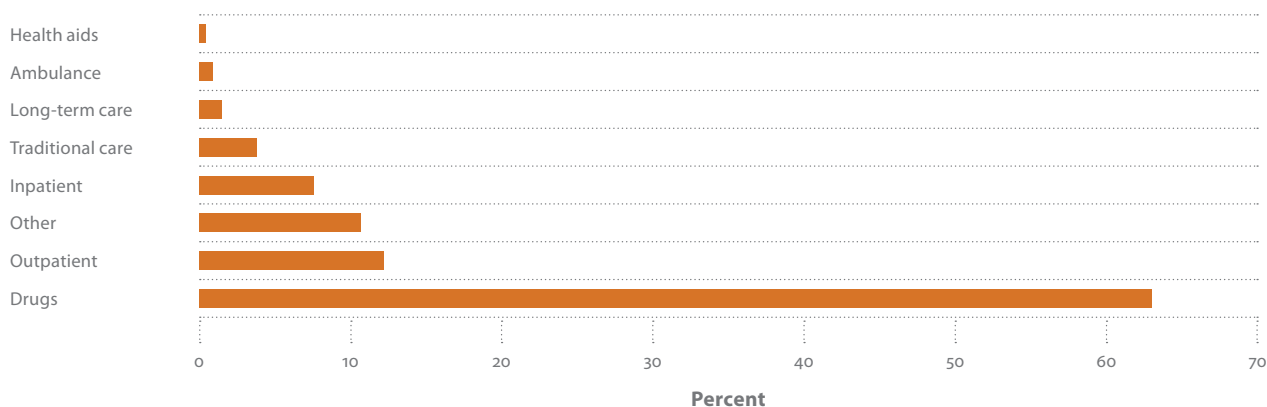
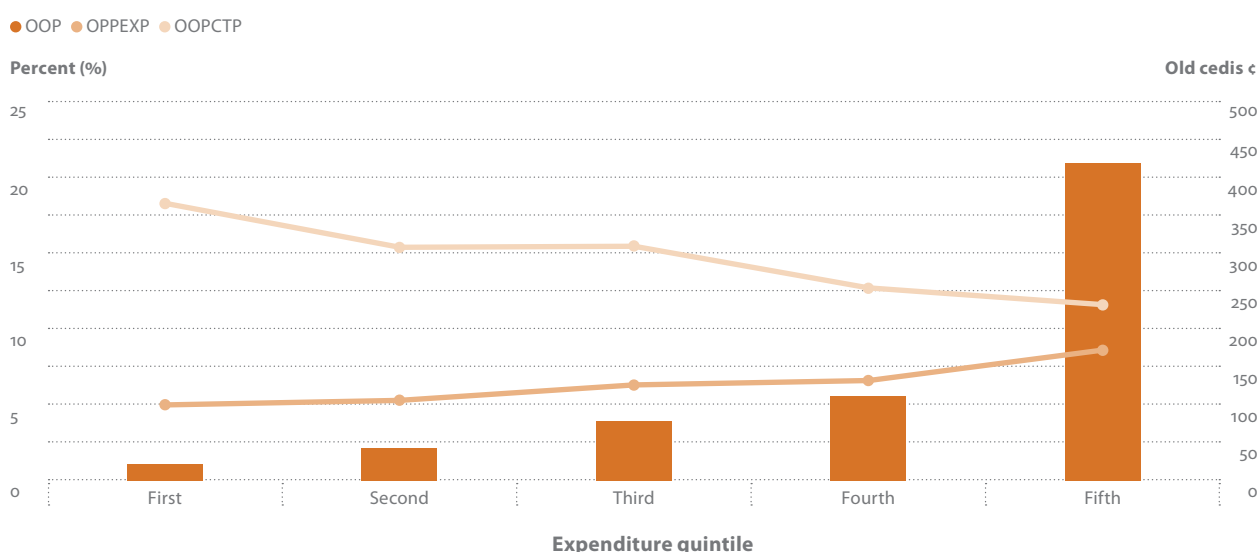


Figure 4.2 Percentage with out-of-pocket health expenditures and as proportion of capacity of pay, by expenditure quintiles



household expenditure (OOP%EXP), was 5.0% in households in the poorest income group and 8.6% in the richest (Figure 4.2). Out-of-pocket health payments as a share of capacity to pay (OOPCTP) had the opposite trend 18.3% in the poorest income group compared to 11.6% in the richest— suggesting the impact of health expenditures was higher on the lower income households (Figure 4.2).

There was a 6-fold difference in the amount spent on out-of-pocket payments for health in absolute terms between the least wealthy and most wealthy quintiles. However compared to their capacity to pay the difference between the two groups was not as remarkable: 16.9% for poor and 13.3% for the non-poor.

Households in rural areas spent less on average on health services (¢115,516/month) than those in urban areas (¢153,554/month). When considering their capacity to pay, rural households spent more (15.8%) than urban households (13.6%). Similarly, rural households with at

least one member with insurance coverage spent less on health services compared to urban households (¢115,090/month and ¢160,883/month, respectively), but when comparing their capacity to pay, uninsured households spent more (16.9%) than insured households (11.8%). Households with at least one member aged 50-plus spent just over half as much (¢120,256/month) compared to those without an older adult household member (¢219,544/month); however, when comparing their capacity to pay the difference was unremarkable.

Catastrophic expenditure and impoverishment occurred in all income groups. There was a decreasing trend amongst income groups with 16% of the poorest households experiencing catastrophic expenditures compared to 7.3% of the richest. In addition to catastrophic expenditures, households in poorer income groups were more likely to face (further) impoverishment. Households with at least one member aged 50-plus were also more likely to experience catastrophic expenditure and impoverishment. No household became impoverished in the

poorest income group as these households were under the poverty line before health payments.

Multivariate logistic regression was used to explore the determinants of catastrophic expenditure. Holding all other factors constant, the risk of facing catastrophic expenditure was 53% higher for the poor compared to the non-poor, and in households with one or more member aged 65-plus (senior), the risk was 28% higher than a household without an adult aged 65-plus (Figure 4.3). Households in urban areas had an 18% lower risk of facing catastrophic expenditure compared to those in rural areas and those with insurance coverage a 34% lower risk than those households without any insurance cover.

Figure 4.3 Determinants of catastrophic expenditure: Highest risk variables from a multiple logistic regression

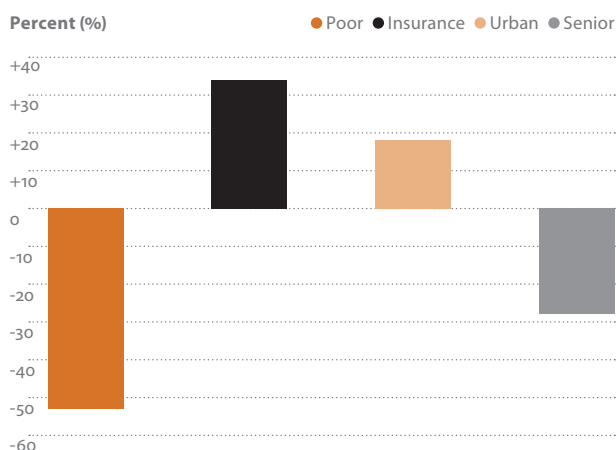


Table 4.9 Sources of out-of-pocket (OOP) health payments (as percentage), by selected household characteristics

| Groups | Inpatient | Outpatient | Traditional care | Drugs | Other | Health aids | Ambulance | Long-term care |
|-----------------------------|------------|-------------|------------------|-------------|-------------|-------------|------------|----------------|
| Catastrophic | | | | | | | | |
| No | 8.1 | 14.6 | 3.8 | 62.9 | 8.0 | 0.7 | 0.1 | 1.8 |
| Yes | 7.2 | 10.1 | 3.7 | 63.2 | 12.9 | 0.1 | 1.5 | 1.2 |
| Poor | | | | | | | | |
| No | 7.8 | 11.9 | 3.6 | 62.5 | 11.4 | 0.4 | 1.0 | 1.5 |
| Yes | 5.8 | 15.4 | 5.2 | 68.6 | 3.7 | 0.2 | 0.1 | 1.0 |
| Insurance | | | | | | | | |
| No | 8.8 | 15.5 | 5.3 | 55.7 | 11.2 | 0.2 | 1.8 | 1.6 |
| Yes | 6.5 | 9.1 | 2.3 | 70.0 | 10.2 | 0.5 | 0 | 1.4 |
| Residence | | | | | | | | |
| Rural | 4.0 | 8.3 | 2.2 | 73.5 | 10.7 | 0.1 | 0 | 1.2 |
| Urban | 10.3 | 15.0 | 4.9 | 55.4 | 10.6 | 0.6 | 1.5 | 1.7 |
| Expenditure quintile | | | | | | | | |
| Lowest | 3.2 | 16.9 | 12.4 | 65.0 | 2.0 | 0.1 | 0 | 0.4 |
| Second | 7.0 | 14.3 | 1.3 | 70.3 | 5.4 | 0.2 | 0.1 | 1.3 |
| Middle | 7.8 | 15.2 | 3.5 | 69.0 | 2.7 | 0.2 | 0 | 1.6 |
| Fourth | 7.0 | 13.5 | 4.1 | 66.4 | 7.4 | 0.4 | 0.8 | 0.4 |
| Highest | 8.0 | 10.8 | 3.5 | 60.2 | 14.0 | 0.4 | 1.2 | 1.8 |
| 50-plus HH member | | | | | | | | |
| No | 7.8 | 7.6 | 2.0 | 75.6 | 6.0 | 0.1 | 0.1 | 0.8 |
| Yes | 7.6 | 13.6 | 4.3 | 59.1 | 12.1 | 0.4 | 1.1 | 1.7 |
| Total | 7.6 | 12.2 | 3.8 | 63.0 | 10.7 | 0.4 | 0.9 | 1.5 |

Table 4.10 Financial sources used by households for paying for health services (as percentage), by level of out-of-pocket expenditures and other selected household characteristics

| | Savings | Sold items | Borrow from relatives | Borrow from others | Health insurance | Current income | Other |
|--|-------------|-------------|-----------------------|--------------------|------------------|----------------|------------|
| OOP as % non-subsistence spending | | | | | | | |
| Less than 10% | 25.3 | 6.6 | 15.3 | 3.0 | 21.3 | 66.0 | 6.3 |
| 10–20% | 26.8 | 7.4 | 17.2 | 3.2 | 13.2 | 68.8 | 6.2 |
| 20–40% | 30.7 | 10.7 | 23.6 | 3.1 | 10.9 | 53.5 | 7.6 |
| Above 40% | 26.7 | 24.2 | 35.9 | 6.5 | 14.4 | 47.0 | 13.3 |
| Hospitalization | | | | | | | |
| No | 25.4 | 9.4 | 18.5 | 3.2 | 16.3 | 61.7 | 7.0 |
| Yes | 41.4 | 16.1 | 37.5 | 7.6 | 19.4 | 61.3 | 12.3 |
| Residence | | | | | | | |
| Rural | 25.8 | 13.2 | 15.5 | 2.8 | 15.7 | 59.6 | 6.2 |
| Urban | 27.9 | 6.7 | 24.8 | 4.3 | 17.5 | 63.9 | 8.8 |
| Expenditure quintile | | | | | | | |
| Lowest | 18.5 | 23.7 | 15.4 | 2.2 | 14.5 | 51.5 | 7.2 |
| Second | 26.9 | 8.0 | 19.9 | 0.8 | 15.9 | 60.9 | 8.1 |
| Middle | 28.4 | 8.1 | 18.5 | 4.5 | 14.7 | 62.3 | 6.9 |
| Fourth | 30.9 | 5.3 | 21.8 | 3.8 | 18.1 | 62.6 | 6.3 |
| Highest | 28.4 | 6.4 | 24.1 | 6.0 | 19.1 | 69.7 | 8.7 |
| 50+ HH member | | | | | | | |
| No | 25.5 | 9.4 | 11.6 | 3.9 | 11.5 | 68.1 | 9.0 |
| Yes | 27.0 | 10.1 | 21.5 | 3.5 | 17.4 | 60.7 | 7.2 |
| Total | 26.8 | 10.0 | 20.1 | 3.5 | 16.6 | 61.7 | 7.5 |

4.4 Household assistance and 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 carers²². Informal care remains the main source of care for older people worldwide²³. In the United States, informal caregiving was estimated to have an economic value of about \$350 billion in 2006, and more recently, for dementias alone was estimated at \$50–106 billion annually^{24,25}. 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.

Questions were asked about the type of care and support received or provided in various forms, including, financial and social or emotional support, and physical, health or personal care.

Mean health score was generally higher in men (57.4) than women (54.7), for urban (59.8) than rural dwellers (52.9), decreased as age increased, from 62.4 in the 50–59 years group to 44.0 in the 80-plus group, and similarly decreased from 58.9 in the highest income group to 51.9 in the lowest income group (Table 4.11). Those in the higher income quintiles (Q3, Q4 and Q5) provided more support and care to households in most of the areas specified (Table 4.11).

Table 4.11 Distribution of type of assistance provided, by health state and other selected background characteristics (of respondents who had member(s) who needed care)

| Characteristics | Mean health score* | Type of support (% of respondents who provided assistance to an adult or child) | | | | | | | | | | N |
|-----------------|--------------------|--|-------|----------------------|-------|--------|-------|----------|-------|------------|-------|-----|
| | | Financial | | Social/ emotional | | Health | | Physical | | Personal** | | |
| | | Adult | Child | Adult | Child | Adult | Child | Adult | Child | Adult | Child | |
| Age group | | | | | | | | | | | | |
| 50–59 | 62.4 | 52.3 | 66.1 | 39.1 | 69.7 | 43.4 | 67.5 | 43.3 | 81.0 | 34.6 | 48.3 | 91 |
| 60–69 | 56.0 | 27.2 | 24.8 | 33.3 | 15.8 | 21.7 | 15.5 | 18.9 | 15.1 | 42.0 | 51.7 | 59 |
| 70–79 | 45.0 | 15.7 | 9.1 | 16.1 | 14.5 | 19.3 | 17.0 | 20.7 | 3.9 | 11.3 | 0 | 30 |
| 80+ | 44.0 | 4.8 | 0 | 11.5 | 0 | 15.7 | 0 | 17.1 | 0 | 12.1 | 0 | 22 |
| Sex | | | | | | | | | | | | |
| Male | 57.4 | 45.7 | 51.5 | 33.6 | 44.6 | 46.0 | 34.8 | 37.9 | 46.6 | 34.9 | 17.2 | 91 |
| Female | 54.7 | 54.3 | 48.5 | 66.4 | 55.4 | 54.0 | 65.2 | 62.1 | 53.4 | 65.1 | 82.9 | 110 |
| Residence | | | | | | | | | | | | |
| Urban | 59.8 | 45.9 | 58.4 | 43.3 | 50.7 | 44.7 | 46.0 | 45.3 | 59.8 | 57.2 | 51.4 | 89 |
| Rural | 52.9 | 54.1 | 41.6 | 56.7 | 49.3 | 55.4 | 54.0 | 54.7 | 40.2 | 42.8 | 48.6 | 112 |
| Income quintile | | | | | | | | | | | | |
| Q1 (lowest) | 51.9 | 13.4 | 5.3 | 10.9 | 4.6 | 18.1 | 0 | 12.8 | 0 | 13.6 | 6.9 | 30 |
| Q2 | 54.9 | 14.8 | 14.5 | 18.8 | 17.8 | 13.6 | 25.1 | 15.0 | 17.9 | 4.8 | 0 | 30 |
| Q3 | 54.5 | 19.2 | 15.6 | 25.1 | 20.1 | 15.7 | 19.2 | 24.0 | 28.3 | 10.7 | 10.3 | 39 |
| Q4 | 56.4 | 20.4 | 16.1 | 13.8 | 14.0 | 20.6 | 22.9 | 15.9 | 4.7 | 21.5 | 15.2 | 36 |
| Q5 (highest) | 58.9 | 32.2 | 48.5 | 31.4 | 43.6 | 32.0 | 32.8 | 32.4 | 49.2 | 49.4 | 67.6 | 65 |
| Total | 56.0 | 125 | 41 | 95 | 29 | 89 | 18 | 88 | 16 | 43 | 6 | 201 |

Note: *Mean health score of respondents who provided support/assistance/care ranges from 0 (worst health) to 100 (best health). More information about health state scores is available in Chapter 6. ** Personal care can also be broken down into ADL-type quantifications to approximate the intensity of care needed.

Women clearly provided higher levels of support than men in all areas (financial, social/emotional, health, physical and personal) to adult or child, except in financial support for a child; hence women have a larger burden of assistance. Unpaid, informal caregiving is a huge and under-recognized benefit for governments, and most often preferentially burdens women with possible impacts on health, earning opportunities and well-being²⁶. Yet the SAGE results support recent literature on the positive impacts of providing care, with women providing any type care having better health scores than women who do not provide care^{22,27} (Table 4.12)

Wealth was not a strong indicator of the provision of financial support or other types of support, with a

somewhat mixed pattern by income quintile for each type of care, but generally increased with increasing wealth (Table 4.12).

The impact of caregiving by age is seen in the magnitude of difference in health scores comparing the 50–59 year to 80-plus age groups. Health levels of those providing financial support were higher at each age group than those not providing care (no care-giving), and mostly lower for those providing personal care. For the three other types of caregiving (social, health and physical), the younger adult age group had better health and older adults lower health (that is, a larger difference), suggesting the possibility of different net impacts of caregiving at different ages.

Table 4.12 Care-giving burden: health scores of caregivers by age, sex, residence and income quintile

| Characteristics | Mean health scores by type of care provided | | | | | | | | | | | | No.* |
|-------------------|---|-------|-----------|-----|------------------|----|--------|----|----------|----|----------|----|-------|
| | No care-giving | N | Financial | N | Social/emotional | N | Health | N | Physical | N | Personal | N | |
| Age group | | | | | | | | | | | | | |
| 50–59 | 53.8 | 1 823 | 61.1 | 65 | 65.4 | 41 | 58.9 | 34 | 58.9 | 34 | 51.2 | 15 | 2 012 |
| 60–69 | 47.7 | 1 242 | 51.9 | 37 | 52.7 | 24 | 51.5 | 19 | 51.5 | 19 | 55.6 | 13 | 1 354 |
| 70–79 | 43.4 | 1 054 | 45.3 | 15 | 42.8 | 11 | 44.0 | 11 | 44.0 | 11 | 42.1 | 2 | 1 104 |
| 80+ | 39.4 | 436 | 43.9 | 5 | 38.0 | 8 | 38.9 | 10 | 38.9 | 10 | 31.2 | 4 | 473 |
| Sex | | | | | | | | | | | | | |
| Male | 52.2 | 2 275 | 59.6 | 53 | 60.4 | 29 | 50.2 | 28 | 50.2 | 28 | 51.2 | 10 | 2 426 |
| Female | 44.6 | 2 279 | 52.7 | 69 | 53.7 | 56 | 53.1 | 46 | 53.1 | 46 | 49.3 | 24 | 2 520 |
| Residence | | | | | | | | | | | | | |
| Urban | 50.8 | 1 838 | 50.8 | 57 | 64.0 | 37 | 57.5 | 32 | 57.5 | 32 | 53.2 | 20 | 2 016 |
| Rural | 46.7 | 2 716 | 46.7 | 65 | 49.9 | 48 | 47.9 | 42 | 47.9 | 42 | 45.0 | 14 | 2 927 |
| Income quintile | | | | | | | | | | | | | |
| Q1 | 46.1 | 840 | 46.2 | 19 | 40.4 | 10 | 41.6 | 14 | 41.6 | 14 | 41.1 | 5 | 902 |
| Q2 | 45.8 | 890 | 60.0 | 19 | 56.6 | 18 | 52.4 | 13 | 52.4 | 13 | 50.9 | 2 | 955 |
| Q3 | 45.1 | 947 | 52.4 | 21 | 56.5 | 15 | 53.1 | 9 | 53.1 | 9 | 49.3 | 4 | 1 005 |
| Q4 | 51.6 | 911 | 57.9 | 21 | 61.3 | 13 | 56.8 | 14 | 56.8 | 14 | 49.5 | 9 | 982 |
| Q5 | 52.8 | 960 | 58.6 | 41 | 58.3 | 29 | 54.9 | 23 | 54.9 | 23 | 53.0 | 14 | 1 090 |
| Total respondents | | 4 554 | | 122 | | 85 | | 74 | | 74 | | 34 | |

* No. of respondents



5. Risk factors and health behaviours

This section describes risks to health and measures how these risks are distributed in the population. It is necessary to identify health risks to focus on interventions that can improve the health of the Ghanaian population. The rationale behind the inclusion of risk factors in SAGE is that they have significant impact on mortality and morbidity from non-communicable diseases, and risk modification is possible through effective primary prevention and health promotion efforts. The SAGE questions are based on recommendations from the WHO NCD STEPS guidelines²⁸. The use of tobacco and alcohol have well-documented and considerable impacts on health, namely heart disease and a range of cancers. Data were collected on four major behavioural risk factors (tobacco use, alcohol consumption, intake of fruit and vegetables, physical activity levels). The nutritional content of food, the levels of fruit and vegetable intake, and the level of physical activity are directly associated with health. The impacts of tobacco and harmful alcohol intake on health are also well documented^{29,30}.

Data were collected on environmental risk factors (water, sanitation and indoor air pollution). Access to improved drinking water, improved sanitation facilities and the type of fuel used (and ventilation for such use) for cooking, are crucial determinants of human health. Interventions towards safe environments offer a large potential for disease prevention and can help to reduce health inequalities.

SAGE has 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

Questions about current use of any tobacco products were asked, including inhaling, sniffing and chewing,

as well as duration and quantity of tobacco use. The questions are based on the WHO “Guidelines for controlling and monitoring the tobacco epidemic” and WHO STEPwise approach to risk factor surveillance^{31,32}. There is provision for the collection of information on other forms of smoking/tobacco use apart from cigarettes, such as cigars, pipes, snuff or chewed/smokeless tobacco.

Similarly, with alcohol consumption, both commercially available and home-brewed beverages were quantified in terms of alcohol content and quantity (including the use of showcards to demonstrate what is meant by a “standard drink”). Risky drinking behaviours were based on thresholds of five (5) standard drinks for men and four (4) standard drinks for women (data appear in Table 5.2).

Accurately quantifying “intensity”, that is, patterns and duration of tobacco and alcohol consumption, is crucial to understanding the health impacts and ensuring that data are comparable to other health surveys.

The pattern of tobacco use and consumption shown in Table 5.1 includes smokeless tobacco. The proportion of respondents who were current daily smokers was 7.6%, those who were smokers but not daily was 2.6%. The proportion of ‘not current smokers’ was 14.2% and those who had never smoked was 75.5%. The proportion of current daily smokers was higher among men, rural respondents, respondents with no formal education, the never married and those in the lowest income quintile. With respect to educational status, respondents with secondary school completed had high prevalence of current daily smoking. While a high percentage of older adults are daily smokers, the positive note here is that more people have quit than continue to smoke.

The highest mean number of cigarettes/cigarette equivalents was 5.7 in the 50–59 age group. Mean tobacco consumption decreased with increasing age; however, the intensity of smoking largely persisted with age where

Table 5.1 Prevalence of smoking and average daily tobacco consumption by selected demographic characteristics

| Characteristics | Tobacco use (%) | | | | Mean daily tobacco consumption* | N |
|-----------------------------------|----------------------|-------------------|--------------------|--------------|---------------------------------|-------|
| | Current daily smoker | Smoker, not daily | Not current smoker | Never smoker | | |
| Age group | | | | | | |
| 50–59 | 6.8 | 2.9 | 14.0 | 76.4 | 5.7 | 1 694 |
| 60–69 | 7.6 | 3.0 | 13.1 | 76.3 | 5.1 | 1 172 |
| 70+ | 8.7 | 2.0 | 15.5 | 73.8 | 4.8 | 1 386 |
| Sex | | | | | | |
| Male | 11.3 | 3.7 | 24.6 | 60.4 | 5.4 | 2 215 |
| Female | 3.7 | 1.4 | 2.9 | 92.0 | 4.4 | 2 037 |
| Residence | | | | | | |
| Urban | 4.1 | 2.2 | 15.6 | 78.2 | 4.8 | 1 757 |
| Rural | 10.2 | 2.9 | 13.3 | 73.7 | 5.3 | 2 495 |
| Education | | | | | | |
| No education | 10.2 | 1.8 | 10.7 | 77.2 | 5.0 | 2 278 |
| Less than primary school | 5.4 | 4.6 | 15.7 | 74.3 | 3.7 | 438 |
| Primary school completed | 4.3 | 2.4 | 16.1 | 77.2 | 4.9 | 461 |
| Secondary education completed | 8.0 | 3.1 | 21.9 | 66.9 | 9.4 | 170 |
| High school (or equiv.) completed | 3.9 | 4.4 | 21.3 | 70.4 | 6.2 | 729 |
| College/university completed | 1.6 | 0.9 | 15.0 | 82.5 | 3.5 | 145 |
| Postgraduate degree completed | 0 | 0 | 16.8 | 83.2 | – | 7 |
| Marital status | | | | | | |
| Never married | 12.2 | 4.3 | 21.6 | 61.9 | 3.3 | 52 |
| Currently married | 9.0 | 3.0 | 18.8 | 69.2 | 5.5 | 2 463 |
| Cohabiting | 8.8 | 2.4 | 21.2 | 67.5 | 8.2 | 36 |
| Separated/divorced | 4.9 | 3.3 | 12.3 | 79.6 | 5.2 | 551 |
| Widowed | 5.8 | 1.3 | 4.8 | 88.1 | 4.1 | 1 126 |
| Income quintile | | | | | | |
| Q1 (lowest) | 16.0 | 3.2 | 11.8 | 69.0 | 4.4 | 766 |
| Q2 | 9.1 | 3.1 | 13.3 | 74.5 | 5.1 | 814 |
| Q3 | 8.0 | 2.1 | 14.5 | 75.4 | 6.2 | 874 |
| Q4 | 4.8 | 2.3 | 14.2 | 78.7 | 5.2 | 879 |
| Q5 (highest) | 1.8 | 2.5 | 16.8 | 78.9 | 7.4 | 914 |
| Total respondents, N (%) | 325 (7.6) | 111 (2.6) | 605 (14.2) | 3 211 (75.5) | 325 | 4 252 |

* Current daily smokers only, average number of cigarettes/cigarette equivalents.

the 70-plus age group still recorded a mean of 4.8 cigarettes/cigarette equivalents daily.

The mean daily consumption of tobacco for men (5.4) was higher than for women (4.4), while more men (11%) were current smokers at the time of the survey than women (3.7%). A higher proportion of women

(92%) than men (60%) had never used tobacco. The mean number of cigarettes/cigarette equivalents for daily users was a little higher among rural residents (5.3) than urban residents (4.3), probably due to the use of smokeless tobacco among the rural Ghanaian population. There was no distinct pattern regarding tobacco consumption and level of education; the

Table 5.2 Alcohol consumption by selected demographic characteristics

| Characteristics | Alcohol consumption (%) | | | | N |
|-----------------------------------|-------------------------|--------------------|---------------------------|-------------------------|-------|
| | Lifetime abstainers | Non-heavy drinkers | Infrequent heavy drinkers | Frequent heavy drinkers | |
| Age group | | | | | |
| 50–59 | 51.1 | 45.4 | 1.6 | 1.8 | 1 265 |
| 60–69 | 58.1 | 39.0 | 0.9 | 2.0 | 840 |
| 70+ | 65.9 | 32.4 | 0.9 | 0.7 | 1 004 |
| Sex | | | | | |
| Male | 44.0 | 51.9 | 1.7 | 2.5 | 1 658 |
| Female | 73.6 | 25.3 | 0.7 | 0.4 | 1 450 |
| Residence | | | | | |
| Urban | 64.1 | 33.4 | 1.3 | 1.2 | 1 234 |
| Rural | 53.6 | 43.5 | 1.2 | 1.7 | 1 874 |
| Education | | | | | |
| No education | 65.2 | 33.9 | 0.6 | 0.3 | 1 776 |
| Less than primary school | 56.0 | 41.2 | 1.5 | 1.2 | 307 |
| Primary school completed | 51.6 | 43.4 | 2.5 | 2.4 | 325 |
| Secondary education completed | 32.7 | 62.0 | 1.7 | 3.6 | 119 |
| High school (or equiv.) completed | 45.4 | 47.5 | 2.5 | 4.6 | 470 |
| College/university completed | 43.8 | 52.2 | 1.3 | 2.6 | 92 |
| Postgraduate degree completed | 22.1 | 77.9 | 0 | 0 | 4 |
| Marital status | | | | | |
| Never married | 47.2 | 50.8 | 0 | 2.0 | 41 |
| Currently married | 51.8 | 45.1 | 1.0 | 2.1 | 1 838 |
| Cohabiting | 42.8 | 57.2 | 0 | 0 | 23 |
| Separated/divorced | 60.3 | 35.6 | 2.6 | 1.4 | 374 |
| Widowed | 71.0 | 27.4 | 1.2 | 0.4 | 811 |
| Income quintile | | | | | |
| Q1 (lowest) | 48.2 | 48.8 | 1.3 | 1.7 | 588 |
| Q2 | 55.0 | 43.6 | 0.4 | 1.0 | 596 |
| Q3 | 57.6 | 39.1 | 1.1 | 2.2 | 653 |
| Q4 | 65.7 | 30.5 | 2.2 | 1.6 | 627 |
| Q5 (highest) | 61.4 | 36.5 | 1.1 | 1.0 | 643 |
| Total respondents | 1 796 (57.8) | 1 228 (39.5) | 38 (1.2) | 47 (1.5) | 3 109 |

highest mean daily consumption was among those who had completed secondary school. However, the highest prevalence of those who currently smoked (10.2%) was among those without formal education.

Mean daily tobacco consumption was highest in the highest quintile (Q5) and lowest in the lowest income

quintile (Q1). Mean daily tobacco consumption tended to increase with increasing income quintile (Q1 = 4.4 to Q5 = 7.4), but current daily tobacco users had a clear inverse relation to this (decreasing from Q1 = 16% to Q5 = 1.8%). Respondents with lower education levels had a high prevalence of current daily users, but had lower mean daily tobacco consumption compared to

the more educated. In fact, the highest income group had the highest mean daily consumption but the lowest prevalence of current daily smokers, whereas the lowest income group had the lowest mean daily consumption but the highest prevalence of current daily smokers.

Alcohol use was defined for the survey as:

- lifetime abstainers or those who never consumed alcoholic beverage;
- non-heavy drinkers (social drinkers): consumed alcohol in the last 30 days;
- infrequent heavy drinkers (binge drinkers): use alcohol 1-2 days per week with 5 or more standard drinks in last 7 days for men and 4 or more standard drinks (in last 7 days) for women; and,
- frequent heavy drinkers, 3 or more days per week with 5 or more standard drinks (in last 7 days) for men and 4 or more standard drinks (in last 7 days) for women.

In total, 1796 (57.8%) out of 3109 respondents were lifetime abstainers (Table 5.2). Non-heavy drinkers formed 39.5% of respondents, infrequent heavy drinkers formed 1.2% and frequent heavy-drinkers formed 1.5%. The proportion of lifetime abstainers was higher for respondents aged 70-plus compared to younger adults, and higher in women (73.6%) than men (44.0%). More urban respondents, respondents with no formal education, the widowed and respondents in the highest income quintile were lifetime abstainers compared to the other categories within the respective groups.

Frequent heavy drinkers were more often in the two younger age groups, men, and rural dwellers. The currently married and never married were more likely to be frequent heavy drinkers compared to other marital situations. Only 1% of the respondents in the highest income quintile were classified as frequent heavy drinkers.

In summary, men showed a higher prevalence of alcohol use in all three categories (frequent heavy drinkers, infrequent heavy drinkers and non-heavy drinkers) than women (Table 5.2). Rural residents had higher prevalence of frequent heavy drinkers (1.7%) and non-heavy drinkers (43.5%) than urban residents (1.2% and 33%, respectively). More urban residents were lifetime abstainers from alcohol (64.1%) than rural residents (53.6%). Respondents who had completed secondary and high school education had the highest prevalence of alcohol use among frequent heavy drinkers. Those with no formal education had the lowest prevalence of alcohol

use in all categories of drinkers and, indeed, had the highest prevalence of lifetime abstainers from alcohol use (65.2%). Marital status and alcohol consumption from the survey did not display any clear patterns, although those widowed generally showed low alcohol use in all three categories and, indeed, had the highest prevalence (71%) of lifetime abstainers from alcohol. The number of lifetime abstainers increased with increasing income quintiles (Q1 = 48.2% and Q5 = 61.4%) and in the non-heavy drinkers category the prevalence decreased with increasing income quintiles (from Q1 = 48.8% to Q5 = 36.5%).

5.2 Diet and physical activity

The diet questions in SAGE asked about the quantity of fruit and vegetables consumed in a typical 24-hour period. Insufficient intake of fruit/vegetables was based on WHO recommendations and defined as less than 5 servings (80g per serving) on a typical day³³ Further questions asked about food availability and access. “Availability” means sufficient quantities of necessary types of food, and “access” means that incomes are adequate to purchase or barter for appropriate foods in sufficient quantity.

About 69% of respondents had insufficient daily intake of fruits/vegetables (Table 5.3). Over two-thirds of both men and women had insufficient intake in their diet, with no distinction between the sexes. Insufficiency of fruit and vegetable intake worsened marginally with increasing age, increasing from 66% in the 50-59 age group to 71% in the 70-plus age group.

Fruits and vegetables insufficiency in the diet was slightly worse for the older rural population (70%) than their urban counterparts (67%). There was a clear gradient of worsening dietary intake by household income quintiles: worst in the lowest income group, Q1 (75%), improving through the quintiles to 64% in the highest Q5 group (Table 5.3).

Insufficient intake of fruits and vegetables was generally higher for those with less education and relatively better for those who had completed high school and above. There was no clear association with marital status.

Physical activity refers to physical action caused by the skeletal muscles that consumes energy. Lack of sufficient physical activity is considered to be a significant contributor to mortality, accounting for 9% of premature

Table 5.3 Respondents with insufficient and sufficient intake of fruit/vegetables by selected demographic characteristics

| Characteristics | Intake of fruit/vegetables (%) | | N |
|----------------------------------|--------------------------------|--------------|-------|
| | Insufficient | Sufficient | |
| Sex | | | |
| Male | 70.0 | 30.0 | 2 259 |
| Female | 67.7 | 32.3 | 2 048 |
| Age group | | | |
| 50–59 | 66.3 | 33.7 | 1 712 |
| 60–69 | 69.9 | 30.1 | 1 184 |
| 70+ | 71.1 | 28.9 | 1 411 |
| Residence | | | |
| Urban | 67.1 | 32.9 | 1 770 |
| Rural | 70.1 | 29.9 | 2 537 |
| Education | | | |
| No education | 72.4 | 27.6 | 2 309 |
| Less than primary school | 69.3 | 30.7 | 443 |
| Primary school completed | 63.1 | 36.9 | 468 |
| Secondary education completed | 73.2 | 26.8 | 172 |
| High school (or equiv) completed | 61.9 | 38.1 | 732 |
| College/university completed | 62.0 | 38.0 | 147 |
| Postgraduate degree completed | 66.8 | 33.2 | 7 |
| Marital status | | | |
| Never married | 65.9 | 34.1 | 54 |
| Currently married | 68.6 | 31.4 | 2 505 |
| Cohabiting | 82.8 | 17.2 | 36 |
| Separated/divorced | 69.1 | 30.9 | 553 |
| Widowed | 69.2 | 30.8 | 1 135 |
| Income quintile | | | |
| Q1 (lowest) | 75.1 | 24.9 | 785 |
| Q2 | 70.4 | 29.6 | 821 |
| Q3 | 68.8 | 31.2 | 880 |
| Q4 | 67.5 | 32.5 | 889 |
| Q5 (highest) | 63.7 | 36.3 | 927 |
| Total respondents, N (%) | 2 966 (68.9) | 1 341 (31.1) | 4 307 |

deaths in 2008, with an impact similar to that of smoking and obesity^{34–36}. Furthermore, it is estimated that physical inactivity contributes to various cancers, diabetes and heart disease. Regular and appropriate levels of physical activity for adults reduces the risk of high blood pressure, coronary heart disease, stroke, diabetes, breast and colon cancers, depression and the risk of falling,

but can also improve bone and functional health. Physical activity also is a key determinant of energy consumption and therefore has a fundamental role in energy balance and weight control.

Questions in SAGE on physical activity will allow for direct comparisons with the Global Physical Activity

Table 5.4 Different levels of physical activity by selected demographic characteristics

| Characteristics | Physical activity level (%) | | | N |
|-----------------------------------|-----------------------------|------------|--------------|-------|
| | High* | Moderate | Low | |
| Sex | | | | |
| Male | 65.9 | 12.3 | 21.8 | 2 181 |
| Female | 58.5 | 12.1 | 29.4 | 1 982 |
| Age group | | | | |
| 50–59 | 70.0 | 11.8 | 18.2 | 1 666 |
| 60–69 | 64.6 | 12.3 | 23.1 | 1 142 |
| 70–79 | 53.0 | 12.6 | 34.5 | 960 |
| 80+ | 46.5 | 13.0 | 40.5 | 395 |
| Residence | | | | |
| Urban | 46.2 | 15.7 | 38.0 | 1 704 |
| Rural | 73.6 | 9.8 | 16.7 | 2 459 |
| Education | | | | |
| No education | 63.6 | 11.3 | 25.0 | 2 221 |
| Less than primary school | 68.5 | 8.1 | 23.3 | 434 |
| Primary school completed | 60.9 | 12.4 | 26.7 | 451 |
| Secondary education completed | 53.0 | 17.5 | 29.5 | 169 |
| High school (or equiv.) completed | 61.5 | 14.6 | 23.9 | 717 |
| College/university completed | 44.6 | 17.5 | 37.8 | 141 |
| Postgraduate degree completed | 62.1 | 26.7 | 11.2 | 7 |
| Marital status | | | | |
| Never married | 51.0 | 22.5 | 26.5 | 54 |
| Currently married | 67.1 | 11.7 | 21.1 | 2 418 |
| Cohabiting | 49.2 | 16.5 | 34.3 | 36 |
| Separated/divorced | 60.1 | 11.8 | 28.0 | 541 |
| Widowed | 54.2 | 12.9 | 32.9 | 1 092 |
| Income quintile | | | | |
| Q1 (lowest) | 75.1 | 8.4 | 16.5 | 758 |
| Q2 | 66.3 | 13.0 | 20.6 | 797 |
| Q3 | 68.1 | 10.8 | 21.1 | 861 |
| Q4 | 55.5 | 13.6 | 30.8 | 854 |
| Q5 (highest) | 49.1 | 14.8 | 36.2 | 889 |
| Total respondents, N (%) | 2 597 (63.4) | 508 (12.2) | 1 058 (25.4) | 4 163 |

* **High-level:** A person meeting either of the following criteria is classified in this category: (1) Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1,500 MET-minutes per week, or (2) 7 or more days of any combination of walking, moderate- or vigorous-intensity activities achieving a minimum of at least 3,000 MET-minutes per week. **Moderate-level:** A person not meeting the criteria for the “high” category, but meeting any of the following criteria is classified in this category: (1) 3 or more days of vigorous-intensity activity of at least 20 minutes per day, or (2) 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day, or (3) 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-level:** A person not meeting any of the above-mentioned criteria falls in this category.

Questionnaire (GPAQ) surveys³⁷. The survey questions assessed the frequency of activity (days), intensity (moderate, vigorous) and duration (minutes and/or hours) over the preceding seven days. SAGE also differentiates work and leisure/recreational/sport-related activity. Current scientific evidence shows that physiological changes associated with health benefits from physical activity require a minimum duration of such activity.

About 63% of the respondents had engaged in high levels of physical activity, 12.2% had engaged in moderate levels of physical activity and 25.4% had engaged in low levels of physical activity (Table 5.4). More men (65.9%) engaged in high-level physical activities than women (58.5%), while those in the 80-plus age group had the lowest prevalence of high-level physical activity (46.5%) compared to those in the 50–59 age group (70.0%). The rural aged showed higher levels of physical activity (73.6%) than their urban counterparts (46.2%); this may be due to the physical nature of the common occupations (including farming) available to the older rural population in Ghana.

The older married population showed the highest level of high physical activity (67%) and the lowest level of low physical activity (21%). The lowest income quintiles had the highest prevalence of high-level physical activity (75.1%) and the lowest in the low physical activity category (16.5%). This observation was in direct contradiction to older adults in the highest income group (Q5), who had the least engagement in high-level physical activity (49.1%) and the highest percentage of low-level physical activity (36.2%). The results show that generally

older adults with less than primary school education had higher high-level physical activity (68.5%) and those with higher education (secondary school and above) tended to report lower percentages of high level physical activity.

5.3 Access to improved water sources and sanitation

Access to water supply and sanitation is a fundamental need and a human right. It is vital for the dignity and health of all people. SAGE attempts to determine levels of access to water and sanitation – and the impact on health in older Ghanaians. The questions and show cards on water and sanitation were based on the 2006 WHO/UNICEF international survey standards and therefore should be comparable to other recently collected and future data.³⁸

- Adequate quantities of safe water for consumption and its use to promote hygiene are complementary measures for protecting health.
- Sanitation facilities interrupt the transmission of much faecal-oral disease at its most important source by preventing human faecal contamination of water and soil.

Epidemiological evidence suggests that sanitation is at least as effective in preventing disease as improved water supply. For SAGE, the following definitions were used for improved water source and sanitation:

Table 5.5 Access to improved drinking-water source and sanitation of HHs by type of access to drinking water and sanitation by HH type and income quintile

| Characteristics | Drinking water sources (%) | | | Sanitation (%) | | |
|-------------------------|----------------------------|-------------------|--------------|-------------------|---------------------|--------------|
| | Improved | Unimproved | N | Improved | Unimproved | N |
| Residence | | | | | | |
| Urban | 94.5 | 5.5 | 2 615 | 19.3 | 80.7 | 2 615 |
| Rural | 74.6 | 25.4 | 2 536 | 10.5 | 89.5 | 2 536 |
| Income quintile | | | | | | |
| Q1 (lowest) | 70.0 | 30.0 | 885 | 2.1 | 97.9 | 885 |
| Q2 | 78.5 | 21.5 | 950 | 7.5 | 92.5 | 950 |
| Q3 | 82.3 | 17.7 | 991 | 10.8 | 89.2 | 991 |
| Q4 | 92.0 | 8.0 | 1 100 | 14.5 | 85.5 | 1 100 |
| Q5 (highest) | 95.7 | 4.3 | 1 202 | 34.4 | 65.6 | 1 202 |
| Total HHs, N (%) | 4 363 (84.7) | 787 (15.3) | 5 150 | 771 (15.0) | 4 380 (85.0) | 5 151 |

- **Improved water** means it is piped into the household or yard/plot. Other improved sources: public standpipe, borehole, protected dug well, protected spring, rainwater collection and bottled water. *Unimproved sources*: unprotected dug well, unprotected spring, surface water and tanker truck supplies.
- **Improved sanitation**: connection to septic system, pour-flush latrine, covered dry latrine (with privacy) (provided facilities are not shared). *Unimproved facilities*: uncovered dry latrine (without privacy), bucket latrine and no facilities (open defecation).

The proportion of respondents with improved drinking water was 84.7% (Table 5.5). More urban household had

improved sources of domestic water (95%), as against only 75% for rural households. Only 15% of respondents had improved sanitation, with urban households (19%) more likely than rural households (11%) to have improved sanitation. For both improved water sources and improved sanitation facilities, a clear gradient was evident from the lowest to the highest income quintile groups. The highest income quintile households had the highest levels of improved water and sanitation. The lack of improved water sources and sanitation was prevalent in many households, particularly in the lower income quintiles. Improvement in the health status of older adults requires a number of measures to correct these inadequacies.

Table 5.6 Time to collect drinking water per household (round trip)

| Characteristics | Drinking water sources (%) | | | N |
|------------------|----------------------------|----------------------|----------------------|-------|
| | Water on premises | Less than 30 minutes | More than 30 minutes | |
| Residence | | | | |
| Urban | 4.5 | 79.1 | 10.2 | 1 627 |
| Rural | 1.0 | 72.9 | 20.3 | 2 480 |
| Income quintile | | | | |
| Q1 (lowest) | 1.0 | 69.3 | 20.6 | 862 |
| Q2 | 1.9 | 74.3 | 18.3 | 873 |
| Q3 | 2.3 | 79.3 | 13.5 | 895 |
| Q4 | 3.1 | 77.8 | 14.7 | 829 |
| Q5 (highest) | 4.4 | 76.2 | 13.7 | 632 |
| Total HHs, N (%) | 100 (2.4) | 3 096 (75.4) | 670 (16.3) | 4 107 |

Table 5.7 Person who usually collects drinking water for a household

| Characteristics | Drinking water collectors (%) | | | | | Total number of HHs |
|------------------|-------------------------------|--------------|------------|--------------|---------------|---------------------|
| | Adult man | Adult woman | Male child | Female child | Other persons | |
| Residence | | | | | | |
| Urban | 10.1 | 50.4 | 15.1 | 19.3 | 4.1 | 1 453 |
| Rural | 10.4 | 60.7 | 11.8 | 13.3 | 3.0 | 2 313 |
| Income quintile | | | | | | |
| Q1 (lowest) | 11.6 | 61.4 | 10.4 | 13.1 | 2.7 | 775 |
| Q2 | 13.2 | 59.3 | 10.8 | 12.8 | 3.2 | 808 |
| Q3 | 12.1 | 57.3 | 13.8 | 12.5 | 3.2 | 831 |
| Q4 | 6.4 | 54.7 | 16.5 | 17.3 | 3.9 | 767 |
| Q5 (highest) | 6.7 | 48.8 | 14.2 | 25.3 | 4.5 | 568 |
| Total HHs, N (%) | 388 (10.3) | 2 136 (56.7) | 492 (13.1) | 589 (15.6) | 128 (3.4) | 3 766 |

In households where water was not on the premises, 75% spent less than 30 minutes to get to their source of drinking water, with a difference between urban and rural dwellers (Table 5.6). Respondents in 16.3% of households spent more than 30 minutes to get to their source of drinking water. Ten percent of respondents in urban areas compared to 20.3% of the respondents in rural areas spent more than 30 minutes to get to their source of drinking water. Generally, those in the highest income groups had easier access to drinking water than the lower income households; in fact, 21% of households in the lowest income quintile spent more than 30 minutes to access drinking water, while only 13.7% of the respondents in the highest income quintile spent more than 30 minutes to get to their drinking water.

Fetching water is a highly gendered activity. The burden of providing water for a household rested heavily on the adult female, followed by the female child, in both urban and rural households and across all income quintiles (Table 5.7). With the effect of climate change and scarcity of water, this finding may have increasing health and social implications for rural female adults and children in particular.

5.4 Indoor air pollution (solid-fuel use for cooking)

The use of solid fuels such as wood, coal, and agricultural and crop residues for cooking can have serious effects on respiratory health. Traditional low-efficiency

stoves produce heavy smoke with fine particles, carbon monoxide and carcinogenic compounds. Women are at high risk of chronic respiratory disease and eye conditions, as they often spend more time in the home than men, particularly during cooking. The 2010 Global Burden of Disease estimates show that household air pollution from solid fuels is the leading health risk factor in Ghana (www.healthmetricsandevaluation.org/sites/default/files/country-profiles/GBD%20Country%20Report%20-%20Ghana.pdf).

The questions and show cards on indoor air pollution were based on the WHO/UNICEF Joint Monitoring Programme core questions.³⁸ Coal, charcoal, wood, agricultural/crop residue, animal dung and shrubs/grass were considered as solid fuel and electricity/gas as clean fuel for the purposes of qualifying indoor air pollution. About 90% of households used solid fuel (Table 5.8). There was a huge difference in the type of cooking fuel used by households in urban and rural areas, 17% of urban households used clean fuel, while less than 1% of rural households did so. Almost all rural households (98.9%) used solid fuel. This may have health implications for the rural aged women who spend long hours cooking with this type of fuel. The situation may be worsened by the poor ventilation in the type of houses found in most rural parts of Ghana.

The use of clean fuel and solid fuel by households showed clear patterns by levels of wealth. Clean fuel use was highest in Q5 (31.9%) and lowest in Q1 (0.7%), while the wealthier households had the lowest prevalence of solid fuel use (67.5%) and poorest had the highest prevalence of solid fuel use (99.0%). Generally,

Table 5.8 Indoor air pollution: distribution of cooking fuel used, by household residence and income quintile

| Characteristics | Clean fuel (electricity/gas) (%) | Kerosene/ paraffin (%) | Solid fuel (%) | Number of HHs |
|-----------------------------|-------------------------------------|------------------------|-------------------------|---------------|
| Residence | | | | |
| Urban | 17.2 | 0.7 | 82.1 | 2 614 |
| Rural | 0.9 | 0.2 | 98.9 | 2 531 |
| Income quintile | | | | |
| Q1 (lowest) | 0.7 | 0.3 | 99.0 | 884 |
| Q2 | 0.6 | 0.3 | 99.1 | 947 |
| Q3 | 3.0 | 0.3 | 96.6 | 990 |
| Q4 | 4.3 | 0.6 | 95.1 | 1 100 |
| Q5 (highest) | 31.9 | 0.6 | 67.5 | 1 202 |
| Total HHs, N (%) | 475 (9.2) | 22 (0.4) | 4 648 (90.3) | 5 145 |

Table 5.9 Where cooking is usually done and ventilation in households that use solid fuels

| Characteristics | Fire/stove covered or not (%) | | Number of HHs |
|--------------------------------------|-------------------------------|--------------|---------------|
| | Chimney/hood | Neither | |
| Where cooking usually done | | | |
| In room used for living or sleeping | 9.0 | 91.0 | 16 |
| In separate room used as kitchen | 7.5 | 92.3 | 967 |
| In separate building used as kitchen | 2.8 | 97.0 | 1 341 |
| Outdoors | 5.9 | 93.9 | 2 222 |
| Other, specify | 3.3 | 94.7 | 71 |
| Total HHs, N (%) | 245 (5.3) | 4 366 (94.4) | 4 626 |

Table 5.10 Materials used in the construction of dwellings: Floor and wall types by household location and income quintile

| Characteristics | Type of floor (%) | | N | Type of wall (%) | | | | N |
|-----------------|-------------------|-------|-------|------------------|------|--------|-------------------|-------|
| | Hard | Earth | | Cement | Mud | Thatch | Plastic/ metal | |
| Residence | | | | | | | | |
| Urban | 96.8 | 3.0 | 2 615 | 79.5 | 19.2 | 0.9 | 0.5 | 2 608 |
| Rural | 80.8 | 19.1 | 2 537 | 35.3 | 63.5 | 1.0 | 0.2 | 2 534 |
| Income quintile | | | | | | | | |
| Q1 (lowest) | 63.8 | 35.8 | 886 | 19.6 | 77.4 | 2.5 | 0.5 | 884 |
| Q2 | 85.4 | 14.2 | 950 | 43.0 | 55.9 | 0.8 | 0.4 | 947 |
| Q3 | 93.2 | 6.5 | 991 | 56.1 | 42.4 | 1.0 | 0.5 | 988 |
| Q4 | 97.5 | 2.5 | 1 100 | 70.2 | 28.8 | 0.6 | 0.3 | 1 100 |
| Q5 (highest) | 98.7 | 1.3 | 1 202 | 87.4 | 12.5 | 0.1 | 0 | 1 201 |

the use of paraffin/kerosene for cooking was less than 1% in all households in urban and rural areas and across all income quintiles.

A total of 245 (5.3%) of the households had fire or stove which was covered by hood or chimney, whereas the remainder of dwellings did not have specific ventilation systems (Table 5.9). Most households in the survey (97%) either cooked outside or in a separate building used as a kitchen. Of major health concern, though, is the households who cooked in their living or sleeping rooms (16 households).

The materials used for a dwelling is a wealth proxy, but also has some related environmental health risks. Earthen floors easily develop cracks and crevices and may serve as suitable hiding places for some pests/disease vectors. Almost 97% of urban households had hard (cement/concrete) floors, while more rural households had earthen floors (19.1%). Households in the

higher income groups had higher prevalence of hard floors in their houses, with the highest in Q5 (98.7%) and lowest in Q1 (63.8%).

Similarly, more urban households had cement walls (79.5%), a few were made of mud (19%) and less than 1% were made of thatch. In rural areas, however, most walls were made of mud (63.5%), while 35.3% were made of cement and 1% was thatch.

The distribution shows gradients for all three types of wall and household income quintiles. Q5 households had the highest prevalence of cement walls (87.4%) and low prevalence of mud (12.5%) and thatch walls (0.1%). On the other hand, Q1 households most often had dwellings with walls made of mud (77.4%), and had the highest prevalence for thatch walls (2.5%) and the lowest prevalence of cement walls (19.6%).



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.”

However, this definition does not provide objective health indicators for monitoring and evaluation. There is no uniform scale to measure health, and it 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.³⁹ 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.³⁹

Decrements in health, specifically disability, were measured using the 12-item version of WHO Disability Assessment Scale (WHODAS) 2.0.⁴⁰ 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 Appendix 2.

6.1 Self-reported overall general health and household activity

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.

One hundred and seventy four respondents (4.0%) out of 4301 respondents stated that their overall general health was very good, 37.2% good, 41.6% moderate, 14.9% bad, and 2.3% stated their general health as being very bad (Table 6.1). The well-established patterns of self-rated health by sex and age were confirmed in this study, with men in better health than women and younger in better health than older respondents. Men rate their health as very good/ good significantly more often than women (46.4% versus 35.6%). The prevalence of health rated as bad or very bad increased with age, ranging from 8.9% among the youngest age group to 35.7% for the oldest. The distribution of self-reported health by place of residence does not show any strong association; there were slightly more urban than rural dwellers reporting good health (42.7% versus 40.2%, respectively). The differences in the accessibility of health services, especially those of a specialized nature, and a possible different attitude in help seeking between urban and rural populations seemed not to interact with respondents’ overall rating of their own health.

More than 46% of the currently married reported very good or good health, as compared to 39.4% among the

separated/divorced and 30.5% among the widowed. An age-confounding effect was investigated and revealed no association of marital status with self-rated health for people aged 60–69 and 70–79. Among the wealthiest income quintile, 49.7% of respondents reported very good or good health, versus 38.0% for the poorest, and the inverse relationship with bad/very bad health,

indicating that higher levels of income correspond with better self-reported health.

A clear pattern in the relationship between the single health question result and the two composite scores from the multi-dimensional health and disability measures (health state and WHODAS) is shown in Table 6.1.

Table 6.1 Distribution of respondent ratings of overall general health (Q2000), by selected demographic characteristics and mean health state and WHODAS scores

| Characteristics | % distribution | | | | | N |
|--------------------------|----------------|--------------|--------------|------------|----------|-------|
| | Very good | Good | Moderate | Bad | Very bad | |
| Sex | | | | | | |
| Male | 4.9 | 41.5 | 38.9 | 12.8 | 1.9 | 2 254 |
| Female | 3.2 | 32.4 | 44.7 | 17.2 | 2.6 | 2 046 |
| Age group | | | | | | |
| 50–59 | 7.0 | 47.5 | 36.6 | 7.9 | 1.0 | 1 710 |
| 60–69 | 3.9 | 36.1 | 42.6 | 14.8 | 2.6 | 1 183 |
| 70–79 | 0.8 | 27.1 | 49.0 | 20.3 | 2.9 | 992 |
| 80+ | 0.5 | 22.0 | 41.8 | 30.8 | 4.9 | 414 |
| Residence | | | | | | |
| Urban | 5.0 | 37.7 | 41.4 | 14.0 | 1.9 | 1 764 |
| Rural | 3.4 | 36.9 | 41.8 | 15.5 | 2.5 | 2 535 |
| Marital status | | | | | | |
| Never married | 2.3 | 23.8 | 40.9 | 33.0 | 0 | 54 |
| Currently married | 5.0 | 41.4 | 39.5 | 12.5 | 1.6 | 2 499 |
| Cohabiting | 6.4 | 70.4 | 16.9 | 3.8 | 2.5 | 36 |
| Separated/divorced | 4.3 | 35.1 | 42.7 | 15.2 | 2.7 | 553 |
| Widowed | 1.8 | 28.7 | 46.5 | 19.5 | 3.6 | 1 135 |
| Income quintile | | | | | | |
| Q1 (lowest) | 3.3 | 34.7 | 39.5 | 19.6 | 2.9 | 784 |
| Q2 | 3.1 | 33.2 | 46.5 | 15.0 | 2.3 | 821 |
| Q3 | 4.0 | 34.3 | 42.7 | 15.6 | 3.4 | 879 |
| Q4 | 4.2 | 38.7 | 42.9 | 12.7 | 1.6 | 888 |
| Q5 (highest) | 5.5 | 44.2 | 37.1 | 12.0 | 1.3 | 922 |
| Health state* | | | | | | |
| Mean score | 73.7 | 59.1 | 46.0 | 38.5 | 29.6 | 4 299 |
| WHODAS** | | | | | | |
| Mean score | 8.5 | 13.1 | 25.4 | 38.0 | 54.0 | 4 299 |
| Total respondents, N (%) | 174 (4.0) | 1 600 (37.2) | 1 791 (41.6) | 639 (14.9) | 97 (2.3) | 4 299 |

* The health state score is a composite of responses from eight domains and ranged from 0 (indicating worst health) to 100 (best health).

** A single disability score is generated through summing the responses to the 12 questions and then standardizing the raw score to a 0–100 scale with a higher WHODAS score reflecting worse overall functioning or higher disability.

Respondents who rated their health very good obtained the highest health score mean value (73.7), which then decreased to the lowest values for the very bad category (29.6): a variation of 59%. Analogously, the lowest level of disability (lowest WHODAS score) was seen in respondents reporting very good health (8.5), while the highest disability (WHODAS score of 54.0) by respondents

who felt that their health was very bad; in this case, the variation was 84%.

A second question about an individual's overall health and functioning enquired about the level of difficulty encountered with work or household activities in the last 30 days. In general, about 20% of the respondents

Table 6.2 Distribution of difficulties with 'work or household activities', by selected demographic characteristics and mean health state and WHODAS scores

| Characteristics | % distribution | | | | | N |
|--------------------------|----------------|--------------|--------------|------------|-----------|-------|
| | None | Mild | Moderate | Severe | Extreme | |
| Sex | | | | | | |
| Male | 22.7 | 25.2 | 38.3 | 11.4 | 2.4 | 2 250 |
| Female | 15.6 | 22.5 | 43.0 | 16.2 | 2.8 | 2 041 |
| Age group | | | | | | |
| 50–59 | 29.5 | 29.0 | 34.4 | 6.3 | 0.9 | 1 705 |
| 60–69 | 16.5 | 25.8 | 43.5 | 11.8 | 2.4 | 1 182 |
| 70–79 | 10.3 | 18.0 | 47.4 | 21.1 | 3.2 | 991 |
| 80+ | 7.1 | 11.7 | 40.9 | 31.7 | 8.6 | 413 |
| Residence | | | | | | |
| Urban | 24.7 | 24.6 | 36.3 | 12.1 | 2.4 | 1 760 |
| Rural | 15.5 | 23.4 | 43.5 | 14.8 | 2.7 | 2 531 |
| Marital status | | | | | | |
| Never married | 14.0 | 19.4 | 36.3 | 29.2 | 1.2 | 54 |
| Currently married | 22.4 | 25.3 | 39.0 | 11.2 | 2.2 | 2 493 |
| Cohabiting | 28.4 | 32.6 | 32.6 | 2.0 | 4.4 | 36 |
| Separated/divorced | 21.0 | 24.3 | 39.9 | 13.0 | 2.0 | 552 |
| Widowed | 11.8 | 20.6 | 44.4 | 19.4 | 3.8 | 1 133 |
| Income quintile | | | | | | |
| Q1 (lowest) | 14.7 | 21.4 | 46.6 | 15.5 | 1.9 | 783 |
| Q2 | 14.1 | 25.3 | 42.4 | 14.7 | 3.4 | 820 |
| Q3 | 16.1 | 20.7 | 44.2 | 15.3 | 3.7 | 877 |
| Q4 | 22.2 | 25.3 | 37.4 | 12.4 | 2.7 | 885 |
| Q5 (highest) | 28.1 | 26.4 | 33.3 | 10.9 | 1.2 | 921 |
| Health state* | | | | | | |
| Mean score | 71.8 | 54.7 | 44.2 | 35.8 | 28.8 | 4 291 |
| WHODAS** | | | | | | |
| Mean score | 6.5 | 14.8 | 26.1 | 42.0 | 61.4 | 4 291 |
| Total respondents, N (%) | 829 (19.3) | 1 026 (23.9) | 1 739 (40.5) | 587 (13.7) | 111 (2.6) | 4 291 |

* The health state score is a composite of responses from eight domains and ranged from 0 (indicating worst health) to 100 (best health).

** A single disability score is generated through summing the responses to the 12 questions and then standardizing the raw score to a 0–100 scale with a higher WHODAS score reflecting worse overall functioning or higher disability.

did not have any difficulty (Table 6.2). About 24% had mild difficulty, 40.5% had moderate difficulty, 13.7% had severe difficulty and 2.6% had extremely severe difficulty with work or household activities. Women tended to report higher levels of difficulties than men; combining severe and extreme levels, prevalence rates were 19.0% for women versus 13.8% for men.

Increasing age was also associated with significant increases in difficulties; about 30% of people aged 50–59 reported no difficulties, versus 7.1% among people aged 80-plus. Among the urban population, there is higher prevalence of no difficulties (24.7%) versus that observed among the rural population (15.5%). The association with residence was still true when stratifying for sex and age groups, except for the oldest age group, 80-plus, where no statistical association was found (about 7% of people report no difficulties and about 8.5% extreme difficulties, regardless of the location of residence). The highest prevalence of no or mild difficulties was found among the married/cohabiting or separated/divorced people, while the lowest prevalence of no difficulties was observed among the widowed. An association was also seen in terms of income quintile, where the richest reported a higher prevalence of experiencing no difficulties. These findings (marital status and income quintile) hold true even after stratifying for sex and age.

As with the single health question, comparisons between this single functioning question and the multi-dimensional health state and WHODAS results showed clear patterns (Table 6.2). The mean health state score ranged between 71.8 among respondents with no difficulties to 28.8 for respondents with extreme difficulties; the corresponding mean values for the WHODAS score were 6.5 and 61.4. Even the corresponding variations were similar to the previous measure, 59% and 89%, respectively.

6.2 Composite health state score

With regard to Section 6.1 and WHO's approach to measuring health, further disaggregation of health through the multiple health domains was done to better understand the determinants of health and identify possible differences between perceived health and true levels of health. Eight health domains were covered in the survey: mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy, and affect/mood. Health state levels, adjusted by vignette responses, improve comparability

within and across countries. Results are discussed in terms of mean scores on a scale of 0 to 100, with higher values indicating better health.

The overall mean health score was 50.5, lower among women (44.8, versus 52.3 among men) and decreases with ageing, ranging from a mean value of 54.0 for the youngest age group to 39.3 for the oldest group (Table 6.3). On average, married people or separated/divorced had higher health scores, around 50, compared to the widowed, who had the lowest score (44.0). Education also plays an important role in determining the health score; respondents with no education scored lowest (47.0) versus all other educational categories, which reported a health score ranging between 49.8 and 57.9. A gradient with income quintile was also observed, where the poorest reported a mean health score value of 46.1, versus a value of 53.0 for the richest.

The vignette-adjusted health state scores showed similar patterns, but also demonstrated a systematically lower health score when the vignette adjustments are not applied. The differences by sex were also slightly smaller than the unadjusted health state scores – suggesting that the vignettes remove some of the inter-personal differences in how the questions are understood – and give a better reflection of the true levels of health.

6.3 Functioning and disability: WHODAS 2.0

Measures of functioning or disability are common in surveys of older adults, and often include ADLs and IADLs. Functioning was assessed through the 12-item WHODAS version 2.0 (see Appendix 1). The WHODAS contains many of the most commonly asked ADL and IADL questions, as well as an assessment of the severity of disability through the use of response categories that assess level of difficulty. Disability levels on average were quite low, the mean WHODAS score was 22.5, consistent with what is typically seen in community-dwelling older adults (Figure 6.3). Disability was higher among women than men, as widely supported from the literature. Being widowed resulted in higher disability scores; however, embedded in this subgroup is an age effect (49% of the widowed aged 70-plus versus 26% of the married) that should be taken into account. An inverse trend with levels of disability was observed with increasing age (from 14.9 for the youngest age group to 38.0 for the oldest), level of education (the highest

Table 6.3 Mean unadjusted and adjusted health state scores and WHODAS scores, by selected demographic characteristics

| Characteristics | Mean health score* | | | | Mean WHODAS score | |
|-----------------------------------|--------------------|-------|-------------------|------|-------------------|--------------|
| | Unadjusted | N | Vignette-adjusted | N | WHODAS | N |
| Sex | | | | | | |
| Male | 52.3 | 2 350 | 58.6 | 2254 | 19.2 | 2 259 |
| Female | 44.8 | 2 374 | 53.5 | 2046 | 26.2 | 2 048 |
| Age group | | | | | | |
| 50–59 | 54.0 | 1 907 | 61.8 | 1710 | 14.9 | 1 712 |
| 60–69 | 47.9 | 1 290 | 55.4 | 1183 | 22.0 | 1 184 |
| 70–79 | 43.5 | 1 075 | 51.1 | 993 | 29.7 | 993 |
| 80+ | 39.3 | 452 | 47.2 | 414 | 38.0 | 418 |
| Residence | | | | | | |
| Urban | 51.1 | 1 918 | 58.4 | 1764 | 21.6 | 1 770 |
| Rural | 46.8 | 2 806 | 54.6 | 2536 | 23.2 | 2 537 |
| Education | | | | | | |
| No education | 47.0 | 2 308 | 53.1 | 2308 | 26.7 | 2 309 |
| Less than primary school | 49.8 | 445 | 55.5 | 445 | 21.7 | 443 |
| Primary school complete | 55.7 | 468 | 59.0 | 468 | 19.3 | 468 |
| Secondary education complete | 52.3 | 172 | 57.7 | 172 | 20.4 | 172 |
| High school (or equiv.) and above | 57.9 | 732 | 62.7 | 732 | 14.2 | 732 |
| University/college completed | 57.1 | 147 | 62.0 | 147 | 15.1 | 147 |
| Postgraduate degree completed | 55.5 | 7 | 61.0 | 7 | 13.2 | 7 |
| Marital status | | | | | | |
| Never married | 46.5 | 62 | 54.9 | 54 | 25.5 | 54 |
| Currently married | 50.0 | 2 809 | 58.1 | 2499 | 19.5 | 2 505 |
| Cohabiting | 57.8 | 37 | 63.5 | 36 | 8.7 | 36 |
| Separated/divorced | 50.6 | 574 | 57.0 | 553 | 21.4 | 553 |
| Widowed | 44.0 | 1 215 | 51.4 | 1135 | 30.0 | 1 135 |
| Income quintile | | | | | | |
| Q1 (lowest) | 46.1 | 868 | 53.9 | 784 | 24.3 | 785 |
| Q2 | 46.0 | 914 | 54.0 | 821 | 24.5 | 821 |
| Q3 | 45.3 | 976 | 53.2 | 880 | 24.9 | 880 |
| Q4 | 51.7 | 945 | 58.5 | 888 | 20.6 | 889 |
| Q5 (highest) | 53.0 | 1 014 | 60.5 | 922 | 18.8 | 927 |
| Total respondents | | | | | | 4 307 |

* Health state and WHODAS (disability) scores were both transformed to the same scale of 0 to 100, where 0 indicates worst health/least disability and 100 is best health/most disability, respectively. Adjustment for the health state score refers to the pattern of responses to the vignette questions that correspond to each health domain.

Table 6.4 Persons with ADL (0, 1, 2+) and IADL (0, 1, 2+) deficiencies, by selected demographic characteristics, and mean health state and WHODAS scores

| Characteristics | ADL (%) | | | Total | IADL (%) | | | Total |
|-------------------------------|--------------|------------|--------------|-------|--------------|-----------|-----------|-------|
| | 0 | 1 | 2+ | | 0 | 1 | 2+ | |
| Sex | | | | | | | | |
| Male | 65.9 | 12.0 | 22.1 | 2 254 | 85.5 | 7.6 | 7.0 | 2 253 |
| Female | 49.9 | 13.4 | 36.6 | 2 047 | 76.5 | 12.1 | 11.4 | 2 046 |
| Age group | | | | | | | | |
| 50–59 | 76.6 | 9.7 | 13.7 | 1 711 | 92.4 | 4.9 | 2.7 | 1 709 |
| 60–69 | 60.2 | 14.1 | 25.7 | 1 184 | 84.5 | 8.7 | 6.8 | 1 184 |
| 70–79 | 37.8 | 17.1 | 45.2 | 993 | 71.0 | 16.0 | 13.0 | 992 |
| 80+ | 26.8 | 10.2 | 63.0 | 414 | 50.0 | 17.6 | 32.4 | 414 |
| Residence | | | | | | | | |
| Urban | 58.2 | 12.2 | 29.7 | 1 765 | 80.8 | 9.6 | 9.6 | 1 764 |
| Rural | 58.4 | 13.0 | 28.6 | 2 537 | 81.5 | 9.8 | 8.7 | 2 535 |
| Education | | | | | | | | |
| No education | 50.2 | 13.8 | 36.0 | 2 309 | 75.5 | 12.8 | 11.8 | 2 309 |
| Less than primary school | 59.9 | 11.8 | 28.3 | 443 | 84.9 | 6.1 | 9.0 | 443 |
| Primary school completed | 66.3 | 13.3 | 20.4 | 467 | 86.4 | 7.2 | 6.4 | 466 |
| Secondary education completed | 76.8 | 7.7 | 15.5 | 172 | 89.1 | 5.2 | 5.7 | 172 |
| High school (or equiv.) | 71.2 | 10.6 | 18.1 | 732 | 89.7 | 6.2 | 4.1 | 732 |
| University/college completed | 68.9 | 10.5 | 20.5 | 147 | 90.5 | 4.4 | 5.1 | 147 |
| Postgraduate degree completed | 54.2 | 18.1 | 27.6 | 7 | 88.8 | 11.2 | 0 | 7 |
| Marital status | | | | | | | | |
| Never married | 56.1 | 4.9 | 38.9 | 54 | 72.8 | 3.4 | 23.8 | 54 |
| Currently married | 66.2 | 12.1 | 21.7 | 2 500 | 86.0 | 7.9 | 6.1 | 2 499 |
| Cohabiting | 82.2 | 1.5 | 16.3 | 36 | 93.5 | 6.5 | 0 | 36 |
| Separated/divorced | 54.5 | 14.1 | 31.4 | 553 | 82.5 | 8.7 | 8.8 | 552 |
| Widowed | 42.0 | 13.7 | 44.2 | 1 135 | 69.9 | 14.9 | 15.2 | 1 135 |
| Income quintile | | | | | | | | |
| Q1 (lowest) | 57.5 | 11.8 | 30.7 | 821 | 78.8 | 12.3 | 8.9 | 820 |
| Q2 | 57.3 | 12.5 | 30.2 | 880 | 79.3 | 10.3 | 10.4 | 879 |
| Q3 | 60.9 | 12.5 | 26.5 | 888 | 83.7 | 7.3 | 9.0 | 888 |
| Q4 | 62.2 | 11.9 | 25.9 | 922 | 84.0 | 8.1 | 7.9 | 922 |
| Q5 (highest) | 52.7 | 14.6 | 32.6 | 785 | 79.7 | 11.1 | 9.3 | 785 |
| Health score | | | | | | | | |
| Mean score | 57.5 | 47.1 | 37.9 | 50.5 | 54.0 | 39.6 | 30.8 | 50.5 |
| WHODAS score | | | | | | | | |
| Mean score | 13.1 | 22.8 | 41.4 | 22.5 | 16.8 | 36.8 | 58.4 | 22.5 |
| Total respondents, N (%) | 2 508 (58.3) | 544 (12.7) | 1 249 (29.0) | 4 301 | 3 491 (81.2) | 418 (9.7) | 390 (9.0) | 4 299 |

* Health state and WHODAS scores were both transformed to the same scale of 0 to 100, where 0 indicates worst health/least disability and 100 is best health/most disability, respectively.

mean score observed among respondents with no education) and income quintile (ranging from 24.3 among the poorest income quintile to 18.8 for the richest).

Table 6.4 describes the proportion of respondents with different levels of ADLs (0, 1, 2+) and IADLs (0, 1, 2+). Overall, 58.3% of the respondents had no ADL deficiencies, 12.7% had one, and 29.0% had two or more. However, with respect to IADLs, the 'none' category was 81.2%, mild as 9.7% and severe as 9.0%.

The sex differences in disability were also confirmed when using ADL and IADL measures: women reported more difficulties than men in both indicators. This finding is consistent with findings from higher income countries. Potential explanations in this context lie on the socioeconomic gradient: women tend to be poorer and to achieve a lower level of education.

The relationship between disability and age was also clear; increasing age was associated with increasing disability, with prevalence of two or more ADLs ranging from 13.7% among the 50–59 age group to 63% among people aged 80-plus.

The proportion with two or more ADLs did not differ significantly between people living in urban or rural settings (29.7% versus 28.6%, respectively). An analogous finding was observed for the prevalence of two or more IADL disabilities (9.6% versus 8.7%). It was anticipated that difficulties would be higher in rural areas, where essential services are often limited or do not exist, and people face greater difficulties than those encountered by people living in urban areas in terms of access to housing, transportation, employment, educational programmes and specialized health care.

Higher prevalence of independence in ADLs was observed among currently married or cohabiting respondents; while widowhood appeared to be related to higher levels of dependency. However, as already stated, the age effect should be taken into consideration. When considering IADL, the separated/divorced status had prevalence rates as high as the currently married or cohabiting status.

The relationship between disability and level of education differs according to the measure investigated. As far as the IADL is concerned, the substantial effect of education is seen in relation to the no formal education versus the other levels of education. Prevalence of IADL independence was 75.5% for people with no education and then ranged from 84.9% for people with less than a primary school education to 90.5% for

people who had completed university/college. On the other hand, the ADL measure revealed a positive effect for higher education; in fact, 60% of people with less than primary school education carried no ADL deficiencies, versus 76.8% of people who had completed secondary education. Both the ADL and IADL distribution by income quintile showed an increasing trend from the lowest quintile to the fourth one (from 57.5% to 62.2% and from 78.8% to 84%, respectively), while the richest people reported the highest prevalence (32.6%) of deficiencies in ADLs.

6.3 Measured cognitive function

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-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). Here though, the focus is on the three specific cognition tests used: 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 about 10 minutes of interview time, recall and recognition are again tested. Digit span forward and backward are the last tests used for testing working memory and executive function.

On average, the number of animals named correctly in the verbal fluency test was 13.5. Mean verbal recall (average of immediate and delayed) scores were 5.4 out of 10. The mean forward number series without errors was 4.4 and the backward numbers mean was 2.5. All the cognitive measures showed an association with sex (women always reported lower mean values), age (increasing age corresponded with a decreasing mean score), and marital status and education (widowed and people with no education always reported the worst score compared to the other categories).

The overall score result showed a decreasing trend with age (from a mean score of 59.2 among the youngest

Table 6.5 Mean cognition scores (overall and sub-scores for verbal fluency (VF), verbal recall (VR), forward digit span (FDS) and backward digit span (BDS) tests by age, sex, residence, marital status and income quintile

| Characteristics | Mean cognition score | | | | Overall score | N |
|-------------------------------|----------------------|-----|-----|-----|---------------|-------|
| | VF | VR | FDS | BDS | | |
| Sex | | | | | | |
| Male | 14.2 | 5.6 | 4.7 | 2.8 | 57.5 | 2 259 |
| Female | 12.7 | 5.3 | 4.2 | 2.2 | 53.4 | 2 048 |
| Age group | | | | | | |
| 50–59 | 14.5 | 5.8 | 4.8 | 2.9 | 59.2 | 1 712 |
| 60–69 | 13.5 | 5.5 | 4.4 | 2.5 | 55.9 | 1 184 |
| 70–79 | 12.5 | 5.2 | 4.2 | 2.2 | 52.5 | 993 |
| 80+ | 12 | 4.6 | 3.6 | 1.7 | 46.2 | 418 |
| Residence | | | | | | |
| Urban | 13.2 | 5.5 | 4.9 | 2.9 | 56.4 | 1 770 |
| Rural | 13.7 | 5.5 | 4.2 | 2.3 | 55.0 | 2 537 |
| Marital status | | | | | | |
| Never married | 11.4 | 5 | 4.1 | 2.0 | 50.4 | 54 |
| Currently married | 14.1 | 5.7 | 4.7 | 2.7 | 57.8 | 2 505 |
| Cohabiting | 15.9 | 6.2 | 4.9 | 3.0 | 62.3 | 36 |
| Separated/divorced | 13.8 | 5.4 | 4.5 | 2.6 | 55.0 | 553 |
| Widowed | 12.1 | 5.1 | 3.9 | 2.0 | 51.1 | 1 135 |
| Education | | | | | | |
| No education | 12.7 | 5.3 | 3.9 | 1.9 | 52.0 | 2 309 |
| Less than primary school | 13.9 | 5.5 | 4.4 | 2.5 | 55.1 | 443 |
| Primary school completed | 14.2 | 5.8 | 5.0 | 3.0 | 58.9 | 468 |
| Secondary education completed | 12.4 | 5.7 | 5.6 | 3.7 | 59.6 | 172 |
| High school (or equiv.) | 15.2 | 5.9 | 5.3 | 3.5 | 61.3 | 732 |
| College/university completed | 15.6 | 6.0 | 6.0 | 4.0 | 63.6 | 147 |
| Postgraduate degree completed | 14.0 | 6.5 | 6.7 | 4.8 | 72.5 | 7 |
| Income quintile | | | | | | |
| Q1 (lowest) | 12.6 | 5.4 | 3.9 | 2.0 | 53.8 | 785 |
| Q2 | 13.2 | 5.4 | 4.1 | 2.2 | 53.7 | 821 |
| Q3 | 13.3 | 5.4 | 4.2 | 2.3 | 54 | 880 |
| Q4 | 14.2 | 5.6 | 4.7 | 2.7 | 56.7 | 889 |
| Q5 (highest) | 14.0 | 5.6 | 5.2 | 3.3 | 59.2 | 927 |
| Mean score/total respondents | 13.5 | 5.5 | 4.5 | 2.5 | 55.6 | 4 307 |

group to a mean score of 46.2 among the oldest group), and an increasing trend with educational level (among uneducated people, the mean score was 52, increasing to 63.6 for those who had completed college/university).

On average, men had higher scores than women; marital status with higher scores included currently married/cohabiting and separated/divorced. No significant difference was seen with respect to residence.



7. Morbidity and interventions

Globally, the burden of disease is shifting from infectious diseases to non-communicable diseases. In most countries, the contribution of chronic conditions to the overall burden of disease is increasing, with chronic conditions such as heart disease and stroke now the chief causes of death. This is the case in Ghana, although infectious diseases still contribute the largest share of disease burden (see Figure 1.1, and the 2010 Global Burden of Disease Ghana profile www.healthmetricsandevaluation.org/sites/default/files/country-profiles/GBD%20Country%20Report%20-%20Ghana.pdf). The contributing factors are many and varied, including global, societal and individual factors. Improving the comparability of results will enhance our ability to understand the inter-relationships and mitigating factors.

SAGE gathered evidence on a selected range of chronic diseases that contribute to a large portion of the burden of disease for non-communicable diseases and are typically more widely prevalent among older adults. In this section, results are presented for arthritis, stroke, angina, diabetes mellitus, chronic lung disease, asthma, depression, hypertension and edentulism. Prevalence rates were based on self-reported diagnosis. In addition, 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. This report includes the unmet treatment needs for each condition – those with a condition and not receiving treatment – indicating 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

7.1.1 Single chronic conditions and unmet treatment needs

SAGE calculated prevalence rates for a select number of chronic conditions by self-report and also by symptom-reporting. The list of conditions includes: stroke, angina pectoris, diabetes mellitus, osteoarthritis, chronic lung disease, asthma, depression, and hypertension. A number of conditions (angina, asthma, arthritis and depression) have symptoms with sufficient specificity and sensitivity to also consider prevalence/incidence rates estimates generated with established diagnostic algorithms. For these conditions, the rates were reported both ways.

Prevalence for each of the chronic conditions indicated above, was based on self-reporting by respondents to the question “*Has a health care professional/doctor ever told you, you have . . . ?*”. Tables 7.1a, b, c and d show the rates for the selected chronic conditions in Ghana. Rates for chronic ongoing treatment (in the last 12 months) and current treatment (last two weeks) were included for these conditions and analysed with the chosen socio-demographic characteristics of the population. It was hoped that these treatment questions would capture both the ongoing nature of treatment needed for chronic conditions, but also assessing current adherence.

Prevalence by symptom-reporting was based on validated sets of symptoms and related diagnostic algorithm. Prevalence of chronic diseases by self-report (SR) and symptom reporting (Sx), prevalence on current therapy in last two weeks (CTx) and chronic ongoing therapy in last 12 months (RTx) by selected demographic characteristics are also shown in Tables 7.1a, b, c and d.

Arthritis was reported by 13.8% of respondents and more by women (16.3%) than men (11.5%). Prevalence was higher using symptom-reporting/algorithm and

Table 7.1a Arthritis and stroke

| Characteristics | Arthritis | | | | | | | Stroke | | | | | |
|--------------------------|-------------|--------------|-------------|-------------|-------------|-------------|------------|------------|--------------|-------------|------------|-------------|------------|
| | SR* (%) | N | Sx (%) | N | CTx (%) | RTx (%) | N | SR (%) | N | CTx (%) | N | RTx (%) | N |
| Sex | | | | | | | | | | | | | |
| Male | 11.5 | 2 239 | 20.1 | 2 239 | 20.2 | 38.6 | 449 | 2.7 | 2 241 | 49.9 | 59 | 61.7 | 58 |
| Female | 16.3 | 2 041 | 26.7 | 2 038 | 26.4 | 44.3 | 542 | 2.9 | 2 042 | 54.9 | 58 | 76.8 | 58 |
| Age group | | | | | | | | | | | | | |
| 50–59 | 9.3 | 1 703 | 19.3 | 1 702 | 17.0 | 31.9 | 328 | 1.5 | 1 705 | 45.9 | 25 | 69.4 | 25 |
| 60–69 | 13.5 | 1 179 | 22.9 | 1 178 | 21.9 | 42.9 | 269 | 3.2 | 1 179 | 60.4 | 38 | 71.6 | 37 |
| 70–79 | 18.6 | 985 | 26.7 | 984 | 31.9 | 49.4 | 260 | 4.0 | 986 | 56.3 | 37 | 75.3 | 37 |
| 80+ | 22.1 | 413 | 32.5 | 413 | 27.2 | 48.3 | 134 | 4.0 | 413 | 35.2 | 17 | 50.0 | 17 |
| Residence | | | | | | | | | | | | | |
| Urban | 14.1 | 1 758 | 22.5 | 1 756 | 29.2 | 45.7 | 395 | 4.3 | 1 758 | 63.5 | 75 | 76.9 | 75 |
| Rural | 13.7 | 2 523 | 23.8 | 2 521 | 19.8 | 39.0 | 597 | 1.7 | 2 525 | 32.1 | 41 | 54.9 | 40 |
| Marital status | | | | | | | | | | | | | |
| Never married | 8.7 | 54 | 17.9 | 54 | 33.8 | 42.1 | 10 | 3.9 | 54 | 0 | 2 | 0 | 2 |
| Currently married | 12.1 | 2 485 | 21.0 | 2 485 | 22.7 | 37.9 | 522 | 2.4 | 2 486 | 50.3 | 58 | 68.8 | 57 |
| Cohabiting | 4.4 | 36 | 9.7 | 36 | 0 | 45.6 | 3 | 0 | 36 | 0 | 25 | 0 | 25 |
| Separated/divorced | 15.6 | 552 | 26.1 | 552 | 25.0 | 43.4 | 144 | 4.5 | 552 | 66.5 | 32 | 73.4 | 32 |
| Widowed | 17.5 | 1 130 | 27.8 | 1 128 | 24.0 | 46.9 | 312 | 2.9 | 1 132 | 48.6 | 0 | 71.3 | 0 |
| Income quintile | | | | | | | | | | | | | |
| Q1 (lowest) | 11.0 | 781 | 21.6 | 782 | 20.1 | 30.5 | 169 | 1.8 | 782 | 55.6 | 13 | 64.8 | 13 |
| Q2 | 13.8 | 817 | 2.3 | 816 | 19.2 | 44.8 | 182 | 1.9 | 818 | 53.4 | 15 | 66.7 | 15 |
| Q3 | 14.1 | 878 | 26.4 | 878 | 16.0 | 37.2 | 230 | 2.8 | 880 | 53.9 | 24 | 74.9 | 24 |
| Q4 | 13.8 | 882 | 22.2 | 882 | 27.4 | 45.3 | 195 | 2.9 | 882 | 38.5 | 26 | 51.3 | 25 |
| Q5 (highest) | 16.1 | 916 | 23.6 | 915 | 34.5 | 49.2 | 216 | 4.2 | 916 | 59.3 | 38 | 79.8 | 38 |
| Total respondents | 13.8 | 4 280 | 23.2 | 4277 | 23.6 | 41.7 | 992 | 2.8 | 4 283 | 52.4 | 116 | 69.2 | 115 |

* Self-report (SR), symptom reporting (Sx), current therapy in last two weeks (CTx), chronic ongoing therapy in last 12 months (RTx).

was also more common among women (26.7%) than among men (20.1%). Rates from both self- and symptom-report increased with increasing age, and the highest among the 80-plus age group in both instances. Urban dwellers had slightly higher self-reporting rates, but lower symptom-based assessments than rural dwellers. This result could be a function of differences in access to services and treatment.

Prevalence rates based on self-report of arthritis generally increased from Q1 to Q5, but the symptom-/algorithm-based assessment did not show any clear pattern or trends in terms of income groups. Again, possibly suggesting that prevalence based on symptom-reporting is less biased by accessibility of services.

More women had current as well as chronic therapy for arthritis than men, and generally higher income quintile groups had higher levels of both current and chronic therapy for arthritis than lower income quintile groups. The widowed self-reported more arthritis (17.5%) than the currently married (12.1%)

Stroke prevalence was estimated at 2.8%, and almost equally reported by women (2.9%) and men (2.7%); however, women received both current and chronic ongoing therapy more than men. Self-reported stroke increased with age, although there was no difference between the 70–79 year and 80-plus groups (4.0% each); however, the 80-plus group had the lowest levels of current (35.2%) and chronic (50.0%) therapy

Table 7.1b Angina and diabetes

| Characteristics | Angina | | | | | | | Diabetes | | | | | |
|--------------------------|------------|--------------|-------------|--------------|-------------|-------------|------------|------------|--------------|-------------|------------|-------------|------------|
| | SR (%) | N | Sx (%) | N | CTx (%) | RTx (%) | N | SR (%) | N | CTx (%) | N | RTx (%) | N |
| Sex | | | | | | | | | | | | | |
| Male | 3.0 | 2 240 | 9.8 | 2 101 | 15.9 | 23.6 | 205 | 3.2 | 2 241 | 78.3 | 69 | 82.0 | 69 |
| Female | 4.3 | 2 042 | 16.8 | 1 865 | 9.0 | 17.2 | 311 | 4.4 | 2 042 | 74.8 | 90 | 80.0 | 89 |
| Age group | | | | | | | | | | | | | |
| 50–59 | 2.4 | 1 704 | 11.1 | 1 584 | 8.7 | 17.8 | 175 | 2.7 | 1 705 | 69.9 | 45 | 78.7 | 44 |
| 60–69 | 3.5 | 1 179 | 14.2 | 1 084 | 9.5 | 16.9 | 154 | 5.7 | 1 179 | 83.4 | 64 | 83.4 | 64 |
| 70–79 | 5.3 | 985 | 15.2 | 917 | 16.5 | 23.5 | 138 | 3.7 | 986 | 84.8 | 36 | 92.2 | 36 |
| 80+ | 5.0 | 413 | 12.9 | 381 | 16.5 | 19.8 | 49 | 3.3 | 413 | 41.5 | 14 | 45.5 | 14 |
| Residence | | | | | | | | | | | | | |
| Urban | 3.8 | 1 758 | 9.7 | 1 588 | 20.1 | 30.1 | 151 | 6.1 | 1 758 | 77.9 | 105 | 82.1 | 105 |
| Rural | 3.4 | 2 524 | 15.3 | 2 378 | 8.4 | 15.1 | 365 | 2.2 | 2 525 | 73.1 | 53 | 78.4 | 53 |
| Marital status | | | | | | | | | | | | | |
| Never married | 0.7 | 54 | 14.0 | 50 | 0 | 5.2 | 7 | 3.4 | 54 | 0 | 2 | 0 | 2 |
| Currently married | 3.0 | 2 485 | 11.0 | 2 319 | 12.9 | 20.4 | 253 | 4.0 | 2 486 | 79.6 | 95 | 83.6 | 94 |
| Cohabiting | 4.9 | 36 | 10.0 | 34 | 24.6 | 50.7 | 3 | 1.5 | 36 | 100 | 1 | 100 | 1 |
| Separated/divorced | 2.2 | 552 | 11.4 | 498 | 10.8 | 15.7 | 57 | 2.4 | 552 | 53.9 | 13 | 84.3 | 13 |
| Widowed | 5.6 | 1 131 | 18.4 | 1 041 | 11.1 | 20.5 | 191 | 4.3 | 1 132 | 78.5 | 49 | 77.4 | 49 |
| Income quintile | | | | | | | | | | | | | |
| Q1 (lowest) | 3.1 | 781 | 15.7 | 720 | 2.8 | 12.4 | 113 | 2.22 | 782 | 44.5 | 17 | 57.3 | 17 |
| Q2 | 3.0 | 818 | 14.5 | 767 | 6.1 | 13.6 | 112 | 1.87 | 818 | 80.0 | 15 | 84.2 | 15 |
| Q3 | 4.2 | 880 | 16.0 | 819 | 11.6 | 16.8 | 131 | 2.5 | 880 | 75.7 | 22 | 81.7 | 22 |
| Q4 | 4.0 | 881 | 12.5 | 813 | 18.1 | 26.7 | 100 | 5.05 | 882 | 76.8 | 42 | 84.1 | 42 |
| Q5 (highest) | 3.7 | 916 | 7.3 | 842 | 28.8 | 39.7 | 61 | 6.9 | 916 | 84.1 | 62 | 84.1 | 61 |
| Total respondents | 3.6 | 4 281 | 13.1 | 3 961 | 11.8 | 19.8 | 516 | 3.8 | 4 283 | 76.3 | 159 | 80.8 | 158 |

compared to current (45.9%) and chronic therapy (69.4%) for the 50–59 year group. Stroke levels were higher in urban (4.3%) than rural areas (1.7%), and urban dwellers received higher levels of both current and chronic therapy, likely a function of access to health facilities. In terms of marital status, the separated/divorced had a higher level of stroke (4.5%) compared to the currently married (2.4%). Treatment rates were also higher for separated/divorced respondents (66.5%).

The higher income quintile group reported more stroke (Q5 = 4.2% and Q1 = 1.8%), while the Q5 group received the highest current (59.3%) and chronic (79.8%) therapy for stroke.

Angina prevalence by self-report was 3.6%. Almost 12% received current treatment and 19.8% were on chronic treatment. Angina was higher among women (4.3%) than men (3.0%); however, men had higher current (15.9%, compared to 9.0%) and chronic ongoing (23.6%, compared to 17.2%) therapy than women. Self-reporting of angina showed higher values with increasing age, with the highest among the 70–79 year age group (5.3%).

Similar prevalence rate patterns were seen by sex and age using the symptom-based/algorithm method (based on the Rose questionnaire), but with considerably higher levels (13.1% overall). Urban and rural older adults had similar rates by self-report, but urban adults

Table 7.1c Chronic lung disease and asthma

| Characteristics | Chronic lung disease | | | | | Asthma | | | | | | |
|--------------------------|----------------------|--------------|-------------|-------------|-----------|------------|--------------|------------|--------------|-------------|-------------|------------|
| | SR (%) | N | CTx (%) | RTx (%) | N | SR (%) | N | Sx (%) | N | CTx (%) | RTx (%) | N |
| Sex | | | | | | | | | | | | |
| Male | 0.6 | 2 241 | 30.1 | 67.4 | 9 | 3.3 | 2 241 | 3.6 | 2 240 | 22.0 | 43.2 | 81 |
| Female | 0.5 | 2 042 | 0 | 54.8 | 9 | 3.4 | 2 042 | 3.8 | 2 042 | 35.7 | 54.8 | 76 |
| Age group | | | | | | | | | | | | |
| 50–59 | 0.4 | 1 705 | 6.0 | 64.6 | 7 | 2.6 | 1 705 | 3.4 | 1 704 | 23.9 | 35.7 | 58 |
| 60–69 | 0.7 | 1 179 | 27.4 | 67.6 | 5 | 3.0 | 1 179 | 3.5 | 1 178 | 29.5 | 49.0 | 41 |
| 70–79 | 0.7 | 986 | 15.3 | 60.1 | 5 | 5.1 | 986 | 4.6 | 986 | 30.9 | 65.8 | 45 |
| 80+ | 0.5 | 413 | 0 | 0 | 1 | 3.4 | 413 | 3.2 | 413 | 39.0 | 48.0 | 13 |
| Residence | | | | | | | | | | | | |
| Urban | 0.8 | 1 758 | 15.6 | 55.2 | 12 | 3.5 | 1 758 | 4.6 | 1 756 | 34.9 | 48.9 | 80 |
| Rural | 0.4 | 2 525 | 12.6 | 73.5 | 6 | 3.2 | 2 525 | 3.1 | 2 525 | 22.1 | 48.8 | 77 |
| Marital status | | | | | | | | | | | | |
| Never married | 0 | 54 | 0 | 0 | 7 | 0.7 | 54 | 0 | 54 | 19.5 | 37.1 | 77 |
| Currently married | 0.5 | 2 486 | 25.6 | 82.1 | 5 | 2.5 | 2 486 | 3.1 | 2 484 | 0 | 32.9 | 4 |
| Cohabiting | 0 | 36 | 0 | 0 | 6 | 5.2 | 36 | 10.1 | 36 | 39.1 | 53.7 | 31 |
| Separated/divorced | 0.9 | 552 | 0 | 35.5 | 0 | 5.6 | 552 | 5.7 | 552 | 40.1 | 67.0 | 43 |
| Widowed | 0.6 | 1 132 | 12.3 | 54.0 | 0 | 4.0 | 1 132 | 3.8 | 1 132 | 0 | 0 | 0 |
| Income quintile | | | | | | | | | | | | |
| Q1 (lowest) | 0.7 | 782 | 0 | 45.4 | 4 | 2.6 | 782 | 2.6 | 782 | 19.4 | 45.6 | 20 |
| Q2 | 0.5 | 818 | 0 | 0 | 2 | 3.2 | 818 | 3.4 | 818 | 22.8 | 45.4 | 28 |
| Q3 | 0.7 | 880 | 11.8 | 74.8 | 6 | 3.5 | 880 | 4.0 | 878 | 32.2 | 50.3 | 35 |
| Q4 | 0.2 | 882 | 0 | 100 | 1 | 4.0 | 882 | 5.4 | 882 | 32.2 | 45.6 | 47 |
| Q5 (highest) | 0.7 | 916 | 43.7 | 78.4 | 4 | 3.2 | 916 | 2.9 | 916 | 27.8 | 56.8 | 27 |
| Total respondents | 0.6 | 4 283 | 14.7 | 61.0 | 18 | 3.3 | 4 283 | 3.7 | 4 283 | 51.9 | 87.7 | 157 |

had lower symptom-based rates than rural older adults and higher treatment rates for angina.

The widowed had higher prevalence than the currently married using either method of generating angina prevalence. Lower income groups had higher rates by symptom-reporting than higher income groups (Q1 = 15.7% and Q5 = 7.3%); however, this difference did not apply to self-report by income group, where no gradient was observed.

Diabetes was reported by 3.8% of respondents with 76.3% receiving current treatment while 80.4% were on chronic therapy. Women had higher rates (4.4%) than men (3.2%), but men were more likely to be treated

than women. Self-reported diabetes was higher in the 60–69 and 70–79 groups and these two age groups received higher current and chronic therapies than the other two age groups (50–59 and 80+ years). Diabetes was reported more by urban (6.1%) than rural adults (2.2%) and had higher treatment rates.

The higher income quintiles generally reported more diabetes (Q5 = 6.9% and Q1 = 2.2%) and also received more current and chronic therapy. The poorest quintile (Q1) had a lower prevalence rate than the higher income groups, and more than 50% of the Q1 group did not receive current therapy for diabetes. The widowed had higher prevalence of diabetes (4.3%) than the currently married (4.0%), but currently married

Table 7.1d Depression and hypertension

| Characteristics | Depression | | | | | | | Hypertension | | | | |
|--------------------------|------------|--------------|------------|--------------|------------|------------|------------|--------------|--------------|-------------|-------------|------------|
| | SR (%) | N | Sx (%) | N | CTx (%) | RTx (%) | N | SR (%) | N | CTx (%) | RTx (%) | N |
| Sex | | | | | | | | | | | | |
| Male | 1.2 | 2 241 | 7.1 | 2 241 | 5.3 | 11.5 | 158 | 11.3 | 2 241 | 75.2 | 81.6 | 250 |
| Female | 2.6 | 2 042 | 11.6 | 2 041 | 4.4 | 7.0 | 236 | 17.4 | 2 042 | 66.9 | 79.0 | 353 |
| Age group | | | | | | | | | | | | |
| 50–59 | 0.8 | 1 705 | 7.4 | 1 704 | 3.8 | 6.2 | 126 | 12.4 | 1 705 | 67.6 | 77.0 | 209 |
| 60–69 | 1.5 | 1 179 | 9.6 | 1 179 | 1.9 | 5.3 | 113 | 15.0 | 1 179 | 71.1 | 83.6 | 176 |
| 70–79 | 2.6 | 986 | 9.8 | 986 | 4.9 | 5.5 | 96 | 18.4 | 986 | 73.6 | 80.8 | 179 |
| 80+ | 5.3 | 413 | 14.4 | 412 | 12.2 | 26.3 | 59 | 9.3 | 413 | 67.2 | 77.3 | 39 |
| Residence | | | | | | | | | | | | |
| Urban | 1.9 | 1 758 | 10.1 | 1 756 | 3.0 | 7.7 | 177 | 23.1 | 1 758 | 73.5 | 80.1 | 406 |
| Rural | 1.8 | 2 525 | 8.6 | 2 525 | 6.2 | 9.7 | 217 | 8.0 | 2 525 | 63.8 | 79.9 | 197 |
| Marital status | | | | | | | | | | | | |
| Never married | 0 | 54 | 9.7 | 54 | 0 | 0 | 5 | 2.5 | 54 | 100 | 100 | 1 |
| Currently married | 1.2 | 2 486 | 7.0 | 2 485 | 5.4 | 12.0 | 172 | 12.9 | 2 486 | 72.0 | 80.7 | 318 |
| Cohabiting | 1.9 | 36 | 15.0 | 36 | 0 | 0 | 5 | 9.9 | 36 | 26.7 | 69.8 | 4 |
| Separated/divorced | 3.1 | 552 | 11.0 | 552 | 3.6 | 7.9 | 61 | 16.7 | 552 | 74.9 | 74.6 | 92 |
| Widowed | 2.8 | 1 132 | 13.0 | 1 131 | 4.8 | 6.3 | 147 | 16.4 | 1 132 | 65.4 | 81.5 | 183 |
| Income quintile | | | | | | | | | | | | |
| Q1 (lowest) | 0.8 | 782 | 7.7 | 782 | 0 | 1.4 | 60 | 5.5 | 782 | 55.5 | 68.1 | 42 |
| Q2 | 2.9 | 818 | 11.7 | 818 | 9.1 | 10.7 | 95 | 7.5 | 818 | 58.3 | 75.4 | 60 |
| Q3 | 2.0 | 880 | 9.2 | 880 | 1.7 | 6.3 | 81 | 10.5 | 880 | 69.3 | 78.8 | 92 |
| Q4 | 2.2 | 882 | 9.6 | 882 | 6.9 | 16.3 | 84 | 18.9 | 882 | 69.0 | 84.1 | 167 |
| Q5 (highest) | 1.4 | 916 | 8.1 | 915 | 3.9 | 6.5 | 74 | 26.7 | 916 | 77.1 | 81.3 | 242 |
| Total respondents | 1.9 | 4 283 | 9.2 | 4 281 | 4.8 | 8.8 | 394 | 14.2 | 4 283 | 70.4 | 80.1 | 603 |

respondents had slightly higher prevalence of receiving both current and chronic therapies.

Chronic lung diseases The proportion of respondents who reported chronic lung diseases was 0.6%, with men receiving more current therapy (30.1%, compared to 0%) and more chronic therapy (67.4%, compared to 54.8%) than women; however, these differences were not statistically significant.

More urban residents self-reported than rural residents (0.8% compared to 0.4%, respectively). Chronic lung disease was reported most among the highest income quintiles and they received the highest current and chronic therapy. However, there was no clear pattern

among the different income groups. The effect by age was generally increasing proportion by age except for the 80+ age group.

Asthma prevalence based on self-report was 3.3% and based on symptom-reporting was 3.7%. It was almost equally reported by women and men using self-report and symptom-reporting, but women received higher current and chronic therapies for asthma than their male counterparts. Again, rates of asthma by self-report was almost equal the urban and rural populations (3.5% and 3.7%, respectively), but urban older adults received more current and chronic treatment for asthma than those living in rural areas. Prevalence rates tended to increase as wealth increased through

Q4. Generally, treatment levels for both chronic lung disease (such as emphysema and chronic obstructive pulmonary/lung disease) and asthma are low.

Depression diagnosis was reported by 1.9% of respondents. It was more common among women (2.6%) than men (1.1%). In contrast, the prevalence was 9.2% using symptom-reporting and diagnostic algorithm (based on the World Mental Health Survey CIDI), and more common among women (11.6%) than men (7.1%); however, men had higher rates of current and chronic treatment for depression than women. Prevalence estimates from self-report and symptom-based report showed increasing rates with increasing age, with the highest among the 80+ year group in both instances, while the 80+ group received the highest current and chronic therapy among the age groups. However, overall, treatment rates are very low compared to other chronic conditions.

The urban aged had slightly higher self-report and symptom-based diagnosis than rural aged, and also received higher current and chronic therapy for depression. The lowest income group had the lowest self-reported prevalence rate (0.8%) and also the lowest prevalence of both current and chronic treatment. Widowed respondents had higher self-reported levels (2.8%) and symptom-based levels (13.0%) than the currently married (1.2% and 7.0%, respectively).

Hypertension diagnosis was reported by 14.2% of respondents with higher prevalence in women than men (17.4%, compared to 11.3%); however, men were more likely to receive both current and chronic treatment than women. Self-reported hypertension was highest in the 70–79 years group (18.4%), followed by the 60–69 years group, and these two age groups received higher current and chronic therapy than the other two age groups. The prevalence of hypertension increased with age, from 12.4% in the 50–59 years group to 18.4% in the 70–79 years group (in the 80+ years group, the level dropped to 9.3%, possibly due to survival issue or small sample size). Hypertension was more prevalent in urban (23.1%) than rural dwellers (8.0%), with urbanites receiving higher levels of both current and chronic therapy.

The higher income quintiles generally reported more hypertension (Q5 = 26.7% versus Q1 = 5.5%) and received more current and chronic therapy for hypertension than the lower income quintiles.

7.1.2 Co-morbidities

Amongst all respondents with a chronic condition, 2920 (68%) had no co-morbid conditions, 969 (22.6%) had one co-morbidity and 401 (9.4%) had two or more co-morbidities.

Respondents with arthritis had hypertension as the highest co-morbid condition (41.8%), followed by angina (14.1%) and then depression (13.8%). Those with stroke also had hypertension as the highest co-morbid condition (52.4%), followed by diabetes (21.0%) and then asthma (9.5%). Similarly for respondents with angina, hypertension was the highest co-morbid condition (64.3%), followed by asthma (15.5%) and then diabetes (10.7%). With regards to diabetes, hypertension again was the highest co-morbid condition (80.0%), followed by asthma (11.1%) and depression (5.6%). For those with chronic lung disease, the highest co-morbid condition was hypertension followed by asthma; and for those with asthma, hypertension was the highest followed by depression.

From the results, hypertension was the highest co-morbid condition in the respondents for all the selected chronic diseases for SAGE.

7.2 Injuries (road-traffic and all other)

Injuries constitute the third broad grouping for burden of disease estimates and are a growing burden for most countries. The questions in Wave 1 build on Wave 0 questions and follow WHO's suggested injury surveillance guidelines⁴¹. Questions about road-traffic injuries and other types of injuries, along with details and impact of the injury, are included and are summarized in the text.

Road traffic injuries were reported by 1.6% of respondents. Women reported more road-traffic injury and more injury with disability (2.1% and 29.0%) than men (1.4% and 16.2%). Similarly, women reported more non-traffic related (other) injuries with a higher prevalence of resultant disabilities than men. Road-traffic injuries were similar in urban and rural residents, but urban dwellers had a higher prevalence of injury resulting in disability (36.3%) than rural residents (13.8%). However, with other injuries, rural residents reported more injuries (6.3%) and resulting disabilities (24.8%) than urban aged; this is probably due to the nature of the main occupation of older rural Ghanaians, which is farming.

Table 7.2 Self-reported prevalence of injuries, and any resulting physical disability, by selected demographic characteristics

| Characteristics | Road-traffic accidents | | | | All other accidents | | | |
|--------------------------|-------------------------|--------------|-------------------|-----------|---------------------|--------------|-------------------|------------|
| | Road-traffic injury (%) | N | % with disability | N | Other injury (%) | N | % with disability | N |
| Sex | | | | | | | | |
| Male | 1.4 | 2 241 | 16.2 | 29 | 5.4 | 2 238 | 16.2 | 118 |
| Female | 2.1 | 2 042 | 29.0 | 39 | 6.1 | 2 039 | 26.7 | 122 |
| Age group | | | | | | | | |
| 50–59 | 1.8 | 1 704 | 22.9 | 31 | 5.5 | 1 704 | 17.0 | 93 |
| 60–69 | 1.9 | 1 177 | 26.1 | 22 | 6.3 | 1 175 | 18.3 | 71 |
| 70–79 | 1.3 | 986 | 23.8 | 12 | 5.5 | 986 | 31.2 | 54 |
| 80+ | 0.7 | 411 | 0 | 2 | 5.3 | 411 | 28.0 | 21 |
| Residence | | | | | | | | |
| Urban | 1.7 | 1 755 | 36.3 | 29 | 4.9 | 1 754 | 15.5 | 83 |
| Rural | 1.6 | 2 523 | 13.8 | 38 | 6.3 | 2 522 | 24.8 | 156 |
| Marital status | | | | | | | | |
| Never married | 0 | 54 | 0 | 0 | 7.7 | 54 | 46.1 | 3 |
| Currently married | 1.4 | 2 484 | 23.7 | 35 | 5.1 | 2 483 | 17.1 | 126 |
| Cohabiting | 2.1 | 36 | 0 | 1 | 6.8 | 36 | 0 | 2 |
| Separated/divorced | 2.0 | 551 | 23.2 | 10 | 6.8 | 551 | 22.2 | 37 |
| Widowed | 1.8 | 1 130 | 27.0 | 20 | 6.3 | 1 129 | 29.2 | 70 |
| Income quintile | | | | | | | | |
| Q1 (lowest) | 1.2 | 781 | 35.8 | 9 | 5.5 | 781 | 10.7 | 42 |
| Q2 | 1.5 | 818 | 12.5 | 11 | 5.6 | 818 | 39.3 | 45 |
| Q3 | 1.4 | 879 | 35.1 | 12 | 6.6 | 878 | 21.2 | 57 |
| Q4 | 2.1 | 881 | 26.2 | 18 | 6.2 | 881 | 20.1 | 54 |
| Q5 (highest) | 1.8 | 914 | 12.9 | 16 | 4.7 | 912 | 15.9 | 42 |
| Total respondents | 1.6 | 4 278 | 23.5 | 67 | 5.7 | 4 276 | 21.5 | 240 |

Respondents in the 50–59 and 60–69 age groups reported more road-traffic injuries and more resulted in a disability; however, those in the older age groups (70–79 and 80+) reported more disabilities as a result of other injuries than their younger counterparts. This may well be explained by more frailty in older ages and less resilience to stressors like falls and domestic accidents and injuries, as well as higher activity levels for persons in the 50–59 and 60–69 age groups and engagement in activities that expose them to road-traffic accidents.

A sensitive issue that may be picked up in closer investigation of the other injuries data, is elder abuse, a devastating reality for some older adults and difficult to assess directly using this household interview design.

7.3 Oral health and cataracts

Sensory deficits are likely to increase at older ages. SAGE included questions about teeth and swallowing problems, and the eyes for multiple purposes to:

- get a broad indication of selected sensory problems;
- contribute to improving burden of disease estimates for these difficult-to-obtain data;
- determine levels of health coverage through indicator conditions like cataracts.

In Ghana, problems with oral cavity and ophthalmic conditions continue to beleaguer the health service, especially under conditions of the limited number of

Table 7.3 Self-reported prevalence of edentulism and cataracts, by selected demographic characteristics

| Characteristics | Edentulism | | Cataracts | |
|--------------------------|------------|--------------|------------|--------------|
| | (%) | N | (%) | N |
| Sex | | | | |
| Male | 2.6 | 2 240 | 5.1 | 2 237 |
| Female | 3.4 | 2 042 | 5.6 | 2 041 |
| Age group | | | | |
| 50–59 | 1.7 | 1 704 | 2.3 | 1 701 |
| 60–69 | 2.4 | 1 179 | 4.8 | 1 178 |
| 70–79 | 3.3 | 986 | 9.6 | 986 |
| 80+ | 8.8 | 413 | 9.4 | 413 |
| Residence | | | | |
| Urban | 4.0 | 1 757 | 6.3 | 1 756 |
| Rural | 2.2 | 2 525 | 4.7 | 2 522 |
| Marital status | | | | |
| Never married | 0 | 54 | 6.9 | 54 |
| Currently married | 2.3 | 2 485 | 4.8 | 2 483 |
| Cohabiting | 0 | 36 | 4.5 | 36 |
| Separated/divorced | 3.7 | 552 | 5.7 | 550 |
| Widowed | 4.3 | 1 132 | 6.3 | 1 132 |
| Income quintile | | | | |
| Q1 (lowest) | 2.8 | 782 | 3.3 | 781 |
| Q2 | 2.6 | 818 | 3.8 | 818 |
| Q3 | 3.3 | 880 | 4.9 | 876 |
| Q4 | 2.7 | 882 | 6.2 | 882 |
| Q5 (highest) | 3.3 | 916 | 8.0 | 916 |
| Total respondents | 3.0 | 4 282 | 5.3 | 4 278 |

specialist health professionals available in the country⁴², although with some improvements in eye care services and cataract surgeries noted in 2009⁴³.

Three percent of respondents reported edentulism, and for cataracts the proportion was 5.3%. Prevalence was higher for women than men for both edentulism and cataracts. The prevalence clearly showed an age gradient: higher values were reported in the older age groups (the highest for edentulism was 8.8% in the 80+ age group and for cataracts was 9.6% in the 70–79 age group). The burden of these two conditions in the aged population of Ghana may have considerable health and quality of life implications. Urban residents reported higher rates for both than rural residents. Higher income groups reported higher prevalence of both conditions.

The differences in prevalence were statistically significant by age and place of residence for both conditions. There were also significant differences in cataracts prevalence by income quintile – possibly indicating a health services access issue.

7.4 Cervical and breast cancer

Women's health issues continue to be high on the agenda of health policy development in Ghana. Cancers of the cervix and breast are common cancers in women, with preventive health measures available to alter the course of disease, and screening programmes overall as a proxy for health service coverage. There are continuing

Table 7.4 Women undergoing recent breast and cervical cancer screening, by selected demographic characteristics

| Characteristics | Breast cancer screening (%) | N | Cervical cancer screening (%) | N |
|--------------------------------------|-----------------------------|--------------|-------------------------------|--------------|
| Age group | | | | |
| 50–59 | 4.6 | 784 | 3.1 | 781 |
| 60–69 | 4.2 | 572 | 3.1 | 571 |
| 70–79 | 1.8 | 490 | 2.0 | 488 |
| 80+ | 2.5 | 185 | 0 | 185 |
| Residence | | | | |
| Urban | 4.8 | 845 | 3.0 | 840 |
| Rural | 2.8 | 1 186 | 2.3 | 1 185 |
| Marital status | | | | |
| Never married | 0 | 27 | 2.0 | 26 |
| Currently married | 4.7 | 608 | 3.0 | 610 |
| Cohabiting | 7.6 | 11 | 0 | 11 |
| Separated/divorced | 5.6 | 392 | 4.0 | 388 |
| Widowed | 2.3 | 982 | 1.9 | 979 |
| Income quintile | | | | |
| Q1 (lowest) | 1.1 | 410 | 1.3 | 411 |
| Q2 | 2.9 | 428 | 1.8 | 424 |
| Q3 | 1.6 | 434 | 1.6 | 433 |
| Q4 | 7.1 | 401 | 4.2 | 402 |
| Q5 (highest) | 5.9 | 354 | 4.7 | 353 |
| Total respondents (mean or N) | 3.6 | 2 031 | 2.6 | 2 025 |

efforts to educate the female adult population to screen for breast cancer through regular breast self-examination and mammography and to screen for cervical cancer through pap smears. As a nation, there is still a very long way to go in getting a large proportion of the adult female population to undergo these screening tests. Breast cancer and cervical cancer are the two top-most causes of cancer death among Ghanaian women⁴².

The results on self-reported breast screening through mammograms and pap smears for cervical cancer are directly relevant for policy-makers, and good indicators of women's health care issues and the gaps that exist in the health delivery system. They may also be broader indicators of preventive health care efforts in Ghana.

Just 3.6% of women reported having undergone recent breast cancer screening and 2.6% cervical cancer screening. Self-reported breast and cervical cancer screening was higher in the wealthier portions of the population

(Q4 and Q5) than the lower income quintiles. Generally, the prevalence of breast screening and cervical cancer screening also showed an age gradient: the prevalence of screening for both cancers decreased as age increased (the age group 50–59 years had the highest levels of reporting, while there were lower rates of reporting for the 70–79 and 80-plus age groups). The currently married had higher prevalence of both breast and cervical cancer screening than widowed women. The separated/divorced had higher prevalence of breast and cervical cancer screening than the currently married and the separated or divorced.

Urban aged residents had higher rates of both breast and cervical cancer screening than rural residents. These results can be used to inform policy-makers and health care providers, to improve awareness and make services for the screening of these cancers available, especially in the districts.



8. Health examination and biomarkers

An important methodological contribution in SAGE is the use of direct health examinations and biomarkers as a means to improve the measurement of health in older populations. Biomarkers are intermediaries for chronic conditions and critical for assessing the true prevalence of morbidity and poor health conditions particularly in rural, illiterate and poor populations with very high levels of undiagnosed diseases. For example, blood pressure and pulse rate can provide information on risk for heart diseases; body mass index (BMI) and waist-hip ratios are indicators of obesity, chronic metabolic disorders and fatty deposits. The incorporation of biomarkers in Wave 1 also complements the WHO approach to measuring health across multiple domains – as biomarkers often measure distinct components of health, rather than the “whole” of an individual’s health state. In this instance, self-report of mobility can be assessed against performance on a timed walk and grip strength, or self-reported vision can be compared to results of the tumbling “E” (LogMAR) eye tests.

Along with information gained from responses to the vignettes, results from these more objective health measures can be used to make corrections to self-reported health to better estimate true levels of health and differences across individuals and populations. This section will describe the methodology adopted in the use of health examinations and biomarkers and present initial results.

8.1 Anthropometry

Body mass index (BMI) is an important indicator of an individual’s nutritional status and is a health determinant. BMI is calculated by dividing an individual’s weight (in kilograms) by the square of their height (in metres). BMI is used to identify those at higher risk of health

conditions. Epidemiological studies have consistently shown that obesity is associated with an increased risk for a variety of diseases and even mortality. Obesity is a well-known risk factor for type-2 diabetes mellitus and is associated with some of the major risk factors for cardiovascular disease. Overweight and obesity have been estimated to account for about 65-80% of new cases of diabetes⁴⁴. The risks of being underweight are also considerable, in addition to inadequate calories for daily mental and physical activities, and include impairments in the immune system, impaired fertility and micro-nutrient deficiencies.

8.1.1 Height, weight and BMI

Measured height and weight were used to generate BMI. As Table 8.1 shows, more than half (55.3%) of the respondents were described by a normal BMI, 9.8% were obese, 19.8% overweight and 15.2% underweight. Women were more obese or overweight compared to men. The proportion of obese respondents among women was twice that for men. Obesity and overweight were more common among respondents in urban localities; there was about four times the proportion of obese respondents in urban areas (17.6%) compared to respondents in rural areas (4.3%). Obesity was associated with marital status. The never married, the currently married and those cohabitating had a lower prevalence of obesity (6.9%, 8.3% and 3.0%, respectively); higher obesity prevalence was found among those respondents who had separated or divorced (13.4%) and among the widowed (11.6%).

The proportion of respondents who were overweight and obese decreased with increasing age, but worryingly the underweight proportion increased with age. Food security seemed to be more of an issue for under and normal weight respondents. Those with some

Table 8.1 Distribution of underweight, normal weight, overweight and obese respondents, by selected demographic characteristics

| Characteristics | Prevalence | | | Normal weight (%) | N |
|-----------------------------------|-----------------|----------------|-----------|-------------------|-------|
| | Underweight (%) | Overweight (%) | Obese (%) | | |
| Sex | | | | | |
| Male | 15.1 | 18.4 | 6.3 | 60.1 | 2 177 |
| Female | 15.2 | 21.2 | 13.6 | 50.0 | 1 958 |
| Age group | | | | | |
| 50–59 | 10.5 | 22.9 | 12.9 | 53.7 | 1 658 |
| 60–69 | 13.2 | 19.3 | 9.3 | 58.3 | 1 136 |
| 70+ | 22.7 | 16.2 | 6.3 | 54.8 | 1 340 |
| Residence | | | | | |
| Urban | 9.1 | 26.5 | 17.6 | 46.7 | 1 690 |
| Rural | 19.4 | 15.1 | 4.3 | 61.3 | 2 445 |
| Marital status | | | | | |
| Never married | 25.4 | 12.6 | 6.9 | 55.1 | 53 |
| Currently married | 13.5 | 21.0 | 8.3 | 57.2 | 2 410 |
| Cohabiting | 14.3 | 12.8 | 3.0 | 70.0 | 36 |
| Separated/divorced | 14.6 | 18.9 | 13.4 | 53.0 | 535 |
| Widowed | 18.6 | 18.1 | 11.6 | 51.7 | 1 080 |
| Education | | | | | |
| No education | 17.9 | 17.5 | 6.8 | 57.8 | 2 205 |
| Less than primary school | 13.1 | 19.0 | 9.9 | 58.0 | 425 |
| Primary school completed | 12.2 | 24.0 | 11.1 | 52.7 | 451 |
| Secondary education completed | 13.1 | 22.5 | 22.1 | 42.3 | 166 |
| High school (or equiv.) completed | 11.3 | 22.3 | 13.4 | 53.0 | 711 |
| College/university completed | 9.6 | 25.5 | 16.9 | 48.0 | 145 |
| Postgraduate degree completed | 10.7 | 38.7 | 17.5 | 33.2 | 7 |
| Income quintile | | | | | |
| Q1 (lowest) | 23.6 | 9.6 | 2.7 | 64.1 | 752 |
| Q2 | 21.0 | 15.5 | 4.0 | 59.5 | 786 |
| Q3 | 16.9 | 15.6 | 7.0 | 60.4 | 838 |
| Q4 | 11.3 | 27.0 | 10.7 | 51.1 | 861 |
| Q5 (highest) | 5.1 | 28.8 | 22.3 | 43.7 | 892 |
| Total respondents and (%) | 628 (15.2) | 817 (19.8) | 403 (9.8) | 2 287 (55.3) | 4 135 |

Note: - BMI has been calculated by dividing weight (kg) by height (metre) squared (kg/m²). BMI categories are based on WHO recommendations: Underweight <18.4; Normal 18.5 - 24.9; Overweight 25.0 - 29.9; Obese ≥30.0.

education (secondary school and above) had higher levels of overweight and obesity compared with those with little or no education. Those with little or no education, however, had higher prevalence of those who were underweight. The proportion of respondents classified as obese or overweight was related to educational status. Respondents with no education had the lowest prevalence (6.8%), compared to a prevalence of 13.4% among those with high school completed

and 16.9% for those with college/university completed. Respondents with secondary school completed had the highest prevalence of obesity (22.1%).

There was a linear relationship between prevalence of obesity and income quintiles. Lower prevalence was associated with the lowest income quintile (2.7%), while the highest quintile had the highest prevalence of obesity (22.3%).

Table 8.2 Waist circumference risk categories, by selected demographic characteristics

| Characteristics | No risk (%) | Increased risk (%) | Substantial risk (%) | N |
|-----------------------------------|--------------|--------------------|----------------------|--------------|
| Sex | | | | |
| Male | 82.4 | 10.5 | 7.1 | 2 197 |
| Female | 33.3 | 24.9 | 41.8 | 1 974 |
| Age group | | | | |
| 50–59 | 57.5 | 17.1 | 25.3 | 1 671 |
| 60–69 | 57.8 | 16.8 | 25.4 | 1 145 |
| 70+ | 62.3 | 18.0 | 19.7 | 1 355 |
| Residence | | | | |
| Urban | 47.2 | 17.8 | 35.0 | 1 714 |
| Rural | 67.5 | 17.0 | 15.5 | 2 457 |
| Marital status | | | | |
| Never married | 70.7 | 7.0 | 22.3 | 53 |
| Currently married | 69.4 | 14.4 | 16.3 | 2 435 |
| Cohabiting | 71.3 | 16.2 | 12.6 | 36 |
| Separated/divorced | 45.4 | 21.6 | 33.0 | 543 |
| Widowed | 42.2 | 22.2 | 35.5 | 1 082 |
| Education | | | | |
| No education | 57.9 | 19.9 | 22.2 | 2 231 |
| Less than primary school | 62.4 | 13.7 | 23.9 | 426 |
| Primary school completed | 59.6 | 14.4 | 26.0 | 457 |
| Secondary education completed | 61.7 | 15.5 | 22.8 | 168 |
| High school (or equiv.) completed | 58.6 | 15.6 | 25.7 | 714 |
| College/university completed | 64.3 | 10.1 | 25.6 | 144 |
| Postgraduate degree completed | 72.2 | 5.9 | 21.9 | 7 |
| Income quintile | | | | |
| Q1 (lowest) | 68.2 | 18.2 | 13.7 | 757 |
| Q2 | 64.6 | 16.9 | 18.5 | 801 |
| Q3 | 65.0 | 15.7 | 19.4 | 848 |
| Q4 | 56.4 | 15.3 | 28.3 | 864 |
| Q5 (highest) | 44.1 | 20.4 | 35.5 | 897 |
| Total respondents | 2 469 | 722 | 981 | 4 171 |

8.1.2 Waist and hip circumference

Waist circumference (WC) and waist-to-hip ratio (WHR) are important indicators of overall health risk for cardiovascular and metabolic diseases. People with more weight around their waists are at greater risk of lifestyle-related diseases such as heart disease and diabetes than those with weight around their hips. It is a simple and useful measure of fat distribution in the human body. WC and WHR have been found to be more efficient

predictors of mortality and other health outcomes in older people than BMI, as in higher BMI in older adults is associated with lower mortality rates⁴⁵⁻⁴⁸. Elevated WHR, as opposed to high BMI, has been associated with a greater risk of death⁴⁹.

Table 8.2 shows the distribution of the categories of health risk by selected demographic characteristics. The risk of metabolic complication from increased WC was classified based on WHO recommendations as follows:

Table 8.3 WHR and risk, by selected demographic characteristics

| Characteristics | Low risk (%) | High risk (%) | N |
|-----------------------------------|--------------|---------------|--------------|
| Sex | | | |
| Male | 33.0 | 67.0 | 2 197 |
| Female | 10.5 | 89.5 | 1 974 |
| Age group | | | |
| 50–59 | 25.6 | 74.4 | 1 671 |
| 60–69 | 21.8 | 78.2 | 1 145 |
| 70+ | 18.8 | 81.2 | 1 355 |
| Residence | | | |
| Urban | 21.8 | 78.2 | 1 714 |
| Rural | 22.8 | 77.2 | 2 457 |
| Marital status | | | |
| Never married | 29.1 | 70.9 | 53 |
| Currently married | 28.1 | 71.9 | 2 435 |
| Cohabiting | 40.2 | 59.8 | 36 |
| Separated/divorced | 16.5 | 83.5 | 543 |
| Widowed | 11.4 | 88.6 | 1 082 |
| Education | | | |
| No education | 19.0 | 81.0 | 2 231 |
| Less than primary school | 22.4 | 77.6 | 426 |
| Primary school completed | 23.9 | 76.1 | 457 |
| Secondary education completed | 27.7 | 72.3 | 168 |
| High school (or equiv.) completed | 29.4 | 70.6 | 714 |
| College/university completed | 23.5 | 76.5 | 144 |
| Postgraduate degree completed | 49.3 | 50.7 | 7 |
| Income quintile | | | |
| Q1 (lowest) | 24.4 | 75.6 | 757 |
| Q2 | 21.5 | 78.5 | 801 |
| Q3 | 22.2 | 77.8 | 848 |
| Q4 | 22.6 | 77.4 | 864 |
| Q5 (highest) | 21.4 | 78.6 | 897 |
| Total respondents | 933 | 3 238 | 4 171 |

- increased if WC is greater than 94 cm for men and 80 cm for women; and,
- increased substantially if WC is greater than 102 cm for men and 88 cm for women.

The proportion of respondents with no risk was 59%, respondents with increased risk were 17.3% and respondents with substantial risk were 23.5%. Women had higher prevalence of increased risk (24.9%) and substantial risk (41.8%) compared to men (10.5% and 7.1%, respectively).

Significant differences also existed in risk level by age. For the age groups 50–59 and 60–69 years, the proportion with no risk was about the same (58%); however, that for the 70-plus group was 62.3%. Thus, the proportion with substantial risk was lower among the 70-plus group (19.7%) compared to the other age groups (25% for the 50–59 and 60–69 age groups). Urban respondents had a higher percentage with substantial risk (35%) compared to rural respondents, where only 15.5% had substantial risk.

There was a clear distinction between the respondents who were never married, currently married or cohabiting versus those who had separated/divorced or were widowed. In general, the latter group had lower prevalence of no risk (45.4% and 42.2%, respectively) and higher prevalence of substantial risk (33.0% and 35.5%, respectively).

Educational status had a mixed impact on the level of risk. Besides the few respondents with postgraduate degrees, the respondents with college/university completed reported the highest prevalence of no risk (64.3%), but, on the other hand, respondents with no education had the lowest prevalence of substantial risk.

A positive association existed between income quintiles and the proportion of respondents with substantial risk. The range was from 13.7% among the lowest income quintile to 35.5% among respondents from the highest income quintile.

Table 8.3 shows the level of risk according to WHR. High risk was defined as a WHR ratio greater than 0.90 cm for men and 0.85 cm for women. The proportion of respondents with low risk was 22.4% and respondents with high risk by WHR were 77.6%. Women (89.5%), those aged 70-plus (81.2%), the widowed and separated/divorced (88.6% and 83.5%, respectively), and respondents with no education (81.0%) had significantly higher prevalence of high risk. Area of residence and income quintiles did not show any clear impact with respect to risk level using WHR.

8.2 Physiological measurements

8.2.1 Blood pressure and pulse rate

As displayed in Table 8.4, the average systolic blood pressure was 137.4 mmHg, the average diastolic blood pressure was 90.5 mmHg and the average pulse rate was 76.6 beats per minute. Female respondents had a significantly higher mean systolic blood pressure of 139.6 mmHg, compared to 135.4 mmHg for male respondents. Mean systolic pressure showed some increase with age, as the 50–59 years group had the lowest mean value (134.6 mmHg), while respondents in urban localities had a significantly higher mean (140.3 mmHg) compared to respondents in rural areas (135.3 mmHg).

Differences were seen between the currently married, who had lower mean systolic blood pressure (135.4 mmHg), compared to the widowed (141.4 mmHg). The mean systolic blood pressure did not show clear link with education. There was instead a linear and positive association between income quintile and mean systolic blood pressure. The respondents in the lowest income quintile had a significantly lower mean of 133.3 mmHg compared to respondents in the Q3–Q5 (higher) income quintiles (137.6 mmHg, 139.1 mmHg and 139.2 mmHg, respectively).

The oldest age group had a significantly lower mean diastolic reading than the other age groups. Older adults living in urban areas had higher mean values than their rural counterparts and respondents in the lowest income quintile had lower mean values than respondents belonging to the other income quintiles. An association with education was, however, observed for respondents with less than primary school education, who had a significantly higher mean value (91.5 mmHg) than respondents who had completed college/university (87.9 mmHg). No particular patterns in diastolic blood pressure were observed by sex and marital status.

The mean pulse rate differed between sexes (77.3 among women versus 76.1 among men) and income quintiles (Q4 and Q5 had lower pulse rate means than Q1 and Q2). No important differences were seen in terms of the other categories of demographic characteristics.

8.2.2 Hypertension

The levels of hypertension, by severity, were based on the average of the last two out of three total measurements taken with the person in a seated position, and were categorized as follows (in mmHg):

Table 8.4 Mean systolic and diastolic blood pressure and pulse rate, by selected demographic characteristics

| Characteristics | Mean systolic blood pressure | Mean diastolic blood pressure | Mean pulse rate | N |
|-----------------------------------|------------------------------|-------------------------------|-----------------|--------------|
| Sex | | | | |
| Male | 135.4 | 90.2 | 76.1 | 2 259 |
| Female | 139.6 | 90.9 | 77.3 | 2 048 |
| Age group | | | | |
| 50–59 | 134.6 | 91.0 | 77.1 | 1 712 |
| 60–69 | 139.4 | 91.3 | 76.5 | 1 184 |
| 70+ | 138.9 | 89.2 | 76.2 | 1 411 |
| Residence | | | | |
| Urban | 140.3 | 92.0 | 76.3 | 1 770 |
| Rural | 135.3 | 89.4 | 76.9 | 2 537 |
| Marital status | | | | |
| Never married | 131.6 | 87.6 | 77.6 | 54 |
| Currently married | 135.4 | 89.9 | 76.1 | 2 505 |
| Cohabiting | 124.2 | 86.0 | 74.4 | 36 |
| Separated/divorced | 138.5 | 92.0 | 77.2 | 553 |
| Widowed | 141.4 | 91.1 | 77.4 | 1 135 |
| Education | | | | |
| No education | 137.5 | 90.0 | 76.8 | 2 309 |
| Less than primary school | 137.9 | 91.5 | 77.1 | 443 |
| Primary school completed | 136.1 | 90.3 | 77.6 | 468 |
| Secondary education completed | 137.5 | 91.6 | 74.4 | 172 |
| High school (or equiv.) completed | 138.3 | 92.1 | 76.0 | 732 |
| College/university completed | 133.0 | 87.9 | 75.3 | 147 |
| Postgraduate degree completed | 129.9 | 83.6 | 76.9 | 7 |
| Income quintile | | | | |
| Q1 (lowest) | 133.3 | 87.8 | 78.5 | 785 |
| Q2 | 136.8 | 90.2 | 76.7 | 821 |
| Q3 | 137.6 | 91.5 | 77.0 | 880 |
| Q4 | 139.1 | 91.6 | 75.5 | 889 |
| Q5 (highest) | 139.2 | 91.0 | 75.7 | 927 |
| Total | 137.4 | 90.5 | 76.6 | 4 307 |

- Optimal: systolic<120 and diastolic<80
- Normal: 120≤systolic<130 or 80≤diastolic<85
- High normal: 130≤systolic<140 or 85≤diastolic<90
- Mild: 140≤systolic<160 or 90≤diastolic<100
- Moderate: 160≤systolic<180 or 100≤diastolic<110
- Severe: systolic≥180 or diastolic≥110.

The proportion of respondents with isolated systolic hypertension was 40.8%, the proportion with isolated

diastolic hypertension was 48.5% and with hypertension (elevations of either, or both, systolic and diastolic values) was 54.6%. More women had isolated systolic hypertension (45.3%) than men (36.6%); with a much smaller sex difference for isolated diastolic hypertension (49.6% versus 47.4%, respectively). Overall, the proportion of women with hypertension (57.0%) was higher than seen in men (52.3%).

Rates of isolated diastolic hypertension were inversely related to increasing age, whereas, isolated systolic and

Table 8.5 Systolic and diastolic hypertension, by selected demographic characteristics

| Characteristics | Systolic hypertension* | | Diastolic hypertension | | Hypertension (systolic and/or diastolic) | |
|---|------------------------|--------|------------------------|--------|--|--------------|
| | Yes (%) | Number | Yes (%) | Number | Yes (%) | Number |
| Sex | | | | | | |
| Male | 36.6 | 2 221 | 47.4 | 2 220 | 52.3 | 2 220 |
| Female | 45.3 | 2 020 | 49.6 | 2 020 | 57.0 | 2 019 |
| Age group | | | | | | |
| 50–59 | 36.3 | 1 685 | 50.7 | 1 683 | 54.2 | 1 683 |
| 60–69 | 45.4 | 1 164 | 49.9 | 1 164 | 57.1 | 1 164 |
| 70+ | 42.3 | 1 392 | 44.5 | 1 393 | 52.9 | 1 392 |
| Residence | | | | | | |
| Urban | 46.2 | 1 743 | 52.9 | 1 743 | 60.5 | 1 743 |
| Rural | 37.0 | 2 498 | 45.4 | 2 497 | 50.4 | 2 496 |
| Marital status | | | | | | |
| Never married | 22.1 | 54 | 33.1 | 54 | 35.9 | 54 |
| Currently married | 37.6 | 2 459 | 47.4 | 2 458 | 52.7 | 2 458 |
| Cohabiting | 22.5 | 35 | 35.7 | 35 | 37.2 | 35 |
| Separated/divorced | 42.9 | 552 | 50.4 | 552 | 56.4 | 552 |
| Widowed | 47.9 | 1 119 | 50.7 | 1 119 | 59.1 | 1 118 |
| Education | | | | | | |
| No education | 40.1 | 2 268 | 46.4 | 2 269 | 52.5 | 2 268 |
| Less than primary school | 45.3 | 442 | 53.7 | 442 | 60.4 | 442 |
| Primary school completed | 40.0 | 461 | 47.7 | 460 | 55.2 | 460 |
| Secondary education completed | 42.7 | 171 | 48.3 | 171 | 52.5 | 171 |
| High school (or equiv.) completed | 42.7 | 723 | 53.9 | 722 | 59.9 | 722 |
| College/university completed | 31.4 | 145 | 43.2 | 145 | 46.7 | 145 |
| Postgraduate degree completed | 17.9 | 7 | 23.9 | 7 | 23.9 | 7 |
| Income quintile | | | | | | |
| Q1 (lowest) | 34.4 | 766 | 41.2 | 767 | 46.2 | 766 |
| Q2 | 39.7 | 812 | 46.3 | 812 | 52.0 | 812 |
| Q3 | 40.7 | 873 | 51.3 | 873 | 55.4 | 873 |
| Q4 | 43.7 | 879 | 52.1 | 877 | 59.2 | 877 |
| Q5 (highest) | 44.1 | 905 | 50.2 | 905 | 58.4 | 905 |
| Total respondents per category (%) | 1 729 40.8 | | 2 054 48.5 | | 2 313 54.6 | 4 239 |

Note: Isolated systolic hypertension = ≥ 140 mm Hg; isolated diastolic hypertension = ≥ 90 mm Hg.

overall hypertension rates were highest in the 50–59 year age group. Urban respondents had higher prevalence of mild, moderate and severe hypertension and the differences were large. All three classifications of hypertension were associated with increasing levels of income quintile, increasing from 34.4% in the lowest income quintile to 44.1% in the highest income quintile

for systolic hypertension, from 41.2% to 50.2% for diastolic hypertension, and from 46.2% to 58.5% for either type of hypertension, respectively.

The proportion of respondents with optimal blood pressure was 19.3%, normal blood pressure was 12.6%, and high normal blood pressure was 13.6% (Table 8.6).

The proportions of respondents with mild, moderate and severe hypertension were (24.7%, 16.0% and 13.7% respectively). Moderate hypertension was more common among female respondents (18%, versus

14.2% for men), urban respondents (17.5%, versus 15.0% for rural) the widowed (19.9%) and among the higher income quintiles (Q3 = 16.9%, Q4 = 18.9% and Q5 = 16.5%).

Table 8.6 Blood pressure and hypertension categories, by selected demographic characteristics

| Characteristics | Blood pressure (%) | | | | | | N |
|-----------------------------------|--------------------|--------|-------------|-------------------|-----------------------|---------------------|-------|
| | Optimal | Normal | High normal | Mild hypertension | Moderate hypertension | Severe hypertension | |
| Sex | | | | | | | |
| Male | 20.9 | 12.8 | 14.0 | 24.2 | 14.2 | 13.9 | 2 220 |
| Female | 17.5 | 12.3 | 13.2 | 25.2 | 18.0 | 13.9 | 2 021 |
| Age group | | | | | | | |
| 50–59 | 20.2 | 11.8 | 13.8 | 26.3 | 15.1 | 12.9 | 1 684 |
| 60–69 | 18.1 | 12.7 | 12.2 | 24.5 | 16.8 | 15.8 | 1 164 |
| 70+ | 19.2 | 13.4 | 14.5 | 23.0 | 16.4 | 13.5 | 1 393 |
| Residence | | | | | | | |
| Urban | 13.6 | 11.8 | 14.1 | 27.8 | 17.5 | 15.3 | 1 743 |
| Rural | 23.2 | 13.1 | 13.2 | 22.6 | 15.0 | 12.9 | 2 498 |
| Marital status | | | | | | | |
| Never married | 29.1 | 7.4 | 27.7 | 19.1 | 7.6 | 9.2 | 54 |
| Currently married | 20.8 | 12.9 | 13.7 | 25.2 | 14.9 | 12.6 | 2 458 |
| Cohabiting | 40.6 | 13.8 | 8.3 | 20.6 | 3.3 | 13.4 | 35 |
| Separated/divorced | 16.4 | 12.2 | 15.0 | 25.0 | 14.9 | 16.4 | 552 |
| Widowed | 16.5 | 12.2 | 12.1 | 24.0 | 19.9 | 15.3 | 1 120 |
| Education | | | | | | | |
| No education | 20.1 | 13.2 | 14.2 | 22.4 | 16.7 | 13.4 | 2 269 |
| Less than primary school | 16.3 | 10.1 | 13.2 | 30.7 | 16.5 | 13.3 | 442 |
| Primary school completed | 21.4 | 11.1 | 12.3 | 26.9 | 15.4 | 13.0 | 460 |
| Secondary education completed | 21.7 | 8.9 | 16.9 | 21.3 | 13.8 | 17.4 | 171 |
| High school (or equiv.) completed | 15.6 | 12.6 | 11.9 | 27.3 | 16.2 | 16.4 | 723 |
| College/university completed | 22.9 | 17.3 | 13.1 | 27.5 | 8.6 | 10.6 | 145 |
| Postgraduate degree completed | 23.3 | 30.2 | 22.6 | 14.5 | 9.4 | 0 | 7 |
| Income quintile | | | | | | | |
| Q1 (lowest) | 24.4 | 13.5 | 15.8 | 22.2 | 13.6 | 10.5 | 767 |
| Q2 | 23.1 | 12.3 | 12.5 | 22.6 | 13.6 | 15.8 | 812 |
| Q3 | 19.3 | 13.4 | 12.0 | 23.0 | 16.9 | 15.5 | 873 |
| Q4 | 16.9 | 10.8 | 13.0 | 26.7 | 18.9 | 13.7 | 878 |
| Q5 (highest) | 13.7 | 13 | 14.9 | 28.4 | 16.5 | 13.5 | 905 |
| Total respondents | 817 | 533 | 576 | 1 047 | 678 | 589 | 4 240 |
| N (%) | 19.3 | 12.6 | 13.6 | 24.7 | 16.0 | 13.7 | |

8.2.3 Lung function

Conditions and diseases of the respiratory system formed 2.5% of all admissions to the National Referral Hospital (Korle-Bu Teaching Hospital) in 1996⁵⁰. Respiratory tract infections rank third on the reasons of out-patient visits

to the main health institutions in the country, with lower respiratory infections still in the top three causes of premature death in Ghana according to the 2010 Global Burden of Disease study. Chronic Obstructive Pulmonary Disease (COPD) remains in the top 20 leading

Table 8.7 Distribution of Chronic Obstructive Pulmonary Disease (COPD) severity using spirometry (FEV<2), by selected sociodemographic characteristics, health risks and self-reported (SR) COPD

| Characteristics | COPD (%), by severity | | | | | | |
|----------------------|-----------------------|------|----------|--------|-------------|-------|-------|
| | None | Mild | Moderate | Severe | Very severe | Total | N |
| Sex | | | | | | | |
| Male | 73.9 | 3.9 | 11.0 | 6.7 | 4.6 | 100 | 1 852 |
| Female | 74.2 | 9.1 | 9.4 | 4.7 | 2.6 | 100 | 1 549 |
| Age group | | | | | | | |
| 50-59 | 79.1 | 5.8 | 9.0 | 4.3 | 1.8 | 100 | 1 374 |
| 60-69 | 74.5 | 6.7 | 9.6 | 5.2 | 3.9 | 100 | 949 |
| 70-79 | 69.1 | 5.8 | 11.8 | 7.5 | 5.8 | 100 | 788 |
| 80+ | 62.0 | 8.3 | 14.0 | 9.8 | 5.9 | 100 | 291 |
| Residence | | | | | | | |
| Urban | 72.5 | 6.2 | 11.5 | 5.6 | 4.1 | 100 | 1 375 |
| Rural | 75.1 | 6.3 | 9.4 | 5.9 | 3.4 | 100 | 2 027 |
| Income quintile | | | | | | | |
| Q1 (lowest) | 72.0 | 7.3 | 11.2 | 5.6 | 3.9 | 100 | 583 |
| Q2 | 69.9 | 8.7 | 11.2 | 5.7 | 4.5 | 100 | 672 |
| Q3 | 76.4 | 7.0 | 8.7 | 5.1 | 2.8 | 100 | 693 |
| Q4 | 77.7 | 3.8 | 10.2 | 4.7 | 3.6 | 100 | 722 |
| Q5 (highest) | 73.7 | 5.0 | 10.2 | 7.6 | 3.5 | 100 | 727 |
| Tobacco use | | | | | | | |
| Current daily smoker | 70.3 | 8.0 | 9.1 | 6.6 | 6.0 | 100 | 253 |
| Smoker, not daily | 80.6 | 3.9 | 8.7 | 4.2 | 2.6 | 100 | 90 |
| Not current smoker | 72.5 | 3.4 | 13.5 | 5.4 | 5.2 | 100 | 510 |
| Never smoker | 74.6 | 6.7 | 9.8 | 5.8 | 3.1 | 100 | 2 524 |
| Obesity | | | | | | | |
| <30kg/m² (No) | 73.5 | 6.4 | 10.5 | 6.0 | 3.6 | 100 | 3 041 |
| >=30kg/m² (Yes) | 77.7 | 5.6 | 9.3 | 4.7 | 2.7 | 100 | 311 |
| SR COPD | | | | | | | |
| No | 74.1 | 6.3 | 10.3 | 5.7 | 3.7 | 100 | 3 380 |
| Yes | 66.1 | 6.0 | 3.9 | 17.3 | 6.8 | 100 | 22 |
| Total | 74.0 | 6.3 | 10.3 | 5.8 | 3.7 | 100 | 3 401 |
| Number | 2 518 | 213 | 349 | 196 | 125 | 3 401 | |

contributors to DALYs in Ghana. Lung function tests are done for a very few patients in health facilities in Ghana and there are problems in the estimation of spirometry cut-offs for older adults. As such, the SAGE data are a valuable resource for lung specialists in Ghana. International cut-points for Chronic Obstructive Pulmonary Disease (COPD) and asthma were used to derive Tables 8.7 and 8.8 below.

Overall, 75% of all respondents self-reported no COPD, 5.6% reported severe COPD and 3.0% reported very severe COPD. The severity of COPD generally increased with age, from 3.9% in the 50-59 years age group to 9.6% in the 80+ age group. More men reported severe COPD, than women (6.6% and 4.4%, respectively), similarly for very severe COPD, the percentage for men was 3.8% compared to 2.2% in women.

Table 8.8 Distribution of asthma severity using spirometry (FEV₂<2), by selected sociodemographic characteristics, health risks and asthma rates derived from symptom-reporting and algorithm

| Characteristics | Asthma prevalence (%), by severity | | | | |
|----------------------------|------------------------------------|--------------|-------------|-------------|--------------|
| | None | Mild | Moderate | Severe | Total |
| Sex | | | | | |
| Male | 20.5 | 33.2 | 29.6 | 16.7 | 1 626 |
| Female | 16.8 | 50.3 | 22.1 | 10.8 | 1 283 |
| Age group | | | | | |
| 50-59 | 15.4 | 46.3 | 26.8 | 11.4 | 1 159 |
| 60-69 | 20.6 | 40.6 | 27.6 | 11.2 | 816 |
| 70-79 | 20.8 | 34.1 | 25.0 | 20.0 | 697 |
| 80+ | 23.8 | 33.3 | 22.9 | 20.0 | 236 |
| Residence | | | | | |
| Urban | 19.5 | 38.7 | 26.5 | 15.3 | 1 167 |
| Rural | 18.5 | 42.1 | 26.2 | 13.3 | 1 742 |
| Income quintile | | | | | |
| Q1 (lowest) | 17.5 | 42.4 | 25.3 | 14.8 | 486 |
| Q2 | 20.0 | 39.6 | 25.5 | 14.9 | 559 |
| Q3 | 20.2 | 41.6 | 26.9 | 11.2 | 594 |
| Q4 | 17.3 | 41.1 | 29.6 | 12.1 | 628 |
| Q5 (highest) | 19.4 | 39.3 | 23.9 | 17.3 | 638 |
| Tobacco use | | | | | |
| Current daily smoker | 22.6 | 33.3 | 26.0 | 18.1 | 211 |
| Smoker, not daily | 18.0 | 35.4 | 32.7 | 13.9 | 82 |
| Not current smoker | 16.0 | 37.7 | 29.8 | 16.5 | 438 |
| Never smoker | 19.2 | 42.4 | 25.4 | 13.1 | 2 155 |
| Obesity | | | | | |
| <30kg/m ² (No) | 18.2 | 41.3 | 26.2 | 14.3 | 2 591 |
| ≥30kg/m ² (Yes) | 17.1 | 41.5 | 29.6 | 11.7 | 271 |
| Asthma (algorithm) | | | | | |
| No | 18.8 | 41.5 | 26.3 | 13.5 | 2 809 |
| Yes | 21.6 | 19.5 | 27.2 | 31.7 | 99 |
| Total | 18.9 | 40.7 | 26.3 | 14.1 | 2 908 |
| Number | 549 | 1 185 | 765 | 410 | 2 908 |

More rural residents had no COPD (75.1%) compared to urban residents (72.5%), and indeed more urban residents had very severe COPD (4.1%) compared to the rural residents (3.4%). Relatively higher percentages of higher income groups (Q3, Q4 and Q5) had no COPD compared to the lower income groups (Q1 and Q2).

Current daily smokers had the highest rates of severe and very severe COPD. Interestingly, obese respondents had relatively higher percentage of no COPD (77.7%) and lower percentages of disease in each category compared to non-obese respondents.

Mild and moderate asthma were quite prevalent in general (67% of those aged 50-plus), with just 18.9% without asthma by lung function testing. Severe asthma was more common in older age groups, in men and current smokers (Table 8.8). The spirometry testing may have also uncovered some undiagnosed/non-symptomatic disease and could be a public health target.

8.3 Measured performance tests

8.3.1 Vision (near and distance)

Sensory, perceptual and cognitive function tends to diminish with increasing age. These changes can have a profound effect on an older person's self-esteem, quality of life and health. Sensory declines represent a broad category of normal age-related changes that can lead to diminished quality of life for the older individual, loss of independence and increased costs for society as a whole. Sensory deficits with increasing age can include, for instance, visual difficulties that impact mobility and increase the risk for falls, frailty, and physical and mental health status of the older person. Risk factors for falls in the older person include sensory deficits, increasing age, medication use, and cognitive impairment.

The proportion of respondents with normal distant visual acuity was 87.1% and normal near visual acuity was 71.5% (Table 8.9). The higher rate of problems with low near visual acuity is typical of presbyopia seen in older ages. The prevalence of men with normal distant visual acuity was significantly higher at 89.5% compared to 85.6% for women; near visual acuity followed a similar pattern, with 24.7% of men having low near visual acuity compared to 32.7% of women. The prevalence of respondents with both distant and near low visual acuity increased by age. Respondents in the age group

70-plus had the highest prevalence of low visual acuity for both distant and near visual acuity (18.4% and 36.7%, respectively), compared to 7.6% and 22.3% for respondents in the 50-59 age group.

Respondents in rural community had poorer visual acuity. The proportions were 14.2% and 29.6% for distant vision and near vision, respectively, while in urban areas, 9.7% and 27.0% had low distant and low near visual acuity, respectively. This might be related to differences in access to corrective aids.

The pattern of low visual acuity by marital status was not consistent across distant visual acuity and near visual acuity; however, significant differences were observed. For distant vision, the currently married and the widowed had higher prevalence of low visual acuity (11.3% and 17.8%, respectively), while respondents who were separated/divorced had the lowest prevalence (6.3%). In the case of near visual acuity, the highest prevalence of low visual acuity was found among the widowed (37%).

Differences in terms of level of education were also found for both types of acuity. Respondents who had completed secondary school had the lowest prevalence of low distant visual acuity (3.6%) compared to respondents with no education (16.6%); for near visual acuity, respondents with no education had the highest prevalence (68.5%).

Only for distant visual acuity was there a positive relationship between income quintile and visual acuity. Respondents in the lowest income quintile had the lowest prevalence of normal visual acuity (82.6%, versus 91.8% for the richest quintile).

8.3.2 Grip strength

Several studies of older people have shown that grip strength is a long-term predictor of mortality and disability⁵¹. Low hand-grip strength has been consistently linked to premature mortality, disability and other health complications in older people. Poor muscular strength has been shown to be associated with increased morbidity and mortality in diverse samples of middle-aged and older adults⁵².

Grip strength was assessed with the person in an upright seated position with the arm along the side, elbow bent at 90°, and the forearm and wrist were in the neutral position. The dynamometer handle was adjusted to fit the hand size. Grip strength was assessed

Table 8.9 Level of visual acuity (distant and near), by selected demographic characteristics

| Characteristics | Distant visual acuity | | | Near visual acuity | | |
|-----------------------------------|-----------------------------|---------------------------|--------------|-----------------------------|-----------------------------|--------------|
| | Normal (%) | Low vision (%) | N | Normal (%) | Low vision (%) | N |
| Sex | | | | | | |
| Male | 89.5 | 10.5 | 2 223 | 75.3 | 24.7 | 2 239 |
| Female | 85.6 | 14.4 | 2 031 | 67.3 | 32.7 | 2 039 |
| Age group | | | | | | |
| 50–59 | 92.4 | 7.6 | 1 689 | 77.7 | 22.3 | 1 703 |
| 60–69 | 87.8 | 12.2 | 1 177 | 72.3 | 27.7 | 1 179 |
| 70+ | 81.6 | 18.4 | 1 387 | 63.3 | 36.7 | 1 395 |
| Residence | | | | | | |
| Urban | 90.3 | 9.7 | 1 739 | 73.0 | 27.0 | 1 753 |
| Rural | 85.8 | 14.2 | 2 516 | 70.4 | 29.6 | 2 525 |
| Education | | | | | | |
| No education | 83.4 | 16.6 | 2 289 | 68.5 | 31.5 | 2 297 |
| Less than primary school | 91.5 | 8.5 | 441 | 72.0 | 28.0 | 443 |
| Primary school completed | 89.3 | 10.7 | 458 | 74.3 | 25.7 | 462 |
| Secondary education completed | 96.4 | 3.6 | 167 | 72.6 | 27.4 | 172 |
| High school (or equiv.) completed | 94.2 | 5.8 | 723 | 77.9 | 22.1 | 727 |
| College/university completed | 93.3 | 6.7 | 146 | 71.6 | 28.4 | 146 |
| Postgraduate degree completed | 86.4 | 13.6 | 7 | 80.7 | 19.3 | 7 |
| Marital status | | | | | | |
| Never married | 90.9 | 9.1 | 54 | 78.2 | 21.8 | 54 |
| Currently married | 88.7 | 11.3 | 2 467 | 74.4 | 25.6 | 2 487 |
| Cohabiting | 92.7 | 7.3 | 36 | 65.0 | 35.0 | 36 |
| Separated/divorced | 93.7 | 6.3 | 551 | 74.4 | 25.6 | 552 |
| Widowed | 82.2 | 17.8 | 1 122 | 63.0 | 37.0 | 1 126 |
| Income quintile | | | | | | |
| Q1 (lowest) | 82.6 | 17.4 | 778 | 68.8 | 31.2 | 779 |
| Q2 | 85.3 | 14.7 | 814 | 71.2 | 28.8 | 817 |
| Q3 | 87.2 | 12.8 | 878 | 70.2 | 29.8 | 880 |
| Q4 | 90.4 | 9.6 | 877 | 72.6 | 27.4 | 882 |
| Q5 (highest) | 91.8 | 8.2 | 903 | 74.1 | 25.9 | 914 |
| Total respondents % | 3 728 87.1 | 526 12.9 | 4 254 | 3 058 71.5 | 1 220 28.5 | 4 278 |

* Normal distant and near visual acuity were classified for values ranging from 0.3 to 2.0 on the LogMAR chart (better than 20/70 vision). Vision tests include the respondent's typical correcting aids (spectacles or other) if used.

twice in each hand, with brief pauses between, and the final result a mean of the best result in each hand. The mean grip strength was 27kg, decreasing by age (Table 8.10). The mean for respondents in the age group 50–59 was 29.8kg, compared to 23.2kg for the 70-plus age group.

Respondents with no education had the lowest mean grip strength (25.4kg) and there was some trend with increasing level of education. For respondents with less than primary school completed, the mean grip strength was 26.3kg, while for those with college/university completed it was 29.7kg.

Table 8.10 Mean grip strength, by selected demographic characteristics

| Characteristics | Grip strength | |
|-----------------------------------|---------------|--------------|
| | Mean | N |
| Sex | | |
| Male | 30.1 | 2 259 |
| Female | 23.4 | 2 048 |
| Age group | | |
| 50–59 | 29.8 | 1 712 |
| 60–69 | 27.2 | 1 184 |
| 70+ | 23.2 | 1 411 |
| Residence | | |
| Urban | 27.1 | 1 770 |
| Rural | 26.9 | 2 537 |
| Education | | |
| No education | 25.4 | 2 309 |
| Less than primary school | 26.3 | 443 |
| Primary school completed | 30.2 | 468 |
| Secondary education completed | 31.5 | 172 |
| High school (or equiv.) completed | 28.3 | 732 |
| College/university completed | 29.7 | 147 |
| Postgraduate degree completed | 36.4 | 7 |
| Income quintile | | |
| Q1 (lowest) | 26.5 | 785 |
| Q2 | 25.8 | 821 |
| Q3 | 26.8 | 880 |
| Q4 | 27.6 | 889 |
| Q5 (highest) | 28.1 | 927 |
| Total | 27 | 4 307 |

There was a linear relationship between mean grip strength and income quintile levels. Respondents in the lowest income quintile had a mean grip strength of 26.5kg, compared to a mean grip strength of 28.1kg for respondents in the highest income quintile.

8.3.3 Mobility (timed walk)

Respondents were asked to complete a timed walk over 4 meters, once at a normal pace and once at a rapid pace. For normal paced walking in community-dwelling older adults, times less than 0.4–0.6 meters/second are considered slow, and possibly an indicator of health risk, but may also need adjustment based on

cultural gait norms. On average, respondents took 4.2 seconds to walk at a rapid pace over the 4 m interval and 6.3 seconds for a walk at normal pace. Female respondents took more time for the rapid walk (4.7 seconds, versus 3.8 seconds for men). The same trend was observed for the normal walk, which was 6.7 seconds for women, as opposed to 5.9 seconds for men. The results showed a strong relationship between age group and the mean time taken for both the rapid and normal walks. Respondents in the older age groups took much longer to cover the 4 m distance.

Respondents in rural areas took a shorter time for a rapid walk (4.1 seconds versus 4.5 seconds for urban respondents), while for the normal walk, the time was 6.0 seconds for rural respondents and 6.7 seconds for urban dwellers. In general, the currently married or cohabitating respondents displayed better performance compared to those who were separated/divorced or widowed.

Respondents with no education took a longer time (4.4 seconds) to walk rapidly over the 4 m distance, compared to a mean time of 3.9 or 3.8 for respondents who had completed high school or college/university, respectively. There was no relationship between income quintile levels and mean time for the rapid walk. However, for a normal walk, respondents in the highest income quintile took 6.6 seconds to cover the 4 m distance, compared to 6.1 seconds for those in the lowest income quintile.

8.4 Blood analysis

As a means to assess individual and population health within epidemiological and health studies, self-reporting of health and health conditions balances the ease of collection with inherent biases. One problem is the difficulty of accurately measuring health. Biomarkers promise to provide a more accurate and objective measure of health risks and health conditions, which does not rely on the memory of respondents.

Use of DBS samples provides a relatively low-cost and efficient method of collecting samples in large health studies⁵³. Information about collection techniques, consent and tests undertaken on the DBS samples is provided in Chapter 2.

Preliminary results are presented below, with additional assays yet to be completed. Further cleaning of the laboratory results and linkage to the survey data will be conducted when the final assays are run. This is a strategy employed to minimize freeze-thaw cycles of

Table 8.11 Mean mobility time (rapid and normal walk), by selected demographic characteristics

| Characteristics | Rapid walk (seconds) | | Normal walk (seconds) | |
|-----------------------------------|-----------------------|--------------|-----------------------|--------------|
| | Mean | N | Mean | N |
| Sex | | | | |
| Male | 3.8 | 2 259 | 5.9 | 2 259 |
| Female | 4.7 | 2 048 | 6.7 | 2 048 |
| Age group | | | | |
| 50–59 | 3.8 | 1 712 | 5.8 | 1 712 |
| 60–69 | 4.1 | 1 184 | 6.1 | 1 184 |
| 70+ | 4.9 | 1 411 | 7.0 | 1 411 |
| Residence | | | | |
| Urban | 4.5 | 1 770 | 6.7 | 1 770 |
| Rural | 4.1 | 2 537 | 6.0 | 2 537 |
| Education | | | | |
| No education | 4.4 | 2 309 | 6.4 | 2 309 |
| Less than primary school | 4.3 | 443 | 6.4 | 443 |
| Primary school completed | 4.1 | 468 | 6.2 | 468 |
| Secondary education completed | 4.2 | 172 | 6.1 | 172 |
| High school (or equiv.) completed | 3.9 | 732 | 6.0 | 732 |
| College/university completed | 3.8 | 147 | 5.8 | 147 |
| Postgraduate degree completed | 3.8 | 7 | 5.7 | 7 |
| Marital status | | | | |
| Never married | 4.6 | 54 | 6.1 | 54 |
| Currently married | 3.9 | 2 505 | 5.9 | 2 505 |
| Cohabiting | 3.4 | 36 | 5.3 | 36 |
| Separated/divorced | 4.6 | 553 | 6.7 | 553 |
| Widowed | 4.9 | 1 135 | 6.9 | 1 135 |
| Income quintile | | | | |
| Q1 (lowest) | 4.1 | 785 | 6.1 | 785 |
| Q2 | 4.3 | 821 | 6.2 | 821 |
| Q3 | 4.3 | 880 | 6.3 | 880 |
| Q4 | 4.2 | 889 | 6.2 | 889 |
| Q5 (highest) | 4.3 | 927 | 6.6 | 927 |
| Total (mean or N) | 4.2 | 4 307 | 6.3 | 4 307 |

the samples, while also producing some initial results to fill important data gaps about the health of older adults in Ghana.

8.4.1 Haemoglobin

Anaemia is difficult to assess through interview; it can be associated with non-specific complaints such as

fatigue or decline in physical performance, and can have a significant effect on the quality of life of older individuals^{54,55}. Haemoglobin levels can be used to assess levels of anaemia, because a common form of anemia in older adults is associated with a low level of haemoglobin. Anaemia is associated with an increased risk of cardiovascular disease, cognitive dysfunction and poor outcomes in many chronic diseases. Among

Table 8.12 Percentage with higher risk haemoglobin and HIV-positive, by background characteristics

| Characteristic | Higher risk Hb (%) | N | HIV-positive (%) | N |
|------------------------------|--------------------|-----|------------------|-----|
| Sex | | | | |
| Male | 70.8 | 558 | 1.9 | 830 |
| Female | 80.0 | 544 | 2.4 | 839 |
| Age group | | | | |
| 50–59 | 73.8 | 446 | 2.3 | 663 |
| 60–69 | 73.1 | 312 | 3.0 | 463 |
| 70+ | 79.4 | 344 | 1.3 | 543 |
| Residence | | | | |
| Urban | 71.3 | 512 | 2.6 | 764 |
| Rural | 78.8 | 590 | 1.8 | 905 |
| Marital status | | | | |
| Never married | 100 | 9 | 0 | 16 |
| Currently married | 73.1 | 581 | 2.3 | 873 |
| Cohabiting | 53.3 | 15 | 5.0 | 20 |
| Separated or divorced | 76.1 | 201 | 2.4 | 292 |
| Widowed | 79.2 | 293 | 1.7 | 458 |
| Wealth quintiles | | | | |
| Q1 (lowest) | 78.0 | 182 | 1.1 | 264 |
| Q2 | 79.6 | 196 | 1.7 | 303 |
| Q3 | 78.8 | 250 | 3.6 | 358 |
| Q4 | 69.0 | 242 | 1.8 | 383 |
| Q5 (highest) | 72.3 | 231 | 2.2 | 359 |
| Self-rated health | | | | |
| Very Good | 66.7 | 57 | 3.9 | 80 |
| Good | 74.1 | 390 | 2.6 | 569 |
| Moderate | 76.2 | 433 | 2.0 | 663 |
| Bad | 76.4 | 165 | 1.6 | 250 |
| Very bad | 75.0 | 28 | 0 | 44 |
| Administrative region | | | | |
| Ashanti | 68.8 | 253 | 4.3 | 350 |
| Brong-Ahafo | 91.0 | 189 | 2.3 | 213 |
| Central | 69.4 | 117 | 0 | 210 |
| Eastern | 69.5 | 158 | 1.6 | 248 |
| Greater Accra | 62.6 | 139 | 1.9 | 208 |
| Northern | 70.2 | 57 | 1.2 | 82 |
| Upper East | 60.0 | 5 | 0 | 26 |
| Upper West | 100 | 3 | 0 | 14 |
| Volta | 95.5 | 67 | 1.0 | 103 |
| Western | 85.1 | 114 | 2.8 | 215 |

Hb, haemoglobin – higher risk is Hb less than 12.0g/dl.

the older population, anaemia can be an independent risk factor for death. For this report, a working definition of anemia is based on a haemoglobin level cut-off of 12g/dL for men and women, providing an indication of higher health risk (see for example, www.uptodate.com/contents/anemia-in-the-older-adult)⁵⁶.

The patterns shown in Table 8.12 include higher risk in women, adults aged 70-plus years, rural dwellers, and lower socioeconomic status. On average, about 76% of the study population was classified as higher risk. The widowed had a higher proportion of respondents with high risk haemoglobin compared to the currently married. While a few regions had insufficient data at the time of writing this report (see for example, the small numbers from the Upper East and Upper West in Table 8.12), differences by regions do exist with wealthier regions having lower rates. Clear risk patterns are also present when looking at self-rated health, lower risk with better perceived health, suggesting an area for further investigation by the research team.

8.4.2 HIV status

Older adults are often sexually active, a common potential source of risk for infection with HIV. Also, older adults often play a critical role as caregivers in households, families and communities – another possible source of infection when care is provided by older adults to people who are infected with HIV. Nevertheless, little is known about rates of HIV infection in older adults. Generally, there is little data on HIV infection in people aged 50-plus years around the world; the few studies that have been undertaken among older adults were mainly undertaken in developed countries⁵⁷. Due to individual and systematic factors, older adults are less likely to be tested for HIV⁵⁸.

The tests were anonymous, with results decoupled from individual identifiers. The HIV+ rate for adults aged 50-plus is 2.3%, with higher rates in women and urban dwellers (Table 8.12). Distribution by age showed higher prevalence among those aged 50-59 and 60-69 than the 70-plus group. Regional differences are also seen, as well as a clear pattern by self-rated health with the highest levels seen in those reporting very good health. SAGE Wave 1 Ghana provides much needed prevalence data on rates of HIV infection in older adults, particularly as Ghana is a lower HIV prevalence country.



9. Health care utilization and health system responsiveness

This section describes health care use, associated costs and the responsiveness of the health care system. An important consideration, especially 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 care utilization

9.1.1 Those who needed and received outpatient and inpatient care

As shown in Table 9.1, based on a question about the health care need in the three years prior to interview, 82.5% of the respondents reported that they needed care. More women said they needed care than men (85.5% compared to 79.9%, respectively).

A higher proportion of women who needed care also received care compared to men. The proportion of women who did not receive care when needed was

26.8%, compared to 32% of male respondents who did not receive care. Almost 63% of women received outpatient care, while 10.5% received inpatient care. For men, 55.1% received outpatient care and 13% received inpatient care. Overall, in those who needed health care, about 30% of all respondents did not receive any care, while about 60% received outpatient care and 10% received inpatient care.

The proportion of respondents who needed care in the last three years increased with age. Nearly 88% of respondents aged 70-plus years needed care, compared to 79% of respondents in the age group 18-49. The proportion receiving both outpatient and inpatient care was also related to the age of the respondent: a higher percentage of older persons reported inpatient and outpatient care (Table 9.1). Older respondents were also more likely to receive both inpatient and outpatient care (data not shown).

Urban dwellers were more likely to have needed care in the last three years compared to those in rural areas, and more urban respondents received both inpatient and outpatient care. Of widowed respondents, 84.6% needed care compared to 82.1% of currently married respondents. More widowed respondents received care compared to those who are currently married.

The proportion of respondents who needed care was positively related to the income quintile. More respondents in the highest income quintile (Q5) needed care in the last three years compared to those in the lowest income quintile (Q1). However, over 42% of respondents in the lowest quintile did not receive care, compared to only 21.7% of those in the highest income quintile.

The prevalence of those not needing care was higher among respondents working in the private sector. In the last three years, 84.6% of respondents working in the public sector needed care, compared to 76.7% of

Table 9.1 Distribution of respondents needing and receiving health care, by selected demographic characteristics

| Characteristics | Needed health care (%) | | | N | Received health care in the last three years (%) | | | N |
|--|------------------------|---------------------|--------------|-------|--|-----------------|-----------------------------|-------|
| | More than 3 years ago | In the last 3 years | Never needed | | Inpatient care | Outpatient care | Did not receive health care | |
| Sex | | | | | | | | |
| Male | 15.9 | 79.9 | 4.2 | 2 233 | 13.0 | 55.1 | 32.0 | 1 992 |
| Female | 12.1 | 85.5 | 2.4 | 2 036 | 10.5 | 62.7 | 26.8 | 1 878 |
| Age group | | | | | | | | |
| 18–49 | 16.8 | 79.0 | 4.2 | 1 696 | 11.0 | 54.1 | 34.9 | 1 520 |
| 50–59 | 13.7 | 83.1 | 3.2 | 1 177 | 11.5 | 60.8 | 27.7 | 1 062 |
| 60–69 | 12.0 | 85.7 | 2.3 | 983 | 12.2 | 62.2 | 25.7 | 902 |
| 70+ | 9.3 | 87.9 | 2.9 | 413 | 14.7 | 63.7 | 21.7 | 385 |
| Residence | | | | | | | | |
| Urban | 10.4 | 84.6 | 5.1 | 1 754 | 14.4 | 59.6 | 26.0 | 1 601 |
| Rural | 16.7 | 81.1 | 2.2 | 2 515 | 9.9 | 58.2 | 31.9 | 2 269 |
| Marital status | | | | | | | | |
| Never married | 22.8 | 71.9 | 5.3 | 54 | 24.7 | 47.7 | 27.7 | 50 |
| Currently married | 14.3 | 82.1 | 3.6 | 2 481 | 12.2 | 57.9 | 29.9 | 2 235 |
| Cohabiting | 8.3 | 89.1 | 2.6 | 34 | 12.7 | 55.5 | 31.8 | 32 |
| Separated/divorced | 12.4 | 82.5 | 5.1 | 549 | 8.6 | 56.9 | 34.5 | 510 |
| Widowed | 13.5 | 84.6 | 1.9 | 1 127 | 11.9 | 62.7 | 25.4 | 1 025 |
| Income quintile | | | | | | | | |
| Q1 (lowest) | 21.4 | 75.3 | 3.3 | 779 | 9.5 | 48.0 | 42.5 | 678 |
| Q2 | 15.0 | 81.9 | 3.1 | 816 | 11.3 | 56.5 | 32.3 | 733 |
| Q3 | 14.8 | 82.6 | 2.5 | 876 | 10.5 | 63.0 | 26.6 | 801 |
| Q4 | 10.9 | 85.3 | 3.8 | 879 | 12.0 | 61.0 | 27.1 | 810 |
| Q5 (highest) | 9.5 | 86.5 | 4.0 | 915 | 15.1 | 63.2 | 21.7 | 844 |
| Employment status | | | | | | | | |
| Public sector | 11.3 | 84.6 | 4.1 | 439 | 16.7 | 59.9 | 23.5 | 400 |
| Private sector | 11.6 | 79.6 | 8.8 | 162 | 12.9 | 57.5 | 29.6 | 146 |
| Self-employed | 13.7 | 83.3 | 3.0 | 3 272 | 11.4 | 60.2 | 28.5 | 2 961 |
| Informal employment/ not employed/retired | 20.3 | 76.7 | 3.0 | 302 | 7.7 | 45.7 | 46.7 | 277 |
| Total respondents (% or N) | 14.1 | 82.5 | 3.3 | 4 269 | 11.8 | 58.8 | 29.6 | 3 870 |

respondents who had retired. It is striking that close to 50% of informally employed/retired/not employed respondents stated that they did not receive care compared to respondents in the other categories. Fewer respondents employed in the public sector stated that they did not receive care (23.5%).

The respondents who received the lowest inpatient care were the retired, those in the lowest income

quintile, those in rural areas, the 50–59 age group, widowed respondents and women.

9.1.2 Outpatient and inpatient services by type of care

The types of care used by those who needed and received inpatient care in the previous three years was

Table 9.2 Distribution of respondents receiving inpatient care, by type of care in the previous three years and by selected demographic characteristics

| Characteristics | Maternal health (%) | Non-communicable & chronic conditions (%) | Acute illnesses (%) | Other (%) | N |
|------------------------|---------------------|---|---------------------|-------------|------------|
| Sex | | | | | |
| Male | – | 16.7 | 7.9 | 75.4 | 168 |
| Female | 5.0 | 27.0 | 15.6 | 52.3 | 139 |
| Age group | | | | | |
| 18–49 | 3.1 | 18.7 | 14.3 | 64.0 | 97 |
| 50–59 | 3.2 | 23.7 | 13.8 | 59.3 | 83 |
| 60–69 | 1.8 | 24.8 | 4.7 | 68.8 | 83 |
| 70+ | 0 | 17.3 | 13.7 | 69.0 | 43 |
| Residence | | | | | |
| Urban | 1.4 | 23.0 | 14.1 | 61.6 | 151 |
| Rural | 3.3 | 20.6 | 8.9 | 67.1 | 150 |
| Marital status | | | | | |
| Never married | 0 | 0 | 35.1 | 64.9 | 5 |
| Currently married | 2.3 | 18.0 | 10.7 | 69.0 | 173 |
| Cohabiting | 0 | 0 | 28.3 | 71.8 | 4 |
| Separated/divorced | 0 | 33.9 | 11.3 | 54.8 | 36 |
| Widowed | 3.7 | 26.9 | 11.0 | 58.3 | 83 |
| Income quintile | | | | | |
| Q1 (lowest) | 3.5 | 19.1 | 16.3 | 61.1 | 41 |
| Q2 | 3.5 | 13.8 | 5.1 | 77.7 | 58 |
| Q3 | 3.3 | 30.9 | 12.1 | 53.8 | 63 |
| Q4 | 2.8 | 19.9 | 8.7 | 68.7 | 56 |
| Q5 (highest) | 0 | 23.2 | 15.1 | 61.8 | 83 |
| Mean/total | 2.4 | 21.8 | 11.5 | 64.4 | 307 |

Note: Non-communicable and chronic conditions include diabetes, heart disease, oral and swallowing problems, breathing problems, hypertension, stroke, paralysis, and cancers. Acute illnesses are predominantly fever, diarrhea, colds, headaches and coughing. The “Other” category includes communicable disease (infection), maternal and perinatal conditions (pregnancy) or nutritional deficiencies, injury, surgery, depression/anxiety/sleep problems, occupation/work related condition, and pain in joints/arthritis (joints, back, neck).

2.4% for maternal health, 21.8% for non-communicable diseases, 11.5% for acute diseases and about 64% for other conditions (Table 9.2). In the case of non-communicable and chronic diseases, the proportions were higher for women, urban residents, the separated/divorced and widowed, and those in the highest income quintile.

For outpatient care in the last 12 months in those who needed and received care (Table 9.3), the pattern was the same as that for inpatient care, except that the

proportion of respondents receiving maternal health care was very low (<1%).

There was a relationship between income quintile and non-communicable and chronic conditions, where 32.4% of respondents in the highest income quintile received care, compared to 14.0% of respondents in the lowest income quintile. More urban respondents and more women received care for non-communicable and chronic conditions.

Table 9.3 Distribution of respondents receiving outpatient care, by type of care in the last 12 months and selected background characteristics

| Characteristics | Maternal health (%) | Non-communicable & chronic conditions (%) | Acute illnesses (%) | Other (%) | N |
|------------------------|---------------------|---|---------------------|-------------|--------------|
| Sex | | | | | |
| Men | – | 19.4 | 13.0 | 67.7 | 1 255 |
| Women | 0.9 | 22.9 | 12.2 | 64.1 | 1 298 |
| Age group | | | | | |
| 18–49 | 0.7 | 18.3 | 14.0 | 67.1 | 929 |
| 50–59 | 0.1 | 24.3 | 12.5 | 63.1 | 710 |
| 60–69 | 0.7 | 24.7 | 11.2 | 63.5 | 636 |
| 70+ | 0 | 14.8 | 11.2 | 74.1 | 278 |
| Residence | | | | | |
| Urban | 0.2 | 26.8 | 12.3 | 60.6 | 1 118 |
| Rural | 0.6 | 16.8 | 12.7 | 69.9 | 1 435 |
| Marital status | | | | | |
| Never married | 0 | 28.2 | 15.2 | 56.6 | 34 |
| Currently married | 0.2 | 20.7 | 13.7 | 65.4 | 1 462 |
| Cohabiting | 0 | 9.8 | 24.0 | 66.2 | 19 |
| Separated/divorced | 0.5 | 21.0 | 8.5 | 70.0 | 318 |
| Widowed | 1.0 | 21.8 | 11.7 | 65.5 | 713 |
| Income quintile | | | | | |
| Q1 (lowest) | 0.3 | 14.0 | 13.4 | 72.2 | 361 |
| Q2 | 0.5 | 15.9 | 11.1 | 72.5 | 453 |
| Q3 | 0.5 | 16.6 | 11.5 | 71.4 | 555 |
| Q4 | 0.8 | 21.9 | 14.0 | 63.2 | 558 |
| Q5 (highest) | 0.1 | 32.4 | 12.6 | 54.9 | 621 |
| Total (% , N) | 0.5 | 21.1 | 12.5 | 65.9 | 2 553 |

Table 9.4 Health responsiveness domains

| Group | Domain | Issue |
|---------------|--------------------------------|--|
| Interpersonal | Dignity | Talked 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 |

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 scores are quantitative indicators of the interaction between individuals and their health system. SAGE collected information on respondents' impressions of their most recent inpatient and/or outpatient visit from seven dimensions, including waiting time, being treated respectfully, clear

Table 9.5 Mean health care responsiveness scores* for inpatient and outpatient services, by selected demographic characteristics

| Characteristics | Inpatient (%) | N | Outpatient (%) | N |
|--------------------------|---------------|------------|----------------|--------------|
| Sex | | | | |
| Men | 75.7 | 159 | 66.8 | 1 220 |
| Women | 73.1 | 127 | 64.7 | 1 281 |
| Age group | | | | |
| 18–49 | 74.2 | 95 | 65.8 | 906 |
| 50–59 | 77.7 | 75 | 65.4 | 708 |
| 60–69 | 69.8 | 77 | 65.7 | 614 |
| 70+ | 78.4 | 40 | 66.1 | 274 |
| Residence | | | | |
| Urban | 72.9 | 141 | 65.2 | 1 076 |
| Rural | 76.0 | 140 | 66.1 | 1 421 |
| Marital status | | | | |
| Never married | 78.4 | 5 | 66.0 | 29 |
| Currently married | 75.5 | 172 | 65.7 | 1 424 |
| Cohabiting | 87.2 | 4 | 67.5 | 19 |
| Separated/divorced | 70.5 | 29 | 65.6 | 314 |
| Widowed | 72.7 | 71 | 65.6 | 705 |
| Income quintile | | | | |
| Q1 (lowest) | 75.3 | 44 | 64.1 | 356 |
| Q2 | 75.9 | 49 | 65.4 | 444 |
| Q3 | 77.0 | 59 | 67.9 | 547 |
| Q4 | 76.0 | 51 | 65.1 | 538 |
| Q5 (highest) | 70.1 | 77 | 65.4 | 608 |
| Employment status | | | | |
| Never worked | 78.4 | 5 | 66.0 | 40 |
| Ever worked | 75.5 | 281 | 65.7 | 2 453 |
| Currently working | 87.2 | 143 | 67.5 | 1 642 |
| Not currently working | 70.5 | 138 | 65.6 | 811 |
| Total (% , N) | 72.7 | 281 | 65.6 | 2 497 |

* Responsiveness scores were converted to a range between 0 and 100, with a higher score reflecting better system responsiveness.

Table 9.6 Health insurance coverage (mandatory, voluntary, both, and none), by selected demographic characteristics

| Characteristics | Mandatory (%) | Voluntary (%) | Mandatory & voluntary (%) | None (%) | N |
|------------------------|---------------|---------------|---------------------------|-------------|--------------|
| Residence | | | | | |
| Urban | 2.3 | 39.0 | 2.3 | 56.4 | 1 768 |
| Rural | 0.9 | 32.3 | 1.3 | 65.6 | 2 536 |
| Income quintile | | | | | |
| Q1 (lowest) | 0.5 | 22.9 | 1.0 | 75.5 | 784 |
| Q2 | 0.8 | 28.8 | 1.0 | 69.4 | 821 |
| Q3 | 0.5 | 32.1 | 1.6 | 65.8 | 879 |
| Q4 | 2.4 | 42.0 | 2.1 | 53.6 | 888 |
| Q5 (highest) | 3.1 | 47.4 | 2.5 | 47.0 | 927 |
| Total (% , N) | 1.5 | 35.0 | 1.7 | 61.8 | 4 304 |

explanations, being involved in making treatment decisions, talking privately, happiness with providers, and cleanliness in the health facility. 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.

Overall, inpatient services (responsiveness score of 72.7) were more responsive than outpatient or ambulatory services (score of 65.6), although many more people accessed outpatient care. Similar patterns were seen for both inpatient and outpatient services, where the scores were higher for men, rural respondents and those currently working.

The inpatient system was most responsive for respondents aged 70-plus (mean score 78.4), but for outpatient services the mean scores were lower and did not vary much by age. Respondents not currently working had the lowest mean health care responsiveness scores for both inpatient and outpatient services. The patterns by levels of wealth were inconsistent – with somewhat better results for the middle income quintiles than the poorest or wealthiest. These results suggest the need for health system improvements overall, and particularly in women’s health care, urban centers, and outpatient care.

the population. The proportion of respondents with mandatory health insurance was 1.5% (Table 9.6). More urban respondents had mandatory health insurance (2.3%) compared to (0.9%) for rural respondents. Thirty-five per cent had voluntary health insurance and again the proportion was higher for urban dwellers compared to rural dwelling respondents. There was a strong positive relationship between the proportion with health insurance and income quintile. More respondents in the highest income quintile had mandatory or voluntary health insurance (3.1% and 47.4%) compare to (0.5% and 22.9%) for the lowest income quintile. A higher percentage of wealthier respondents also had both types of insurance coverage. While the “cash and carry” system has recently been replaced with a more equitable health insurance scheme in Ghana, these results from 2007/08 indicate a need for broader coverage and improvements in the registration process for the scheme, especially for lower income people and rural dwellers.

9.3.2 Health insurance

Health insurance provides a hedge against catastrophic expenditures due to an illness, and pools cost risks across



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. There is a well-known interplay between happiness/subjective well-being/life satisfaction and health. An eight-item WHOQOL combined with an adapted version of the Day Reconstruction Method was used in SAGE to assess evaluative well-being and experienced well-being in Ghana.

10.1 Happiness and well-being (the Day Reconstruction Method, or DRM)

Happiness plays an important role for chronically ill people in decreasing mortality and seems to offset the negative impact of chronic illness. The effect of marriage decreasing mortality seems to be mediated through increasing happiness. However, life circumstances, by and large, seem to affect happiness only temporarily and individuals return close to their baseline levels of happiness. The effects of life circumstances such as health, wealth, and marital status on well-being

have been shown to be modest, whereas, the effects of nationality and unemployment have had substantial and consistently negative effects on well-being. Social status also appears to play a role in well-being, but many unanswered questions remain about the measurement of well-being and its determinants of such as age, income and health.

The relationship between subjective well-being (SWB) and aging is not quite clear. Individual aspirations and adaptations to health and life circumstances influence happiness over the life course. As health declines with age, happiness tends to decline – especially among those with poorer health. Yet, circumstances such as marriage and the extent and nature of social support clearly modify SWB, depending on the cultural context. The effect of aging on happiness varies internationally with the decline in life satisfaction with age being more notable in low and middle income countries. In high income countries, this relationship is not monotonic, with a U-shaped relationship with age among the English-speaking high income countries⁵⁹.

Understanding differences in the well-being of older adults across and within countries will have significant implications for national policies. As people live longer and the proportion of the older adult population rises, the way they spend their time, the circumstances in which they live, the nature of their work and leisure lives and changes in these over time, will need to be tracked along with their health and its determinants, in order to inform all aspects of policy-making. Estimates of national well-being (and inequalities within nations) will allow the assessment of how policies affect people's lives and perhaps a more appropriate allocation of resources. Lessons from comparisons within and across countries will provide important insights into what may be responsible for these differences given the varying contexts of these populations.

For the purposes of measurement, the notion of SWB can thus be separated into experienced happiness and evaluative life satisfaction. Experienced happiness, or the affective experiences of daily life, fluctuates from day-to-day depending on how people use their time. SAGE used the Day Reconstruction Method (DRM) to measure this component of SWB⁶⁰. The DRM is a new method of combining experiential and time use assessments. Table 10.1 represents the U-index (a single composite score derived from the DRM) by selected demographic characteristics. In SAGE, an adapted version of the DRM developed with the assistance of Dr Kahneman, was used for measuring experienced well-being (happiness)⁶⁰. The WHO Quality of Life (WHOQoL) eight-item instrument was used for measuring evaluative well-being⁶¹.

10.2 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^{62,63}. 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 recall⁶⁰.

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 day⁶⁴. Women, urban dwellers, and those who are separated, divorced or widowed, had higher scores – meaning, these respondents spent more time in an unpleasant state in an average day. Patterns by age and income levels were not consistent.

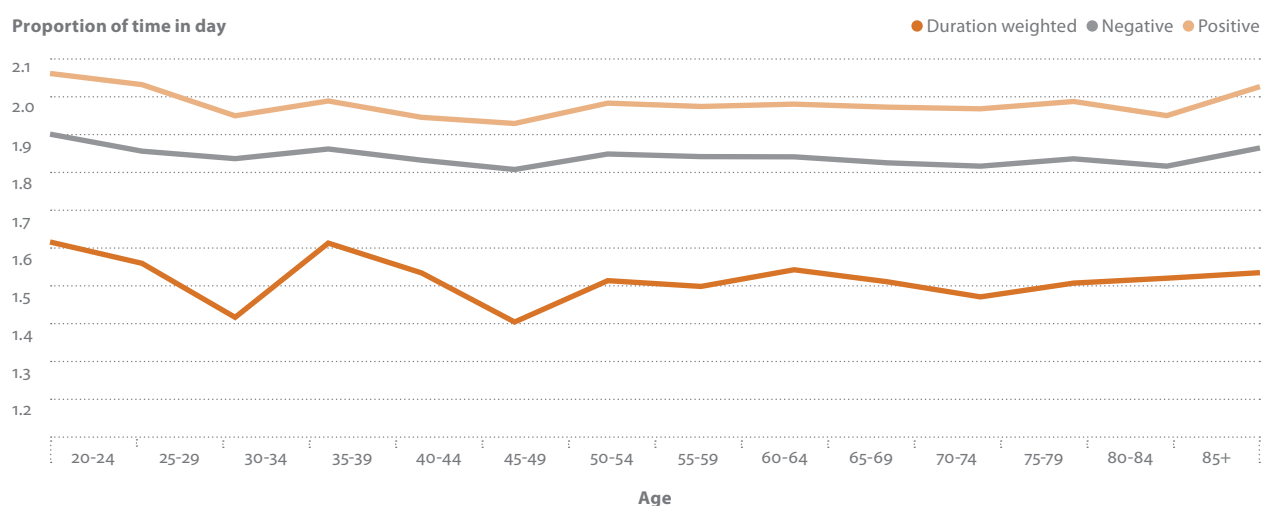
A benefit to using the U-index is that it reduces the interpersonal differences in the use of survey response scales; however, another way to examine the results of the Day Reconstruction Method, is to break down the amount of time during the day that a person spends in a positive state, negative state, or a net affect based on amount of time spent in both positive and negative states (duration weighted net affect). Looking at the

Table 10.1 Among adults age 50-plus, distribution of mean U-index scores, by selected background characteristics

| Characteristics | Mean U-index score | N |
|------------------------|--------------------|--------------|
| Sex | | |
| Men | 1.9 | 2 258 |
| Women | 2.5 | 2 047 |
| Age group | | |
| 50-59 | 2.2 | 1 711 |
| 60-69 | 2.4 | 1 184 |
| 70-79 | 2.0 | 993 |
| 80+ | 2.1 | 417 |
| Residence | | |
| Urban | 2.8 | 1 769 |
| Rural | 1.7 | 2 536 |
| Marital status | | |
| Never | 2.5 | 54 |
| Currently | 1.8 | 2 504 |
| Cohabiting | 0 | 36 |
| Separated/divorced | 2.8 | 553 |
| Widowed | 2.8 | 1 135 |
| Income quintile | | |
| Q1 (lowest) | 1.8 | 784 |
| Q2 | 2.2 | 821 |
| Q3 | 2.3 | 880 |
| Q4 | 2.1 | 888 |
| Q5 (highest) | 2.4 | 927 |
| Mean/total | 2.2 | 4 305 |

results this way, the DRM results showed that people were more likely to spend larger portions of their day in a positive emotional state (Figure 10.1). Consistent with many reports of happiness, duration-weighted net affect was lowest in the middle ages, centered around the ages of 30-34 and 45-49 in Ghana, with more positive overall experienced well-being in earlier and later adulthood (although the higher variability in younger adults ages (18-49) may be due to small sample sizes). Negative affect does not imply lack of positive affect, nor the reverse, and was shown to be more consistent over all age groups than positive affect. Positive affect seemed highest in youngest and oldest adults – and lowest in middle ages 30s to late-40s. This assessment of experienced well-being adds information to the WHOQoL life satisfaction when assessing the impact of happiness on health.

Figure 10.1 Positive affect, negative affect and duration weighted net affect, by age



Source: SAGE 2007-2010

Table 10.2 Distribution of mean WHOQoL scores, by selected demographic characteristics

| Characteristics | Mean WHOQoL score* | N |
|-----------------------------------|--------------------|--------------|
| Sex | | |
| Male | 52.2 | 2 259 |
| Female | 56.3 | 2 048 |
| Age group | | |
| 50-59 | 50.9 | 1 712 |
| 60-69 | 53.8 | 1 184 |
| 70+ | 58.5 | 1 411 |
| Residence | | |
| Urban | 52.3 | 1 770 |
| Rural | 55.5 | 2 537 |
| Education | | |
| No education | 57.0 | 2 309 |
| Less than primary school | 54.4 | 443 |
| Primary school completed | 52.1 | 468 |
| Secondary education completed | 49.5 | 172 |
| High school (or equiv.) completed | 49.6 | 732 |
| College/university completed | 46.8 | 147 |
| Postgraduate degree completed | 44.6 | 7 |
| Marital status | | |
| Never married | 59.4 | 54 |
| Currently married | 52.4 | 2 505 |
| Cohabiting | 45.6 | 36 |
| Separated/divorced | 54.5 | 553 |
| Widowed | 58.1 | 1 135 |
| Income quintile | | |
| Q1 (lowest) | 59.0 | 785 |
| Q2 | 56.5 | 821 |
| Q3 | 56.1 | 880 |
| Q4 | 52.2 | 889 |
| Q5 (highest) | 48.2 | 927 |
| Total | | 4 302 |

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



10.3 Quality of life and satisfaction

In SAGE, the 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 QoL 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”⁶⁵. The important feature of this definition is that QoL is a matter of the individual’s perception of the life that he or she is leading.

Based on this definition, it was decided that a multi-dimensional tool was needed to assess quality of life. WHOQoL has been developed through a collaborative effort between international partners, including both developed and developing contexts. It has been used in many different study populations, including a special

adaptation for the elderly as part of a study funded by the European Commission^{61,65,66}. The measure places primary importance on the perception of the individual and their perception of their own quality of life. Its well-established psychometric properties, including an eight-item short version, have been shown to have good cross-cultural performance^{61,66}. The 8-item version used in SAGE was shown to have good cross-cultural performance⁶⁷. Table 10.2 presents results of the WHOQoL scores for Ghana by selected demographic characteristics, with the ranging from 0 to 100, where a *lower* score reflects *better* quality of life.

Women reported higher mean WHOQoL score (56.3, versus 52.2 among men), while increasing age was also associated with higher scores, ranging from 50.9 for the youngest age group to 58.5 for the oldest. This means worse reported quality of life for women and with increasing age. It was also observed that rural respondents had higher scores (worse QoL) than their urban counterparts (55.5 versus 52.3), while a decreasing trend in terms of education was evident: respondents with no education reported the highest score (57), which decreases to a 46.8 among respondents who had completed college/university. Another wide difference was seen between respondents belonging to the poorest income quintile, with a score of 58.9, compared to one of 48.3 among the richest quintile.



11. Emerging policy issues for the elderly

11.1 Madrid International Plan of Action on Ageing

Ageing as a policy issue received international recognition at the first World Assembly on Ageing held in Vienna, Austria in 1982 to address ageing concerns and its implications for national development. Since then several ageing-related conferences have been held including the 1984 International Conference on Population and Development, the Twenty Second Ordinary Session of the OAU Labour and Social Affairs Commission held in Windhoek, Namibia in 1999, the Expert Meeting hosted by the African Union (AU) in 2000, The Second World Assembly on Ageing held in Madrid in 2002, and the 38th Session of Heads of State and Government held in Durban, South Africa in 2002. These have stimulated some national Governments to create or update policy interventions, yet more still have yet to address the challenges posed by ageing populations.

11.2 National and state policies on ageing

Increasing numbers of older persons have policy implications across many sectors, including health, social services, housing, transportation, employment and agriculture.

Ghana has a draft national ageing policy prepared in 2002 with the goal of achieving overall social, economic and cultural re-integration of older persons into mainstream society, to enable them to participate fully, as far as practicable, in the national development process by the Ministry of Employment and Social Welfare. Unfortunately, for multiple reasons, the policy has not been implemented – although it was revisited in July 2010 through, “Ageing with Security and Dignity”⁶⁸.

11.3 Emerging research issues

The ageing and older population of a country is a vital resource – particularly from the view point of wisdom, experience and skills which they bequeath to the younger generation. Despite their growing numbers, the health and care of the elderly population has not been accorded optimal attention in Ghana and in other low-income countries. The current demographic dynamics of a rapidly increasing population of older persons within a period of social and economic challenges have implications for the delivery of health services, housing, transportation, social protection and other services needed by older persons to improve their standard of living.

In Ghana, the emerging policy challenges and issues that need to be researched in accord with the draft policy, generally include:

- Demographic dynamics of ageing
- Ageing and fundamental human rights
- Ageing and the development challenge
- Ageing and poverty
- Old age and health challenges
- Ageing and the living environment
- Ageing and gender

The SAGE provides major complementary information on older persons in Ghana. Together with the National Census and other national surveys (demographic and health surveys and living standards surveys) a lot of research and information on ageing can be harnessed to adequately inform the draft national ageing policy and in the implementation of programmes to improve the living standards of older persons in Ghana.



Abbreviations and acronyms

| | | | |
|-------------|---|---------------|--|
| ADL | activities of daily living | Sx | symptom-based reporting of condition |
| BDS | backward digit span | VF | verbal fluency |
| BMI | body mass index | VR | verbal recall |
| CSO | civil society organization | WHO | World Health Organization |
| CTx | current therapy | WHODAS | World Health Organization Disability Assessment Schedule |
| DALY | disability adjusted life years | WHOQoL | World Health Organization Quality of Life (measure) |
| DESA | Department of Economic and Social Affairs | WHR | waist-to-hip ratio |
| DRM | day reconstruction method | WHS | World Health Survey |
| EA | enumeration area | YM | younger man |
| FDS | forward digit span | YW | younger woman |
| GDP | gross domestic product | | |
| GHC | Ghanaian old cedi | | |
| GHS | Ghana Health Service | | |
| HH | Household | | |
| IADL | instrumental activities of daily living | | |
| M/F | male/female | | |
| MOH | Ministry of Health | | |
| NGO | non-governmental organization | | |
| OM | older man | | |
| OOP | out-of-pocket | | |
| OW | older woman | | |
| PSU | primary sampling unit | | |
| RTx | recent therapy | | |
| SAGE | Study on Global Ageing and Adult Health | | |
| SR | self-report | | |



References

1. United Nations Population Division, DESA. *The World Population Prospects: The 2010 Revision*. New York: United Nations. 2011.
2. The global burden of disease update, 2004. Geneva: World Health Organization. 2008. www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html
3. Ghana Statistical Service: Ghana Demographic and Health Survey GDHS, 2008. www.measuredhs.com/pubs/pdf/GF14/GF14.pdf
4. Ghana National Population and Housing Census. Ghana Statistical Service, Ministry of Finance and Economic Planning, Accra, Ghana. 2000.
5. Ghana National Population and Housing Census. Ghana Statistical Service, Ministry of Finance and Economic Planning, Accra, Ghana. 2010
6. UNESCO. End of Decade Notes on Education for All : Youth and Adult Literacy. Bangkok, EAPRO, ROSA: UNICEF. 2012. www.unesco.org/bangkok; www.unicef.org/eapro; www.unicef.org/rosa; and, www.unicef.org/southasia.
7. National Literacy Rates, UNESCO institute for Statistics 2012, <http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=210>
8. WHO Department of Health Statistics and Information Systems, 2008.
9. Ministry of Health (MOH) Publication. Programme of Work: The Ghana Health Sector, 2010.
10. World Health Statistics. Geneva: World Health Organization. 2008. www.who.int/gho/publications/world_health_statistics/en/index.html
11. Global Health Expenditure Database. Geneva: World Health Organization. 2012.
12. World Health Statistics. Geneva: World Health Organization. 2010.
13. National Health Accounts. Geneva: World Health Organization. 2007. www.who.int/nha/country/gha/en/
14. WHO SAGE website 2012. www.who.int/healthinfo/sage
15. National Report of the World Health Survey in Ghana, 2002–2004. Geneva: World Health Organization. 2006.
16. International Standard Classification of Education (ISCED) 1997. UNESCO (re-edition) 2006. www.uis.unesco.org/Library/Documents/isced97-en.pdf
17. Pardeshi GS. Age heaping and accuracy of age data collected during a community survey in the Yavatmal district, Maharashtra. *Indian J Community Med*. 2010;35(3):391-5.
18. Siegel JS, Swanson DA (eds.) *The methods and materials of demography*. 2nd ed. San Diego, California: Elsevier Academic Press. 2004.
19. Ghana National Pensions Regulatory Authority. Fact Sheet, March 2012 (http://npra.gov.gh/site/index.php?option=com_content&view=article&id=92:fact-sheets-on-)
20. International Labor Organization (ILO). International Standard Classification of Occupations (ISCO-88). 1987. www.ilo.org/public/english/bureau/stat/isco/index.htm
21. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJL. Household catastrophic health expenditure: A multicountry analysis. *Lancet* . 2003;362(9378):111–7.
22. Robison J, Fortinsky R, Kleppinger A, Shugrue N, Porter M. A broader view of family caregiving: effects of caregiving and caregiver conditions on depressive symptoms, health, work, and social isolation. *J Gerontol: Soc Sci*. 2009; 10.1093/geronb/gbp015
23. Fernández J-L, Forder J. *How can European States design efficient, equitable and sustainable funding systems for long-term care for older people?* Joint HEN/European Observatory on Health Systems and Policies Policy Brief. Copenhagen, World Health Organization on behalf of the European Observatory on Health Systems and Policies. 2009.
24. Hurd MD, Martorell P, Delavande A, Mullen KJ, Langa KM. Monetary costs of dementia in the United States. *NEJM*. 2013; 368:1326–34.
25. Gibson MJ, Houser A. Valuing the invaluable: a new look at the economic value of family caregiving. *Issue Brief (Public Policy Inst (Am Assoc Retired Pers))*. 2007;(1B82):1-12.
26. Ferreira M, Keikelame M, Mosaval Y. *Older women as carers to children and grandchildren affected by AIDS: A study towards supporting the carers*. Cape Town: University of Cape Town, Institute of Ageing in Africa. 2001.
27. Mugisha J, Scholten F, Owilla S, Naidoo N, Seeley J, Chatterji S, Kowal P, Boerma T. Caregiving responsibilities and burden among older people by HIV status and other determinants in Uganda. *AIDS Care*. 2013 Feb 11. DOI: 10.1080/09540121.2013.765936
28. STEPwise approach to risk factor surveillance. Geneva: World Health Organization. 2009. www.who.int/chp/steps/resources/updates/en/index.html
29. Clausen T, Rossow I, Naidoo N, Kowal P. Diverse alcohol drinking patterns in 20 African countries. *Addiction*. 2009;104(7):1147–54. doi: 10.1111/j.1360-0443.2009.02559.x.
30. Peltzer K, Phaswana-Mafuya N. Tobacco use and associated factors in older adults in South Africa. *J Psych Afr*. 2012;22(2):283–8.
31. *Guidelines for Controlling and Monitoring the Tobacco Epidemic*. Geneva: World Health Organization. 1998.
32. STEPwise approach to risk factor surveillance. Geneva: World Health Organization. 2009.

33. Recommended Fruits and Vegetable Intake. Geneva: World Health Organization. 2009.
34. Global Health Observatory Data Repository. Geneva: World Health Organization. 2011. <http://apps.who.int/ghodata/>
35. Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012;380(9838):219-29.
36. Lim SS, Vos T, Flaxman AD, Danaei G, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 012;380(9859):2224-60.
37. Armstrong T, Bull F. Development of the World Health Organization Global Physical Activity Questionnaire (GPAQ). *J Public Health*. 2006;14(2):66-70.
38. WHO/UNICEF Joint Monitoring Programme core questions on drinking-water and sanitation for household surveys. Geneva: World Health Organization. 2006. whqlibdoc.who.int/publications/2006/9789241563260_eng.pdf
39. Salomon JA, Mathers CD, Chatterji S, Sadana R, Ustun TB, Murray CJL. Quantifying individual levels of health: definitions, concepts and measurement issues (Chapter 26). In: Murray CJL, Evans DB (eds.). *Health Systems Performance Assessment: Debates, Methods and Empiricism*. Geneva: World Health Organization. 2003.
40. Ustun TB, Chatterji S, Kostanjsek N, Rehm J, et al. Developing the World Health Organization Disability Assessment Schedule 2.0. *Bull World Health Organ*. 2010;88(11): 815-23.
41. Holder Y, Peden M, Krug E, Lund J, Gururaj G, Kobusingye O, (eds). *Injury surveillance guidelines*. Geneva: World Health Organization. WHO/NMH/VIP/01.02. 2001.
42. Ghana Ministry of Health, Annual Report 2008.
43. Ghana Ministry of Health, Annual Report 2009.
44. Seidell JC. Time trends in obesity: An epidemiological perspective. *Horm. Metab. Res*. 1997;29:155-8.
45. Seidell JC. Waist circumference and waist/hip ratio in relation to all-cause mortality, cancer and sleep apnea. *Eur J Clin Nutr*. 2010;64(1):35-41
46. Janssen I, Katzmarzyk PT, Ross R. Body Mass Index is inversely related to mortality in older people after adjustment for waist circumference. *JAGS*. 2005;53(12):2112-8.
47. Huxley R, Mendis S, Zheleznyakov E, Reddy S, Chan J. Body mass index, waist circumference and waist:hip ratio as predictors of cardiovascular risk--a review of the literature. *Eur J Clin Nutr*. 2010; 64(1):16-22.
48. Heim N, Snijder MB, Heymans MW, Deeg DJ, Seidell JC, Visser M. Optimal cutoff values for high-risk waist circumference in older adults based on related health outcomes. *Am J Epidemiol*. 2011; 174(4):479-89.
49. Price GM, Uauy R, Breeze E, Bulpitt CJ, Fletcher AE. Weight, shape, and mortality risk in older persons: elevated waist-hip ratio, not high body mass index, is associated with a greater risk of death. *Am J Clin Nutr*. 2006;84 (2):449-60
50. Biritwum RB, Gulaid J, Amaning AO. Pattern of diseases or conditions leading to hospitalization at Korle Bu Teaching Hospital, Ghana in 1996. *Ghana Med J*. 2000;34(4):197-205.
51. Bohannon RW. Hand-grip dynamometry predicts future outcomes in aging adults. *J Geriatr Phys Ther*. 2008;31(1):3-10.
52. Ling CH, Taekema D, de Craen AJ, Gussekloo J, Westendorp RG, Maier AB. Handgrip strength and mortality in the oldest old population: the Leiden 85-plus study. *CMAJ*. 2010;182(5):429-35.
53. McDade TW, Williams S, Snodgrass JJ. What a drop can do: dried blood spots as a minimally invasive method for integrating biomarkers into population-based research. *Demography*. 2007; 44(4):899-925.
54. Fomovska A, McDade T, Williams S, Lindau S. *Blood spot measurement in Wave 1 of the National Social Life Health and Aging Project (NSHAP)*. NORC and the University of Chicago, Chicago, IL, USA. 2008.
55. Koram KA, Owusu-Agyei S, Fryauff DJ, Anto F, Atuguba F, Hodgson A, Hoffman SL, Nkrumah FK. Seasonal profiles of malaria infection, anaemia, and bednet use among age groups and communities in northern Ghana. *Trop Med Int Health*. 2003; 8(9):793-802.
56. Anaemia in Older Adults: UpToDate, April, 2013. www.uptodate.com/contents/anemia-in-the-older-adult
57. Negin J, Cumming RG. HIV infection in older adults in sub-Saharan Africa: extrapolating prevalence from existing data. *Bull World Health Organ*. 2010;88(11): 847-53.
58. Negin J, Nemser B, Cumming R, Lelera E, Ben Amor Y, Pronyk P. HIV Attitudes, Awareness and Testing Among Older Adults in Africa. *AIDS Behav*. 2011 Jul 8. [Epub ahead of print]
59. Deaton A. Income, health, and well-being around the world: evidence from the Gallup World Poll. *J Econ Perspect*. 2008; 22(2):53-72.
60. Kahneman D, Krueger AB, Schkade DA, Schwarz N, Stone AA. A survey method for characterizing daily life experience: The Day Reconstruction Method. *Science*. 2004;306(5702):1776-80.
61. Power M, Quinn K, Schmidt S; WHOQOL-OLD Group. Development of the WHOQOL-old module. *Qual Life Res*. 2005;14(10): 2197-214.
62. Csikszentmihalyi M, Larson R. Validity and reliability of the Experience-Sampling Method. *J Nerv Ment Dis*. 1987;175:526-36.
63. Stone AA, Shiffman SS, DeVries MW. Ecological momentary assessment. In: Kahneman D, Diener E, Schwartz N (eds.). *Well-being: The foundations of hedonic psychology* (pp. 26-39). New York: Russell Sage Foundation. 1999.
64. Krueger AB, Kahneman D, Schkade D, Schwarz N, Stone AA. National time accounting: The currency of life. In: Krueger AB (ed). *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*. Cambridge: NBER Books. 2009.
65. WHOQOL Group. Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychol Med*. 1998; 28(3):551-8.
66. Schmidt S, Muhlan H, Power M. The EUROHIS-QOL 8-item index: psychometric results of a cross-cultural field study. *Eur J Public Health*. 2006;16(4):420-8.
67. da Rocha NS, Power MJ, Bushnell DM, Fleck MP. The EUROHIS-QOL 8-item index: comparative psychometric properties to its parent WHOQOL-BREF. *Value Health*. 2012;15(3):449-57. doi: 10.1016/j.jval. 2011.11.035.
68. Ghana National Ageing Policy. Accra: Ministry of Employment and Social Welfare, 2002. www.ghanaweb.com/GhanaHomePage/blogs/blog.article.php?blog=3442&ID=1000008901



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

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

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 | – |
| Totals | 28 | 116 | 390 | |

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.