Trends in Health and Well-Being of the Older Populations in SAGE Countries: 2014–2015

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By Wan He, Paul Kowal, and Nirmala Naidoo

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Introduction

In 2019, the global population aged 60 and older will surpass 1 billion individuals (U.S. Census Bureau, 2018). This represents a significant milestone in population aging worldwide. It is also an important juncture to pause to reflect on the state of these older people, given that their number is expected to double in about 30 years, reaching 2 billion by the year 2048.

The extent and pace of population aging are affected by enduring low fertility levels and rising life expectancy worldwide. As of 2018, 128 countries have total fertility rates at or below a replacement level of 2.1 (U.S. Census Bureau, 2018), with most of these countries reporting a declining or stable rate (World Bank, 2017). Life expectancy at birth increased by 4.8 years from 2000 to 2018, with life expectancy at birth increasing by 7.2 years on average over this period in low-income countries compared to 2.1 years in high-income countries (United Nations Population Division, 2017). Life expectancy at age 60 also increased by 1.6 years overall, 1.5 years in low-income countries, and 2.1 years in high-income countries.

However, the pace of this demographic transition has not been uniform across world regions, or even in different locations within countries (He, Goodkind, and Kowal, 2016). Globally, the difference between countries with the highest life expectancy at birth in 2018 (Japan and Singapore, 85.5 years) and lowest (Chad, 51.0 years) is more than 34 years (U.S. Census Bureau, 2018). In the United States, there is a 20-year gap in life expectancy at birth when comparing among U.S. counties, with that gap increasing from 1980 to 2014 (Dwyer-Lindren et al., 2017). Much of the geographic disparity in the United States is attributed to a combination of social, economic, and demographic characteristics; behavioral and metabolic risks; and health care factors. These same factors are at play in most countries throughout the world; socioeconomic status and social determinants of health are considerable drivers of cross-country and intracountry differences. Wealth begets health. For example, in the United States, the increase in gross domestic product per capita from US$36,000 to US$55,000 between 2000 and 2014 also saw a parallel increase in the number of healthy older adults (Davis et al., 2017; World Bank, 2018b). Yet health also begets wealth, where evidence is building that shows fitter people may be more productive, get paid more, and have lower health costs over time (Frenk, 2004; Bachmann et al., 2015; Willis et al., 2015; Goettler, Grosse, and Sonntag, 2017). This bidirectional relationship will become more important over time for economies with aging workforces, especially for older women without sufficient social support (Katz, 2004; Katz, 2005; Bloom et al., 2015; Onarheim, Iverson, and Bloom, 2016).

It is known that people are living longer on average: estimates for life expectancy at birth and at age 60 continue to show improvements. Healthy life expectancy (HALE) is also improving on average, but may not be increasing at the same rate as life expectancy overall.[1] Over the period 1990 to 2016, global estimates showed that HALE increased less than life expectancy, based on the Global Burden of Disease (GBD) 2016 study (GBD 2016 DALYs and HALE Collaborators, 2017). The World Health Organization (WHO) estimated that two countries had a lower HALE in 2015 than in 2000 (Syria, –5.9 years and Iraq, –0.7 years), while four countries, all in Africa (Botswana, Eritrea, Rwanda, and Zambia), saw HALE gains of 15 years or more over this same 15-year period between the years 2000 and 2015 (WHO, 2016).

[1] Healthy life expectancy is the average number of years that a person can expect to live in full health by taking into account years lived in less than full health due to disease and/or injury (World Health Organization, 2014).

Whether people will be living in full or less-than-full health in old age depends on a number of factors, including economic development level and geography. The vast majority of the world's population live in less developed countries. In 2018, these countries were home to 83 percent of people of all ages, and 68 percent of those aged 60 and older which is expected to rise to 79 percent by 2050 (U.S. Census Bureau, 2018). That means a projected 1.65 billion adults aged 60 and older residing in less developed countries among an estimated 2.08 billion worldwide by 2050.

These demographic estimates and projections suggest the need to focus additional attention on the situation of older adults in low- and middle-income countries. One such effort is the WHO Study on global AGEing and adult health (SAGE), which includes six countries—Ghana, China, India, Mexico, Russia, and South Africa. These six countries comprised 40.5 percent of the world's total population and 41.8 percent of the world's population aged 60 and older in 2018. SAGE is a longitudinal survey that completed Wave 1 over the 2007–2010 period and Wave 2 data collection was completed by most countries in 2014–2015.

This report summarizes key results and unique analyses for the three SAGE countries with data available from Wave 2—Ghana, Mexico, and South Africa. Among these three countries, Ghana is classified as a lower-middle-income country, while Mexico and South Africa are classified as upper-middle-income countries according to the latest estimates from the World Bank (World Bank, 2018a). Combined, their populations included an estimated 209 million people in 2018, which is projected to increase to 272 million by 2050 (U.S. Census Bureau, 2018). An estimated 20 million people aged 60 and older lived in these three countries as of 2018. The older population is projected to grow at a much faster rate than that of the total population and will more than double to 54 million by 2050.

The report starts with an overview of aging in Ghana, Mexico, and South Africa, using the population estimates and projections data from the U.S. Census Bureau's International Data Base and the United Nations Population Division, as well as health data from the WHO and the Global Burden of Disease study. The findings sections are based on analyses of SAGE data Wave 2 (2014–2015), and longitudinal comparisons between Wave 2 and Wave 1 (2007–2010), to take advantage of insights provided by SAGE's cross-sectional and longitudinal data. Topics covered include self-reported health, quality of life and life satisfaction, chronic conditions, behavioral and systemic risk factors, disability, cognition, and health insurance coverage. A final section summarizes the results and discusses the impact of this study.

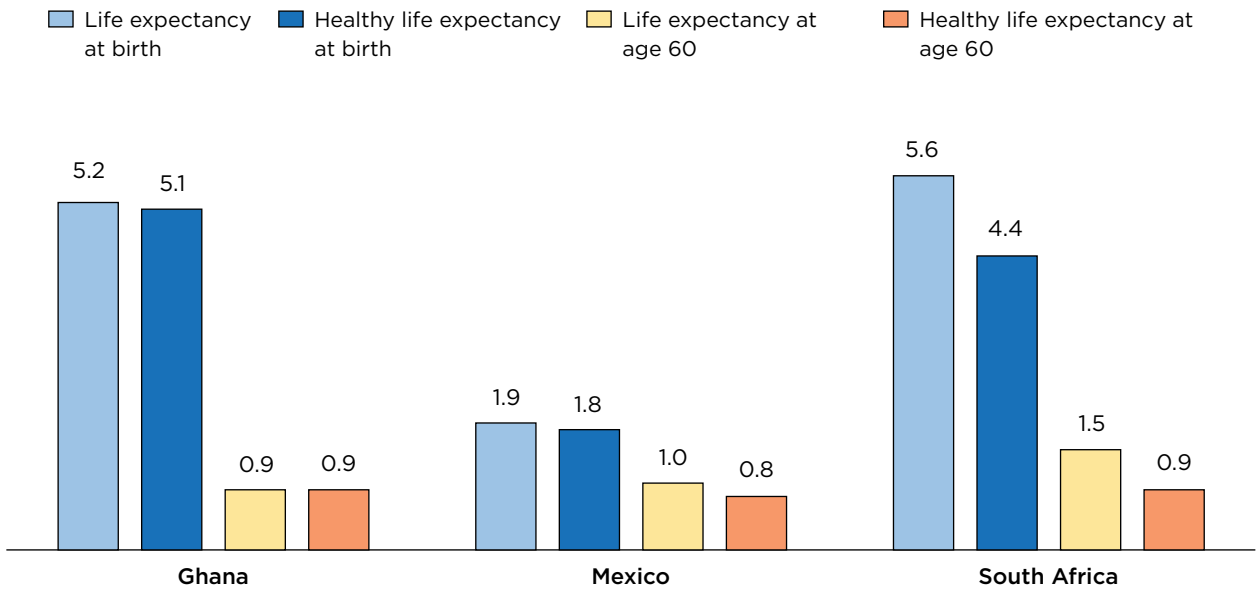
For information on the sample size and characteristics with standard errors of the study population in each of these three SAGE countries, see appendix Table A-1. All comparisons across countries were age standardized using the WHO World Standard Population. All comparative statements in this report have undergone statistical testing, and comparisons are significant at the 90 percent confidence level unless noted otherwise.

Aging and Health in Ghana, Mexico, and South Africa

In 1993, a leading gerontologist in Ghana wrote about the emerging issue of care for older Ghanaians (Apt, 1993). Similarly, by 2000, the issue of growing older in a "new" South Africa was being discussed (Ferreira, 2000). Between then and now, older adults have "emerged" in this region (de Graft Aikins and Apt, 2016), just as they have worldwide. Ghana's 60-and-older population, at 1.8 million in 2018, represented 6.5 percent of the country's total population (U.S. Census Bureau, 2018). By 2050, it is projected to more than triple to reach 5.8 million, equivalent to 11.1 percent of the total population. In Mexico, currently already one in ten are aged 60 and over (13.5 million, 10.7 percent of the total population), and projections forecast more-than-doubling growth to reach 35.8 million (23.7 percent) by 2050. In South Africa, the 60-and-older population numbered 4.9 million in 2018, representing 8.9 percent of the total population, and also is projected to more than double in the next three decades, reaching 12.6 million and 18.4 percent by 2050.

Looking at the timeframe of 2000–2015, Ghana's life expectancy increased by 5.2 years, and its healthy life expectancy at birth increased 5.1 years (Figure 1). The increase in life expectancy at birth and healthy life expectancy at birth for Mexico was 1.9 years and 1.8 years, respectively, and for South Africa, 5.6 years and 4.4 years, respectively. Over this same period, Ghana gained, for both sexes combined, 0.9 years of life expectancy at age 60, and 0.9 years of healthy life expectancy at age 60. This compares to increases in life expectancy and healthy life expectancy, both at age 60, of 1.0 years and 0.8 years, respectively, in Mexico, and 1.5 years and 0.9 years, respectively, in South Africa.

Figure 1.
Gains in Life Expectancy and Healthy Life Expectancy at Birth and Age 60 for Ghana, Mexico, and South Africa: 2000–2015
(In years)



Source: World Health Organization, Global Health Observatory, 2016.

Between the two waves of SAGE surveys (approximately 2008 and 2015), the burden of noncommunicable disease (NCD) morbidity grew by 8.2 percent and mortality by 7.7 percent in Ghana, compared to 5.2 percent and 4.3 percent, respectively, in Mexico, and 10.9 percent and 12.0 percent, respectively, in South Africa (GBD 2016 Causes of Death Collaborators, 2017).[2, 3] The burden of NCDs increased for men aged 60 in Ghana, from 59 percent of the burden from all diseases in 2000, to 62 percent in 2008, and 66 percent in 2016. For older Ghanaian women at the age of 60, the NCD burden represented a higher share than for men, and rose from 71 percent in 2000 to 72 percent in 2008 and to 76 percent in 2016. The rates in Mexico were at levels higher than in Ghana, but followed similar gendered patterns, reaching 88 percent in men and 93 percent in women in 2016. The NCD burden levels and increases over time in South Africa were similar to estimates in Ghana. However, the high levels of HIV infections as well as antiretroviral drugs to treat this infection may be contributing to accelerated aging and earlier onset and higher levels of NCDs, a situation that gives rise to considerable concern (Guaraldi et al., 2011; Schouten et al., 2014; Mpondo, 2016; Magodoro, Esterhuizen, and Chivese, 2016).

[2] The World Health Organization defines noncommunicable diseases (NCDs) as comprising mainly cardiovascular diseases, cancers, diabetes, and chronic lung diseases (WHO, 2011).

[3] The WHO global burden of disease is a time-based measure that combines years of life lost due to premature mortality and years of life lost due to time lived in states of less than full health. The global burden of disease uses the disability-adjusted-life-year (DALY) metric to assess the burden consistently across diseases, risk factors, and regions (WHO, 2018).

Findings

Self-Reported Health

Self-reported health is a low cost and efficient mechanism for assessing population health and has been found to generate reliable results even for individuals in settings of low education and poor access to health systems (Kuhn, Rahman, and Menken, 2006). Looking specifically at the SAGE Wave 2 data for those aged 50 and over, a majority of older adults in Ghana (63.2 percent) and South Africa (54.0 percent) reported good health (Table 1).[4, 5] However, only four in ten older Mexicans (42.1 percent) reported that they were in good health. In all three countries, men were more likely to report being in good health than women. The sex difference is especially noticeable in South Africa, with an 18 percentage-point gap (63.7 percent of men vs. 46.5 percent of women).

In general, age was negatively associated with self-reported good health. The decline by age is best illustrated by data from Ghana. Three-fourths (75.3 percent) of the youngest age cohort, those aged 50–59, reported good health, and the proportion dropped with increasingly older age groups, reaching only a third (33.4 percent) for those aged 80 and older.

[4] In this report, "older population" from the SAGE data refers to those aged 50 and over.

[5] The health question asked was, "In general, how would you rate your health today?" Response choices were very good, good, moderate, bad, and very bad. For this report, good health includes those responding very good or good.

Table 1.
Percentage of Population Aged 50 and Over Reporting Good Health by Country and Selected Characteristics: 2014–2015

Characteristics	Ghana	Mexico	South Africa
Total	**63.2**	**42.1**	**54.0**
Age Group			
50–59	75.3	44.7	65.5
60–69	63.0	41.0	49.6
70–79	43.6	37.3	37.7
80 and older	33.4	42.5	38.1
Sex			
Male	68.3	46.5	63.7
Female	58.6	38.7	46.5
Residence			
Urban	64.1	40.5	54.6
Rural	62.4	47.8	51.2
Marital Status			
Never married	74.2	46.4	52.0
Currently married	67.1	44.0	60.9
Cohabiting	81.6	32.8	57.7
Separated/divorced	54.2	48.1	63.7
Widowed	54.6	32.2	38.2
Education			
No formal education	61.9	49.6	48.7
Less than primary	61.7	34.4	49.0
Primary school completed	60.9	37.6	47.8
Secondary school completed	65.4	38.1	59.4
High school completed	67.7	48.9	60.1
College completed	70.0	65.4	74.4
Post graduate degree completed	59.5	89.6	57.6
Income Tertile			
Lowest	53.6	44.5	53.3
Middle	66.0	37.8	43.2
Highest	72.9	46.7	66.0

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

The relationship between wealth and health differed from that between age and health. In all three countries, those in the highest-income tertile were more likely to report good health than people in the lowest tertile. The majority of older people in these three countries are either married or widowed (Table A-1). The disadvantage of widowhood compared to marriage is illustrated through the lower proportion of widows reporting good health as compared to their married counterparts (Ghana, 54.6 percent of widowed vs. 67.1 percent of married; Mexico, 32.2 percent vs. 44.0 percent; and South Africa, 38.2 percent vs. 60.9 percent; Table 1). In Mexico and South Africa, a higher proportion among those who were divorced or separated reported being in good health compared to widowed persons, with the gap particularly evident among older South Africans (63.7 percent of divorced/separated vs. 38.2 percent of widowed).

Quality of Life and Life Satisfaction

Well-being was recently described in a public health program review as "more than health" and "more than happiness"—well-being is both a communal and individual aspiration (Dooris, Farrier, and Froggett, 2017). While this points to a high degree of subjectivity, twin-family studies and personality assessments showed a degree of heritability in happiness and life satisfaction (Rietveld et al., 2013; Bartels, 2015). More specific measures, such as positive and negative emotions, may also show a more complex association with health (Steptoe, Deaton, and Stone, 2015; Dolan, Kudrna, and Stone, 2017; Kitayama and Park, 2017; Miret et al., 2017; He, Weingartner, and Sayer, 2018). A detailed set of measures are needed to get a fuller picture of subjective well-being. SAGE employed a number of commonly used measures, including those to examine evaluative and experienced well-being.

There have long been challenges for researchers and clinicians on how best to measure subjective quality of life or life satisfaction, where single and composite measures have both been used extensively with new insights into the relationships with health. These well-being measures are increasingly being used as high-level national health and wealth/development indicators (Stiglitz, Sen, and Fitoussi, 2009; Ralston, et al., 2018). For evaluative well-being, SAGE used the eight-item version of the World Health Organization Quality of Life instrument (WHOQOL) to create a multidimensional assessment of an individual's perceptions of satisfaction. These assessments vary by the context of the individual's culture and value systems as well as personal goals, standards, and concerns. On a scale of 0 to 100, with 100 being best quality of life, older Ghanaians and Mexicans had similar mean WHOQOL scores of about 66 (Table 2), with the score for South Africans a little lower, at 64.6.

Socioeconomic status showed a clear positive association with quality of life. In all three countries, those in the highest tertile of income had a higher WHOQOL score than those in the lowest tertile. Educational attainment showed a linear correlation with WHOQOL scores. In all three countries, the vast majority of those who had a college degree or a post-graduate degree reported good quality of life, with mean WHOQOL scores in the 70s or 80s.

In contrast, age was inversely related to WHOQOL scores in Ghana and South Africa; as age increased, the WHOQOL scores declined. Ghanaians aged 50–59 scored a 70.0, in contrast to 55.0 for those aged 80 and older (Table 2). A similar pattern existed in South Africa, 67.7 for those aged 50-59 and 55.5 for those aged 80 and older. In all three countries, the WHOQOL scores for those currently married were higher than for those who were widowed (Ghana, 67.9 vs. 62.9; Mexico, 67.2 vs. 65.4; and South Africa, 67.8 vs. 60.0 for married and widowed, respectively). In addition, older women had lower quality of life scores than their male counterparts (Ghana, 68.5 vs. 64.4; Mexico, 67.5 vs. 66.2; and South Africa, 67.2 vs. 62.6, for men and women, respectively).

SAGE also included an evaluative well-being question where respondents were asked how they viewed their life on an imaginary ladder with steps labeled from 0 to 10, where 0 represents the worst possible life and 10 represents the best possible life (Bjørnskov, 2010). Based on the general scoring thresholds for this question, older people in Mexico would be considered "thriving" on average, with a mean score of 7.5, while Ghanaians and South Africans, with mean scores of 5.7 and 5.3, respectively, would be considered as "struggling" (Gallup Inc., 2009).[6]

[6] Gallup considers people who report that they presently stand on step 7 or higher to be "thriving," steps 5–6 to be "struggling," and steps 0–4 as "suffering" (Gallup Inc., 2009).

Table 2.

Mean Score of WHOQOL for Population Aged 50 and Over by Country and Selected Characteristics: 2014–2015

Characteristics	Ghana	Mexico	South Africa
Total	**66.3**	**66.8**	**64.6**
Age Group			
50–59	70.0	67.1	67.7
60–69	66.7	66.7	64.1
70–79	60.6	66.7	61.1
80 and older	55.0	65.2	55.5
Sex			
Male	68.5	67.5	67.2
Female	64.4	66.2	62.6
Residence			
Urban	67.3	66.8	64.1
Rural	65.4	66.8	66.6
Marital Status			
Never married	71.6	67.1	61.4
Currently married	67.9	67.2	67.8
Cohabiting	72.2	63.8	61.2
Separated/divorced	63.0	68.2	66.8
Widowed	62.9	65.4	60.0
Education			
No formal education	64.1	65.2	60.4
Less than primary	66.1	65.4	60.0
Primary school completed	66.2	66.1	62.3
Secondary school completed	70.5	67.1	66.6
High school completed	67.6	70.9	70.7
College completed	73.3	72.7	83.3
Post graduate degree completed	86.1	81.6	74.1
Income Tertile			
Lowest	65.1	64.7	60.9
Middle	67.2	65.9	60.3
Highest	69.0	69.7	71.5

Note: WHOQOL is the World Health Organization Quality of Life instrument, where 0=worst quality of life, 100=best quality of life.
Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

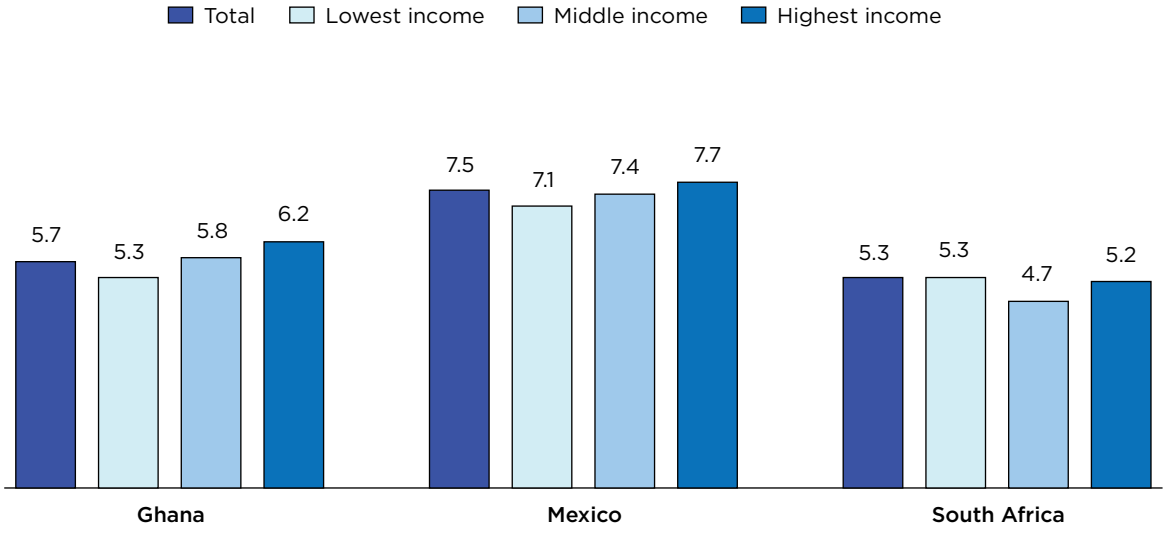
Income was positively associated with one's life satisfaction in two of the three countries (Figure 2)—in Ghana, mean scores of life satisfaction for older people showed 5.3, 5.8, and 6.2 for the lowest one-third, middle one-third, and highest one-third of income, respectively. A similar progression was observed for Mexicans—7.1, 7.4, and 7.7, respectively. These results are similar to those in the United States and England, where evaluative well-being was strongly related to income (Kapteyn et al., 2015).

Chronic Conditions

Chronic NCDs, including diabetes and depression, are currently the main cause of both mortality and morbidity worldwide. NCDs accounted for 39.5 million deaths globally in 2016, which was over 72 percent of total deaths (GBD 2016 Causes of Death Collaborators, 2017). The total number of deaths attributed to NCDs is increasing, even while age-standardized rates of death are decreasing (GBD 2016 Causes of Death Collaborators, 2017; GBD 2016 DALYs and HALE Collaborators, 2017). Results from these global studies also demonstrate a shift towards deaths at older ages. Looking back to the year 2000, the burden from NCDs by 2016 had increased by nearly 30 percent, offsetting decreases from other contributors to overall disease burden (The Economist Intelligence Unit, 2017; GBD 2016 Causes of Death Collaborators, 2017). This trend is set to continue worldwide, given the evolution of NCD risk factors, such as the significant increases in metabolic risks (body-mass index and high fasting plasma

Figure 2.

Mean Score of Life Satisfaction for Population Aged 50 and Over by Country and Income: 2014–2015



Note: The mean score is derived from a question where the respondents were asked how they viewed their life using the scaled position on an imaginary ladder with steps 0 to 10.
Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

glucose), driving the increase in overall NCD burden (Danaei et al., 2011; NCD Risk Factor Collaboration, 2016, 2017; GBD 2016 Causes of Death Collaborators, 2017).

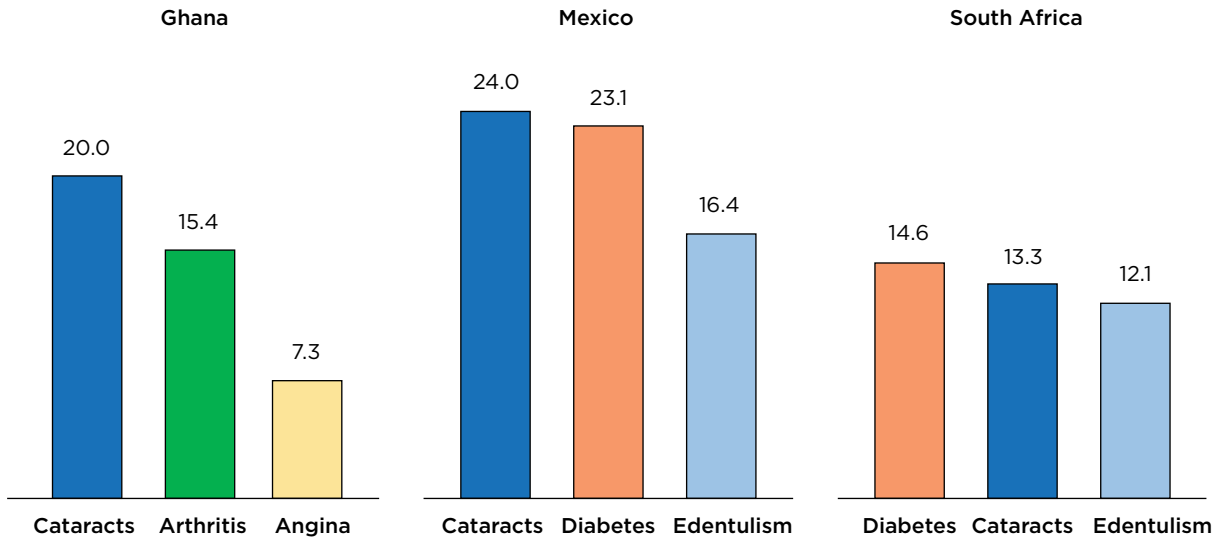
SAGE provides a wealth of information on a number of key chronic conditions, including those targeted by the United Nations High Level Meeting of the General Assembly on the prevention and control of NCDs (United Nations General Assembly, 2012). Respondents were asked about ten conditions through questions about each condition, "Has a doctor/health care professional ever told you that you have [condition]?" Respondents were also asked questions about symptoms commonly seen in a select number of conditions—angina, arthritis, asthma, cataracts, depression, diabetes, and edentulism.[7] The condition rates varied from a low of 2.3 percent for asthma in Ghana, 2.8 percent for depression in South Africa, and 2.8 percent for edentulism in Ghana, to a high of 24.0 percent for cataracts in Mexico (Table A-2).

Figure 3 shows the top three chronic conditions, based on self-reports, for each country. For Ghana, the top three conditions were cataracts (20.0 percent), arthritis (15.4 percent), and angina (7.3 percent); for Mexico, a tie between cataracts (24.0 percent) and diabetes (23.1 percent), and edentulism (16.4 percent); and for South Africa, similar rates for diabetes (14.6 percent) and cataracts (13.3 percent), and edentulism (12.1 percent). Cataracts featured in all three countries, with diabetes and edentulism making the top three list in two of the countries—Mexico and South Africa.

A male-female differential was observed for cataracts in Ghana and South Africa (Table A-2). Older Ghanaian women (21.7 percent) were more likely than their male counterparts (18.1 percent) to have a cataract; similarly, older South African women (16.6 percent) were more likely than men (8.7 percent). Despite being a preventable age-related condition, the oldest age group had the highest share suffering from this condition. The 80 years and older population in Ghana was four times more likely than 50- to 59-year-olds to have cataracts, 44.5 percent vs. 11.6 percent, and similarly in South Africa, 26.9 percent vs. 6.8 percent. The oldest Mexicans also had a higher percentage who reported cataracts (35.1 percent) than Mexicans aged 50–59 (23.4 percent). The high rates could be related to air pollution, smoking rates, and solar radiation exposure—further exacerbated by the higher altitude of Mexico City, for instance (WHO, 2012; Cruz, 2017).

[7] Edentulism is the condition of being toothless.

Figure 3.
Top Three Chronic Conditions for Population Aged 50 and Over by Country: 2014–2015
(In percent)



Notes: All chronic conditions are based on self-reporting. Edentulism indicates complete loss of all natural teeth.
Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Two indicator conditions, diabetes and depression, are examined in the SAGE countries because both conditions account for an increasing and substantial proportion of the global burden of disease. Longitudinal data showed that diabetes rates increased from 18.3 percent in Wave 1 (2007–2008) to 22.9 percent in Wave 2 (2014–2015) in Mexico, especially for older women (19.0 percent to 24.0 percent between the two study waves). Depression levels for Mexican men also increased from 4.3 percent to 6.7 percent in Wave 1 and Wave 2, respectively.

Behavioral and Systemic Risk Factors

Behavioral risk factors in SAGE analysis include hypertension, tobacco use, unhealthy diet, insufficient physical activity, and the harmful use of alcohol; while systemic risk factors include various social determinants of health and infrastructure inequalities such as access to safe drinking water and adequate sanitation. These behavioral risk factors are known and modifiable contributors to a number of NCDs and health mediators. Ongoing urbanization of populations in many countries adds to these risks through poverty, disrupted social networks, diet, obesity, hypertension, a decrease in physical activity, or other factors (Allender et al., 2011).

Just as with individual chronic conditions and multimorbidity, older adults typically have a higher risk for the presence of multiple risk factors. Recent evidence suggests gains in health achieved by addressing these risks even into older ages, thereby providing an opportunity for interventions to reduce future health burdens in aging populations in low- and middle-income countries (Imboden and Probst-Hensch, 2013; Li et al., 2016).

Hypertension: Over the past three decades, high systolic blood pressure has increased worldwide (Forouzanfar et al., 2017). All three countries in this study have populations with a relatively high prevalence of hypertension as a health risk. The highest prevalence was in Mexico (57.0 percent), followed by South Africa (49.9 percent), and then Ghana (38.7 percent). Hypertension showed a clear linear relationship with age in Mexico (Table A-3). The youngest age group, aged 50–59, reported the lowest percentage (43.5). The share with hypertension rose to 62.2 percent among those aged 60–69, 73.9 percent for those aged 70–79, and 80.0 percent for those aged 80 and older.[8]

[8] The proportions for those aged 70–79 and those 80 years and older are not statistically different.

Fruit and vegetable consumption: WHO recommends an intake of 400–500 grams per day of fruits and vegetables (excluding potatoes and other starchy tubers) for the prevention of chronic diseases (WHO, 2003). This roughly equates to a cut-off of about five daily servings of fruits and vegetables. Generally, a low percentage of the population in each of the three countries reported sufficient fruit and vegetable intake. Older Mexicans were most likely to not eat at least five servings of fruits and vegetables (85.0 percent), followed by South Africans (62.4 percent) and Ghanaians (48.5 percent; Figure 4). An age gradient was observed in Ghana (Table A-3), where a higher proportion in the two older age groups (70–79, 80 and older) than the two younger age groups (50–59, 60–69) reported insufficient fruit and vegetable intake.

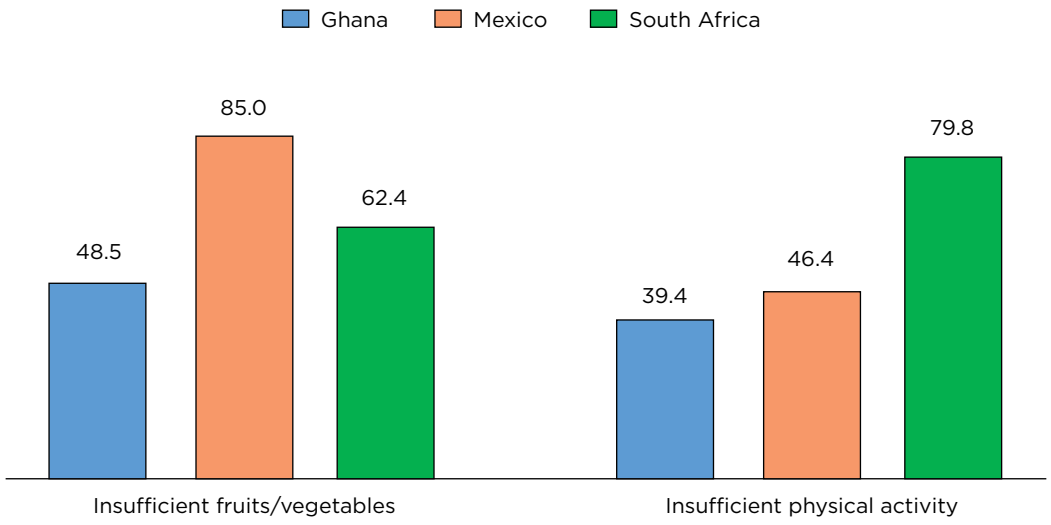
Physical activity levels: The Global Physical Activity Questionnaire (GPAQ) was used in SAGE to measure the intensity, duration, and frequency of physical activity in three domains: occupational, transport-related, and discretionary or leisure time. Total time spent engaged in physical activity during a typical week, number of days per week, and intensity of the physical activity, were considered sufficient or insufficient. Figure 4 shows that the older population in South Africa (79.8 percent) had considerably higher levels of insufficient physical activity compared to Ghana (39.4 percent) and Mexico (46.4 percent). Clear gradients by age were seen in Ghana and Mexico, with levels of insufficient physical activity increasing with older age (Table A-3). While urban dwellers in Ghana had less physical activity than rural residents (42.5 percent for urban residents vs. 36.6 percent for rural residents), it was the opposite in South Africa where rural dwelling respondents had less physical activity (higher insufficient level) than urban dwellers (85.7 percent for rural residents vs. 78.5 percent for urban residents).

Water and sanitation: Access to safe drinking water (a water source protected from contamination) and adequate sanitation (toilets, improved latrines, and other facilities that prevent people from coming into contact with human urine and feces) are the foundations of good health in any population. Sanitation, water, and hygiene are a cornerstone of public health, as well as for collective and individual well-being.

One of the 17 Sustainable Development Goals (SDGs) is devoted to clean water and sanitation (United Nations, 2017a).[9] Water, a crucial factor for eradication of poverty and hunger and indispensable for health and well-being, has been a key target in UN milestone agreements such as the 2030 Agenda for Sustainable Development and the 2015 Paris

[9] Sustainable Development Goal (SDG) 6 is to ensure availability and sustainable management of water and sanitation for all (United Nations, 2017a).

Figure 4.
Percentage of Population Aged 50 and Over With Insufficient Fruit and Vegetable Consumption and Insufficient Physical Activity: 2014–2015



Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Agreement (United Nations, 2017a, 2015). Clean water and sanitation are also global indicators used by WHO and UNICEF to assess and monitor impact on health outcomes (WHO and UNICEF, 2015). Water-related challenges, including limited access to safe water and sanitation, have been recognized as a top-three global risk by the World Economic Forum's Global Water Initiative (World Economic Forum, 2018).

SAGE surveys focus on water use and sanitation behaviors by measuring use of an "improved water source" and "improved sanitation" for household residents. An improved drinking water source is a source that, by nature of its construction, adequately protects the water from outside contamination, in particular from fecal matter. Improved sanitation includes sanitation facilities that hygienically separate human excreta from human contact.

Water: In all three countries, a substantial proportion of respondents reported access to improved drinking water. South Africa had a higher rate (96.4 percent) of access to an improved water source, compared to the rates of Ghana (91.1 percent) and Mexico (92.4 percent; Table 3).

In all three countries, a higher proportion of urban residents reported access to improved drinking water than rural residents. At about 94 percent or higher, improved water access for urban dwellers in these countries on average is in line with global estimates (over 90 percent as of 2015; United Nations, 2017a). Among these three countries, South Africa's urban coverage among the older population was almost universal (99.2 percent), compared to 84.3 percent for older rural dwellers. Ghana showed the smallest difference between urban and rural dwellers (93.7 percent vs. 87.8 percent). More attention is needed in rural locations and in poorer households to achieve universal access to clean water by 2030.

Sanitation: In contrast to the similarity in levels of access to clean water in the three countries, access to improved sanitation differed considerably (Table 3). While over eight out of ten older Mexicans (84.7 percent) had access to improved sanitation, less than one in five older Ghanaians did (18.7 percent). Access to improved sanitation did not show significant differences by urban-rural residency in Mexico and South Africa, while older urban residents in Ghana were more likely than rural dwellers to have access to improved sanitation (21.3 percent vs. 15.3 percent, respectively). Older Ghanaians also showed significant differences in improved sanitation by levels of wealth, with 23.5 percent of older people in the highest-income group, 16.9 percent in the middle-income group, and 13.0 percent in the lowest-income group having access to improved sanitation. Considerably more work is required to ensure that hygiene standards are met and that universal access to improved sanitation is attained.

Table 3.
Percentage of Older Population Aged 50 and Over Reporting Improved Drinking Water and Sanitation by Country and Selected Characteristics: 2014–2015

Characteristics	Ghana	Mexico	South Africa
IMPROVED DRINKING WATER			
Total	**91.1**	**92.4**	**96.4**
Residence			
Urban	93.7	94.7	99.2
Rural	87.8	84.4	84.3
Income Tertile			
Lowest	89.0	90.5	95.7
Middle	93.7	92.4	95.1
Highest	89.1	94.5	98.5
IMPROVED SANITATION			
Total	**18.7**	**84.7**	**65.3**
Residence			
Urban	21.3	85.7	65.5
Rural	15.3	81.2	64.5
Income Tertile			
Lowest	13.0	83.4	60.3
Middle	16.9	82.6	65.5
Highest	23.5	89.1	67.3

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Disability

The impact of age-related disability is likely to rise with the aging of populations worldwide. Disability prevalence is declining in some countries, even while incidence remains somewhat stable (Han et al., 2013; Freedman et al., 2013; Martin and Schoeni, 2014). WHO defines disability as an umbrella term for impairments, activity limitations, and participation restrictions (WHO and World Bank, 2011). SAGE asked questions about difficulties with activities of daily living (ADL), instrumental activities of daily living (IADL), and cognition.[10] This study also included the WHO Disability Assessment Schedule (WHODAS), an instrument that has been well tested in a variety of cultural contexts (Üstün et al., 2010), as another source of information about functioning.

ADL and IADL: The relatively low proportions of older people in Ghana, Mexico, and South Africa reporting limitations in ADL was expected, given the study samples are from community dwelling populations (Brault, 2008; He and Muenchrath, 2011). What is notable, however, was the higher rate of ADL limitations in South Africa compared to the other countries. South Africans, at 11.7 percent, had the highest rate, more than double that for Ghanaians (4.6 percent) or Mexicans (5.2 percent; Table A-4). Age was clearly associated with the likelihood of having an ADL-related disability. In Ghana, only 2.2 percent of those aged 50–59 reported having difficulty performing ADL activities; the percentages increased to 4.0 percent for those aged 60–69, 8.2 percent for those aged 70–79, and 13.9 percent for 80 years and older (Figure 5). The differences in levels of disability for the different age groups were

[10] Activities of Daily Living (ADL) are used to describe a set of daily self-care activities and usually assess the need for help with such personal care activities as eating, bathing, and dressing. An individual's ability to perform ADL is routinely considered the functional status of a person, with an inability to perform ADL suggesting disability.

Instrumental Activities of Daily Living (IADL) describe somewhat higher-level functioning considered necessary to live independently. These typically assess the need for help with routine needs such as using transportation, housekeeping, and preparing food.

COGNITION

As populations in lower-income countries age, dementia and cognitive decline has become a global trend (Livingston et al., 2017; Prince, 2017; Wu et al., 2017). Assessments of the levels and trajectories of change are important for determining the responses required – as new evidence is becoming available about the value of multidomain lifestyle intervention, regardless of age (Rosenberg, 2017, Sherman et al., 2017; Sindi, 2017). However, assessing cognition is a complex task even in a relatively homogenous population; measuring age-related cognitive decline across countries and in the context of an aging world presents significant challenges.

Older adults may experience changes in their abilities to name objects or with their visual, verbal, and short-term memory—some of which may be considered a normal consequence of the aging process. When these cognitive changes begin impacting daily functioning or quality of life, the ability to accurately and reliably measure and differentiate normal changes from disease processes becomes more important for planning purposes.

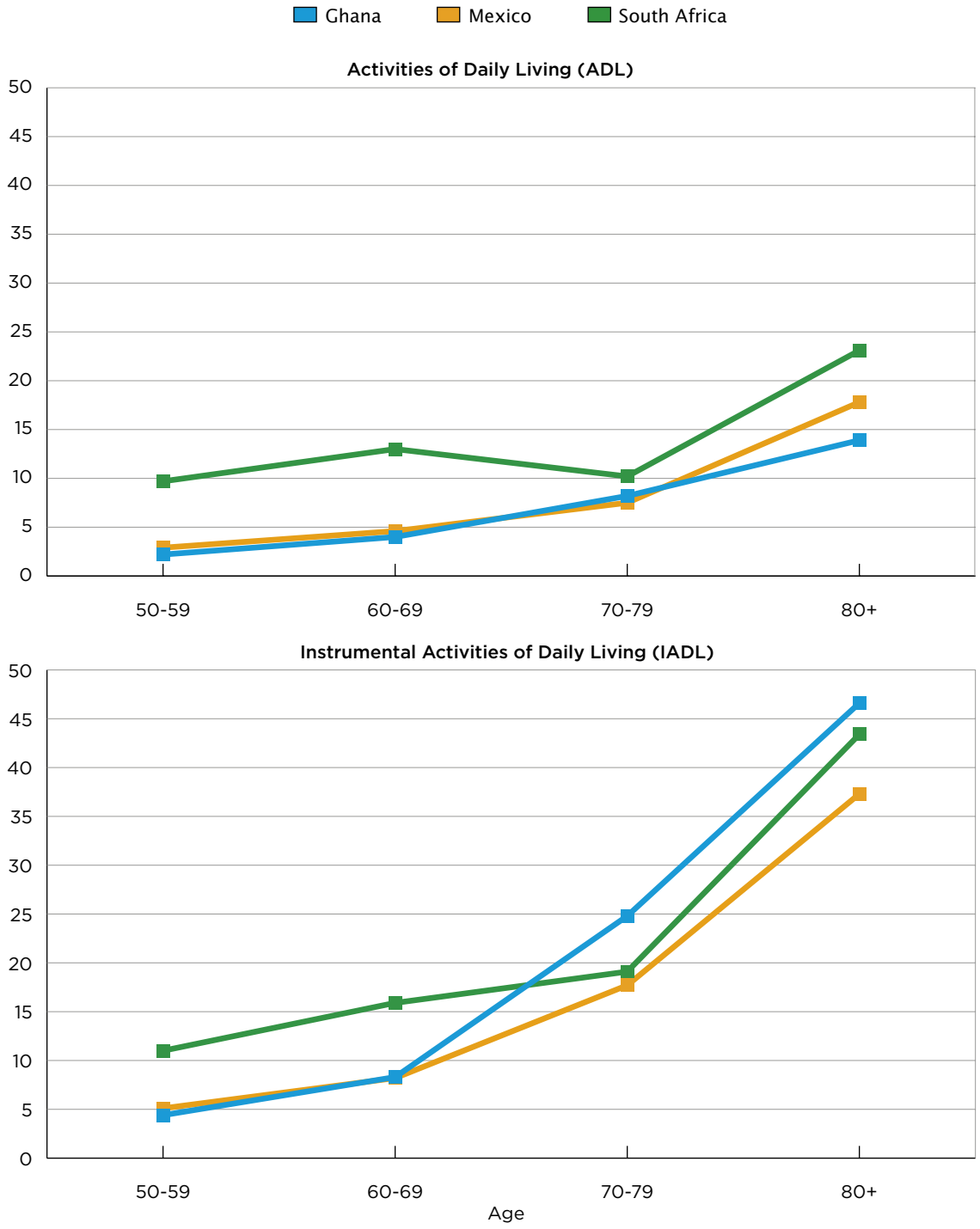
In SAGE, self-reported difficulty with memory was assessed in addition to five cognitive performance tests used to create a summary variable of cognitive function for each participant at baseline and follow-up. The questions asked, "Overall in the last 30 days, how much difficulty… (1) did you have with concentrating or remembering things? and, (2) did you have in learning a new task (for example, learning how to get to a new place, learning a new game, learning a new recipe)?" Significant differences in both memory and learning were seen across the countries in self-reported memory and learning comparing Wave 2 to Wave 1.

The cognition tests included immediate and delayed verbal recall, forward and backward digit span, and verbal fluency—which assess cognitive domains most impacted by age, impairment, and the early stages of dementia. These tests are brief compared to other neuropsychological tests, and comparatively culture-appropriate (Strauss, Sherman, and Spreen, 2006; Cabeza, Nyberg, and Park, 2016).

Limitations in Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs) are one common mechanism to assess the impact of cognitive impairment (Hall et al., 2011; Mograbi et al., 2014; de Paula et al., 2015; Lyu and Kim, 2016; Brown et al., 2017). As shown in Table A-4, clear age gradients were seen in ADLs in each country. Women had higher levels of ADL limitations in Ghana, and higher IADL limitations in Mexico and South Africa, compared to men. Income levels showed consistent patterns where higher levels of limitations were seen among those with lower tertile of income. Combined with the cognitive tests, these results demonstrate the variables that impact functioning and are associated with cognitive impairments.

Figure 5.

Percentage of Population Aged 50 and Over With ADL and IADL Limitations by Country and Age: 2014–2015



Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

also striking for older Mexicans, 17.8 percent of those aged 80 and over compared with 2.9 percent for those aged 50–59; and for older South Africans, 23.1 percent of the oldest age group (80 years and over) versus 9.7 percent of the youngest old. These findings suggest support for theories of aging being deterministic for these functioning limitations (Chmielewski, 2017).

Rates for limitations in IADL were higher than the rates for ADL in all three countries (Ghana, 12.0 percent, Mexico, 10.5 percent, and South Africa, 16.1 percent; Table A-4). As with ADL, older South

Africans reported a higher likelihood of having an IADL disability than older Ghanaians and Mexicans. Sex was also found to be related to IADL limitations, with women more likely than men in Ghana (14.4 percent vs. 9.3 percent) and Mexico (11.7 percent vs. 8.8 percent) to have decrements in higher level functioning.

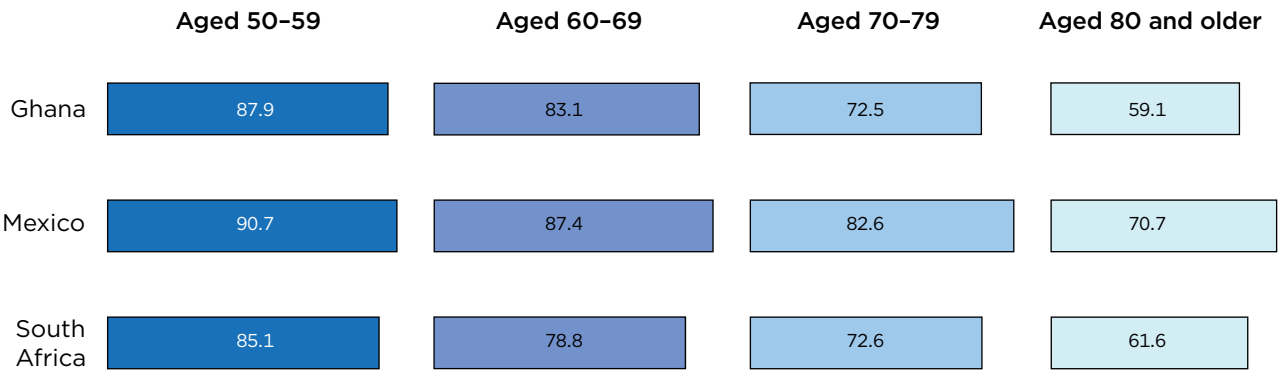
Age again demonstrated a direct relationship with the proportion reporting an IADL disability; the older one's age, the more likely the individual would experience IADL limitations (Figure 5). About one-third to nearly half of those aged 80 and older had IADL difficulties, a much higher proportion than the younger age groups. Income had an inverse relationship with IADL limitations. In all three countries, a smaller proportion of those in the highest-income tertile than in the lowest-income tertile reported an IADL disability (Table A-4).

WHODAS: As briefly introduced earlier, the World Health Organization Disability Assessment Schedule (WHODAS) is a well-tested instrument that provides an assessment of disability and an indication of severity of limitation in functioning in a single composite score. WHODAS evaluates six domains of day-to-day functioning in the last 30 days—understanding and communicating, getting around, self-care, getting along with people, life activities, and participation in society (Üstün et al., 2010). Mean WHODAS scores by demographic and socioeconomic characteristics are provided in Table A-4 where WHODAS was transformed to a 0–100 scale, with the lowest scores reflecting the worst functioning ability because of maximum disability, and the highest scores representing the best functionality because of minimum disability.

In general, the older population in all three countries had a reasonably high level of functioning as indicated by the mean WHODAS scores (Ghana, 81.9; Mexico, 86.9; and South Africa, 80.1), which are also consistent with the low percentages reporting ADL and IADL. Older Mexicans, in particular, had higher mean scores/lower levels of functional limitations than both Ghanaians and South Africans.

Age has a clear association with WHODAS scores (Figure 6). In all three countries, WHODAS mean scores were highest (better functioning) among the youngest age group, decreasing with each older age group, and lowest among the oldest age group. There was a more than 20 percentage-point difference in WHODAS score between the youngest

Figure 6.
Mean WHODAS Scores for Population Aged 50 and Over by Country and Age: 2014–2015



Note: WHODAS is the World Health Organization Disability Assessment Schedule, where 0=maximum disability/worst functioning, 100=minimum disability/best functioning.
Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

and the oldest age groups in each country (Ghana, 87.9 vs. 59.1; Mexico, 90.7 vs. 70.7, and South Africa, 85.1 vs. 61.6; for those aged 50–59 and 80 years and older, respectively). These age-related differences are significant, both statistically and for the potential impacts on health care costs. Even slight changes in chronic disease profiles, pain levels, or age at onset of an age-related physical or cognitive limitation have the potential to dramatically reduce functioning at older ages—thereby influencing future health care needs.

The findings also illustrate differences in functioning by sex and other characteristics. In all three countries, men, those currently married, and those in the highest-income group scored better than women, those widowed, and those in the middle- or lowest-income group, respectively (Table A-4).

Health Insurance Coverage

One of the mechanisms for achieving the SDG 3 Target 3.8 on universal access to health care is to improve health insurance coverage rates (United Nations, 2017b). Yet the putative impacts of health insurance on health remain uncertain and reliant upon access to quality and timely services and social determinants of health (Marmot, 2005; Craig et al., 2006; Sommers, Gawande, and Baicker, 2017). Whether health insurance or other mechanisms to improve access and use of curative or preventive services actually maintain or improve health cannot be determined with the current evidence base (Miller et al., 2014). However, prepaid mechanisms, including insurance, have been shown to reduce the risk of impoverishment due to health expenditures, at least for some population groups (Wagstaff et al., 2018). These financial protection mechanisms may also result in higher treatment intensity, although different populations groups may not benefit equally (Card, Dobkin, and Maestas, 2007).

Mexico declared achievement of universal health coverage in 2012 (Knaul et al., 2012). In SAGE, the health insurance question asked the respondents whether they individually had health insurance and included multiple types of insurance in the response choices.[11] Health insurance coverage reported in SAGE was 79.6 percent in Mexico, the highest among the three countries in this study (Table 4). Ghana's National Health Insurance Scheme has also made

[11] SAGE asked, "Does [NAME] have health insurance coverage?" Answers: 1 = Yes, mandatory insurance; 2 = Yes, voluntary insurance; 3 = Yes, both mandatory and voluntary insurance; 4 = No, none.

Table 4.
Percentage of Older Population Aged 50 and Over With Health Insurance Coverage by Country and Selected Characteristics: 2014–2015

Characteristics	Ghana	Mexico	South Africa
Total	**72.2**	**79.6**	**7.1**
Residence			
Urban	72.6	78.2	8.4
Rural	71.7	84.3	1.8
Income Tertile			
Lowest	70.9	79.0	2.7
Middle	75.8	79.7	3.4
Highest	75.7	80.3	14.3
Health Insurance Type			
Mandatory	0.9	34.9	3.3
Voluntary	71.2	44.0	3.4
Mandatory and voluntary	0.1	0.7	0.4

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

great strides in coverage over the last few years (Blanchet, Fink, and Osei-Akoto, 2012; Alhassan, Nketiah-Amponsah, and Arhinful, 2016), as evidenced by the reported rates of coverage (72.2 percent) found in SAGE. Meanwhile, insurance coverage in South Africa lags considerably behind the other two countries at just 7.1 percent.

Table 4 also shows that in Ghana, residency did not make a difference in terms of health coverage (72.6 percent urban and 71.7 percent rural). However, older Mexicans residing in rural areas had relatively higher health insurance coverage (84.3 percent) than their urban counterparts (78.2 percent), with the opposite coverage pattern seen in South Africa, where urban residents had a higher coverage rate of 8.4 percent versus the very low rate (1.8 percent) for rural residents.

Mandatory insurance schemes require all members of a population group to enroll, and differ from voluntary schemes in out-of-pocket payments (Savedoff and Gottret, 2008; WHO, 2017). In some countries the distinction between mandatory insurance schemes and a government-supported system that provides no- or low-cost care require nuanced examination. For SAGE, respondents were given local examples when asked these questions.

The patterns of insurance type in these three countries showed sharp contrasts. In Ghana, the vast majority of those with health insurance enrolled in voluntary health insurance plans (71.0 percent), with less than 1 percent in mandatory plans (Table 4). In comparison, a higher share (44.8 percent) of older Mexicans had voluntary insurance coverage than those with mandatory health insurance plans (34.9 percent), and in South Africa, the proportions were similar for mandatory (3.2 percent) and voluntary (3.3 percent) schemes. The health care coverage mix in Mexico looks quite different than the other two countries due to its universal health coverage (Spaan et al., 2012; Evans, Hsu, and Boerma, 2013).

Summary and Discussions

Using data from WHO's SAGE Wave 2, this report examined a number of key health and health care issues among adults aged 50 and older in three countries. A selection of health outcomes and their impacts were investigated in cross-section and over two waves of SAGE—including health status, noncommunicable diseases, risk factors, disability, and health insurance coverage. These issues have received considerable attention in the past 5 years through international meetings on NCDs and the SDGs.

Analysis of SAGE data in this report focused on comparisons across three countries that participated in both Wave 1 and Wave 2—Ghana, Mexico, and South Africa. The older adult population in these countries generously shared their time and information, contributing to the assessment of the world's overall disease burden and health care issues.

Health is an important factor at every stage of life, and particular attention is often paid to key phases across the life course, such as early, middle, or older life. Each stage of life forms one's unique health foundation at a given age and positively or negatively affects one's health state at later ages (Kuh, 2007; Halfon et al., 2014; McEniry, 2014; Lachman, Teshale, and Agrigoroaei, 2015; Kwon and Park, 2017). The quality of older adult life is the accumulation of impacts at key life phases and general well-being over a lifetime—with the multitude of genetic, environmental, social, and economic factors contributing to overall health.

In this study, the proportion of older adults reporting good health differed by over 20 percentage points across these countries, with the lowest percentage being found in Mexico. Angina, arthritis, cataracts, diabetes, and edentulism were among the top conditions across these three countries. Longitudinally, in Mexico, diabetes prevalence increased from Wave 1 to Wave 2 for both older men and older women, while the proportion reporting depression increased for men. These findings should raise concern for governments given the known health and social cost of diabetes, and particularly the impact of comorbid physical and mental health conditions like diabetes and depression (Moulton, Pickup, and Ismail, 2015; Elrayah-Eliadarous et al., 2017; Gallup, 2017; Arokiasamy et al., 2017).

Both behavioral and systemic risk factors for health were high in SAGE Wave 2. Hypertension was a large risk in each country, with a clear age gradient in all countries. Generally, older people in these three countries did not consume sufficient fruits and vegetables or engage in sufficient physical activity, with the vast majority of older South Africans lacking adequate physical activity.

All three countries reported high access to improved drinking water (over 90 percent), indicating they are on track to meet key goals and targets of the SDGs and the Paris Agreement. Access to improved sanitation differed by country, with Ghana, in particular, requiring considerably more work in this area.

The prevalence of limitations in activities of daily living in South Africa was more than double the level in the other two countries; older South Africans also had higher rates of limitations in instrumental activities of daily living.

About three-fourths of older Ghanaians and Mexicans reported having health insurance, which is encouraging; the finding of less than one in ten older South Africans having health insurance may be offset by the provision of free services at point of care in South Africa. Nonetheless, continued attention will be needed to ensure that all people obtain needed health services without risking financial hardship, including transport-related costs to get to the free services which are not covered by any current mechanisms. South Africa's low health insurance coverage has also been reported in other recent studies (Govender et al., 2013; Goudge et al., 2018). On a positive note, the South African government has begun implementing some leading-edge policies that directly address key determinants of health and may mitigate the looming financial impact on its systems (Myers et al., 2015; Republic of South Africa National Treasury, 2016; Charlton et al., 2018).

While the amount of data available in low- and middle-income countries is growing, age-specific health and disability data for older adults that are cross-culturally and cross-nationally consistent remain a challenge to locate and access. A new effort, the Titchfield City Group on Ageing, was endorsed by the UN Statistical Commission in March 2018 with the aim to develop standardized tools and methods for producing age-disaggregated and aging-related data (United Nations, 2018). SAGE and this report contribute to this larger effort by providing data in key areas for national and global action on aging and adult health in three middle-income countries and by improving our understanding of the dynamics of aging through cross-national and multidisciplinary research. Future waves of SAGE data collection (SAGE Wave 3 implementation is currently underway, with Mexico completed in 2017) will add to this rich data source and provide additional longitudinal data needed to examine health trends and trajectories.

Sources of the Data and Accuracy of the Estimates

SAGE Data

The findings in this report are primarily based on the WHO's SAGE Wave 2 data collected in 2014–2015. Selected comparisons are made to SAGE Wave 1 data (2007–2010). We focus on three of the six SAGE countries in this report. The population universe covered in this report includes the population living in Ghana, Mexico, and South Africa. SAGE is designed as a multiwave panel study representative of the population aged 50 and older, with a smaller cohort of respondents aged 18–49 for comparative purposes. For Wave 2, all three countries used the Wave 1 sampling frame and reinterviewed at least 50 percent of the Wave 1 respondents. All sampling plans used multistage clustered design samples drawn from an updated frame. Each new household and individual was, therefore, assigned a known nonzero probability of being selected. Household and individual weights were post-stratified to weight up to the entire number of households and the aged 18-and-older population in each nation.

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Other Data

In addition to SAGE, the U.S. Census Bureau International Data Base (U.S. Census Bureau, 2018) and UN Population Division population estimates and projections data (United Nations Population Division, 2017) were also used in this report for trend analysis of population size and growth. WHO's Global Burden of Disease data (2016 update) were used for information on burden of disease and healthy life expectancy.

Sampling and Nonsampling Error

Sampling error occurs when the characteristics of a sample are measured instead of those of the entire population (as from a census). Note that sample-based estimates will vary depending on the particular sample selected from the population, but all attempt to approximate the actual figures. The SAGE estimates are based on the sample and approximate the actual estimates that would have been obtained by interviewing the entire population using the same methodology. The estimates from the 2014–2015 SAGE sample may also differ from estimates based on other survey samples of the population. Measures of the magnitude of sampling error reflect the variation in the estimates over all possible samples that could have been selected from the population using the same sampling, data collection, and processing methods. Estimates of the magnitude of sampling errors are provided in the form of margins of error for selected SAGE demographic and socioeconomic estimates included in this report (see Table A-1).

The U.S. Census Bureau recommends that data users incorporate this information into their analyses, as sampling error in survey estimates could impact the conclusions drawn from the results. All comparative statements in this report have undergone statistical testing, and comparisons are significant at the 90 percent confidence level unless noted otherwise. This means the 90 percent confidence interval for the difference between the estimates being compared does not include zero.

In addition to sampling error, nonsampling errors may be introduced during any phase of data collection or processing. For example, operations such as editing, reviewing, or keying data from questionnaires may introduce error into the estimates. The primary source of nonsampling error and the processes instituted to control error in SAGE and related studies are described in further detail on the SAGE Web site and can be obtained from the WHO at <www.who.int/healthinfo/sage/en/>.

Furthermore, nonsampling error specific to the oldest-old population also stems from age misreporting. This is due to a variety of factors, including a gross ignorance of the true age, lack of birth records which makes it difficult to confirm or disconfirm a reported age, reliance by some oldest people on the knowledge of others for their own age, digit preference (such as those ending in "0" or "5"), and deliberate misreporting out of the desire to share in the esteem generally accorded extreme old age (Hobbs, 2004; Howden and Meyer, 2011; Krach and Velkoff, 1999).

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Table A-1.

SAGE Wave 2 Sample Size and Standard Error by Country and Selected Characteristics: 2014–2015

Characteristics	Ghana			Mexico			South Africa		
	Unweighted	Weighted		Unweighted	Weighted		Unweighted	Weighted	
	Number	Percentage of total	Standard error for percent	Number	Percentage of total	Standard error for percent	Number	Percentage of total	Standard error for percent
Total	**3,553**	**100.0**	**3.4**	**3,903**	**100.0**	**4.7**	**2,163**	**100.0**	**6.0**
Age									
50–59	1,755	49.4	1.2	1,761	45.1	1.8	1,066	49.3	2.2
60–69	951	26.8	1.0	1,135	29.1	1.2	673	31.1	1.8
70–79	552	15.5	0.7	732	18.8	0.9	314	14.5	1.3
80 and older	295	8.3	0.5	276	7.1	0.8	111	5.1	0.8
Sex									
Male	1,654	100.0	5.1	1,731	100.0	6.4	938	100.0	9.7
Female	1,899	100.0	4.4	2,172	100.0	5.9	1,225	100.0	7.1
Residence									
Urban	1,725	48.5	1.1	3,077	78.8	2.3	1,769	81.8	3.0
Rural	1,828	51.5	1.1	826	21.2	2.3	394	18.2	3.0
Marital Status									
Never married	95	2.7	0.4	298	7.6	0.5	544	25.1	2.3
Currently married	2,196	61.8	1.4	2,285	58.5	1.5	819	37.9	2.7
Cohabiting	29	0.8	0.2	309	7.9	1.0	91	4.2	0.8
Separated/divorced	407	11.5	0.7	299	7.7	0.8	207	9.6	1.6
Widowed	826	23.2	1.0	712	18.2	1.2	502	23.2	1.6
Income Tertile									
Lowest	837	33.5	1.8	926	33.4	1.8	421	33.6	3.6
Middle	882	35.3	1.6	921	33.3	1.6	416	33.2	2.9
Highest	782	31.3	2.0	921	33.3	1.8	415	33.2	4.3

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Table A-2.

Percentage of Older Population Aged 50 and Over With Chronic Conditions by Country and Selected Characteristics: 2014–2015

Characteristics	Angina			Arthritis			Asthma			Cataracts			Depression			Diabetes			Edentulism		
	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa
Total	**7.3**	**6.3**	**4.9**	**15.4**	**14.8**	**10.6**	**2.3**	**4.1**	**7.6**	**20.0**	**24.0**	**13.3**	**3.2**	**11.5**	**2.8**	**4.4**	**23.1**	**14.6**	**2.8**	**16.4**	**12.1**
Age																					
50–59	5.7	6.1	3.9	12.4	13.8	8.9	1.8	3.9	8.3	11.6	23.4	6.8	2.1	11.0	3.7	3.8	19.9	10.9	1.2	7.1	9.7
60–69	6.8	5.7	4.8	17.9	15.7	11.9	1.1	4.5	4.8	20.0	22.5	18.7	2.5	12.4	0.9	5.6	27.9	16.0	3.1	17.7	12.1
70–79	10.7	7.3	6.5	18.8	14.5	12.7	4.6	4.3	9.0	32.0	23.6	15.6	6.0	10.4	3.3	3.5	25.8	19.7	3.5	29.4	17.3
80 and older	11.0	7.9	7.9	16.3	17.9	11.0	5.4	2.3	11.2	44.5	35.1	26.9	6.8	13.3	5.1	4.8	16.6	20.2	10.2	38.6	15.4
Sex																					
Male	4.8	5.4	4.4	12.6	11.6	5.4	2.3	2.9	6.3	18.1	26.6	8.7	2.3	6.7	1.5	3.8	21.8	10.5	2.8	12.4	9.4
Female	9.5	7.1	5.1	17.9	17.3	14.4	2.3	5.0	8.7	21.7	22.0	16.6	3.9	15.3	3.9	5.3	24.1	18.2	2.8	19.5	14.2
Residence																					
Urban	5.6	6.8	5.2	16.1	15.5	10.4	2.5	4.3	7.6	17.0	24.5	14.1	2.6	12.7	3.0	6.5	24.0	14.5	2.7	16.5	13.2
Rural	8.8	4.5	3.4	14.7	12.1	11.1	2.2	3.4	7.3	22.5	21.8	9.8	3.7	7.2	2.0	2.1	19.5	14.8	2.8	16.0	7.2
Marital Status																					
Never married	2.9	8.1	7.8	3.2	9.7	10.6	5.2	1.5	10.3	13.7	20.5	12.8	2.6	12.8	1.7	1.3	18.0	12.1	4.2	14.3	11.1
Currently married	7.0	5.7	4.1	14.2	13.7	9.6	2.1	3.9	7.1	18.5	25.5	13.5	2.9	9.0	2.8	4.4	23.3	16.6	2.4	15.3	11.1
Cohabiting	2.5	12.2	2.1	31.0	13.6	5.2	0.0	5.9	8.1	11.1	23.2	7.2	0.0	11.4	5.4	6.2	21.1	10.4	3.5	10.6	6.9
Separated/divorced	7.4	2.6	1.4	18.6	22.1	11.0	1.9	4.5	3.8	20.1	19.1	10.7	4.4	15.2	1.6	6.2	18.2	10.2	2.6	24.9	6.8
Widowed	8.6	5.5	5.2	18.4	17.9	10.5	3.2	5.2	7.1	23.3	20.8	13.9	3.5	19.0	4.7	4.7	30.9	18.8	3.3	19.2	18.4
Education																					
No formal education	9.5	6.2	3.2	15.7	13.5	6.3	2.0	2.1	6.6	21.8	24.2	13.0	3.3	11.3	2.7	2.8	24.6	14.0	2.9	16.6	8.3
Less than primary	6.9	6.8	8.7	16.7	16.1	16.1	3.3	3.8	12.1	20.9	28.4	18.1	2.9	12.9	1.7	2.3	23.3	14.3	2.1	19.9	7.8
Primary school completed	6.3	8.2	6.5	14.8	14.2	13.7	1.6	4.5	9.1	18.3	24.8	17.4	3.6	11.0	3.5	8.4	25.6	18.7	2.3	16.2	18.6
Secondary school completed	4.6	5.9	5.5	14.6	20.9	11.2	1.4	4.8	8.7	18.5	23.7	12.5	3.6	16.2	4.4	6.4	22.0	13.6	3.2	15.3	11.6
High school completed	5.1	3.7	1.5	14.7	9.1	12.7	3.0	5.0	3.6	18.8	12.2	4.5	3.4	5.8	2.6	4.2	25.7	23.4	2.1	10.5	12.5
College completed	4.3	2.5	3.2	12.2	12.2	4.2	3.5	3.3	2.0	4.4	16.9	4.3	1.9	7.3	2.2	14.5	19.1	1.6	2.9	11.7	10.9
Post graduate degree completed	0.0	3.3	3.1	16.4	5.7	45.5	0.0	0.0	3.1	16.4	7.6	32.6	0.0	7.9	0.0	0.0	23.4	4.8	0.0	9.2	5.5
Income Tertile																					
Lowest	7.2	5.9	6.2	12.6	11.2	13.1	3.9	4.4	11.4	23.2	29.0	17.2	4.9	15.0	3.4	3.6	23.2	17.6	3.2	16.3	12.3
Middle	7.4	6.2	4.7	14.9	16.0	12.4	1.7	6.0	5.9	20.1	26.2	19.7	3.2	11.0	2.7	3.9	23.5	18.1	1.9	14.8	16.0
Highest	5.1	7.6	6.6	13.6	13.5	8.4	1.3	2.0	5.9	17.5	20.3	10.4	1.2	7.7	5.4	6.8	23.7	15.0	3.1	7.7	15.4

Note: All chronic conditions are based on self reporting. Edentulism indicates complete loss of all natural teeth.
Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Table A-3.

Percentage of Population Aged 50 and Over With Behavioral Risk Factors by Country and Selected Characteristics: 2014–2015

Characteristics	Hypertension			Insufficient fruit-vegetable consumption			Insufficient physical activity		
	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa
Total	**38.7**	**57.0**	**49.9**	**48.5**	**85.0**	**62.4**	**39.4**	**46.4**	**79.8**
Age Group									
50–59	35.5	43.5	40.9	46.8	84.4	64.1	31.1	39.8	76.8
60–69	40.8	62.2	60.5	46.3	86.7	60.1	36.6	46.4	80.3
70–79	41.8	73.9	59.2	53.3	84.7	60.8	54.1	54.4	84.7
80 and older	41.6	80.0	40.2	57.1	82.2	66.0	69.4	68.9	85.4
Sex									
Male	35.1	54.9	49.5	48.5	87.6	62.2	35.2	42.5	77.0
Female	42.5	58.4	50.5	48.4	83.0	63.0	43.2	49.5	82.1
Residence									
Urban	45.1	57.0	49.8	46.1	84.1	60.6	42.5	46.9	78.5
Rural	31.5	56.4	50.3	50.8	88.3	70.3	36.6	44.2	85.7
Marital Status									
Never married	40.8	49.2	49.7	57.8	84.1	70.0	59.2	45.6	81.5
Currently married	35.1	55.8	49.2	45.8	84.6	55.1	37.6	45.9	76.0
Cohabiting	19.5	51.6	80.1	62.2	93.0	78.1	46.7	36.0	88.2
Separated/divorced	41.6	54.0	40.0	57.9	90.9	60.4	37.9	49.0	81.2
Widowed	44.2	71.6	49.4	51.0	77.8	68.1	41.8	49.2	86.1
Education									
No formal education	33.5	63.8	48.5	50.5	89.6	64.4	37.7	50.8	83.2
Less than primary	40.2	57.3	49.2	48.4	87.7	72.2	38.4	41.8	82.3
Primary school completed	45.6	61.0	56.7	33.3	83.8	64.2	45.9	44.5	78.5
Secondary school completed	40.7	53.4	51.4	49.5	83.8	57.8	40.4	49.5	77.0
High school completed	33.8	56.2	46.8	54.5	77.8	57.6	36.8	45.9	76.1
College completed	40.2	46.3	32.3	40.6	80.5	34.2	31.5	46.9	88.1
Post graduate degree completed	13.6	41.7	36.1	29.0	78.1	39.4	16.9	67.6	79.3
Income Tertile									
Lowest	36.9	51.3	53.5	39.5	87.2	57.0	49.0	44.9	78.1
Middle	36.4	63.3	46.4	45.1	85.5	66.0	34.6	43.3	77.0
Highest	40.0	53.4	42.1	52.7	83.5	57.5	29.4	41.7	77.4

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.

Table A-4.

Percentage of Older Population Aged 50 and Over With Disabilities by Country and Selected Characteristics: 2014–2015

Characteristics	ADL (in percent)			IADL (in percent)			WHODAS (mean score)		
	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa	Ghana	Mexico	South Africa
Total	**4.6**	**5.2**	**11.7**	**12.0**	**10.5**	**16.1**	**81.9**	**86.9**	**80.1**
Age Group									
50–59	2.2	2.9	9.7	4.4	5.1	11.0	87.9	90.7	85.1
60–69	4.0	4.6	13.0	8.3	8.2	15.9	83.1	87.4	78.8
70–79	8.2	7.5	10.2	24.8	17.7	19.1	72.5	82.6	72.6
80 and older	13.9	17.8	23.1	46.6	37.3	43.4	59.1	70.7	61.6
Sex									
Male	2.8	5.0	11.0	9.3	8.8	15.4	85.0	88.9	81.8
Female	6.2	5.4	12.4	14.4	11.7	16.6	79.0	85.3	77.4
Residence									
Urban	4.1	5.2	12.3	12.6	10.7	16.4	83.3	86.6	79.6
Rural	5.0	5.3	9.1	11.7	9.4	15.0	80.4	88.0	78.5
Marital Status									
Never married	0.7	5.0	13.6	3.8	8.3	18.0	88.7	87.6	78.3
Currently married	4.3	4.3	9.9	9.3	9.6	15.0	83.0	87.9	81.8
Cohabiting	0.0	7.4	5.2	6.3	11.4	7.2	87.6	85.3	80.8
Separated/divorced	4.2	8.5	13.9	14.7	14.0	14.4	81.8	85.5	79.8
Widowed	5.5	6.0	12.5	16.8	10.6	17.1	78.0	84.4	75.6
Education									
No formal education	5.6	9.0	19.6	12.1	13.1	20.5	78.9	85.1	71.5
Less than primary	5.4	6.0	13.1	13.6	12.4	15.2	82.0	85.2	78.5
Primary school completed	1.8	4.3	13.5	13.4	8.5	21.2	82.7	87.2	79.2
Secondary school completed	3.3	3.0	9.2	8.2	9.2	14.7	84.2	88.0	81.1
High school completed	5.5	4.5	0.8	13.2	5.1	3.5	86.5	91.4	87.2
College completed	2.3	3.4	0.5	7.6	8.8	2.3	88.3	90.6	88.9
Post graduate degree completed	0.0	4.3	7.2	0.0	6.9	7.2	80.0	94.0	92.1
Income Tertile									
Lowest	8.7	9.2	12.0	18.4	16.3	17.6	77.5	83.6	77.4
Middle	2.2	4.2	16.5	8.1	9.5	16.3	82.5	87.6	76.9
Highest	2.1	2.2	6.4	7.3	4.9	9.7	87.1	90.3	86.2

Note: ADL is Activities of Daily Living, IADL is Instrumental Activities of Daily Living. WHODAS is the World Health Oranization Disability Assessment Schedule, where 0=maximum disability/worst functioning, 100=minimum disability/best functioning.

Source: Study on Global and Ageing and Adult Health (SAGE), 2014–2015.