Global ageing: successes, challenges and opportunities

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Abstract

The world's population is ageing rapidly, with significant increases in the numbers of the oldest old. This places great pressure on societies to adapt to this changing demography. Pertinent issues include provision of education and resource for long-term conditions. The priorities older people hold need to be fully understood and their contributions to society, often diverse and far-reaching, recognised with sincerity. Currently, health systems for older people can often feel reactive, fragmented and disjointed. These systems can harbour inequity and ageism, and leave both patients and health-care providers dissatisfied.

Regarding the global context, the most rapidly ageing populations are in low- and middle-income countries. This partly reflects huge successes in the treatment and control of communicable diseases but gives rise to the challenge of the 'double burden', managing both communicable and non-communicable diseases simultaneously. Moreover, multimorbidity (suffering two or more chronic conditions) is commonplace and presents further challenges with regards to providing coordinated care.

In order to harmonise effective and sustainable change, collaboration at local, national and international levels is key in order to foster a platform for learning and information sharing. Therein lies huge opportunities for countries to share their individual experiences, both past and present, to improve preparedness for global ageing.

Key words: Ageing; Frailty; Global; Older; Non-communicable diseases; Systems

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Introduction

Between 2015 and 2050, the number of people older than 60 years of age is anticipated to rise from 900 million to 2 billion, with significant increases in the number of those living to 80 years and over (World Health Organization, 2018a). Life expectancy continues to increase globally, but there is evidence that these extra years are often not spent in 'good health'. In 2016, global average life expectancy at birth was 72 years (70/75, M/F), an increase of 5 years since 2000 (World Health Organization, 2018c). Despite these rapid changes, the number of years spent in full health (healthy life expectancy) was 63 years in 2016, with significant discrepancies seen between continents (54 years in Africa, 68 years in Europe) (World Health Organization, 2018c). Life expectancy is greater for women than men, but these extra years are spent in poorer health (World Health Organization, 2018c).

Of concern is the preparedness of low- and middle-income countries for rapid population ageing and associated multimorbidity. By 2050, 80% of the world's older people will be residing in low- and middle-income countries (World Health Organization, 2018a). To give further perspective, the proportion of the population of France aged 65 years or older doubled over more than 100 years; it will take countries like Brazil and China less than 25 years to reach that same growth (World Health Organization, 2018a).

The largest number of people aged 60 years and over currently reside in the Asia-Pacific region (HelpAge International, 2019). However, Africa is set to see the most rapid pace of ageing worldwide (HelpAge International, 2019). By 2030, it is estimated that the population of elderly people in Africa will reach 105 million, an increase from 64 million in 2015 (HelpAge International, 2019). Life expectancy was 61 years in 2016, an increase of 10 years since 2000 (World Health Organization, 2018c). Potential life expectancy for those reaching 60 years of age in Africa is 16/17 (M/F) years; this reflects the fact that if an individual survives the common causes of childhood mortality, life expectancy is often much greater than average population estimates (World Health Organization, 2018c).

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There is a paucity of data regarding the health, wellbeing and functional ability of older adults, particularly in low- and middle-income countries. Many studies exclude older adults and/or those with cognitive impairment and thus data are not representative. This leads to a poor understanding of the needs of people as they age and limits the evidence base for informing systems change and policy development.

Non-communicable diseases and multimorbidity

Many older people suffer from chronic conditions and multimorbidity. Non-communicable diseases are responsible for a significant and increasing proportion of deaths worldwide, many of which are premature. In 2017, the leading three causes worldwide were ischaemic heart disease, stroke and chronic obstructive pulmonary disease (**Table 1**) (The Lancet, 2017).

The rise in non-communicable diseases has contributed to widening health gaps, where poor and/or disadvantaged groups are especially affected. Almost three quarters of deaths caused by non-communicable diseases occur in low- and middle-income countries (World Health Organization, 2019c). For example, in Myanmar non-communicable diseases are estimated to be responsible for 68% of all deaths, with cardiovascular disease responsible for 25% of these (World Health Organization, 2018d).

The top risk factors implicated in the development of non-communicable diseases, and therefore mortality, are hypertension, tobacco use, high blood glucose levels, physical inactivity and overweight/obesity (World Health Organization, 2009).

Hypertension

Hypertension is responsible for at least 13% of all deaths globally but the identification, treatment and supervision of a condition that is generally asymptomatic is a massive challenge for which innovative solutions are needed (World Health Organization, 2009). Even if comprehensive screening programmes are instituted, it remains a major challenge to persuade someone who is asymptomatic to commit to potentially lifelong treatments, often incurring significant costs, in order to decrease their risk of developing a condition (such as stroke) that might occur at some point in the future.

In a hypertension prevalence survey of adults aged 70 years and older living in 12 randomly-selected villages in the Hai district demographic surveillance site in northern Tanzania, the ‘rule of sixths’ was observed (Dewhurst et al, 2013). Two out of six participants with hypertension had previously been detected, one of six of these were on treatment

Table 1. Top 10 causes of death worldwide

Rank	Cause of death	Deaths (000s)	% of total deaths
1	Ischaemic heart disease	9433	16.6
2	Stroke	5781	10.2
3	Chronic obstructive pulmonary disease	3041	5.3
4	Lower respiratory tract infections	2957	5.2
5	Alzheimer disease and other dementias	1992	3.5
6	Trachea, bronchus and lung cancers	1708	3.0
7	Diabetes mellitus	1599	2.8
8	Road injury	1402	2.5
9	Diarrhoeal diseases	1383	2.4
10	Tuberculosis	1293	2.3

From World Health Organization (2019a). This is an adaptation of an original work ‘Disease burden and mortality estimates. Geneva: World Health Organization (WHO); 2019. Licence: CC BY-NC-SA 3.0 IGO’. This adaptation was not created by WHO. WHO is not responsible for the content or accuracy of this adaptation. The original edition shall be the binding and authentic edition

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and one of six on treatment were adequately controlled. It is therefore not surprising that a stroke incidence study conducted in the Hai demographic surveillance site, and also a demographic surveillance site in Dar-es-Salaam between 2003 and 2006, demonstrated some of the highest stroke incidence rates in the world (Walker et al, 2010).

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease is often unrecognised, under-diagnosed and under-treated. Nevertheless, it is an increasingly common cause of global mortality. More than 90% of all chronic obstructive pulmonary disease-related deaths occur in low- and middle-income countries (World Health Organization, 2017a). The main drivers of chronic obstructive pulmonary disease include tobacco smoking, indoor air pollution (from use of biomass fuel for cooking and heating), outdoor air pollution, and occupational dusts and chemicals (World Health Organization, 2017a).

Diabetes

The number of people in the world with diabetes is increasing rapidly, particularly in areas such as south-east Asia, mainly driven by dietary changes but also related to urbanisation, ageing and physical inactivity (International Diabetes Federation, 2019). In south-east Asia, the regional prevalence of diabetes in 2017 was 8%, with India and Bangladesh having the greatest numbers of those affected (International Diabetes Federation, 2019). More than half of individuals are undiagnosed, therefore being at risk of serious and costly complications (International Diabetes Federation, 2019). Despite the significant burden of diabetes, health expenditure for diabetes in south-east Asia is the second lowest per person worldwide, totalling just $9.7 billion (International Diabetes Federation, 2019).

Neuropsychiatric illnesses

Neuropsychiatric illnesses are an important but often unrecognised and/or stigmatised cause of morbidity and mortality. In a systematic analysis of the Global Burden of Disease Study, the number of people living with dementia worldwide more than doubled between 1990 and 2016, with Turkey and Brazil having the highest age-standardised prevalence rates (GBD 2016 Dementia Collaborators, 2018). Currently, the condition is estimated to affect 50 million people, representing 5.2% of adults 60 years and older (Alzheimer's Research UK, 2019). It is estimated that 58% of all people with dementia reside in low- and middle-income countries and this figure is projected to increase 10% by 2050 (Alzheimer's Research UK, 2019).

In a dementia prevalence study in the Hai demographic surveillance site in Tanzania, age-adjusted prevalence was 6.4% in those aged 60 years and older (Longdon et al, 2012).

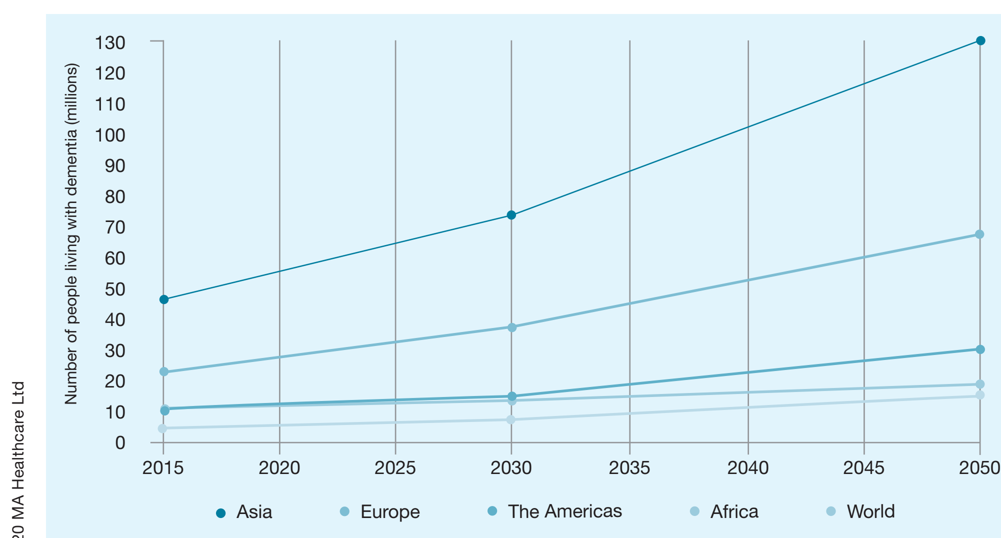

Figure 1. The global prevalence of dementia. From Prince et al (2015)

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Age-adjusted rates for other comparable prevalence studies in sub-Saharan Africa ranged between 2.29% in Nigeria and 8.1% in the Central African Republic (Longdon et al, 2012). Of significant importance when identifying conditions such as dementia are local factors such as health beliefs and illiteracy to avoid over- and under-diagnosis. With increasing rates of dementia in low- and middle-income countries, availability of specialist services and cost implications of long-term care are two of the many challenges faced. It is estimated that 94% of people with dementia in low- and middle-income countries are cared for at home, with minimal infrastructure for individuals and their families (Prince et al, 2015).

In summary, non-communicable diseases and multimorbidity pose significant challenges to health-care systems across the globe. The major factor responsible for the increasing prevalence is ageing. As low- and middle-income countries are disproportionately affected, it is paramount that appropriate formal systems for delivering long-term care and support to rapidly ageing populations are designed and implemented.

Disability

Disability is an umbrella term that relates to 'the interaction between individuals with a health condition and personal and environmental factors' (World Health Organization, 2018b). Those living with a disability are more likely to require access to health services but often suffer significant barriers to do so, for example because of the availability of services or limited specialist knowledge. Disability associated with non-communicable diseases can result in huge costs to individuals, families and societies because of the requirement for lifelong treatments, escalating health-care costs and loss of productivity.

Physical disability is common in older adults and can manifest in many ways. Globally, the burden of disability increased 52% between 1990 and 2017, being more prevalent in women and mostly driven by non-communicable diseases (The Lancet, 2017). Table 2 displays the top causes of years lived with disability in 2017. With regards to low- and middle-income countries, the prevalence of disability in people aged 60 years and older is estimated to be 43%; higher than comparable figures from high-income countries (HelpAge International, 2018). However, there remains a lack of reliable data in many low- and middle-income countries. Results from the World Health Organization SAGE study identified that key predictors of disability in adults aged 50–79 years in China and

Table 2. Top 10 causes of global years lived with disability

	Men		Women	
Rank	2007	2017	2007	2017
1	Low back pain	Low back pain	Low back pain	Low back pain
2	Headache disorders	Headache disorders	Headache disorders	Headache disorders
3	Diabetes	Diabetes	Depressive disorders	Depressive disorders
4	Depressive disorders	Age-related hearing loss	Dietary iron deficiency	Dietary iron deficiency
5	Age-related hearing loss	Depressive disorders	Anxiety disorders	Diabetes
6	Neonatal disorders	Neonatal disorders	Diabetes	Chronic obstructive pulmonary disease
7	Dietary iron deficiency	Drug use disorders	Age-related hearing loss	Age-related hearing loss
8	Chronic obstructive pulmonary disease	Blindness and vision impairment	Neck pain	Anxiety disorders
9	Drug use disorders	Chronic obstructive pulmonary disease	Blindness and vision impairment	Neck pain
10	Blindness and vision impairment	Other musculoskeletal	Chronic obstructive pulmonary disease	Blindness and vision impairment

From GBD 2017 Disease and Injury Incidence and Prevalence Collaborators (2018)

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India included being female, living in a rural location and suffering chronic conditions, with greater gender inequalities seen in India, mostly because of education and employment opportunities (Williams et al, 2017).

Frailty

While there is no consensus definition for frailty, it is thought to reflect a state of vulnerability to poor resolution of homeostasis after a stressor event and is a consequence of cumulative decline in many physiological systems during a lifetime (Clegg et al, 2013). While frailty may be based on underlying mechanisms of ageing, it is not an inevitable consequence of ageing and it may have some degree of reversibility or be amenable to modification.

Frailty is an emerging public health concern alongside population ageing. It is associated with several adverse outcomes including falls, hospitalisation, cognitive decline and mortality (Hoogendijk et al, 2019). The global prevalence of frailty is unknown as most research has been performed in high-income countries and also because of the plethora of measurement tools. Frailty is known to be more common in women and in those from lower socioeconomic groups (Hoogendijk et al, 2018). Regarding low- and middle-income countries, a study evaluating frailty across six countries identified frailty prevalence according to Frailty Index ranking between 13% and 56% (Biritwum et al, 2016). Frailty patterns were comparable to those seen in high-income countries.

One of the limitations of frailty measurements is their effectivity and applicability of use across geographical settings, including those that are resource poor. Validated for use in community-based settings in Tanzania, the Brief Frailty Instrument for Tanzania can predict mortality and dependency at 3 years (Gray et al, 2017). A cross-sectional survey in the Hai demographic surveillance site identified a frailty prevalence of 19.1% (95% confidence interval=15.2–23.1) in those aged 60 years and over (Lewis et al, 2018).

Frailty has several practical implications; it is not disease-focused and follows a dynamic and potentially reversible trajectory. However, frailty can be used to consider ways in which systems and services might adapt to better meet the needs of older adults, encompassing complexities such as multimorbidity and disability.

Other challenges: diversity, inequity and ageism

There is no 'typical' older person and indeed older adults demonstrate huge heterogeneity. Despite this, stereotyping, prejudices and discrimination are highly prevalent and have a profound negative impact on the health and wellbeing of older adults. An analysis of data from 57 countries found that 60% of respondents felt that older people were not respected (World Health Organization, 2016). The wide range of older people's experiences and needs must be fully understood, and be free from ageist attitudes, in order to support the modernisation of ageing societies and development of successful policies.

Regarding employment, many communities assume that when an individual reaches a certain age, he/she is no longer capable of working. The financial contributions of older adults in the UK in 2011 was nearly £40 billion, more than expenditure through pensions, welfare and health care combined (World Health Organization, 2019b). What is clear is that older people possess a huge degree of economic experience and potential, which they should be able to contribute in a fair, non-prejudiced manner.

Understanding the context: sub-Saharan Africa

Patterns of disease

Understanding the burden of disease, region-specific risk factors and common clusters of non-communicable diseases is crucial when planning service development. In the Global Burden of Disease study 2017, cardiovascular diseases, neoplasms and mental disorders were among the leading causes of non-communicable disease burden across sub-Saharan Africa (Gouda et al, 2019). Rates of non-communicable diseases were highest in southern sub-Saharan Africa, likely to be explained by urbanisation and unhealthy lifestyles associated with poverty and inequality (Oni et al, 2015). The impact of infectious diseases on the

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development of non-communicable diseases has been recognised; for example more than a third of cancer cases in Africa are related to infectious conditions (Dalal et al, 2011). In Tanzania, HIV infection has been found to be an independent risk factors for stroke whereas hypercholesterolaemia is rare (Walker et al, 2013).

In the World Health Organization SAGE study of adults aged 50 years and older in Ghana, huge volumes of undiagnosed chronic disease were reported, which is reflective of poor representation of disease by self-report vs algorithm or measured test-based methods (Arokiasamy et al, 2017). This highlights the importance of developing public awareness as well as the infrastructure for non-communicable disease diagnosis and management.

Resources

In sub-Saharan Africa geriatrics is a speciality in its infancy. In a cross-sectional survey, 25 out of 43 centres had no access to geriatric input, 35 out of 40 had no formal undergraduate geriatrics training for medical students and 33 out of 40 had no national postgraduate training scheme (Dotchin et al, 2013).

Other than the availability of specialist expertise, there are significant barriers to accessing health-care services, especially for chronic conditions which require repeated health-care episodes. Barriers include high out-of-pocket expenses, rural–urban disparities and unequal access to health-care facilities. Consequently, chronic diseases are often under-diagnosed and under-treated which poses risks of significant health deterioration and out of pocket spending.

Perhaps an opportunity for developing education, training and resources to support the ageing population would be to use some of the successes and lessons learned from the treatment of HIV. While much of the focus has been on younger people in low- and middle-income countries, many are now living with HIV into old age; with this is an associated risk of comorbidity, such as cognitive impairment and respiratory disease.

Culture

During initial discussions before a stroke incidence study in Tanzania, it was clear that many people prefer to seek initial advice from traditional and faith healers (Mshana et al, 2008). There are many reasons for this, including traditional health beliefs, ease of access and cost. Furthermore, people are perceived to develop certain conditions such as dementia because of witchcraft, devils, ancestral spirits, or because of leading a sinful life (Guy et al, 2017).

Close intergenerational family structure, respect and reciprocity are embedded within culture in sub-Saharan Africa where elders are greatly revered. Older people are frequently cared for by their families, and many continue to be involved in making household decisions and often look after their grandchildren (Six et al, 2019). With rapid social and cultural changes, there can be challenges in fulfilling these traditional roles and caring responsibilities.

Financial infrastructure to support older people includes pension systems and exemption policies; however, the implementation of these is often patchy. Although there have been laudable efforts to promote universal health coverage the reality in practice does not always reflect the theory, with many older people not being able to access what they are entitled to.

What can be done?

Ageing is a public health priority across the globe. Of particular concern is the preparedness of low- and middle-income countries to meet the challenge of ageing and its associations with chronic disease management, disability and frailty. This requires a shift in practice from responding to the burdens of infectious diseases and acute conditions. Rather than focusing on specific diseases, it might be more apt to target scant health-care resources to those most in need, for example by identifying those who are frail. Strategies to delay and/or reverse the process of becoming frail or care dependent have been suggested in the 'Integrated Care for Older Persons' guidelines by the World Health Organization (2017b), which focus on the concept of healthy ageing across the life course.

Care systems must become integrated and person-centred and to do this, the complex needs of older adults must be intimately understood to allow them to age with dignity and respect. Training and education need to take centre stage, at undergraduate and postgraduate

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Key points

- Ageing is a public health concern for all, with the world's most rapidly ageing populations in low- and-middle income countries.
- Global ageing reflects huge successes in the control of infectious diseases but presents challenges with regards to the coordination and delivery of care for long-term conditions; the 'double burden'.
- Understanding the specific context and needs of older people is crucial when designing systems of care.
- There is a great need for the development of education and training to provide a responsive workforce, free from ageist attitudes and prejudices.
- International collaboration should be facilitated wherever possible to provide a platform for learning and innovation.

level, to ensure skills and competencies are developed to be able to deliver effective and good quality care for an ageing population, with a multidisciplinary lens. To tackle the shortage of specialists, a task-shifting approach has been suggested whereby less qualified staff are provided with the tools, and training, to identify and care for people with certain conditions (European Commission, 2019). There could be a great opportunity for the development of health-care personnel such as nurse specialists who have already had a massive impact in high-income countries such as the UK, but could have an even greater impact in low- and middle-income countries with appropriate training and support. Furthermore, public awareness and education regarding issues pertinent to ageing, particularly for those in hard-to-reach places, may help to harmonise collaborative efforts to support older adults in the environments in which they reside.

Internationally, we have a responsibility to encourage the design, development and implementation of services, systems and educational materials to support our ageing world. With non-communicable diseases a huge contributor to global morbidity and mortality, focusing on older people could represent an innovative approach to providing integrated social and medical interventions to create a resilient health-care system (Hernandez and Myint, 2017). Collaborative efforts to drive high quality data collection, particularly using longitudinal methods, is key in order to develop the global understating of ageing, the effectiveness of interventions and assist in the development of evidence-based strategies and policies.

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Conflicts of interest

The authors do not have any conflicts of interest to declare.

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