Review Article

An ageing world of the 21st century: a literature review

Sarah Naja¹, Mohamed Mohei El Din Makhoul², Mohamad Abdul Halim Chehab^{1*}

¹Department of Community Medicine, Hamad Medical Corporation, Doha, Qatar

²Department of Geriatric Health, High Institute of Public Health, Alexandria University, Egypt

Received: 14 October 2017

Accepted: 11 November 2017

*Correspondence:

Dr. Mohamad A. Chehab,

E-mail: mohamadchehab1989@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Aging is the process of growing older at cellular, organ, or whole body level throughout the life span. Furthermore, the term “demographic transition” refers to a shift in fertility and mortality rates leading to changes in population growth rates, and age distribution. Thus, as people globally live longer, increasing levels of chronic illness as well as diminished wellbeing are nominated to become major global health challenges. Subsequently, the global population of elderly is projected to further increase and reach 1.4 billion by 2030 and 2.1 billion by 2050. Moreover, ageing has important implications on social security, the economy, the organization and delivery of health care, caregiver availability and constraints, society, and policies. Thus, it is pertinent to establish comprehensive elderly-friendly health care with further focus on preventive action to maintain a healthy ageing process.

Keywords: Elderly, Ageing, Demographic transition, Qatar

AGEING AND DEMOGRAPHIC TRANSITION

Aging is the lifelong process of growing older at cellular, organ, or whole body level throughout the life span.¹ According to World Health Organization (WHO), most developed countries have accepted the chronological age of 65 years as a definition of ‘elderly’ individuals.² While this definition is somewhat arbitrary, it is at many times associated with the age at which one can begin to receive pension benefits. Regarding elderly age, it can be categorized into three different groups: young old (60-74 year), old old (75-84 year), and oldest old (≥85 years). The United Nations (UN) proposed a cut-off at 60+ years to refer to the older population.³

The term “demographic transition” refers to the secular shift in fertility and mortality from high and sharply fluctuating levels to low and relatively stable ones. During the transition, mortality typically begins to decline first, followed some decades later by fertility

decline, leading to a series of changes in population growth rates, size, and age distribution. This process started in many European countries as well as parts of the Americas more than a century ago; and is currently underway in most of the world.⁴ Moreover, an epidemiologic transition has paralleled the demographic and technologic transitions in the developed countries of the world. Furthermore, this transition is still underway in less-developed societies; underlining a change in the pattern of mortality and disease from one of high mortality among infants and children to that of degenerative and man-made diseases affecting principally the elderly.⁵

According to the UN, the age composition of populations is transitioning to an older structure in all regions of the world. In 2050, the age pyramids are projected to have a more rectangular, or older, shape in both the less and more developed regions, a sign of a more advanced stage of aging.⁶

INDICATORS OF POPULATION AGING

Elderly dependency ratio

The elderly dependency ratio (EDR) reflects the proportion of elderly people (age 65 years and above) per one hundred persons of working age individuals (between age 15 and 64).⁷

Potential support ratio (PSR)

The PSR is the number of working age people (age 15 years to 64 years) per one elderly person (≥ 65 years). As the population ages, the PSR tends to decrease, which indicates that there are fewer potential workers to support the elderly. As of 2015, the world PSR was estimated to be 7.9%, where of all countries Japan showed the lowest PSR at 2.3 %.⁸

Aging index (elder-child ratio)

The aging index is defined as the number of people aged 65 years and over per 100 youths under the age of 15 years. In 2000, only a few countries (Germany, Greece, Italy, Bulgaria, and Japan) had more elderly than youth (aging index above 100). However, by 2030, the aging index is projected to exceed 100 in all developed countries, and the index of several European countries and Japan are even expected to exceed 200. Since population aging refers to changes in the entire age distribution, the most adequate approach to study population aging is to explore the age distribution through a set of percentiles, or graphically by analyzing the population pyramids.⁹

Life expectancy

The life expectancy is at a specific age, the average number of additional years a person of that age could expect to live if current mortality levels remain constant for the rest of that person's life. In particular, life expectancy at birth is the average number of years a newborn would live if the current age-specific mortality rates were to continue.¹⁰

According to the UN, the global life expectancy at birth is projected to rise from 70 years in 2010-2015 to 77 years in 2045-2050 and to 83 years in 2095-2100.¹¹ Africa is projected to gain about 19 years of life expectancy by the end of the century, reaching 70 years in 2045-2050 and 78 years in 2095-2100. In addition to that, Asia and Latin America as well as the Caribbean are projected to gain 13-14 years of life expectancy by 2095-2100. On the other hand, Europe, Northern America, and Oceania are projected to gain 10-11 years during the aforementioned time period. However, such increase in life expectancy does not immediately result in population ageing, but the progress in life expectancy contributes to the increase in the proportion of older people; where more individuals survive to ever older ages. Thus, eventually, lower

mortality and higher life expectancy end up reinforcing the effect of lower birth rates on population aging.

Median age

The median age of a population is the age that divides a population into two groups of the same size. Moreover, it is a single index that summarizes the age distribution of a population. According to 2015 estimates, the world median age was 29.9 years. Of all the countries, Monaco showed the highest median age at 51.7 years.¹²

GLOBAL BURDEN OF AGING

As people across the world live longer, soaring levels of chronic illness and diminished wellbeing are poised to become a major global public health challenge. Nearly a quarter (23%) of the overall global burden of death and illness afflicts people aged 60 and above; where much of this burden is attributable to long-term illness caused by diseases such as cancer, chronic respiratory diseases, heart disease, musculoskeletal diseases (such as arthritis and osteoporosis), and mental as well as neurological disorders. This long-term burden of illness and diminished wellbeing affects patients, their families, health systems, and economies, and is forecast to accelerate. Moreover, it will greatly affect the quality of life of older people.¹³ Chronic conditions may lead to severe and immediate disabilities, such as hip fractures and stroke, as well as progressive disabilities that slowly diminish the ability of seniors to care for themselves. About 14% of people aged 65 and above require assistance with bathing, dressing, preparing meals, or shopping.¹⁴

PRESENT AND FUTURE PROJECTIONS OF POPULATION AGING

Developed and developing countries alike are experiencing rises in life expectancy, despite Human immunodeficiency virus infection and Acquired Immune Deficiency Syndrome (HIV/AIDS) reversing the trend in some low- and middle-income countries. As a higher number of people survive into their 60s and beyond, the absolute number of elderly will rise. Combined with fertility declines, this results in a sharp increase in the share of elderly in the overall population.¹⁵

According to the UN, there are 901 million people aged 60 or over, comprising 12 per cent of the global population.¹¹ Furthermore, the aforementioned population is growing at a rate of 3.26 % per year. Europe has the greatest percentage of its population aged 60 or over (24%), but rapid ageing will occur in other parts of the world as well, so that, by 2050, all major areas of the world except Africa will have nearly a quarter or more of their populations aged 60 or above. The number of older persons in the world is projected to reach 1.4 billion by 2030 and 2.1 billion by 2050, and could rise to 3.2 billion in 2100.

AGING IN THE AFRICAN REGION

Between 2000 and 2030, the elderly population is projected to double in many Sub-Saharan African countries including the Democratic Republic of Congo, Mozambique, Cameroon, and Ghana. Since advancing age is the most powerful independent predictor of cardiovascular morbidity and mortality, the impact of these demographic changes on heart disease and stroke will be substantial. This demographic change has profound implications for developing countries that already suffer from communicable diseases, especially the HIV/AIDS epidemic, and continue to be challenged by basic infrastructure needs and economic development.¹⁶

AGING IN THE MIDDLE EAST AND NORTHERN AFRICA REGION

According to the World Bank 2012 report, the Middle Eastern population is aging rapidly, and as aging is the main risk factor for cancer, the incidence and prevalence of that disease are increasing among all the populations in the region. The percentage of the population over the age of 65 years in the Middle East and Northern Africa (MENA) is estimated at 4.7% (of a total population of 336 million).¹⁷

Demographic changes in the region are clearly seen through the rectangularization of the population pyramid as well as the increase in the number and proportion of older people. Population projections show a threefold increase of older persons from 4.1% in 2010 to 12% in 2050. Yet, compared to the developed world (13.2% in North America and 18.5% in Europe in 2010), the Arab region remains relatively young. Moreover, Lebanon and Tunisia have the highest percentage of older people (65+) at 7.3% and 7.0% respectively. By the year 2050, the proportion of older persons will exceed 20 percent in 6 out of the 22 Arab countries, and will range between 12 percent and 19 percent in 9 others. This will have implications on the labour force market, pension requirements, social security systems, and health and social care costs. At the same time, chronic diseases increase with aging and it is estimated that more than half of a person's lifetime health care expenditures occur after the age of 65.¹⁸

POPULATION AGING IN THE STATE OF QATAR

Reported by UN 2016, the total dependency ratio in Qatar is 30.3 % which is relatively low (<50%). Moreover, the elderly dependence on the productive population is relatively low; where the EDR of the country is 2%.¹⁹ Regarding the age structure, people between 15 years and 64 years represent the highest portion (76.7%) followed by young those under 15 years (21.8%), and those above 64 years (1.5%). In addition to that, the total life expectancy (both sexes) at birth is 75.7 years, which is higher than the global average of 71 years.

THE CONSEQUENCES OF AGING

Social security

An immediate effect of population aging is the increased number of retirees, implying that a growing number of elderly populations have to be supported by the young and economically active. Several developing countries have integrated social security and other welfare programs for old people in their developmental agenda. Furthermore, some welfare assistance is available to those who retired from the government service in the form of pension and/or contributory provident fund. The rest of the elderly depend on their savings or some kind of assistance from their family.²⁰

Economic implication/policy

For Organisation of Economic Cooperation and Development (OECD) countries, projected drops in both labor force participation and labor-force-to population ratios suggest modest declines in the pace of economic growth. The magnitude of these changes will critically depend on policy decisions taken at the national level, and business decisions taken at the local level. In most non-OECD countries, declining fertility rates will cause labor-force-to-population ratios to rise as the shrinking share of young people will more than offset the skewing of adults toward the older ages. These factors suggest that population aging will not significantly impede the pace of economic growth in developing countries.¹³

Implications for the organization and delivery of health care

Population aging will have a major impact on the organization and delivery of health care. Of particular importance will be the shift from acute to chronic illnesses and the likely growing shortage of health care workers, especially nurses and paraprofessionals. Thus, more focus must be shed on chronic diseases such as Alzheimer's disease, heart disease, and osteoporosis. First, the clinical care approach will need to change from one time interventions to ongoing management of multiple diseases and disabilities. Secondly, with chronic illness often comes disability, meaning that long-term care services, such as nursing homes, home health, personal care, adult day care, and congregate housing will become much more important sources of care. Third, new ways must be established to integrate medical and long-term care services.²¹

Caregiver availability and constraints

A variety of trends have contributed to a widening gap between older Americans' need for care and the availability of family members to provide that care, raising the potential for growing unmet needs, a heavier burden on individual caregivers, and an increased demand for paid care. The combined effects of delayed

childbearing and longer life expectancy mean more adults in later-middle age may be “sandwiched” between the competing demands of their children and those of their aging parents and parents-in-law. Women who have traditionally served as parent care providers are more likely to be employed than in previous generations, limiting their availability, and increasing their time constraints.²²

Social

The experience of loneliness and lack of social integration varies sharply across societies and powerfully influences the wellbeing of elderly and consequences of aging. Other than psychological wellbeing, isolation of the elderly may increase experiences of abuse, violence, and discrimination. However, both recognition of the problem and implementation of responses to resolve it are either inexistent or at best uneven in quality and effectiveness.²³

Policies

According to WHO 2009, policies that promote healthy aging of the population include a better coordination of health and long-term care services as well as enhanced preventive services to target smoking, obesity, and mental disorders.²⁴ When properly implemented, these policies will not only enable more people to age healthy, but they will also allow health systems to become adequately equipped and accommodate the ageing population's health needs.

SERVICES FOR THE ELDERLY

Continuum of care

According to the WHO, the “Continuum of Care” encompasses a comprehensive spectrum of specialized health, rehabilitative, and residential services to the frail and chronically ill.²⁵ The services focus on the social, residential, rehabilitative, and supportive needs of individuals.

Health care settings

Delivery of services to the elderly differs from country to another according to structure, policies and resources of the health care system. However, elderly care may be delivered in the following settings:

Physician's office

The most common reasons for visits are routine diagnosis and management of acute and chronic problems, health promotion and disease prevention, and presurgical or postsurgical evaluation.²⁶

Home health care

Such care is indicated when patients need monitoring, adjustment of drugs, dressing changes, and limited physical therapy. Home health care is commonly indicated after hospital discharge, although hospitalization is not a prerequisite. It can reduce nursing home placement of patients by a near quarter (23%) and is more cost-effective than institutional care when scheduled appropriately.²⁷

Long-term care facilities

These facilities include assisted-living facilities, board-and-care facilities, nursing homes, and life-care communities.

- *Assisted-living programs*

It enable residents who have problems doing activities of daily living (ADL) to maintain their independence in personalized settings by providing or arranging for the provision of daily meals, personal and other supportive services, health care, and 24-h oversight as needed.²⁸

- *Board-and-care facilities* (also called rest homes)

It provides care for elderly people who cannot live independently but do not need the constant supervision as that provided in nursing homes. It typically provides patient rooms, meals in a public dining room, housekeeping services, minimal assistance with personal care, and sometimes supervision of drug administration.²⁹

- *Nursing homes*

It provides a broad range of health-related services for people aged ≥ 65 years. The services provided include skilled nursing care, rehabilitation services, and dietary services. Disabling or burdensome disorders—most commonly dementia, incontinence, and immobility may trigger consideration of nursing home placement. However, even modest amelioration of a disorder may forestall the need for a nursing home.³⁰

- *Life-care communities*

Such service offers a contract intended to help patient lifetime and, at a minimum, guarantee shelter as well as access to various health care services. It offers different levels of care for people who live independently, need assistance, or need skilled nursing care.³¹

Day care facilities

It provides medical, rehabilitative, and cognitive support services multiple hours a day for several days a week. All day care facilities provide certain core services such as transportation, nutrition, recreational, and social activity programs.³²

Hospitals

Hospitals may provide emergency medical care, diagnostic testing, intensive treatment, or surgery. The elderly use hospitals more than younger patients, have more admissions through the emergency department, and stay longer; thus, consuming more resources while at the hospital.³³

Respite care

It is the provision of temporary care by a substitute caregiver to provide relief of the regular caregiver. More than half of the United States of America (USA) have established respite programs.³⁴

Hospice care

Such type of care involves support for people who are very likely to die within a few months. Hospice care focuses on comfort and meaningfulness, not on cure. In some countries hospice mainly provides services at home; in others, such as England, services are provided through inpatient facilities. In typical hospice care, family members serve as the primary caregivers, often with additional help from home health aides and volunteers.³⁵

HEALTHY AGING

According to the WHO, the primary objective of health policies and care directed towards the elderly is to preserve 'healthy' and 'successful' ageing throughout the advanced years.²⁵

PREVENTIVE CARE FOR ELDERLY

Primary prevention in adults aged less than 60 years will improve health in successive cohorts of older people, but further reduction of disease will come through effective primary, secondary, and tertiary prevention targeting older people. Subsequently, several obstacles impede that achievement of such prevention as misplaced global health priorities, ageism, poor preparedness of health systems to deliver age-appropriate care, and the complexity of integrating care for multi-morbidities. Moreover, the WHO recommends that primary prevention encompass a population as well as an individual based strategy.³⁶

POPULATION BASED STRATEGIES

To fulfil such strategy, it is essential to cover the five critical areas of health promotion which are building a healthy public policy, creating supportive environments, strengthening community action, developing personal skills, and reorienting health services.

A comprehensive Global Strategy on Ageing and Health (2016-2020) was adopted by the World Health Assembly

in 2016. The strategy aims at developing age-friendly environments and calls for alignment of health systems with the needs of older populations. In addition to that, it encourages the development of sustainable and equitable systems for long-term care as well as further monitoring and research; thus, emphasizing the important role of involving that elderly in all decisions that concern them.³⁷ The strategy builds on two international policy instruments that have guided action on ageing and health since 2002, the Madrid international plan of action on ageing and WHO's policy framework on active ageing.

INDIVIDUAL BASED STRATEGIES

Individual based strategies aim at decreasing the incidence of aging-related diseases, through targeting selected high-risk individuals; thus having a substantial effect on few people and a modest effect on the population.³⁸

SITUATION IN QATAR

Qatar has completed its national strategy on ageing that states a relevant vision, mission, theme, principles, objectives, and core areas. Qatar has also completed the Arab Plan of Action on Ageing (APAA 2002) as well as a national plan of action on ageing. Further, the State is setting up a mechanism of cooperation regarding the implementation of Madrid International Plan of Action on Ageing (MIPAA). Additionally, the Supreme Council for Family Affairs, department for ageing affairs of elderly and people with disabilities is the responsible institute for ageing in Qatar.¹⁸

Finally, the State of Qatar is investing greatly in preventive services for the elderly such as:

- Cancer screening for colon, breast, and prostate
- Vaccination for pneumococcal, influenza, and herpes zoster at the outpatient clinics in Al Rumailah hospital
- Geriatric outpatient clinics at the aforementioned hospital run by a multidisciplinary team and consisting of a general geriatric clinic, memory clinic, and fall clinic
- A long term care unit (LTCU) at Al Rumailah hospital that provides long term services for the elderly, a skilled nursing facility, and home health care services.³⁹

A center of care and empowerment of the elderly (EHSAN) that provides home care to the elderly through social and psychological services aimed at resolving issues facing elderly families. The center also offers nursing, physiotherapy, and rehabilitation services to some elderly whose health conditions prevent them from going to hospitals. Moreover, such center provides nutritional instructions and gives the needy elderly compensatory equipment.⁴⁰

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Timiras P. Physiological basis of aging and geriatrics. 4th Edition. New York: Informa Healthcare; 2007.
2. World Health Organization (WHO). Definition of an older or elderly person. World Health Organization. 2016. Available at: <http://www.who.int/healthinfo/survey/ageingdefnolder/en/>. Accessed on 3 August 2017.
3. United Nations (UN). Department of Economic and Social Affairs, Population Division. World Population Ageing 2013. New York, 2013: UN; 2013: 17. Available at: <http://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2013.pdf>. Accessed on 3 August 2017.
4. Population Council. Demographic Transition and Its Consequences. 2011. Available at: http://www.pop-council.org/uploads/pdfs/2011_PDRSupp_DemTranConseq.pdf. Accessed on 3 August 2017.
5. McKeown R. The Epidemiologic Transition: Changing Patterns of Mortality and Population Dynamics. *Am J Lifestyle Med*. 2009;3(1):19-26.
6. United Nation (UN). Department of Economic and Social Affairs, Population Division. Population facts: United Nation (UN); 2012 December. Report no: 2012/4. Available at: http://www.un.org/en/development/desa/population/publications/pdf/popfacts/popfacts_2012/4. Accessed on 3 August 2017.
7. Population Division, DESA, United Nations. Definition of the indicators of population aging. UN. 2016. Available at: <http://www.un.org/esa/population/publications/worldageing19502050/pdf/95annexi.pdf>. Accessed on 3 August 2017.
8. Central Intelligence Agency (CIA). Dependency Ratio Country Comparison to the world. *Cia.gov*. 2016. Available at: https://www.cia.gov/library/publications/the-world-factbook/fields/print_2261.html. Accessed on 3 August 2017.
9. Gavrilov LA, Heuveline P. Aging of Population. *The Encyclopedia of Population*. New York, USA, 2003. Available at: http://longevity-science.org/Population_Aging.htm. Accessed on 8 August 2017.
10. United Nation (UN). World Population Aging 1950-2050 Definition of the Indicators of Population Aging. 2016. Available from: <http://www.UN.org/esa/population/publications/worldageing19502050/pdf/95annexi.pdf>. Accessed on 2 August 2017.
11. United Nations (UN). Department of Economic and Social Affairs, Population Division (2015). World Population Prospects the 2015 Revision. New York: UN; 2015: 7. Available at: https://esa.un.org/unpd/wpp/publications/files/key_findings_wpp_2015.pdf. Accessed on 12 August 2017.
12. Central Intelligence Agency (CIA). World Factbook. Median Age of Countries of the World. *World.bymap.org*. 2016. Available at: <http://world.bymap.org/MedianAge.html>. Accessed on 3 August 2017.
13. World Health Organization (WHO). "Ageing well" must be a global priority. WHO. 2014. Available at: <http://www.who.int/mediacentre/news/releases/2014/lancet-ageing-series/en/>. Accessed on 3 May 2017.
14. Pan American Health Organization (PAHO). Healthy Aging and Non Communicable Disease. Available at: http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=17752&Itemid=. Accessed on 21 August 2017.
15. Bloom D, Canning D, Fink G. Implications of Population Aging for Economic Growth. *Harvard School of Public Health*; 2011: 9-11.
16. Smith SM, Mensah GA. Population aging and implications for epidemic cardiovascular disease in Sub-Saharan Africa. *Ethnicity Dis J*. 2003;13(2):77-80.
17. World Bank. The World Bank Annual Report 2012. Vol. 1. Washington, DC: World Bank; 2012. Available at: <https://openknowledge.worldbank.org/handle/10986/11844>. Accessed on 13 August 2017.
18. United Nations Population Fund (UNFPA), Economic and Social Commission of Western Asia (ESCWA), the Center for Studies on Aging (CSA). Ageing in the Arab Region: Trends, Implications and Policy options. UNFPA, ESCWA, CSA. Beirut, Lebanon, 2014. Available at: http://www.csa.org.lb/cms/assets/csa%20publication/unfpa%20escwa%20regional%20ageing%20overview_full_reduced.pdf. Accessed on 16 August 2017.
19. United Nation (UN). United Nations Department of Economic and Social Affairs: Population Division. Qatar Population 2016. *Countrymeters.info*. 2016. Available at: <http://countrymeters.info/en/Qatar>. Accessed on 3 August 2017.
20. Princeton Educational center. Population ageing in Arab countries: future prospects and socio-economic and health consequences. Available at: <http://iussp2005.princeton.edu/papers/50322>. Accessed on 3 June 2017.
21. Wiener J. Population ageing in the United States of America: implications for public programmes. *Int J Epidemiol*. 2002;31(4):776-81.
22. Population Reference Bureau (PRB). Today's research on aging: family caregiving. Available at: <http://www.prb.org/Publications/Reports/2016/todays-research-aging-caregiving.aspx>. Accessed on 3 August 2017.
23. United Nation Population Funds (UNFPA), Doha International Institute for Family Studies. Family Support Networks And Population Ageing. UNFPA, 2009. Available at: https://www.unfpa.org/sites/default/files/pub-pdf/family_support_networks_2009.pdf. Accessed on 3 August 2017.

24. World Health Organization (WHO), Regional Office of Europe. Health Systems and Policy Analysis. 2009. Available at: http://www.euro.who.int/__data/assets/pdf_file/0004/64966/E92560.pdf. Accessed on 21 August 2017.
25. World Health Organization (WHO). Ageing and Health Technical Report A Glossary of Terms For Community Health Care And Services For Older Persons: WHO, volume 5. Available at: http://www.who.int/kobe_centre/ageing/ahp_vol5_glossary.pdf. Accessed on 3 August 2017.
26. Resnick B. Overview of Geriatric Care. 2013. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/overview-of-geriatric-care>. Accessed on 23 August 2017.
27. Resnick B. Home Health Care. Merck Manuals Professional Edition. 2013. Available from: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/home-health-care>. Accessed on 21 August 2017.
28. Resnick B. Assisted-Living Programs. 2013; Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/assisted-living-programs>. Accessed on 22 August 2017.
29. Resnick B. Board-and-Care Facilities. 2013. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/board-and-care-facilities>. Accessed on 3 May 2017.
30. Resnick B. Skilled Nursing Facilities. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/skilled-nursing-facilities>. Accessed on 21 August 2017.
31. Resnick B. Life-Care Communities. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/life-care-communities>. Accessed on 3 August 2017.
32. Resnick B. Day Care for the Elderly. available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/day-care-for-the-elderly>. Accessed on 3 August 2017.
33. Resnik B. Hospital Care and the Elderly. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/hospital-care-and-the-elderly>. Accessed on 12 August 2017.
34. Resnik B. Respite Care. Available at: <http://www.merckmanuals.com/professional/geriatrics/provision-of-care-to-the-elderly/respite-care>. Accessed on 3 August 2017.
35. Cobbs E, Blackstone K, Lynn J. The Dying Patient. Available at: <http://www.merckmanuals.com/professional/special-subjects/the-dying-patient/the-dying-patient#v8587504>. Accessed on 6 May 2017.
36. World Health Organization(WHO). Europe W. Health 2020: Policy framework and strategy. 2012 Available at: https://issuu.com/whoeurope/docs/health2020_policyframework_strategy. Accessed on 3 August 2017.
37. World Health Organization (WHO). The Global strategy and action plan on ageing and health. World Health Organization. 2016. Available at: <http://www.who.int/entity/ageing/global-strategy/en/index.html>. Accessed on 21 May 2017.
38. World Health Organization (WHO). Improving Health Care Individual Interventions. Available at: http://www.who.int/nmh/publications/ncd_report_chapter5.pdf. Accessed on 3 August 2017.
39. Hamad H. Ensuring Quality of Life for Qatar's Elderly Population. Hamad.qa. 2016 Available at: <https://www.hamad.qa/EN/news/2015/October/Pages/Dr--Hanadi-Al-Hamad---Ensuring-Quality-of-Life-for-Qatar's-Elderly-Population.aspx>. Accessed on 1 August 2017.
40. Home Care for the Elderly - Hukoomi - Qatar E-government. Portal.gov.qa. 2016; Available at: <http://portal.www.gov.qa/wps/portal/services/individuallandingpages/medical+services/homecarefortheelderly>. Accessed on 24 August 2017.

Cite this article as: Naja S, Makhoul MMED, Chehab MAH. An ageing world of the 21st century: a literature review. *Int J Community Med Public Health* 2017;4:4363-9.