The Graying of our Planet: Discovering Best Practices in Age-Friendly Initiatives from around the World

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# Introduction

The purpose of this paper is to explore the challenges and opportunities facing the global community in the 21st century as a result of the current demographic trends in aging. For the first time in history within this century, the number of people older than 65 will outnumber those younger. Over the last twenty years, the aging of the world has been the subject of several international initiatives to address the potential challenges of a global aging population. These international efforts provide opportunities for experts in various fields from all over the world to collaborate and build long-range aging policy recommendations to address the societal, cultural, and economic implications of an aging society. This paper will examine the findings of these efforts and the calls to action that resulted. This paper will also identify best practices in countries around the world. Now, as never before, gerontology can utilize cross-cultural lessons to develop the best practices to address the emerging challenge of global aging.

In order to understand the scope of the challenges that face the global community, it is important to understand the factors that have contributed to the “graying” of the planet. Within the last century, human life expectancy in many parts of the industrialized world, has increased by nearly thirty years. Even in countries where the life expectancy is not as high as the mid-seventies, as in the United States, there has still been some increase.

Medical advances to treat age-related diseases have played an important part in helping people to live longer. Social interventions, such as improved sanitation, diet, and public health measures accounted for a significant drop in mortality as well (Moody and Sasser, 2012). Advancements in the area of immunizations have contributed to the increase in longevity. Major diseases, such as polio, which accounted for death in childhood and early adulthood, have been eradicated through the widespread use of childhood immunizations.

The number of older people is increasing in many countries because there are fewer people being born. There are lower birth rates due to a decline in fertility. Family structures are changing as people are having fewer children.

In industrialized countries, the growth in the aging population began in the 19th century as birthrates declined and life expectancies began to increase. While the demographic shift began later in developing countries, the growth in the aging population has happened at a much faster rate. It is projected that soon there will be more people age 65 and over living in China alone than in all of Europe (United Nations 2009). This trend poses a threat for developing countries as there has been less time to make adjustments and develop policies to address the social implications for supporting an older population. Interestingly, in an effort to address this issue, China has relaxed its one-child policy. (Pew Research Center, 2014)

Globalization, particularly in regard to economics, has also impacted the social institutions and public policies influencing the well-being of older adults. Access to information, goods and services spans the world and has allowed developing counties into the arena to participate in the global economy.

Also, for the first time in history, people over 65 will outnumber people of working age, aged 14 to 64 years. This phenomenon is called the old-age dependency ratio. The old-age dependency ratio is an important measure of population aging (Higo and Williamson, 2011). This ratio is an indicator of the both the formal and informal burden of providing for an older population economic security and well-being (Schulz and Binstock 2006). On a global scale, the old-age dependency ratio has increased steadily up from 8.5% in 1950 and projected as be as high as 25.3% by 2050 (Schulz and Binstock 2006). This raises concern that as there is an increase in more aged people who are considered to be “dependent” on society and resources, there will be less working age people to fuel the economies to support them.

# Global Initiatives and Recommendations

The United Nations and its health advocacy arm, the World Health Organization, are primary drivers in the discussion on global aging. These organizations provide leadership in developing policy recommendations for age policies worldwide. Since 1993, the U.N. General Assembly has convened experts in the field of aging to address the implications of global aging.

In 2002, The World Second Assembly on Ageing was held in Madrid. The resulting Plan of Action called for changes in attitudes, policies and practices at all levels to fulfil the enormous potential of ageing in the twenty-first century.  Its specific recommendations for action give priority to older persons and development, advancing health and well-being into old age, and ensuring enabling and supportive environments (www.un.org). The primary principal of the Madrid Plan of Action is articulated in paragraph 19:

*A society for all ages encompasses the goal of providing older persons with the opportunity to continue contributing to society. To work towards this goal, it is necessary to remove whatever excludes or discriminates against them.* (2002 Madrid International Plan of Action on Ageing (para. 19)

# Current Global Challenges

**Healthcare Expenditures and Access to Health Care**

In the 20th century, modern medicine has achieved significant advances that have contributed to the lengthening of human lives and to the curing or controlling of many major diseases. Some of the most dreaded diseases, such as polio and smallpox, have been virtually eliminated. Along with the increase of the longevity, however, there has been an increase in chronic disease. Many industrialized countries have social health care models in which health care is subsidized for the aging population by the government, such as in the United States. The increase in the aging population is anticipated to cause a huge strain on those healthcare systems. The burden of a large aging population along with rising healthcare costs are setting the stage for a crisis in health care in industrialized countries.

The U.S. Institute of Medicine and the WHO are leading the way by convening experts to make recommendations on how to improve current healthcare systems throughout the world. Experts have determined that cutting edge medical and personal care support, and prevention knowledge hold the potential to improve the systems in industrialized countries (Beard, Biggs, Bloom, et al., 2011). The investment in integrated, cost-efficient health systems and the utilization of cutting-edge technology will allow the industrialized countries to provide a model for a modernized healthcare system that can sustain the demands of an aging population.

Developing countries are facing vast health care challenges. One of the greatest issues is the fact that populations in developing countries are growing old at a pace that exceeds the accumulation of financial resources available to support the costs of an aging population. Communicable and chronic diseases are already placing significant strain on existing healthcare systems. Along with these constraints, developing countries do not often have the political infrastructure available to help support the healthcare system. Given these hurdles, the pressures of an aging population will be difficult to respond to. Many countries will not have the resources to adapt, improve, or expand their healthcare systems (Beard, Biggs, Bloom, et al. 2011). It will be an uphill battle as developing countries are advised to follow the same recommendations as industrialized countries to improve their health care system, however, with far fewer resources to do so.

In both industrialized and developing countries, prolonging life seems a desirable goal, but it comes with high costs. With the rising costs and new advances in expensive medical technology, decisions about life prolongation are no longer questions just for medical practitioners. Who will get access to valuable healthcare resources? (Moody & Sasser, 2012) The common stereotype of old age as a time of sickness and decline perpetuates the fear and denial of aging process. This mindset also exaggerates the expectations of the demand placed on society by an aging population. A generational war may be on the horizon, pitting the young against the old as they each compete for critical resources. Often in an attempt to control the availability of essential resources, the practice of age-based healthcare rationing withholds medical care or treatments from the oldest in the population.

In many parts of the world, healthcare is not available to all. Sometimes, access to adequate health care and life-saving treatments can only be attained by those with the means to pay for it. The poor, which in many cases is also the old, can’t get the health care they need to live a healthy life. The inability to attain quality health care perpetuates both financial and physical decline. Without access to health care, many of the oldest in the global population are further excluded from participating in the global community.

**Changes in Family Structure and Support**

Lower fertility has influenced the ability to support an aging population. Fewer children and the resulting smaller family sizes will affect the ability to provide informal care and support for older people. In industrialized countries, the trend in lower fertility rates has been taking place for several generations. In developing countries, this trend is expected to be very detrimental as most cultures rely heavily on family members for support and survival (Higo and Williamson, 2011).

In contrast with industrialized countries where older people prefer autonomy and independence, older people in developing countries are very dependent on their family members and children. This informal support is critical in developing countries, as there is often no state subsidized social welfare program to provide economic security to the more elderly population. In both industrialized and developing countries, the change in family size and structure has had a significant impact on the elderly population’s ability to receive the benefits of informal care. On a global scale, adjustments will need to be made in societal structure and policies to compensate for the loss of this vital resource.

Longevity presents a unique opportunity for a generational interaction and an unprecedented level of familial responsibility for elder care (Damon-Rodriguez and Lubben, 2007). With the frequent occurrence of multiple living generations within a family, there is greater opportunity to have meaningful intergenerational exchanges. It should also be noted that older adults provide care as well as receive it (Kinsella and He, 2009). In many countries, the older generations are caregiving for their grandchildren. This phenomenon is particularly true in developing countries, as working age individuals leave their children behind in rural areas to seek employment in cities.

**Social Security Programs**

During the mid-20th century, in most industrialized countries, retirement became an institution that has been identified with the aging population. The concept of retirement developed primarily because of generous public pension benefits for retirees (Higo and Williamson, 2011). The financial security provided by public pensions for retirement encourage many to leave the workforce. As the global aging population grows, public pension systems will be strained. This trend will lead to a greater demand for individuals to assume more significant role in providing for economic security in their older years. With fewer assurances that states will provide this economic protection, many individuals will need remain in the workforce later in life to save more money. In countries all over the world, governments are incentivizing this trend to help ease the financial burden of supporting an aging population.

**Healthy Aging**

One aspect of concern in the increase of longevity is how to grow old and maintain health. Healthy aging, on a personal level, is necessary for maintaining a high quality of life in later years. On a societal level, healthy aging is viewed as imperative for sustaining the systems and supports needed to care for an aging population. So, how does one achieve healthy aging? Given typical stereotypes, healthy aging may seem like an oxymoron. As it stands, healthy aging is difficult to define.

Many societies around the world have experienced a long-term shift in causes of death from infectious and acute disease to chronic and degenerative diseases (Kinsella and He, 2009). This trend is known as epidemiological transition. This means that by and large, individuals are living longer, but doing so in a state of chronic disease.

According to the WHO, in the next two decades there will be dramatic changes and transitions in the world’s health needs, as a result of the epidemiological transition (WHO, 2013). It appears that developing countries are at greatest risk for this. This is due to the fact that they are generally poorer. Also, as a country's economy becomes more developed, the environmental, social, and behavioral factors that cause this change become more prevalent. Nevertheless, studies indicate that smoking, hypertension, dietary fat, occupational hazards, and poverty are among the leading risk factors for the development of chronic disease in developing and industrialized nations (Kinsella and He, 2009).

The rise in chronic conditions, coupled with a growing aging population, is expected to contribute to an increase in overall health care costs. Some debate exists however that there are additional factors that contribute to an increase in healthcare costs, such as expensive medical technology, workforce demographics, and system inefficiencies.

**Aging of the Workforce**

The participation of older workers in the workforce varies considerably and is lower in industrialized countries than in developing countries (Kinsella and He, 2009). In developing countries, many older adults continue to work past retirement a matter of economic necessity. Retirement is often considered a luxury of the financially well-off. There appears to be a correlation between the GDP of a country and the participation of the older population in the workforce. Those countries with higher GDP have lower rates of people over 65 in the workforce (Kinsella and He, 2009). This trend is likely because many wealthier, industrialized countries have social pension systems that allow for the financial support for older individuals, as was discussed earlier.

As the global aging population grows, those who remain in the workforce, either by necessity or choice will have a tremendous impact on the workforce. Agriculture, particularly in developing countries, and knowledge-based economies provide the greatest employment opportunities for older workers. Over the last decade, there has been an overall rise in employment among older workers between in the fields of health, business services, education, social work, and real estate, reflecting an ongoing shift toward a knowledge-based economy (Kinsella and He, 2009).

**Attitudes about Aging**

By and large, aging is considered a problem in many cultures. The degree to which varies by country. Those countries with an older population consider aging a bigger problem and those countries with younger populations. The concern centers around the perceived amount of resources needed to sustain an aging population. Interestingly, it is the older members of the populations of countries that are more concerned about aging (Pew Research Center, 2014). This attitude is partly driven by personal concerns for financial well-being in later years. In countries with the economic resources to help its older citizens, an older individual’s concern about aging declines.

From a societal perspective, aging is still looked at with fear and trepidation. Many countries have youth focused cultures who view old age as a time of illness and decline. Even in cultures with long-standing positive traditions around aging, there is beginning to be a shift towards negative viewpoints.

There has been a rise in ageism or the discrimination of people based on age throughout the world. Older people are discriminated against because of their age at the work force; they are presented in a humiliated way in various popular media platforms; they are invisible to many key cultural institutions; and they are marginalized in major social activities. (Doron, 2013)

# From Policy to Practice: Best Practices in Age-Friendly Initiatives from Around

# The World

**Housing**

As a society ages, housing options must be adapted to meet design, function, and financial criteria of an aging population. Innovative housing options must take into consideration factors such as continued functional accessibility in the face of decline, affordability, and location relative to supportive services. Research shows that the majority of seniors want to age-in-place and that aging-in-place often provides better health outcomes. The design of affordable, practical housing located within the communities in which seniors live is imperative for many countries.

In Rotterdam, the Netherlands is a model of senior housing that incorporates the principles of greater choice and independence. The Humanitas Foundation Apartments for Life are universally designed apartments housed around a village square which includes recreation, medical and shopping facilities as gardens and studios. Residents are entirely independent and can arrange for their own care, or they have access to personal care, nursing care, and a range of other health care options through Humanitas. In this housing model, residents can get the specific care they need while being a part of a multi-generational community for life (Baldwin, Osborne & Smith, 2013).

Some housing programs have a focus solely on "bricks and mortar" and fail to take into account the social support needs of older people which tend to increase with advancing age. Darwin Court, in London mixes age-friendly design with a social focus. At Darwin court, there is an emphasis on communal space to encourage a sense of community. This is based upon the principle that older people value opportunities to be mentally and physically active while remaining a part of the community.

As an alternative to a nursing home, the innovative concept of “granny pods” allows older individuals to remain independent while receiving a higher level of care. Granny pods are free-standing modular structures that can be placed on a family members or caregiver’s property. The cottages are equipped with monitoring technology, along with medical devices. This concept also allows individuals to remain near loved ones as their need for care increases. These modular housing alternatives are not inexpensive, but they can be cheaper over time than an extended nursing home stay.

**Transportation**

As people grow older and re subject to physical and cognitive impairments, it often becomes more difficult to drive their own cars to get from place to place. Transportation alternatives are an important development in age-friendly initiatives. Like housing innovations, transportation innovations have the potential to improve elder health, well-being, and the abil­ity to age in community. (Lehning, 2012) Without access to transportation, individuals are often disconnected and isolated from the rest of the community. Improving transportation options is not only a benefit to the elderly; it benefits all the members of a society.

When it comes to transportation options, research shows that older adults want control, autonomy, and choice (Community Transportation Association of America, 2003). In Dallas, Texas, a program called MY RIDE is dedicated to helping older adults find and connect to the most appropriate, most cost-effective transportation options. In Newfoundland and Labrador, Canada, the Provincial Government provided funding to establish transportation programs with partners like the Red Cross, Metrobus, and local municipalities to provide affordable and reliable transportation for medical appointments, errands, and social outings. In developing countries, particularly in rural areas, safe, cost-effective, and efficient transportation programs for the elderly are difficult to find.

**Civic Participation and Employment**

Article 10 of the United Nations Madrid International Plan of Action on Ageing states:

*The potential of older adults is a powerful basis for future development. This enables society to rely increasingly on the skills, experience and wisdom of older persons, not only to take the lead in their own betterment but also to participate actively in that society as a whole.* (United Nations, 2002)

The aging members of society are a vast resource that is often left untapped. It is critical for the global community to tap this resource in order to help solve the complex issues facing the world today. Productive engagement of elders in society benefits both the older and younger members of society benefit.

In Calgary, Canada, an initiative called Elder Friendly Communities engages seniors in community engagement to advocate on their own behalf to make their communities more age-friendly. This program fosters the leadership of the elders and empowers them to take ownership of issues directly impacting them. This program is currently being replicated in Adelaide, Australia.

In the Netherlands, the Seniors and Society Academy (SESAM) was established in collaboration with the Legacy Leadership Institute in the U.S. The Academy offers further development and education to retired corporate managers over age 55 to enable them to use their experiences as volunteer advisor/coaches for nonprofit volunteer organizations in the community. This program has bolstered the amount of older volunteers participating in the community is the Netherlands.

In the area of age-friendly employment innovation, Lanxass, a company headquartered in Germany, has developed a program to maintain productivity as its workforce ages. The five-tiered program consists of (1) an additional savings account program; (2) a training program for ongoing qualification; (3) a review of workplace conditions; (4) a health management program; and (5) a work-life balance program (Beard, Biggs, Bloom, et al., 2011). Overall, the program addresses the need of older workers for financial security, professional development, health, remain, and flexibility. Due to the overall success of the program for its employees in Germany, Lanxass has begun to implement it in its offices worldwide. Although the world’s corporations have been slow to address the needs of an aging global workforce, this is an excellent model to share.

**Health and Healthcare**

Maintaining health throughout life is an important objective for all members of society. With the increase in the prevalence of chronic disease throughout the world, the focus of many initiatives has been improving the health of individuals through prevention methods such as information and intervention. Access to affordable healthcare is also an important aspect of prevention.

Due to its early modernization and the influence of Western culture on the diet, the South Korean government instituted a program called, Rural Living Science Program. The program is designed to combat the rise in chronic disease associated with the dietary change. Over the last few decades, there has been an increase in the consumption of animal food products and highly processed foods. (Kim, Moon, & Popkin, 2000) The Rural Living Science Program promotes the consumption of local foods and vegetables through mass media campaigns.

With the one of the oldest populations in Europe, Serbia recognizes the need for innovative and timely action to ensure sustainable and accessible health and social services for its older people. The Health Services Delivery Programme of the Division of Health Systems and Public Health and the Healthy Ageing and Long-term Care Programme of the Division of Noncommunicable Diseases and Life-Course have established a collaboration that strengthens the integration between primary health care and other levels of care, health and social services. It also enhances a platform to promote a people-centered approach for delivering health and social services for older persons. This initiative is designed to improve health in line with the values of Health 2020. (WHO, 2013)

Based upon the needs of its growing aging population, Thailand is in the process of developing an age-friendly primary health care system. The system is based on the premise that greater collaboration is needed between patient, families, and medical professionals. The concept incorporates age-friendly behaviors, services that reflect the demands, health problems, and limitations of elders, and age-friendly environment design. (Hoontrakul, Sritanyarat, Nuntaboot, & Premgamone, 2008)

**Long-term Care**

There has been an explosion in demand of long-term care in industrialized nations (Feder, Komisar, & Niefeld, 2000). Over the last several decades, long-term has evolved from exclusively informal care provided by family members, to more formal care administered in an institutionalized setting. Changes are needed within the entire system of long-term care in order to support an aging population and provide the best possible care.

Due to the eminent social and economic repercussions of an enormous growing aging population, China has made aging a prominent public policy (Zhang, Guo, and Zheng, 2012). Informal care is based upon the deep Confucian culture and has supported the society for centuries. However, with the decrease of family size impacting the ability to care for an aging population, China has implemented elder law to address family care and responsibility. Known as the Law on the Protection of the Rights and Interests of the Older People, the law requires adult children to visit their parents regularly and care for their spiritual needs and not to neglect or isolate them (Zhang, Guo, and Zheng, 2012). This is an example of formalizing filial responsibility and the role of informal care that will be essential to sustain China’s significant aging population.

Innovations are beginning to transform the environments of the care settings. The model known as the Eden Alternative®, with homes in the United States, Canada, Europe, and Australia, has changed the look and feel of the traditional care facilities. The model shifts the focus away from the medical aspects of care towards person-centered care in order to promote well-being and a better quality of life for individuals (KMPG International, 2013).

Better training for healthcare workers in the field of aging is also important. In Singapore, The Singapore Ministry of Health has established the Geriatric Education and Research Institute. The Institute is designed to increase proficiency in healthcare workers caring for the elderly by providing education on the special needs and clinical management of elderly patients (KMPG International, 2013).

The development of technology in long-term care is also an area of great focus. The use of technology improves medical care delivery, reduces risks, and supports greater independence of older adults. Paro, an interactive robot approved as a medical device in the U.S., can show emotions and is being used to help provide comfort and companionship to long-term care patients (KMPG International, 2013).

Germany is providing an attractive model for dealing with the financial aspect of care. Individuals covered by long-term care insurance can opt for either a cash payment, payment for direct services or a combination of the two (KMPG International, 2013). As it turns out, most beneficiaries opt for a cash payment and stay at home and receive care. The resources can be for professional care services or can be paid to a relative or friend. From a government planning perspective, this model has been shown to keep costs predictable (KMPG International, 2013).

**Attitudes and Respect**

Across most cultures, aging is viewed as a time when someone becomes frail, disabled, and totally dependent on others (Crampton, 2009). Often, older people feel invisible, devalued, and excluded from society. As we begin to see the “graying” of our planet, the attitudes towards aging are likely to shift. The fact a large proportion of the world’s population will be over 65, will force society to look at old age differently. It will be unavoidable.

In Ghana, old age is not looked at as a particular chronological time of life, but rather it is a status negotiated within interdependent relationships (Crampton, 2009). The consideration of “old age” is based upon a person’s ability to work and support themselves (Crampton, 2009). Because the economy depends highly on labor, many individuals work until their later years and find ways to contribute despite aging (Crampton, 2009). There is a great deal of respect for this among younger generations.

Collaboration between generations is an important way to change the attitudes towards aging. In the U.S., at Carnegie Mellon University, an artist and professor, has developed a program to collaborate with older people to create large-scale murals in public places. Younger artists are paired with older adults. The idea is to utilize the elders as “custodians of history” to provide a historical vision of places throughout the city in order to draw the murals (Baker, 2014). They provide a richly textured backdrop to conversations that enable dialogue and promote cohesion (Baker, 2014). They are created collectively and the value of the elders’ contributions are essential to the production of a collective depiction of social life (Baker, 2014). This exemplifies how older individuals are vital to society as resources of knowledge and wisdom.

**Conclusion**

The age-friendly innovations discussed in this paper are only a fraction of the initiatives enhancing aging experiences from around the world. In the two last decades, a great deal of progress has been made to identify the opportunities and challenges that lie ahead as the world population ages. The implementation from policy to practice, done well, takes time.

As the examples in the paper show, industrialized countries have distinct advantages over developing countries in the area of innovation. Available economic resources, political infrastructure and stability, as well as cultural constraints all play an important role in the development of innovation to address the complexities of an aging population. While developing countries are working to deal with more pressing issues within their realms, the industrialized countries continue forge on to find innovations that can be utilized by all.

As is evident by the research, it is never too early for countries to develop policies for aging. In order to make the most of aging policy, it should be part of human development under a lifespan approach (Crampton, 2009). This approach would allow for the opportunity of individuals, as well as states, to implement practices to delay the aging process. It would become embedded in the culture of societies.

The world may be getting older, but it is also getting smaller. Globalization will continue be an important factor in the development of social policies around the world. At the prompting of international organizations such as the United Nations and the World Health Organization, best practices in age-friendly initiatives will continue to be brought to light on the international stage. These international collaborations will be instrumental in furthering the progress towards a world where there is less focus on the number of years in a person’s life but rather the quality of life in those years.

References:

Baldwin, C., Osborne, C., and Smith, P. Planning for age-friendly neighbourhoods. 49th ISOCARP Congress 2013.

Baker, D. (2014) Creative approaches to working with older people in the public realm. *Working with Older People*. 18(1) 10-17.

Beard, J., Biggs, S., Bloom, D. E., Fried, L. P., Hogan, P. R., Kalache, A., & Olshansky, S. J. (2012). *Global population ageing: peril or promise?* (No. 8912). Program on the Global Demography of Aging.

Crampton, A. (2009). Global aging: emerging challenges. *The Pardee Papers*,*6*, 1-25.

Damron-Rodriguez, J.A. And Lubben, J. (2007). Family and community healthcare for older persons. In S. Carmel, F. Torres-Gil, and C. Morris (Eds.) with J. Damon Rodriguez, S. Feldman, and T. Seedsman (Co-Eds.) *The Art of Aging Well: Lessons from Three Nations, Volume 1* (pp.75-90). New York: Baywood Publishing Co.

Doron, I. (2013) International rights of older persons: Ageism, justice, and social policy. American Bar Association Journal *BiFocal*, 35(2) p. 52-55.

Feder, J., Komisar, H. L., & Niefeld, M. (2000). Long-term care in the United States: an overview. *Health Affairs*, *19*(3), 40-56.

Higo, M. and Williamson, J. B. (2011) Global Aging. *Handbook of Sociology of Aging*, (pp. 117-119) Springer New York.

Hoontrakul, D., Sritanyarat, W., Nuntaboot, K., & Premgamone, A. (2010). Development of Age-Friendly Primary Health Care: Case Study of One Primary Care Unit. *Thai Journal of Nursing Research*, *12*(2), 131-141.

Kim, S., Moon, S., & Popkin, B. M. (2000). The nutrition transition in South Korea. *The American Journal of Clinical Nutrition*, 71(1), 44-53.

Kinsella, K., & He, W. An Aging World: 2008. Washington, DC: US Government Printing Office; 2009. US Census Bureau. *International Population Reports, PS95/09-1*.

KMPG International *An Uncertain Future: Reimagining Long-Term Care in the 21st Century*. (2013)

Lehning, A. (2012) City governments and aging in place: Community design, transportation and housing innovation adoption. *The Gerontologist*

Moody, H.R. and Sasser, J.R. (2012). Aging Concepts and Controversies. Los Angeles: Sage.

Pew Research Center, Attitudes about Aging: A Global Perspective. January, 2014.

Schultz, J.H. And Borrowski, A. (2006). Economic Security in Retirement: Reshaping the Public-Private Pension Mix. Handbook of Aging and the Social Sciences. Ed. Bin stock and George, San Diego: Academic. 360-379.

United Nations. (2002). *Report of the Second World Assembly on Ageing: Madrid, 8-12 April 2002*. New York: United Nations.

United Nations. Department of Economic. (2010). *World population ageing 2009*(Vol. 295). United Nations Publications.

World Health Report (2013) Research for universal health coverage. World Health Organization. August 2013.

Zhang, N. J., Guo, M., & Zheng, X. (2012). China: Awakening giant developing solutions to population aging. *The Gerontologist*, gns105.