

Ageing and Pattern of Population Changes in the Developing Countries

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ABSTRACT

Ageing is not a disease. It is a natural phenomenon that all species go through. Although, it continues to be not very well understood it is the process that transforms a salubrious person to a frail one, with decline in the efficiency of most of the body organs. Ageing usually impacts human health in a way that is more destructive to the body than any other disease. During ageing there is a continuous deterioration in the function of cells as time passes, increased vulnerability to challenges and high prevalence of occurrence of age-associated diseases that ultimately lead to decreased ability to survive and death.

The number of old people worldwide is on the rise and according to WHO, "between 2000 and 2050, the proportion of the world's population over 60 years will double from about 11% to 22%, reaching an absolute number to over 3 billion in the same period". However, such increase will be seen more and faster in the developing than the developed countries despite the fewer dollars and the cost implications on the health and social services to be provided is high. The main reason for such rapid increase is the decrease in the mortality rate along with the increase in the average living age of people reflected directly on the total population size of such countries.

In this paper the issue of the elderly people is highlighted and discussed in particular to their percentage of the total population and the forecast. It will also discuss issues related to health deterioration and disabilities as people tend to age, and the health needs of this sector of the population with its cost implications.

Key words: Elderly, geriatric, pattern, disabilities, cost, health and social welfare.

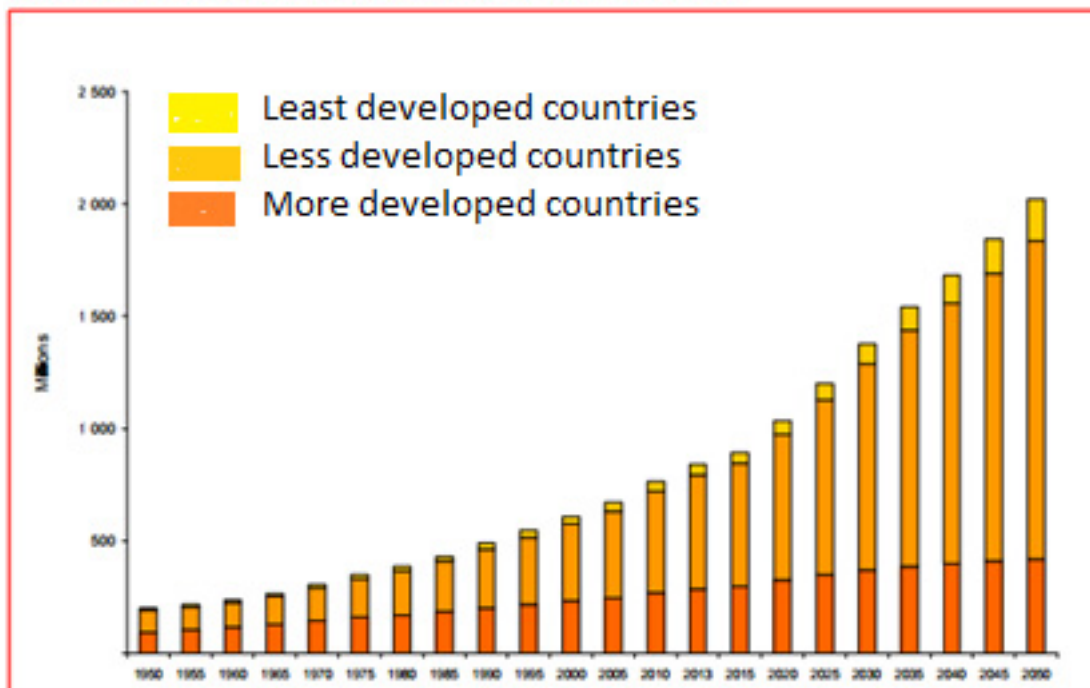
"We all form part of a life cycle, and every moment in this session, both at its beginning or near its end must be regarded as a treasure and be an occasion to celebrate" (World Health Organization).

To highlight the vast changes among the population trend in the world, the World Health Organization (WHO) adopted a slogan stating "The world is turning gray" that indicate the continuous rise in the number of elderly people and forecasting that the whole world is ageing without any marked heterogeneity between countries.(1) Although WHO defined old age as "the segment of the population, aged 60 and over", with many aged people leading an active life, the organization has later introduced three different categories of ages: 'young old' from 60 to 69 years old, 'middle age old' from 70 to 79 and 'old old' who are 80 and over.

Due to the rapid decline in both fertility and mortality rates and more public health prosperity, there is an immense demographic change in the world (2) leading to improvement in the health of old people and ultimately increase in the average life span. (3) In the United Kingdom it is reported that the average life expectancy at birth for a man a few years ago was 68, but it is now 75 years with a rise at a rate of 2 months every year. The increase in the oldest old is even more dramatic reaching 100 years of age. (1)

According to WHO, "between 2000 and 2050, the proportion of over 60 years old from the world's population will double from 11% to 22%, while their absolute number is expected to increase from 605 million to 3 billion over the same period of time" (Graph 1).

Population aged 60 years or over by development region, 1950-2050

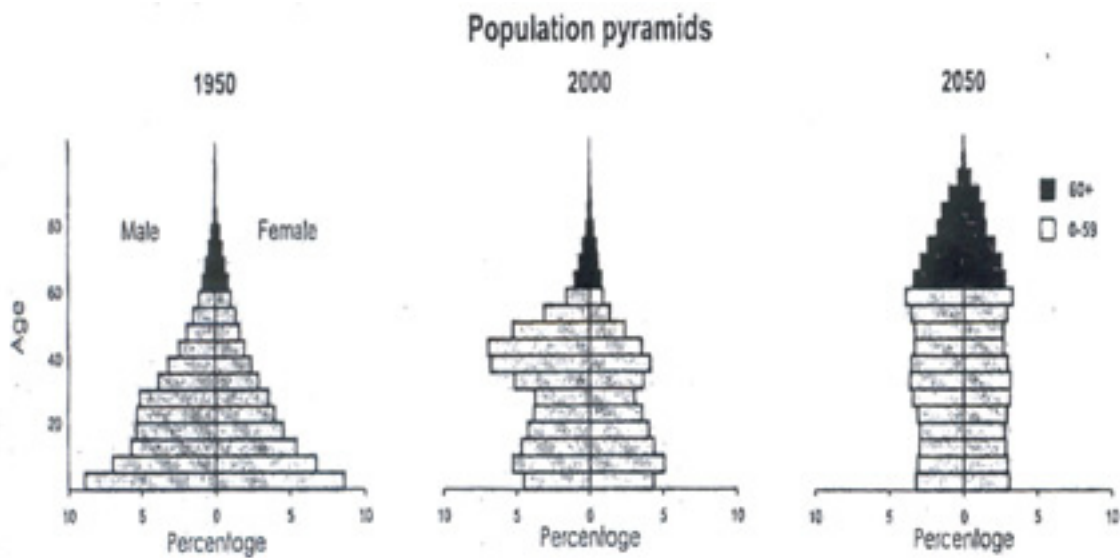


Graph 1: Projection of the number of population over 60 world- wide

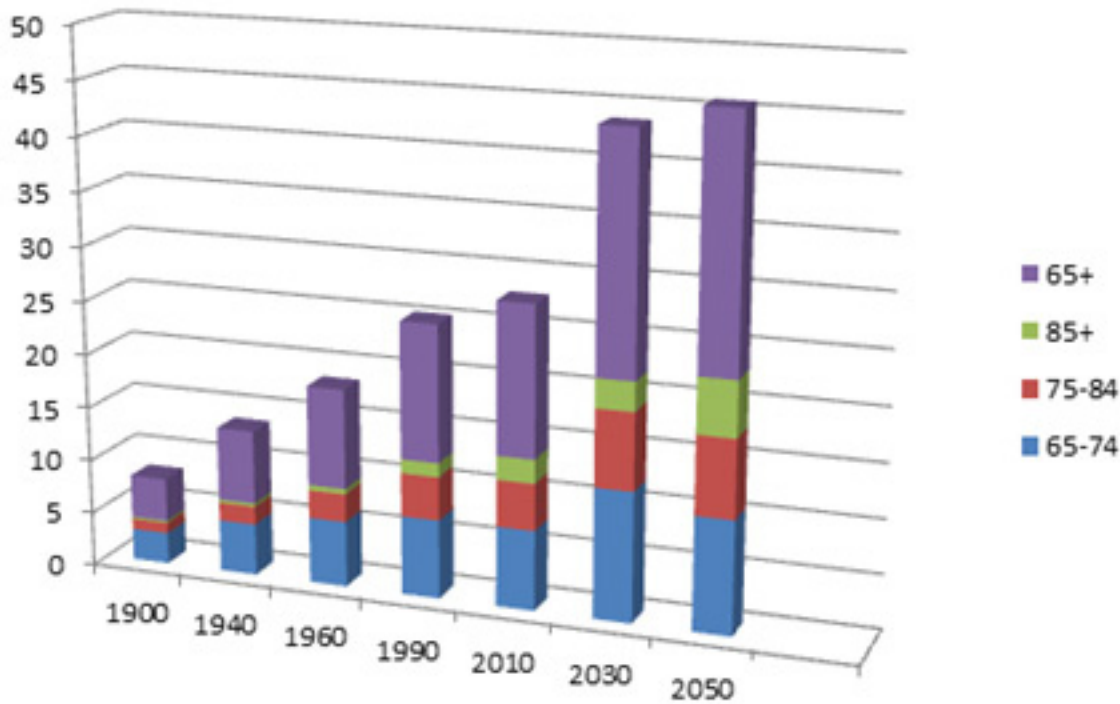
Source: SIXTY-FIVE PLUS IN THE UNITED STATES. May 1995. Economics and Statistics Administration (4)

Gorman, in 2002, projected a monthly increase in the number of people aged 65 years till the year 2010 reaching to 1.1 million.(5) Although the current percentages (18% to 20%) of old people among the population in the developed world is higher than in the developing countries, it maintained its stability, while there is a steady and rapid increase in their number within the developing world. (6) It is alerting to know that 80% of such increment will be most prominent in low and middle-income countries. Reports indicate that in Africa alone during the coming few years the increase will reach 450 million (from an existing 213 million). (7) If the kingdom of Bahrain is taken as an example of the MENA (developing) countries, the percentage of old people reported in 1992 was 2.4%, that reached to 3.2% in 2000, then 5% in 2003 and is anticipated to be 10% and 25% in years 2025 and 2050 (Graph 2 - next page) respectively.(8)

Moreover, China will take around 34 years and Singapore around 20 years to double the proportion of its ageing population.(1) Meanwhile, the changes in the developed world have been gradual and homogeneous occurring over hundreds of years, before reaching its current ratios. In the United States of America, for example, the proportion of old people in 1990 was 4% and amounted to only 13.9% in 2010 (9) (Graphs 3,4). Also it took over 100 years for Belgium to double the proportion of its 60+ population from 9% to 18%. (1) Such a long period of gradual increase provided sufficient time for policy makers and scientists to conduct studies and regulate policies enabling the society to prepare and act in the best interests of this segment of the population, a luxury that the developing world would not have. (6)



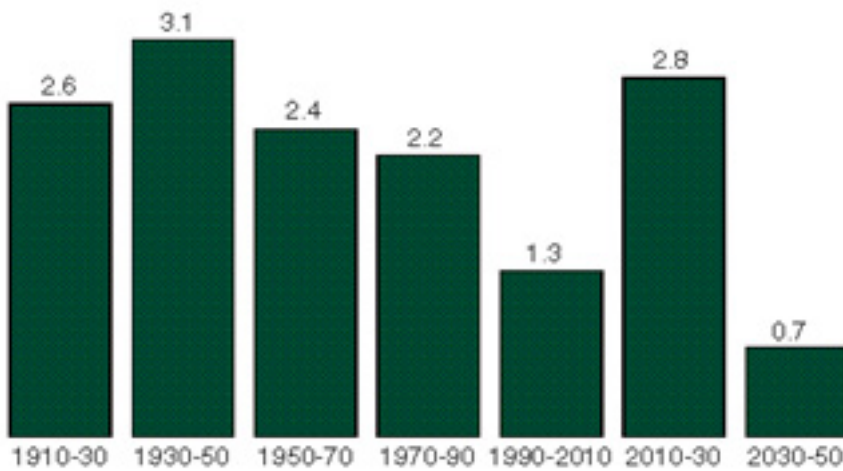
Graph 2: Forecast of population up to 2050 in Bahrain
 Source: Central Statistics Organization, State of Bahrain 1995-1996.(8)



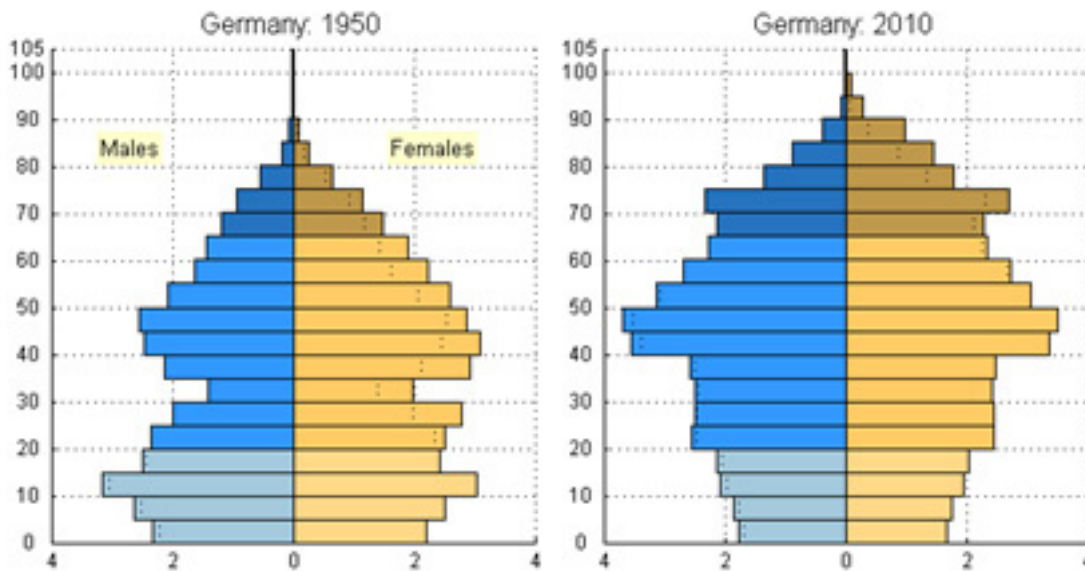
Graph 3: USA population trend from 1900-2050
 Source: U.S. Senate Subcommittee on Aging; American Association of Retired Persons (10)

The traditional population pyramid that has a wide base and tapering end reflecting shape of the population with more of the younger generation than elderly has been changing over the years due to the changes in the population structure. In certain countries it can't be called a pyramid any more. (Graph 5 - example Germany). (11)

Average annual growth rate (in percent) of the elderly population 1910-20 to 2030-50



Graph 4: Trend of elderly population increase in the USA
 Source: Economics and Statistics Administration, U.S. Department of Commerce (4)

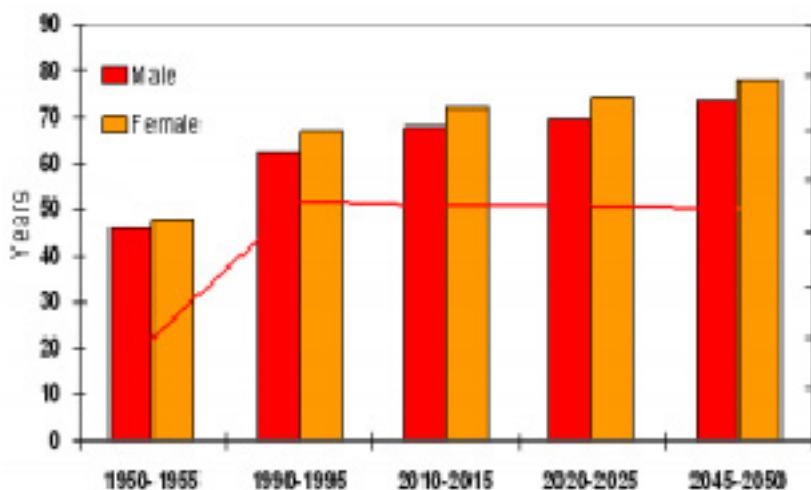


Graph 5 ; Population forecast I Germany
 Source; United Nation Population database (11)

Life span in relation to gender:

Within all of the developed countries, and as is the case in many of the developing countries, there are improvements in the maternal and child health care services that are reflecting directly on the life span of the human being. In addition to that, other biological factors that are not related to the different socio-cultural issues have all lead women to live on average longer than men. (Graph No 6 - next page)

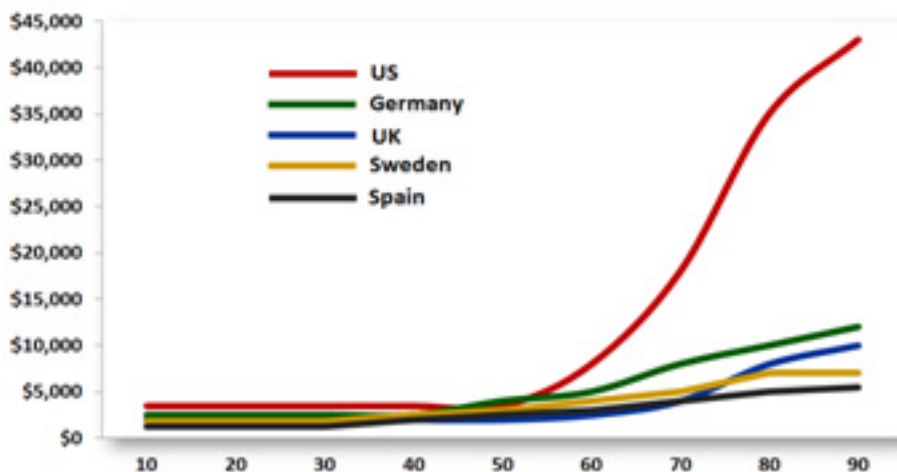
Male and female life expectancy at birth : world 1950-2050



Graph 6: Life Expectancy by Gender

Source: World Population Ageing 2013 Report (12)

Annual Per Capita Healthcare Costs by Age



Graph 7: Per capita health cost by age

Source: Health Care Spending by Age and Country (18)

Socio-economic constraints

Politicians of the poorer countries are much more likely to neglect considering their responsibilities to older people, or worse, remain in a state of denial in which it is assumed that traditional values will ensure that 'the family will cope with the care of old people'. (13) Such ignorance will just add upon the problems and their complications. It is recommended by most agencies that the responsibilities of overlooking such problems should be shared between the government, society and the families where there is a social contract between the three parties emphasizing on the social values from which policies should grow. (14) It seems likely that in all countries there will be a need for re-defining the role of the state in 'welfarism' as suggested by Lloyd-Sherlock, who also highlighted the importance of changing the economic, social and cultural contexts in which social policies for older people are enacted. (15)

It should be clear that institutions or homes for the elderly are not always the solution for elderly problems. Studies have indicated that elderly people living in institutions are more prone to physical, health and social deterioration, than those living within their family at home. (16) It is also reported that at least 3% of the elderly among the age group 65-75 years are affected with some cognitive impairment, while many of those who are older than 85 years of age could get dementia (4) that increases to 66% when they are residing in social institutions. (17)

Whether it is a rich or poor country, the fact is that the cost of health care for old people is increasing. The rising costs for social welfare, has led consequently to the increasing emphasis on identifying what are seen as 'cost-effective' measures, such as enhancing the caring capacity of families and communities, asserting the responsibility of individuals to make provision for their own old age and drawing on collective support for older people from 'civil society' institutions, including non-governmental organizations (NGO). (2) According to a UK study

a few years ago, the cost of health care of a young person in England averaged to about £ 140 per year, while for the elderly it shot up to reach £500- £600 per year. Graph No.7, highlights the pattern of increasing health care cost with increasing age in the developed countries. However, despite such high cost pertaining to the health care and social services to elderly, the developed countries consider caring for them as a moral and social obligation.

Ageing Process

Ageing occurs in all people, even to those who have means of a good living. No matter how much effort is put into maintaining health and living a healthy life, we should accept the certainty of getting old, ageing and eventually, death. (19) Although it commences from early stages of life, even since the embryo stages, ageing is still considered to be a mystery which continues to be not very well understood.

Ageing is a process in which individuals undergo an exponential decline in vitality that transforms a salubrious person to a frail one. (19) Moreover ageing impacts human's health in a way that is more destructive to the body than any other disease. The efficiency of most organ systems is decreased as well and there is a loss of function at a rate of 1% a year starting from the age of 30 years. (20) The progressive decline in the efficiency of body cells lead to lack of cell ability for auto repair while the disturbance of the immune systems lead to functional decline in the ability to respond to new pathogens.(1) In addition one of the most important elements in ageing is the decreased ability to respond to stress and as a result of gradual loss of homeostatic mechanisms.(6) It is a prime major factor that contributes to the likelihood of disease occurrence leading to decline in all of man's physical and mental abilities.

Bergamini et al, 2007 described ageing as "a post-maturational deterioration of cells and organisms with the passage of time, an increased vulnerability to challenges and prevalence of age-associated diseases with decreased ability to survive". (21) While Atwood et al, 2011 in defining ageing theory stated "The Reproductive-Cell Cycle Theory posits that the hormones that regulate reproduction act in an antagonistic manner to control aging via cell cycle signaling; promoting growth and development early in life in order to achieve reproduction, but later in life, in a futile attempt to maintain reproduction, become dys-regulated and drive senescence. Since reproduction is the most important function of an organism from the perspective of the survival of the species, if reproductive-cell cycle signaling factors determine the rate of growth, determine the rate of development, determine the rate of reproduction, and determine the rate of senescence, then by definition they determine the rate of aging and thus lifespan". (22)

It is due to the cellular changes that happen specifically in the chemical structure of the body that makes the waste bio-products build up in tissues due to oxidation of some unsaturated fats causing the deposition and accumulation of certain fatty brown pigments called lipofuscin. Such deposition that is observed mainly in the nerve, liver, kidney and thyroid cells leads to decrement in the cell size, damage beyond repair, loss of chromatin and ultimately loss of cell function and in

some cases the occurrence of fibrosis despite retention of cell activities for a period of time till it ceases completely. (23) The most vital tissues in the body that are affected by ageing are the fibroblasts, connective tissues, collagen and elastic fibers. When these tissues age, they lose their properties. For example, when the elastic property of certain cells is lost, its smooth contraction and relaxation function is affected, leading to stiffness that makes organs, blood vessels, and airways more rigid. (24) In addition lack of elasticity of the lung cells' affects respiration while altered vessel wall elasticity causes stiffness leading to increased pressure. Also, during ageing the collagen in certain body components is distorted or decreased leading to multiple complications. For instance, the transmutation of joints' cartilage causes rigidity mainly due to the disturbances in its collagen. The skin weakness is prone to facile laceration due to changes in the fibroblasts while (25) every change in any organ might be a result of many direct or indirect causes that are related to genetics, environmental or ageing related factors. All of these changes will ultimately lead to death which increases as ageing progress. It is estimated that the risk of death after the age of thirty doubles every eight years.

Challenges faced by old people

As man grows, his appearance, moving abilities, mental and psychological wellbeing, as well as the efficiency of his internal organs diminish. Moreover, ageing has been associated with numerous pathologies at the cellular, tissue, and organ level reflected on most of the vital system in the body. Hence, the size of different organs is decreased, such as the brain, heart, kidneys and lungs. (25,26,27) In addition there is decline in cardiovascular function, bone strength, muscle mass and deterioration or loss of brain functions, that include learning and memory. (28) Such changes lead to various challenges faced by old people, among which the most important are; Immobility, Instability, Incontinence, Intellectual impairment, susceptibility to Infection, Impairment of vision and hearing, malnutrition, Insomnia, Immune deficiency and Impotence. (20) All will play part in their psychological wellbeing increasing the probabilities of isolation and ultimately depression.

Is it possible to prevent ageing?

Scientists have not been able today to avert the process of ageing. However, its deteriorating signs can be delayed through screening and early detection of the factors that play a role in speeding up its process. Moreover, the illnesses' complications could be prevented or diminished by early diagnosis of damaging factors. Resorting to a salubrious healthy life style (in diet and exercise) from as early as childhood will no doubt delay such complications and result in an active senescent person. Cell death usually occurs due to the accumulation of bio products resulting from metabolism, (2) therefore, antioxidants could protect the body from the harmful effects of those free radicals that are normally produced during metabolic processes. Recent studies indicated that any reduction in the amount of calories of the circadian food intake without affecting the daily needed elements, (e.g. minerals, vitamins and fluids) would definitely delay the ageing process and extend lifespan. (21,25) Although, the downstream cellular targets regulated by dietary

restriction are largely unknown, (29) in many organisms, dietary restriction appears to, at least in part, act by down-regulating the nutrient-sensor TOR (Target of Rapamycin). TOR inhibition elicits autophagy, the large-scale recycling of cytoplasmic macromolecules and organelles.(30)

Conclusion

The number of old people is on the rise worldwide, although it is more prominent in the developing world where the highest problems due to its consequences, occur. Due to many factors of which the most important are lack of resources and policies, the developing countries will face a predicament, unless they start amending such policies for the provision of better social and health care services for the old people. Although ageing is inevitable, healthy living with proper sanitation, nutrition, exercise, health screening and health education will no doubt reduce its undesirable effects and help in active ageing.

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