Migration Letters

Volume: 21, No: 8 (2024), pp. 805-821

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)

www.migrationletters.com

The Challenges Associated With Ageing In The Context Of Demographic Changes In Algeria

Meriem Mohammedi[1], Hamza Cherif Ali[2]

Received: 07/2024, Published: 12/2024

Abstract:

This study aims to focus on the social and economic impacts of the increasing elderly population and how it affects society as a whole. It highlights the importance of providing adequate and specialized healthcare for older persons, and the need to create an environment that promotes their active role and participation in society. Algeria, like other modern societies, is undergoing significant demographic changes, transitioning from a period of rapid population growth to a demographic transition phase. These changes include an increase in life expectancy and a decline in mortality rates, leading to a higher proportion of elderly individuals in the population. This predicts new challenges that raise numerous questions about how to adapt to this changing reality. The challenges of ageing in Algeria are not limited to a specific segment of the population but rather represent a societal issue that requires a cohesive and collaborative approach. The elderly are an integral part of our social identity, and the success of Algerian society in adapting to these demographic transitions will be a key indicator of its progress toward a sustainable and thriving future.

Keywords: *Ageing, Algeria, Demographic transitions, Healthcare, Social and economic impacts.*

1- Introduction:

Modern societies are experiencing significant demographic changes that cast their shadows on various aspects of social and economic life. Among these transformations, there is a growing percentage of the elderly within the population structure, which constitutes a global challenge that demands adaptation and comprehensive planning by societies and nations for a future that reflects[1] the size of this growing age group.

In this context, Algeria emerges as a country facing unique challenges related to shifting demographics and ongoing demographic changes. Technological advancements and medical improvements have led to an increase in life expectancy and a decrease in mortality rates.

[1]Population and Sustainable Development Laboratory in Algeria, University of Tlemcen (Algeria), E-mail: mohammedi.meriem@univ-tlemcen.dz

[2]Population and Sustainable Development Laboratory in Algeria, University of Tlemcen (Algeria), E-mail: ali.hamzacherif@yahoo.com

Consequently, there has been a rise in the percentage of elderly individuals in the population, accompanied by an increasing count of this significant age group within society.

While these demographic changes represent a remarkable achievement reflecting advancements in quality of life and healthcare, they simultaneously create a new challenge for Algerian society. This challenge is evident in the growing need to meet the requirements and provide care for the elderly while adapting to the evolving social and economic conditions imposed by the increasing proportion of this important demographic segment of the community.

The present study focuses on the social and economic implications of this increase in the elderly population and how this demographic shift can affect the social and economic aspects of Algerian society as a whole. We will delve into identifying the challenges faced by the elderly in these changing circumstances and how to adapt to them. Additionally, we will explore the significance of providing appropriate and specialized healthcare for them.

2- The statement of the problem:

In light of the rapid demographic changes in Algeria and the increasing number of elderly individuals in society, the community is facing new challenges related to securing their healthcare and specific needs. Ageing is considered as a societal issue that calls for reflection of how to provide an accommodating environment in order to strengthen the role of the elderly and ensure their active participation in social and economic life.

This situation leads to the emergence of three inevitable research questions:

- What are the main demographic changes witnessed in Algeria?
- How do these demographic changes affect the healthcare system in Algeria and its ability to provide healthcare for the elderly?
- What are the financial challenges faced by the retirement system in Algeria due to the increasing number of retirees?

3- Study Objectives

The current study aims at targeting the following research objectives:

1- Shed light on this important issue and stimulate discussion about the challenges of ageing in Algeria and ways to adapt to demographic changes.
2- Analyze the social and economic challenges facing Algerian society because of the increasing number of elderly individuals.
3- Evaluate the impact of ageing on the healthcare system and the healthcare needs of the elderly in Algeria.
4- Study the effects of ageing on the Algeria’s labour market and the sustainability of retirement.

4- Study Approach:

This study is descriptive analytic research that is supported by population diversity data, national surveys, and some demographic theories in order to clarify the conceptual structure of the analysis.

5- Study Structure:

- **Axis One**: The Impact of Demographic Transitions on Social Structure
- **Axis Two**: Reasons for the Increase in the Elderly Population Ratio
- **Axis Three**: Challenges of Aging in Algeria

6- Conceptualization:

- **The Concept of Ageing**: Population ageing refers to a shift in the distribution of a country's population towards higher age groups **(Weil, 2006, p. 2)** According to "The Demographic Dictionary" by Roland Pressat (R. PRESSAT), population ageing entails an adjustment in the age structure of the population, characterized by an increase in the proportion of elderly individuals (60 years and older). This adjustment gradually occurs and results in a decrease in the proportion of young people (under 15 years of age) **(R.PRESSAT, 1979)**

From a statistical perspective, in 1972, the WHO (World Health Organization) Committee of Experts selected the age of sixty-fifth (65) as the starting point for defining the elderly, considering that this age aligns with the retirement age in most countries **(حسان، 2003، صفحة 41)**Thus, the concept of ageing defined by the stage at which an individual ceases his professional activities, coinciding with retirement.

Some demographic studies suggest a third and fourth age category, dividing the elderly into those between 60 and 75 years old, referred to as "active" or "younger" elderly, and those aged 75 and above, representing the "fourth age", characterized by "very old" individuals. Furthermore, there is another perspective that classifies the elderly as follows:

- **Young Elderly**: Aged between 60 and 74 years.
- **Middle-aged Elderly:** Aged between 75 and 84 years.
- **Very Old Elderly:** Aged 85 years and older.

Historical studies of ageing reveal that the concept of ageing emerged in 1928 by introducing the retirement system of the French government. Later extended to all professions in 1945. In 1962, policies on ageing were established. These studies also demonstrate that ageing has multiple definitions and meanings that differ depending on the circumstances of life.

- **The concept of demographic transition:** encompasses several key ideas, including:

It refers to the shift from a situation of high fertility and mortality rates to a situation of low fertility and mortality rates over a specific period. This transition typically occurs in parallel with social and economic development **(Caldwell, 1976)**

Within the concept of demographic transition, there is a shift from a demographic system characterized by high birth and death rates, followed by low mortality rate, leading to population growth, which can only offset by a sufficient reduction in birth rates to achieve a balance between births and deaths. This process reflects a change in population growth rates resulting in unequal changes in birth and death rates, often driven by industrialization and modernization **(Jeffery, 1998, p. 242)**

In a broader context, demographic transition is generally associated with overall population growth. Until the mid-17th century, the global population was annually increasing by more than 0,4%. However, in the 18th century, the population doubled. Some researchers describe these demographic changes as the "demographic transition" or a demographic revolution, marked by the unexpected population increase.

During the latter half of the 18th century, the source of this population increase was not only higher birth rates but also a decrease in death rates. Furthermore, this population growth continued to rise during the 19th and 20th centuries **(Chesnais, 1995 , pp. 8-10)** Some researchers use the term "demographic transition" to indicate the shift from the phase of high birth rates matched by high death rates to the phase of low death rates, ultimately reaching a phase of decreasing birth rates, resulting in a relative balance between birth and death rates. This decline in birth rates can be attributed to technological advancements in agriculture **(Dudley, 1996, p. 363)**

I- The Impact of Demographic Changes on the Structure of Society:

Algeria, like many countries that went through a period of war, experienced a period of high birth rates, known as a "baby boom" after gaining independence **(HAMZA & SALHI, 2015, p. 10).**The birth rate reached over 50 ‰, and then these rates began to decline from the mid-1980s, reaching a level close to 20 ‰ between 2000 and 2004, followed by a period extending to the present, where an improvement in the birth rate (24 ‰) observed due to an increase in the number of women reaching childbearing age and an increase in the marriage rate. However, the decrease in the birth rate, along with a decrease in the death rate in all age groups, led to significant changes in the population structure by age groups.

Table 1: Evolution of Age Groups from 1966-2020

Age Groups	1966[1]	1977[1]	1987[1]	1998[1]	2008[1]	2020[2]
0 – 14 years	48,2	47,9	44,01	36,21	28,9	30,6
15 – 59 years	45,11	46,3	50,24	57,19	63,86	59,6
60 years and over	6,7	5,8	5,75	6,6	7,24	9,8

Source: [1]RGPH - [2] Démographie algérienne

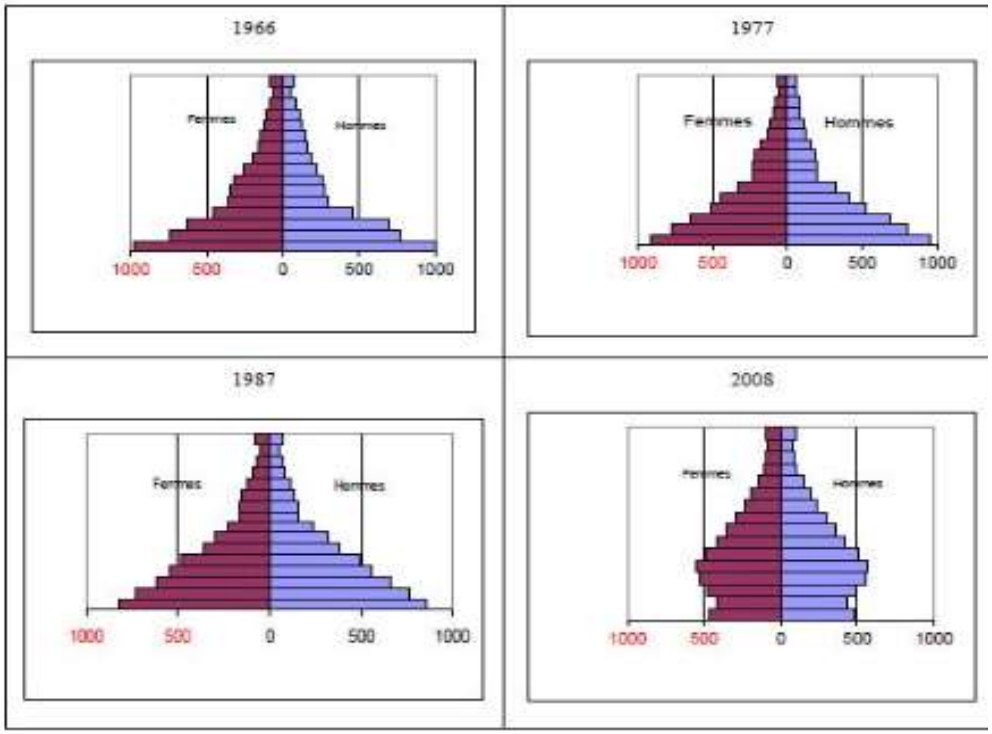
The population under the age of 15 witnessed significant growth in 1977 due to the high birth rate Algeria's respectively experienced in the post-independence period, with rates of 47,8 ‰ and 47,9 ‰ in 1967 and 1977. Starting from 1987, the youth percentage began to decrease due to the decline in birth rates, particularly fertility rates, by virtue of family planning policies and the availability of modern contraception methods, as well as delayed marriage.

In 2008, the population aged 15 to 59 constituted 63,86% of the population compared to 57,19% in 1998. This increase was a result of the "baby boom" generations reaching working age. However, in 2014, this percentage decreased to 63,1%, indicating that Algeria has a significant workforce, which is an advantage for economic and social development on one hand, and can be a negative factor for the labour market (unemployment) and housing crisis on the other.

Regarding individuals aged 60 and over, reflecting the population's longevity, they accounted for 8,5% in 2014 compared to 7,4% in 2008. This percentage witnessed a decline census between the 1966 and 1987, but after this decline, it was observed that it continuously continued to increase. It is important to note that population ageing primarily linked to a decrease in fertility rates and an increase in life expectancy due to improved conditions, including healthcare. Dealing with an ageing population will require appropriate policies for long-term elderly care, as it will place significant pressure on healthcare and retirement systems, accompanied by a demographic transition characterized by an increased prevalence of chronic and degenerative diseases that are expensive and demanding to treat.

By 2020, Algeria's population is estimated to be around 44,3 million **(ONS, 2020, p. 1).**Youth aged 0-14 years make up 30,6% of the population, while individuals considered to be in working age between 15 and 59 years constituting 59,6% of the population, and those aged 60 and over make up 9,8% of the population. This demographic situation can be better illustrated through a population pyramid based on census years.

Figure 01: Age Pyramid of the Algerian Age Structure 1966-2008 -2020



Source : (HAMZA & SALHI, 2015, p. 11) https://www.populationpyramid.net/ consulte le 11/08/2023 at 02:08

II- Reasons for the Increase in the Elderly Population in Algeria:

There are several reasons contributing to the increase in the percentage of the elderly population in Algeria, including some of the following reasons:

1- Decreased Mortality Rates:

The assessment of mortality rates holds significant importance when analyzing the demographic landscape of a population, as it serves as one of the key indicators for measuring the size and growth of a society. After gaining independence, Algeria witnessed a decline in its mortality rates, owing to the improvements in living conditions, environmental factors, and the implementation of healthcare programs targeting the population.

Data indicates a decrease in the crude death rate from 6,03% in 1990 to 4,55% in 2019 **(ONS, 2020, p. 21).**This decline can be attributed to the enhancements in the healthcare system. However, it is worth noting that this reduction in mortality rates will have a negative impact on the national retirement fund due to the increased number of adults aged 0-16 years and senior citizens over the age of sixty (60), thereby extends the dependency years. Furthermore, the decline in mortality rates for those under the age of sixty (60) is considered as an increase in resources, in contrast to the decrease in mortality rates for those over the age of sixty (60), which represents an increase in expenses exceeding the increase in resources.

In 2020, the crude death rate experienced a noticeable increase, reaching 5,33‰, which can be attributed to the COVID-19 pandemic.

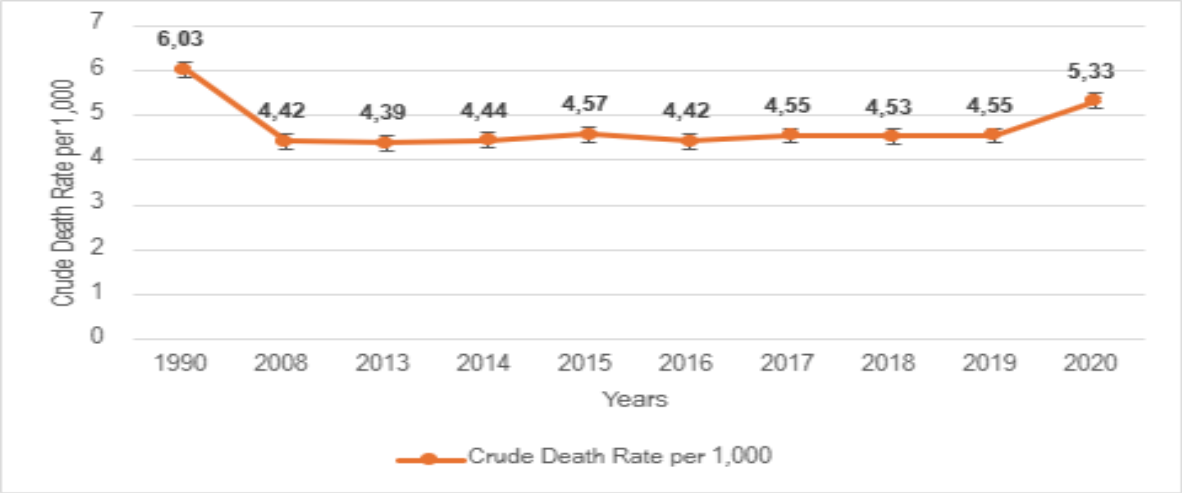


Figure 02: Evolution of Crude Death Rate from 1990 to 2020
Source: Data from Table 09 of the annex.

2- Life Expectancy at Birth:

The decline in mortality rates, especially child mortality rates, recorded over the course of fifty years has resulted in a tremendous gain in the average life expectancy at birth. The life expectancy at birth today is more than 77 years at various stages of life.

Life expectancy at birth increased from 51,15 years in 1965 to 77,80 years in 2019, marking an improvement of 26,65 years. In terms of gender, the life expectancy of Algerian women increased by 27,43 years, compared to 26,08 years for Algerian men during the period between the censuses of 1965 and 2019. This notable improvement in the expected average life at birth can also be attributed to advances in science and improved living conditions, which have led to a significant decrease in mortality rates. It's worth noting that due to the COVID-19 pandemic, life expectancy declined by 1,5 years to reach 76,3 years in 2020.

Table No. 02: Evolution of Life Expectancy at Birth during the Period 1970-2020

Years	1970	1980	1991	2008	2016	2017	2018	2019	2020
Life Expectancy at Birth	52,6	57,4	66,9	75,6	77,6	77,6	77,7	77,8	76,3
Life Expectancy at 60 Years	-	-	16,4	21,5	22,8	22,6	22,9	22,9	21,0

Source : (ONS, 2020, pp. 22-23) (ONS, 2017, p. 27)

3- Fertility Decline:

After gaining independence, Algeria adopted a socialist economic system that rejected any population policy and embraced the principle that development is the best means to control population growth. There was a continuous decline in fertility rates until 2007, with the number of children per woman reaching 2,7. This accelerated decline in fertility can be attributed to the increase in the legal marriage age, the use of contraception, and improvements in women's status, both in terms of education and encouragement to participate in the workforce, compared to the 1960s and 1970s. In order to ensure generational replacement and avoid a long-term

population decline in the absence of immigration, the Total Fertility Rate (TFR) should be at least 2,01 children per woman. Consequently, this decline in fertility will lead to a decrease in the percentage of youth (0-15 years) as a proportion of the total population and an increase in the elderly population (65 and above) to its highest levels, resulting in an ageing population.
In 2014, the TFR increased continuously, reaching 3,03 children per woman, thanks to remarriages (end of the Black Decade) and rising oil prices. After 2014, this rate experienced a slight decline from year to year until stabilizing at 3 children in 2018 and 2019.

Table 03: Evolution of the Total Fertility Rate (TFR) during the period 2008-2020

Years	2008	2011	2012	2014	2016	2017	2018	2019	2020
Total Fertility Rate	2,8	2,9	3,0	3,0	3,1	3,1	3,0	3,0	2,9

Source: (ONS, 2020, p. 21)

III- Challenges of Ageing in Algeria:

Despite ageing being considered a clear indicator of human development success, the increasing number of elderly individuals in Algeria has brought about significant demographic changes, accompanied by a range of challenges and issues that must be addressed seriously and attentively. These challenges are not limited to a specific population group but represent societal challenges that require the collective efforts of all members of the community to effectively address them.

1- Healthcare

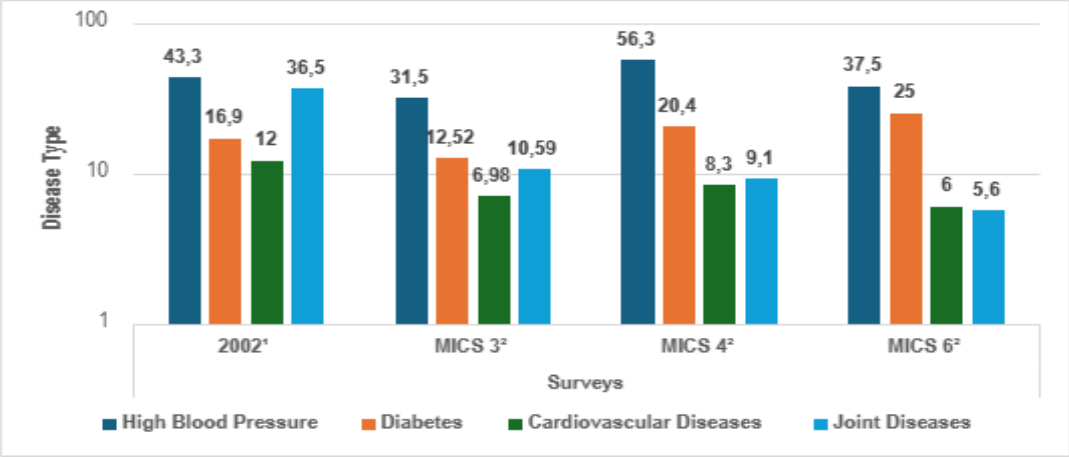
Confronting the challenges of ageing requires the development of comprehensive policies and programs that focus on improving the quality of life for seniors and providing appropriate healthcare while motivating them to actively participate in the society.

1-1 The Reality of Chronic Diseases in Algeria:

Chronic diseases pose a significant threat to the social and economic fabric of any country. High rates of chronic diseases among the population constitute a real obstacle to economic and social development. Therefore, countries strive to reduce the prevalence and impact of these diseases. The global health landscape has witnessed a shift from communicable diseases, which were predominant in previous decades, to chronic diseases, which are the most widespread and deadliest among the population. Algeria, like other countries, aims to control the incidence of chronic diseases through its clear health policy, including free treatment and medical care for chronic diseases. However, there are ongoing challenges due to demographic and social changes in Algerian society and their relationship with disease incidence.
It is observed that the prevalence of chronic diseases often increases in the elderly population compared to other age groups. This is influenced by several health, social, and psychological factors related to the uniqueness of this age group. The increasing life expectancy, improvements in health and living conditions, and demographic shifts, especially the growing elderly population, necessitate an increased focus on healthcare for this group and others affected by chronic diseases.

According to the Algerian Family Health Survey of 2002, which included 121,152 respondents, 11,4% reported having at least one chronic disease. The National Multiple Indicator Cluster Survey (MICS) for 2006 reported that 10,5% of respondents had known chronic diseases. The age group of seniors (60 years and older) is the most affected by these diseases. The prevalence of high blood pressure reaches 31,15%, diabetes 12,52%, joint diseases 10,59%, and heart and vascular diseases 6,98%. Data from the Multiple Indicator Cluster Survey of Algeria in 2013/2012 (4MICS) indicate that high blood pressure, diabetes, heart and artery diseases, and joint diseases are the most prevalent among the elderly, with high blood pressure leading at 56.5%, followed by diabetes at 20,4%, joint diseases at 9,1%, and heart and artery diseases. In the 2019 survey, the percentage of adults aged 15 and above who reported having at least one chronic disease jumped from 14% in 2012 to 20% in 2019, distributed among nine chronic diseases **(MICS 2019 - Enquête par grappes à indicateurs multiples , 2020).**

Figure 03: Most Prevalent Diseases among seniors



Source: Table 10 from the annex.

1-2 Health Coverage:

The healthcare sector, like any other economic sector, has undergone reforms to improve its performance and enhance its effectiveness by providing the necessary material and human resources to meet the population's healthcare needs. The fundamental infrastructure and physical and human resources are considered among the most significant achievements in this field.

After regaining its independence, the country inherited a catastrophic healthcare situation, particularly following the mass departure of European-origin doctors. Only 387 individuals with medical degrees (across various specializations) remained, including 285 physicians, 70 pharmacists, and 15 dentists. This limited number had to meet the healthcare needs of a population of approximately 10 million people spread across an area of about 2,8 million square kilometers **(HAMZA CHERIF & MOKHTARI, 2008, p. 1)**

In 1980, approximately 161 multi-service clinics, 662 health centers, and 1364 treatment rooms were counted nationwide. These facilities represented the first line of defense against various prevalent diseases at that time by providing health services, including prevention and primary

care (ONS). Basic healthcare structures play a pivotal role within the national healthcare system, as their activities address approximately 90% of the population's healthcare demands **(Oufriha, 1992)** Consequently, they received special attention during the preparation of the national health map in the early 1980s.

However, the implementation of the health map faced challenges due to the severe economic crisis that the country experienced. Algeria heavily relied on hydrocarbon exports, constituting about 98% of total hydrocarbon revenues. The collapse of oil prices in the international market since 1985 triggered an economic crisis in Algeria, especially when the balance of payments became incapable of servicing external debt and imports of goods and equipment significantly declined. This resulted in a decrease in the supply of crucial sectors of the national economy and a worsening of the social situation. Algeria sought debt rescheduling through negotiations with the International Monetary Fund (IMF) due to this urgent situation. Subsequently, the Structural Adjustment Program was adopted at the beginning of 1993.

The period from 1992 to 1997 was marked by the layoff of over 400,000 workers and the resulting significant social difficulties, including unemployment and decreased purchasing power. These challenges also affected the financing capacity of the Social Security Fund, given the decrease in contributions due to worker layoffs.

From a demographic perspective, this period witnessed continuous changes, beginning with the first-ever decrease in the birth rate. Algeria had experienced rapid demographic growth since gaining independence, exceeding a growth rate of 3% in some years. This indicated a transformation in the population pyramid in Algeria, evidenced by a noticeable increase in the elderly population. Consequently, this inevitably led to a shift in the demand for healthcare due to the rising cases of non-communicable diseases which necessitated healthcare system adjustments to respond to the growing demand for the treatment of chronic diseases such as diabetes, heart and artery diseases, cancer, Alzheimer's, and more **(LAMRI, 2004, pp. 163-165).**

Table 04: Evolution of Medical Personnel

Practitioners	1997	2005	2015	2018
Doctors	28,344	37,720	73,431	81,751
Dentists	7,966	9,277	13,645	15,008
Pharmacists	4,022	6,567	11,475	12,890

Source : (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2015-2017, 2018, p. 21) (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2016-2018, 2021, p. 22) ONS Algeria, www.ons.dz

1-3 Healthcare Expenditure:

The increase in population and the growth of investments in the healthcare sector, whether in infrastructure or medical equipment, have driven healthcare spending to rise. Therefore, controlling healthcare expenses and providing the necessary financial resources is crucial to ensure Algeria's ability to meet the healthcare needs of its population, especially the elderly **(معزوز، 2017، صفحة 398)** Thus, ensuring financial resources and containing healthcare expenditures is among the most significant challenges faced by public authorities in Algeria.

The table below clearly shows that the allocated budget for the healthcare sector in Algeria has been steadily increasing annually. This continuous increase can be attributed to the government's expansive spending policy. This expansion is closely linked to economic, social, and political developments resulting from the rise in government revenue, primarily derived from petroleum taxes. From 1990 to 1995, Algeria adopted a planning and restructuring approach as a tool fr redirecting and organizing development. The years from 1995 to 1999 are considered a phase of economic reforms **(عايب، 2010، صفحة 256)** During the period from 1990 to 1999, healthcare expenditure as a percentage of the total public expenditure ranged from 0,46% to 6,04%.

The increase in healthcare expenditure also reflects the effects of implemented development programs, including the Economic Revival Program of 2004-2001. The healthcare sector received a share of 14,7 billion DZD out of the total allocation of 90,3 billion DZD. Furthermore, the healthcare sector was enhanced with a substantial number of projects, totaling 545 projects distributed over four years. The healthcare sector allocations within the framework of the Complementary Growth Support Program (2005-2009) amounted to 85 billion DZD, representing 4% of the total program allocation.
The increase in healthcare expenses can be attributed to reforms within the healthcare system. The developmental trajectory was further bolstered by the Five-Year Development Program (2010-2014), from which the healthcare sector benefited with an allocation of 619 billion DZD. The healthcare sector's budget experienced a notable increase of 77,72%, representing 8,79% of the state budget. This increase can be attributed to rising costs associated with acquiring medical equipment and supplies, as well as an increase in the population, which led to greater healthcare needs **(دحمان، 2017، صفحة 240)**

The issue of funding these healthcare expenditures and managing this significant development is one of the most important challenges of national policy. The changing healthcare landscape, demographic growth, the evolution of healthcare infrastructure, and the increasing number of users in the healthcare sector, along with the expansion of healthcare coverage, these factors have contributed to an increase in public spending on the healthcare sector, which has now become the primary concern for decision-makers in this sector. Controlling healthcare expenses is a complex matter due to the interconnection of healthcare with various demographic, economic, and political variables.

Table 05: Healthcare Expenditure Evolution in Algeria (Unit: 10^3 DZD)

Year	2008	2009	2010	2011	2012
Healthcare Expenditure	193 890 787	212 464 000	236 946 962	408 490 413	436 269 706
Year	2013	2014	2015	2016	2017
Healthcare Expenditure	373 800 582	374 715 000	396 217 178	399 154 664	419 309 314

Source: Ministry of Health and Population

2- The Algerian Retirement System in the Face of Demographic Changes:

Social security is one of the most important modern social mechanisms aimed at addressing the effects of various risks that workers may encounter during their professional lives. It does so by providing an alternative source of income in case of work interruption due to illness or disability, typically in the form of compensation or a pension to ensure a decent life for retirees. Over the long term, retirement systems are vulnerable to pressure due to the continuous increase in the ageing population, driven by future demographic changes resulting from a decline in the birth rate and a subsequent decrease in the youth population, coupled with an increase in the number of elderly individuals. This, in turn, leads to a higher number of retirees in the coming years. Consequently, retirement systems will require more funding to sustain their operation. Currently, we have four workers supporting one retiree, but in the future, we will see the reverse: one worker for every four retirees. Therefore, as the number of people entering the labour market decreases, the financial resources for pension systems will diminish.

2-1 Financial Situation of the National Retirement Fund:

The National Retirement Fund relies on both worker contributions and state subsidies to finance its expenses. However, it has been experiencing a continuous deficit for years, and it is expected to reach 680 billion DZD in 2022. This can be observed from the following table:

Table No. 06: Evolution of the Revenues and Expenses of the National Retirement Fund in the Period 2006-2018

Years	2006[1]	2007[1]	2012[1]	2013[1]	2014[2]	2015[2]	2016[2]	2017[2]	2018[3]
Revenues	204150	244910	683 060	599899	648	668.5	695.8	689.6	714.8
Expenses	212870	250720	572520	685661	803100	93600	1032600	1168700	1270300
Balance	-8720	-5810	+110540	-85762	-155100	-263100	+336810	-479100	-555400

Source : [1] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2011-2013, 2014, pp. 20-21) [2] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2015-2017, 2018, p. 19) [3] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2016-2018, 2021, p. 20)

From the data in Table No. 04, we can observe that the balance of the National Retirement Fund has been fluctuating continuously. It recorded a financial deficit in 2007, amounting to approximately 5,810 million DZD. The reason for this deficit can be attributed to the weak growth in revenues, which increased from 204,150 million DZD in 2006 to 244,910 million DZD in 2007, representing a modest increase of 19,96%. This increase is comparatively weak when compared to the expenses, which rose from 212 870 million DZD in 2006 to 250 720 million DZD in 2007, a rate of 17,8%.

It is also noteworthy that the highest deficit recorded in 2013, reaching 85 762 million DZD, followed by consecutive deficits in 2014 and 2015 due to the economic crisis that the country went through and the significant number of workers opting for early retirement before reaching the legal retirement age of 60 years. This led to a financial intervention by the state amounting to 500 billion DZD, in addition to deficits from 2016 to 2017 due to a decrease in revenues from 695,8 million DZD in 2016 to 689,6 million DZD in 2017, a decrease of 0,89%. This was weak compared to the increase in expenses from 1 032,6 million DZD in 2016 to 1168,7 million DZD in 2017, a rate of 13,18%. These deficits persisted despite the reforms introduced by Law

No. 15-16, amended by Law No. 12-83, related to retirement (الجريدة الرسمية للجمهورية الجزائرية الديمقراطية الشعبية، 2016، صفحة 3) which abolished the proportional and ageless retirement (32 years).

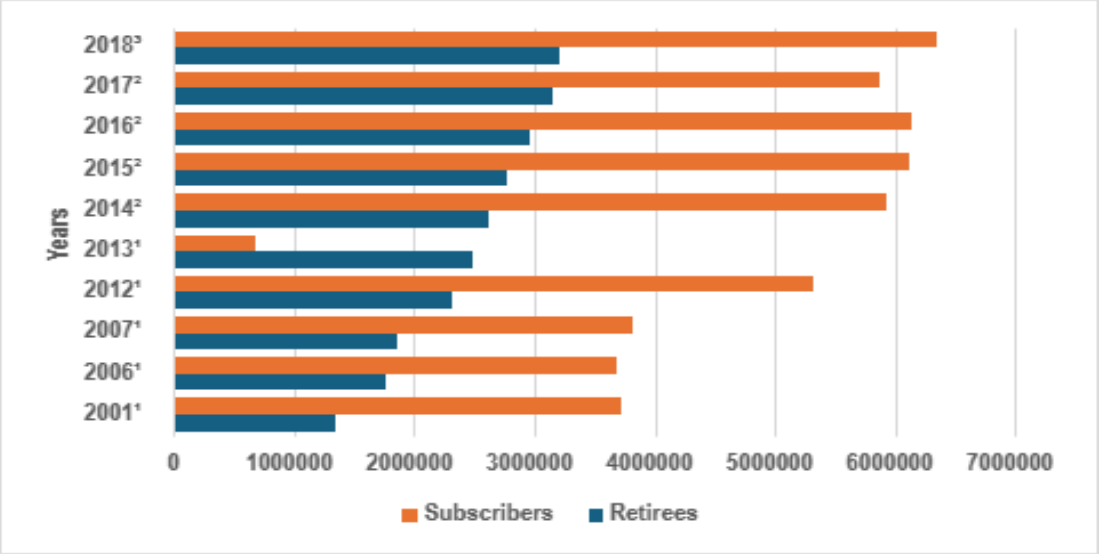
As a result of the consecutive deficits in the retirement fund, the state had to search for additional revenue sources for funding. This led to the establishment of the National Reserve Fund for Retirement, which finances the National Retirement Fund with 3% of the petroleum tax revenues, in addition to a portion of the treasury surplus from the National Social Security Fund. This raised the contribution rate from 31,5% in 1994 to 34,5% in 2015, thus increasing the retirement share from 11% in 1991 to 18,25% in 2015. All of these measures were taken to ensure financial balance and sustainability in the coming years.

2-2 The number of retirees at the level of the National Retirement Fund has evolved as follows:

From the data presented in the table below, we observe that in 2001, the number of retirees reached 1,34 million retirees compared to 3,72 million contributors, which translates to coverage of 2,77 contributors per retiree. However, the fund faced a decline in coverage in 2007 to 1,59 contributors per retiree, resulting in a deficit of 5 810 million DZD, despite an increase in both retirees and contributors.

The number of retirees continued to increase in 2017 to 3,15 million retirees, with 5,87 million contributors, providing coverage of 1,85 contributors per retiree. Therefore, the retirement fund faces a problem in covering the increasing number of retirees, which poses a financial challenge for it.

Figure 04: Evolution of the number of retirees at the National Retirement Fund compared to the number of subscribers from 2001 to 2018.



The data in Table 11 from the appendix.

2-3 Evolution of Dependency Rates:

The future demographic situation in Algeria, which predicts an increase in the elderly population, will pose a new economic challenge that will impact the dependency rates.

Dependency rates refer to the percentage of the population under 15 years of age and over 60 years of age when compared to the active population aged 15-59. We are particularly concerned with the group over 60 years of age, as an increasing dependency rate for this group means that there are fewer contributors for each retiree. Those who are part of the distribution system financially support the demographic group of retirees who are over 60 years of age

Table 07: Evolution of the Elderly Dependency Rate during the Period 2002-2020

Years	2002	2010	2014	2015	2016	2017	2018	2019	2020
Elderly Dependency Rate %	11,3	12,0	13,5	14,0	14,4	14,9	15,4	15,9	16,4
Total Dependency Rate %	63,2	55,0	58,5	60,1	61,8	63,5	65,2	66,6	67,8

Source : (ONS, 2020, p. 21)

From the table, we can observe that the elderly dependency rate has grown by approximately 4% over the last decade, increasing from 11,3% to 16,4% in 2020. This demographic group is predominantly linked to retirement benefits. This increase signifies a continued burden on the National Retirement Fund. The rise may be attributed to the increased life expectancy of individuals over 60 years due to the enhanced general health conditions. However, this increase puts pressure on the retirement fund, resulting in fewer contributors for a large number of beneficiaries.

Conclusion:

In conclusion, the topic of ageing challenges in the context of demographic changes in Algeria represents a multidimensional challenge that requires deep thinking and integrated strategies, uniting Algeria, like other countries, between demographic developments, economic transformations, and social changes. This imposes on it the necessity of facing new challenges related to the elderly and public health.

The increasing percentage of the senior in Algeria reflects improvements in life expectancy and healthcare, but also presents pressing challenges to society and the government. It is essential to give serious consideration to developing sustainable infrastructure that meets the needs of the elderly, whether it's healthcare, social support, or housing. The efforts required to ensure the well-being of the elderly in Algeria extend beyond providing adequate medical care, encompassing a range of issues related to social, economic, and environmental care. From securing a sustainable and fair retirement system that guarantees a decent income for retirees to promoting health awareness and providing suitable employment opportunities for the elderly, all of these aspects come together to form challenges that must be faced with determination and creativity.

While technological and cultural transformations seem to bring generations closer and open up new horizons for the exchange of experiences and communication, economic and social challenges still require sustainable efforts and ongoing cooperation among all members of society.

Facing these challenges is not an easy task, but it is an inspiring and necessary one to build a future that offers the elderly in Algeria a dignified and sustainable life that reflects human

values and appreciates their valuable contributions to society. To achieve these goals, a joint collaboration between the government, healthcare institutions, non-governmental organizations, and the private sector is required. There must be sustainable strategies focused on infrastructure development, improving services, promoting awareness, education and supporting older people's participation in the society.

In conclusion, demographic changes and ageing challenges in Algeria offer opportunities for developing a more solidarity-based and sustainable society, definitely if these challenges are addressed seriously and sustainably. Algeria can make significant progress towards providing a better and more dignified life for the elderly and achieving a bright and sustainable future for the coming generations.

Appendix

Table 08: Population Evolution in Algeria by Age and Gender 1966 – 2008

Age Groups	1966[1]		1977[1]		1987[1]		1998[1]		2008[2]	
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
0-4	1155798	1188403	1479633	1542314	1859991	1941069	1574830	1655204	1685336	1785642
5-9	881481	908979	1245060	1298291	1665121	1735044	1775769	1846772	1441076	1507332
10-14	748383	821116	1039761	1094935	1399450	1485426	1869763	1941412	1624819	1693757
15-19	542468	553188	820538	832400	1238577	1263639	1732310	1801080	1817095	1879122
20-24	421669	400907	708909	663971	1103455	1122123	1454965	1485413	1896054	1925495
25-29	413074	385459	526249	510205	818300	846235	1252597	1270509	1716458	1755956
30-34	378904	350989	372499	323294	672633	721979	1052174	1063262	1380564	1397869
35-39	304463	298526	380946	320076	515207	529048	832195	848295	1192307	1183750
40-44	237911	231669	344123	304089	376812	358783	692566	696212	1024531	1021168
45-49	194982	202100	286182	254793	367949	341768	548034	570427	824380	829312
50-54	178792	178677	212855	201430	346336	317822	394124	375132	673160	691935
55-59	142063	156962	189397	176022	275747	262173	356075	349189	522923	555608
60-64	134989	132890	148929	144146	211707	198403	322984	303936	361315	359886
65-69	96482	101491	128482	133474	166578	156670	260264	254567	320472	319808
70-74	76926	64268	81310	89836	113450	114450	169655	164754	259228	252068
75+	103955	87291	105947	99928	175361	177320	237533	221632	350289	341870
N D	10800	10292	1222	2575	1198	1684	15668	8934	0	0
Total	6023140	6073207	8072042	7991779	11307872	11573636	14541505	14856730	17090007	17500578

Source : [1] (ONS, Rétrospective Statistique 1962-2020, pp. 43-44) [2] (ONS, 2020, p. 20)

Table 09: Evolution of Crude Death Rate between 1990-2020

Years	1990	2008	2013	2014	2015	2016	2017	2018	2019	2020
Crude Death Rate per 1,000	6,03	4,42	4,39	4,44	4,57	4,42	4,55	4,53	4,55	5,33

Source : (ONS, 2020, p. 21)

Table 10: Most Prevalent Diseases Among the Elderly

Disease Type	Surveys

	2002[1]	MICS 3[2]	MICS 4[2]	MICS 6[2]
High Blood Pressure	**43,3**	**31,5**	**56,3**	**37,5**
Diabetes	**16,9**	**12,52**	**20,4**	**25,0**
Cardiovascular Diseases	**12,0**	**6,98**	**8,3**	**6,0**
Joint Diseases	**36,5**	**10,59**	**9,1**	**5,6**

Source: [1] Algerian Survey on Family Health [2]: MICS3 – MICS4 – MICS6

Table 11: Evolution of Retirees at the National Retirement Fund vs. Subscribers from 2001 to 2018

Year	Retirees	Subscribers	Subscribers' Coverage Ratio
2001[1]	**1 341 161**	**3 726 436**	**2,77**
2006[1]	**1 771 596**	**3 693 254**	**2,08**
2007[1]	**1 858 902**	**3 809 980**	**2,05**
2012[1]	**2 319 531**	**5 322 787**	**2,29**
2013[1]	**2 482 454**	**5 673 522**	**2,28**
2014[2]	**2 623 547**	**5 938 431**	**2,26**
2015[2]	**2 766 750**	**6 126 302**	**2,21**
2016[2]	**2 971 641**	**6 140 078**	**2,06**
2017[2]	**3 159 952**	**5 874 042**	**1,85**
2018[3]	**3 216 648**	**6 347 433**	**1,97**

Source : [1] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2011-2013, 2014, pp. 22-23) [2] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2015-2017, 2018, p. 19) [3] (ONS, L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2016-2018, 2021, p. 20)

References:

1. Caldwell, J. (1976). Toward A Restatement of Demographic Transition Theory . population and Development Review 2, 361-363.
2. Chesnais, j. C. (1995). la transition Démographique Trent ans De Bouleversement (1965-1995). paris: les dossiers Du CEPED N034.
3. Dudley, K. (1996). Démographic Transition Theory, population studies. printed in Great Britain.
4. HAMZA CHERIF, A., & MOKHTARI, A. (2008). Population et santé en Algérie : évaluation des besoins en personnels et en infrastructures de santé. Journal d'épidémiologie et de santé publique(02), 1-14.
5. HAMZA, C. A., & SALHI, M. (2015, DECEMBRE). Vieillissement démographique en Algérie : réalité et perspectives. L'HOMME ET LA SOCIETE(11), 1-41.
6. Jeffery, G. W. (1998). Growth Distribution and Demography some lessons from history. Exploration in economic history N035, 242.
7. LAMRI, L. (2004). Le système de sécurité sociale en Algérie. OPU, Alger, 14.
8. MICS 2019 - Enquête par grappes à indicateurs multiples . (2020). Rapport final des résultats.
9. ONS. (2014). L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2011-2013.
10. ONS. (2017). Algerienne demographique. office national des statistique n 816.
11. ONS. (2018). L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2015-2017.
12. ONS. (2020). Demographie algerienne . office national des statistique N 949.
13. ONS .(2021) .L'ALGERIE EN QUELQUES CHIFFRES RESULTATS 2016-2018 .

14. ONS. (s.d.). Rétrospective Statistique 1962-2020. Alger.
15. Oufriha, F. Z. (1992). Cette chère santé : une analyse économique du système de soins en Algérie. OPU Alger, 73-77.
16. R.PRESSAT. (1979). Dictionnaire de démographie,. Presse Universitaire de France.
17. Weil, D. V. (2006). Population Aging. National bureau of economic research(N° 12147), p 2.
18. الجريدة الرسمية للجمهورية الجزائرية الديمقراطية الشعبية. (2016). 03.
19. جعفر حسان. (2003). الشيخوخة سن الأمل و الشباب الدائم . بيروت - لبنان: دار البحار.
20. علي محمد دحمان. (2017). تقييم مدى فعالية االنفاق العام على مستوى القطاع الصحي بالجزائر، أطروحة دكتوراه. الجزائر، كلية العلوم الاقتصادية والتجارية وعلوم التسيير: جامعة أبو بكر بلقايد تلمسان.
21. نشيدة معزوز. (2017). دور الرعاية الصحية الأولية في تخفيض الانفاق الصحي الجزائر. مجلة الاقتصاد والتنمية البشرية(01)، 398.
22. وليد عبد الحميد عايب. (2010). الآثار الاقتصادية الكلية لسياسة الانفاق الحكومي:دراسة تطبيقية قياسية لنماذج التنمية الاقتصادية. بيروت - لبنان: مكتبة حسن العصرية.