

The Dynamics of Epidemiological Transition in Algeria: From Communicable Diseases to the Burden of Chronic Diseases □

ديناميكيات التحول الوبائي في الجزائر: من الأمراض المعدية إلى عبء
الأمراض المزمنة

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Abstract:

This study sheds light on the evolution of the epidemiological situation in Algeria since the independence alongside the demographic changes that the country has witnessed, especially the decrease in mortality rates and the change in causes of death. Using a descriptive-analytical approach based on confidential statistical data, the results reveal a gradual decrease in infectious diseases thanks to the expansion of health coverage, the implementation of public health programs, the widespread vaccination, and the improvements in population's living conditions. In contrast, this change contributed to the emergence of non-infectious and chronic diseases; particularly, cardiovascular diseases, hypertension, cancer, obesity, and trauma. This has been accompanied by an increase in life expectancy level and a growing proportion of the population aged over 20 years old, leading to a fundamental change in patterns of illness and death, and a rise in the epidemiological burden in a way that poses an increasing challenge to the national health system. In light of these findings, the present study highlights the necessity for a comprehensive strategy to face these challenges through underscoring prevention, reducing risk factors, and improving the quality of health data. Moreover, it emphasizes the importance of providing accurate information on the current epidemiological features, allowing decision makers to develop

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effective health policies that are based on scientific knowledge and confidential field data.

Keywords: epidemiological transition, demographic transition, mortality pattern, chronic diseases, Algeria.

ملخص:

تسلط هذه الدراسة الضوء على تطور الوضع الوبائي في الجزائر منذ الاستقلال في سياق التحولات الديموغرافية التي شهدتها البلاد، لا سيما تراجع معدلات الوفيات وما صاحبه من تغيير في أنماط أسباب الوفاة. وقد تم اعتماد المنهج الوصفي التحليلي بالاستناد إلى بيانات إحصائية موثوقة، كشفت عن التراجع التدريجي للأمراض المعدية بفضل توسع التغطية الصحية، وتنفيذ برامج الصحة العامة والتلقيح الشامل، فضلا عن تحسين الظروف المعيشية للسكان.

في المقابل، ساهم هذا التحول في بروز الأمراض غير المعدية والمزمنة على رأسها أمراض القلب والشرابيين، والضغط الدموي، والسرطان، والسمنة، والصدمات. وقد ترافق ذلك مع ارتفاع متوسط العمر المتوقع وتزايد أعداد الفئات العمرية التي تفوق 20 سنة، مما أدى إلى تغيير جوهري في أنماط المرض والوفاة، وارتفاع العبء الوبائي بشكل يشكل تحديا متزايدا للمنظومة الصحية الوطنية.

وفي ضوء هذه المعطيات، تؤكد الدراسة على ضرورة وضع إستراتيجية شاملة لمواجهة هذه التحديات من خلال تعزيز الوقاية والتقليل من عوامل الخطر، والارتقاء بجودة البيانات الصحية. كما تشدد على أهمية توفير معطيات دقيقة حول الخصائص الوبائية الراهنة، بما يتيح لصناع القرار بناء سياسات صحية فعالة تستند إلى المعرفة العلمية والمعطيات الميدانية الموثوقة.

الكلمات المفتاحية: انتقال وبائي، انتقال ديموغرافي، نمط الوفيات، أمراض المزمنة، الجزائر.

Introduction

Since independence, Algeria has passed through an accelerating course of health and demographic transformations, namely the remarkable decrease in mortality rates and an increase in life expectancy level due to the widespread health policies and the improvement of the infrastructure. However, this achievement has introduced new challenges putting non-infectious diseases as the main reasons behind illness and death. Accordingly, this study seeks to analyse the epidemiological transition course in Algeria through

capturing epidemiological and health indicators, and understanding its relation with demographic changes.

The epidemiological transition concept has emerged as one of the essential theoretical frameworks to understand health situation shifts in societies, and it was first introduced by Abderrahim Omran in the first 1970s to explain the changes in illness and death patterns in the context of demographic transition. The importance of this model lies in its ability to link between the improvement of public health indicators and societal, demographic, and economic changes, where societies move gradually from a phase of infectious diseases spread and famines with high death levels—especially within younger age proportions—to a phase where chronic diseases and injuries related to life patterns are the main reasons behind mortality, which is characterised by a relative decrease and reaches its peak mostly within old age groups (Omran, 1971). This transition is perceived as one of the main reasons that contributed to the remarkable increase in age expectancy level in birth (Mackenbach, 1994). Countries worldwide vary in overcoming epidemiological transition phases because of disparity in rates of industrial, cultural, economic, and medical development. While developed countries have reached the phase of degenerative and human-induced diseases, several developing countries are still passing through the transitional phase of epidemiological change, where most of these countries could eliminate numerous infectious epidemic diseases, but at the same time are suffering from the emergence of chronic diseases. Nevertheless, developing countries have not yet reached the level reached by developed countries in the context of new contemporary diseases because they are still managing with the burden of the first phase diseases of this transition.

For exploring the characteristics of epidemiological transition and its circumstances in Algeria, this study's main question is: what are the characteristics of the epidemiological transition in Algeria and what are its implications on the change of mortality pattern?

Aim of The Study

The study essentially aims to examine the current health status of the Algerian population by tracing the path of health transition, and identifying the changes that have occurred in death patterns and causes. It also seeks to link these changes to the demographic determinants that have accompanied this transition.

Methodology and Instruments

To answer the research's question, the study adopts a descriptive-analytical approach where statistical quantitative data related to demographic indicators in Algeria since the independence are presented and analysed. It draws on varied population statistics resources such as a number of studies that examined the demographic and epidemiological transition, as well as data and reports from the National Office of Statistics, the Ministry of Health, and the National Institute of Public Health. Additionally, it relied on the results of national and regional investigations relevant to the study's indicators. Also, different graphical representations were generated by Excel to support the analysis.

The research is structured to present and analyse the following elements:

1. The demographic transition in Algeria
2. The epidemiological transition in Algeria
3. The evolution of mortality rates in Algeria (general mortality, infant mortality, and life expectancy at birth).
4. The evolution of causes of death in Algeria.

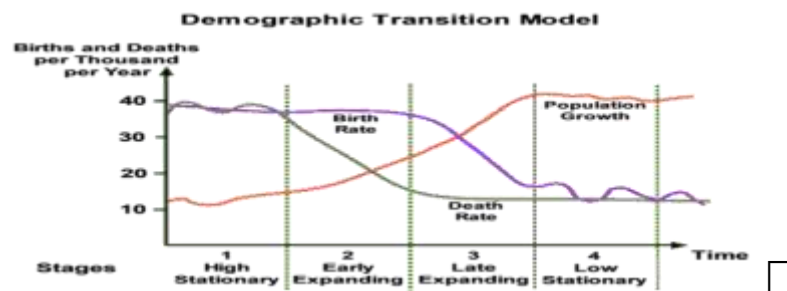
1-Demographic Transition

The demographic transition model (also referred to as the demographic transition theory) is considered a central model in the field of population studies since it is the dominant feature of population dynamics (Reher, 2011). This concept has first emerged in the late 2000s in British and American literature that focuses on demographic studies, particularly those which follow the evolution of varying level of fertility and mortality. The American demographic Warren Thompson has determined three different scenarios of population growth rates of countries (DUDLEY , 1996).

Generally, the process of demographic transition is a result of the transformation from a traditional balanced demographic system, characterised by high rates of both birth and mortality together, to a contemporary system that is also balanced but with low rates of birth and mortality (Adolphe, 1987). This transition is a long term one (lasts between few decades to almost two centuries) passing through several stages to eventually change the demographic structure, especially the age structure which is mainly affected by changes in birth and mortality rates, as well as migration, economic level, political changes, and societal changes that occur in societies (Theodore H & Elena A, 2014). In the last phase of demographic transition, birth and mortality rates are low and convergent where they take different forms (see Figure 1) (Yoann, 2020), and this somehow leads to a decline in population

growth and stability. At the end of the demographic transition process, the natural population growth reaches zero as fertility levels decline to or fall below the replacement level, and mortality rates stop decreasing (BONGAARTS, 2009). However, this is technically difficult to occur because of improvements in medical technology and health care, as well as transformations in lifestyle patterns and related factors.

Figure N°1: A descriptive diagram of the demographic transition model.



Source : (Centre, Barcelona field studies, 2024)

1.1. The Demographic Transition in Algeria

The Algerian demographic transition is exceptional and has varying characteristics compared to the majority of world countries (Yoann, 2020) as it witnessed a severe decline in fertility rate within a short period starting from the early 1970s. This was described by experts as a free fall, as within a period of less than three decades, it declined to nearly replacement level where it reached 2.4 children per woman in 2000 (ONS, 2018), after it had exceeded 7 children per woman in 1970 passing through 4.5 children per woman in 1990. Conversely, the decrease of mortality rate was relatively gradual and balanced, in addition to the significant increase in birth rate in 2015, reaching 25.48‰ after having fallen to its lowest rate in the first 20s when it reached 19.36‰ (ONS, 2011). However, the remarkable rise in birth since 2012 as a result to an increase in the number of marriages—which led to a rise in natural population growth (2.16% in 2012 compared to 1.48% in 2000 and 1.93% in 2019)—alongside improvements in economic and living conditions prepared for the beginning of a new stage, the so-called "post-transition stage", particularly if fertility remains high despite its overall decline (Kateb, 2014).

The current increase in birth rate can be explained by the increase in the proportion of women who are in reproductive age groups (an effect of the sex and age structure). It is uncommon that fertility rises

remarkably above two children per woman and to persist at that level. From this perspective, Algeria is considered one of the cases once marked by a rise of fertility which can be considered as a baby boom will eventually returns to its natural level, or this rise will make a change to the post demographic transition stage, like what happened in Eastern Europe where some countries currently are witnessing a rise –even if a minor rise– in fertility.

Figure N°2: Evolution of demographic transition indicators in Algeria (1960-2023).



Source : (ONS, 2011) (ONS, 2023)

2. Epidemiological Transition

Epidemiological transition is defined as the process by which the burden of disease in a population shifts from the rise of premature mortality rate due to infectious diseases to delayed mortality (i.e., increased life expectancy) and the rise in morbidity rates due to chronic non-communicable diseases such as cardiovascular diseases, cancer, chronic respiratory diseases, diabetes, and others. The decrease in mortality rate in the demographic transition is accompanied by improvements in hygiene, nutrition, and the organisation of health services leading to a shift in causes of death, with infectious diseases gradually declining and replaced by chronic and degenerative diseases and injuries.

The first theory to tackle these changes that occur in disease patterns and mortality causes was the theory of epidemiological transition proposed by the Egyptian-American scholar Abderrahim Omran in 1971 which came as a try from him to identify the factors and results of the changes in morbidity patterns. He distinguished between three main stages of epidemiological transition (Leridon, 2012), with chronic diseases replacing infectious diseases as a main reason of death.

First is the era of pestilence and famine, characterised by a rise in mortality rates due to the exacerbation of infectious diseases, malnutrition, and famine, in addition to the life expectancy level ranging between 25 and 30 years. This was observed in France and across Europe before the 18th century.

Second is the era of receding pandemics, characterised by the elimination of major death crises related to epidemics and some pandemics. In this stage, mortality rates decrease gradually, improvements in nutrition, hygiene, and preventive measures take place, and life expectancy level rises to 50 years, which was regarded as a major achievement in health progress at the time. This was seen in many European countries in 18th and 19th centuries.

Third is the era of decadence and societal diseases, marked by a decline of infectious diseases replaced by diseases largely linked to human behaviour, such as cardiovascular diseases, cancers, as well as violence, drug use, and accidents. In this stage, mortality rates increase among older age groups, which enhances life expectancy at birth to reach 75 years. Moreover, fertility, in this stage, becomes the decisive factor in population growth. This was realised in France and several European countries since the early 1980s.

Generally, the essence of this theory is about the transition from a society in the process of industrialization to a modern society, where infectious diseases are replaced by non-communicable chronic diseases as the principle causes of death, and malnutrition issues are replaced by overweight and obesity issues in the domain of nutrition.

Nevertheless, according to specialists, this theory has two main limitations. First, the determinants and pace of passing through these stages vary significantly from a country to another, which makes it difficult to capture a synchronised global picture of epidemiological transition. In fact, some developing countries are still passing through these stages nowadays—even if in a slightly different way. Second, the three stages of this transition were defined at the time of formulating this theory; therefore, newer phases observed after that period were not taken into consideration, particularly delaying deaths resulted from degenerative diseases to increasingly advanced ages, which has become of an increasing importance in overall mortality.

For this reason, in 1986, a fourth stage of epidemiological transition was suggested by Olshansky and Ault after their studies on life tables, which revealed an uninterrupted increase in life expectancy in the United States of America unlike Omran's assumptions. They referred to this stage as the era of delayed degenerative diseases. It is characterised by:

- A rapid decline in mortality rates concentrated among the elderly, which occurs nearly with the same pace for males and females.
- The age structure distribution of mortality according to reason is significantly still the same as it is in Omran's third stage, but the age distribution of mortality resulted from degenerative diseases has gradually shifted towards older age groups.
- The relatively rapid improvements in survival have been concentrated among older populations. During this stage, degenerative causes of death that were dominant in Omran's third stage remain the same during the fourth stage leading to death. However, mortality risk from these diseases becomes redistributed among older individuals.

In 1998, two other stages were added into the epidemiological transition model, characterised by notable decrease in mortality rates resulted from cardiovascular diseases (Barrett, Christopher , Thomas, & George J. , 1998). This decrease has been attributed to shifts in cultural patterns, lifestyle, and dietary regime, and to the increasing impact of age-related diseases. In the first of these stages, mortality associated with aging, cardiac diseases, and emerging epidemics decreases, with mortality and fertility rates stabilising thanks to medical and technological advancements. However, the emergence of new diseases and the increasing antibiotics resistance have reshaped health threats, such as the case of viruses or mutations that reactivate old diseases.

The second stage is characterised by improving life quality despite persistent disparities, with increasing life expectancy and decreasing fertility rates. The population's age structure is moving towards balance, and societies that have better opportunities of education and health care are becoming more capable to control these diseases, though inequalities such as socio-economic, ethnic, and gender disparities in health care access persist.

Overall, epidemiological transition represents a transitional path that countries pass through as they move from the characteristics of developing countries to those of developed countries. Innovations in modern medicine and health improvements play a central role in reducing infant mortality and extending life expectancy, while decreasing fertility rates and the emergence of chronic and degenerative diseases become the main causes of mortality.

2.1. Epidemiological Transition in Algeria

Since independence, Algeria has sought to improve living standards, particularly by enhancing the health system based on the generalisation of health care and the implementation of health programs aimed at protecting vulnerable population groups and ensuring the prevention of widespread diseases. These efforts have had a significant role in generally modifying the epidemiological profile of diseases.

2.1.1. Waterborne Diseases

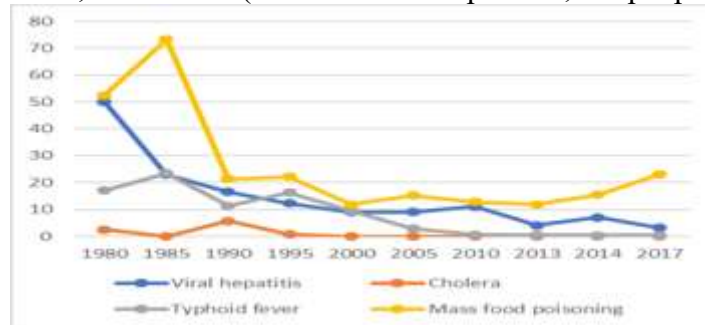
The waterborne diseases (such as typhoid fever, cholera, and viral hepatitis) are considered among the main diseases causing morbidity, and its persistence and spread are directly linked to general hygiene conditions and the availability of potable water. Furthermore, the migration of population from rural areas contributes to the spread of these diseases, specifically because of the lack of safe drinking water, the risks of water contamination, and the uncontrolled discharge of untreated wastewater, which causes groundwater pollution (CNES, 1999).

The number of cases of waterborne diseases was estimated at 28.66 to 33.45 cases per 100,000 people between 1993 and 1996 while the number has exceeded from 19.70 to 27 cases per 100,000 people between 2014 and 2017. The National Institute of Public Health explained the variation in these numbers with the increase in cases of mass foodborne poisoning (INSP, 2017).

According to the following figure, the incidence rate of typhoid fever, which is the most common waterborne infection, took an upward trend, rising from 11.75 cases per 100,000 people in 1990 to its peak of 16.35 cases per 100,000 in 1996. At the beginning of the 21st century, the number of typhoid fever cases in Algerian was at a significantly low rate of 0.29 cases per 100,000 people in 2017, compared to 9.28 cases per 100,000 in 2000. Meanwhile, the number of cholera cases steadily decreased from 5.39 cases per 100,000 people in 1990 to 0.06 cases per 100,000 in 1993, reaching near elimination with 0.003 cases per 100,000 people in 1997.

In 2018, the first cases of cholera were recorded after more than two decades, which reached 83 confirmed cases out of 217 hospitalised individuals, with two deaths reported. The emergence of the cholera bacterium was attributed to the consumption of contaminated non-potable water and the contamination of fruits and vegetables (Institut Pasteur d'Algérie, 2018). Conversely, the incidence rate of viral hepatitis has varied in recent years, decreasing from 15.69 cases per 100,000 people in 1990 to 7.02 cases per 100,000 in 2014.

Figure N° 03: Evolution of the prevalence rate of waterborne diseases, 1980-2017 (number of cases per 100,000 people)



Source : INSP, relevés épidémiologiques annuels, Algérie.

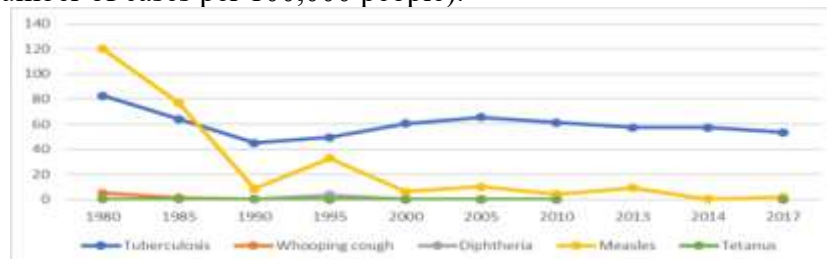
2.1.2. Diseases with Expanded Program of Immunisation

The vaccination programs and campaigns had a highly significant role in reducing the spread of infectious diseases in addition to improvements in potable water supply, living conditions, and personal hygiene.

At the end of 1960s, the first mass vaccination campaign against tuberculosis and smallpox took place. In 1969, vaccination became mandatory and free against tuberculosis, diphtheria, tetanus, whooping cough, and poliomyelitis. In 1977, vaccination against measles was introduced and became mandatory in 1985. During the 1980s, the prevention policy set its goal as reducing the spread of vaccine-preventable diseases (CNES, 1999).

Overall, the expanded program of immunisation against mortality has achieved highly satisfactory and encouraging results across nearly all targeted diseases with some variations and exceptions between them.

Figure N° 04: Evolution of the prevalence rate of diseases covered by the expanded program of immunisation 1980-2017 (number of cases per 100,000 people).



Source : INSP, relevés épidémiologiques annuels, Algérie.

Tuberculosis represents a priority for public health in Algeria. Despite the decrease in the incidence rate of tuberculosis in all its forms –from 53.2 cases to 22.4 cases per 100,000 people in 1981 and 1992 respectively–, the number of cases continued an upward trend during the 1990s and until the early 2000s (INSP, 2017). The resurgence of this disease raises questions about the nature of the disease's return, coinciding with social and economic situations.

In contrast, whooping cough has witnessed a significant decline since independence compared to the prevalence rates in three decades the 1960s, the 1970s, and the 1980s, dropping from 10.76 to 7.88 to 2.02 cases per 100,000 people respectively. By the 1990s, whooping cough became almost rare.

As for measles, its incidence rate increased during the 1990s. This urged public authorities to redesign the vaccination schedule and make the second vaccine dose mandatory for preschool-aged children. However, the disease emergence had been reported again in 2003 with a rise in cases to 40.09 cases per 100,000 people after it was 21.37 cases per 100,000 people in 2002 and 8.01 in 2001 (INSP, 2003). Meanwhile, no cases of poliomyelitis have been reported since 1997 thanks to the efforts made under the expanded program of immunisation.

2.1.3. Animal Borne Diseases

Zoonotic diseases are still being recorded at concerning rates, especially that they have dangerous consequences for human health. Animal borne diseases, such as brucellosis, rabies, and leishmaniasis are increasingly becoming a public health problem because of the sharp rise in the number of reported cases. The zoonotic diseases relative to the total number of reported diseases rose from 16.5% to 23.1% between 1992 and 1996. The evolution of these diseases is linked to the insufficient implementation on the ground of cross-sectoral measures in the areas of environmental and animal health.

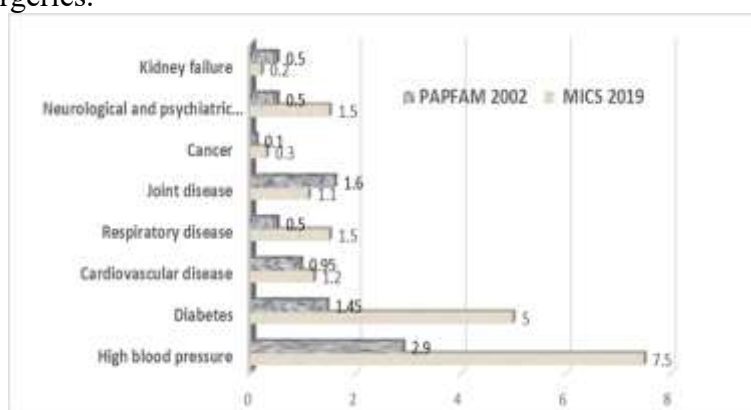
2.2. Non-Communicable Diseases

Simultaneously with the decline of infectious diseases, Algeria, like other developing and developed countries, is witnessing a steady rise in non-communicable diseases, particularly the chronic ones, most notably hypertension, diabetes, asthma, joint diseases, cardiovascular diseases, and cancer.

In 2012, the incidence rate of at least one of these diseases among adults aged more than 15 reached 14% compared to 10.5% in 2006. Women recorded the highest rates (17% compared to 11% for men), as did individuals living in urban areas (15% compared to 12% in rural areas) (CNES, 2016).

According to the 2019 Multiple Indicator Cluster Survey, one-fifth of the Algerian population aged more than 15 years is affected by at least one chronic disease (20%), with variation by gender (16% among males and 24.2% among females), and by area (21.6% in urban areas and 17.2% in rural areas). The average age at diagnosis of the first chronic disease, regardless of type, was estimated at 45.6 years. Those affected by a single chronic disease was 13.8%, which is a relatively high rate that needs attention and the development of appropriate strategies to address common risk factors for non-communicable diseases. These factors, identified by the World Health Organisation, include tobacco use, alcohol consumption, dietary habits, physical inactivity, obesity, hypertension, high blood sugar levels, and lipid disorders, all of which significantly contribute not only to the spread of these diseases but also to the rise of mortality rates (MSPRH, 2016-2017).

Figure N° 05: Evolution of chronic disease prevalence among adults over 15 years of age based on the 2002 and 2019 surgeries.



Source : MSPRH (2019) [MICS], MSPRH PAPFAM 2002

3. The Evolution of General Mortality in Algeria

The phenomenon of mortality represents one of the central components of natural population growth and the most important indicator reflecting the health status of population through the availability of health care infrastructure, treatment, and other services. In Algeria, general mortality rates have seen a significant decline over the past three decades, thanks to improvements implemented by the state in the health care sector, such as the introduction of free health care in 1974, vaccination campaigns, the fight against infectious

diseases, attention to reproductive health, and the overall improvement of living standards.

The general mortality rate has shown a marked downward trend. By the early 1980s, health care coverage extended to the entire population through public health services distributed across the national territory. The mortality rate decreased from 16.45 ‰ in 1970 to 10.9 ‰ in 1980, reaching 4.59 ‰ in 2000, after passing through 8.40 ‰ in 1985 and 6.43 ‰ in 1995 (ONS, 2011). Since the early 2000s, it has stabilised between 4 and 5 deaths per 1000 inhabitants (2000-2020) (ONS, 2023).

This clear decline in the general mortality level is largely linked to the reduction in infant mortality rates, as shown by most national surveys and investigations, as well as civil registry data. It also reflects improvements in reproductive health services and particular attention to maternal health.

Figure N° 06: Evolution of the general mortality rate in Algeria 1967-2023



Source : (ONS, 2011) (ONS, 2023).

3.1. Infant Mortality

The child mortality rate, in its both components (infant mortality under one year and under five years), is considered a key indicator for measuring a country's progress and improvement in the health sector. For this reason, the United Nations has included reducing child mortality among its development goals, aiming to cut the child mortality rate by two-thirds during the period from 1990 to 2015.

In Algeria, the infant mortality rate has followed the same downward trend of general mortality rate after independence, particularly after implementing the national child mortality reduction program in 1984 and the introduction of mandatory vaccination. Various data published later showed a significant decline in the infant

mortality rate, reaching 26.2 ‰ in 2007, 22‰ in 2014, and 17‰ in 2019 (MSPRH, 2019), down from 46.8‰ in 1990 and 84.7‰ in 1981 (ONS, 2011).

The under-five mortality rate was 24‰ in 2012 (MSPRH, 2015), and according to the MICS 2019 survey, it decreased to 19‰, with specific rates of 3‰ and 2‰ for children aged 1-4 years respectively.

Overall, the majority of deaths among children under five occur within the first year of life (89%), with nearly 73% occurring within the first month, accounting for about three-quarters of infant deaths (MSPRH, 2015).

The same estimates also highlight clear differences when child mortality rates are distributed by geographic regions and areas of dispersion: the rate was 23‰ in southern regions, 24‰ in northeastern regions, and only 13‰ in north-central regions. The rate is somewhat higher in rural areas at 21‰ compared to 14‰ in urban areas (MSPRH, 2019).

3.2.Life Expectancy at Birth

The Human Development Index, introduced in 1990, is a statistical indicator that measures the social and economic development level achieved by countries towards improving the well-being of their populations. In Algeria, the HDI recorded significant progress across the periods 1990-2000, 2000-2010, and 2010-2019, with average annual growth rates of 1.08%, 1.25%, and 0.93% respectively, moving from 0.572 in 1990 to 0.637 in 2000, and reaching 0.748 in 2019 (UNDP, 2020). This was thanks to the rise in life expectancy at birth, which showed clear improvement, increasing from 66.9 years in 1990 to 72.5 years in 2000, after having been no more than 54 years in 1970 for both sexes. This improvement continued to the present day, with life expectancy at birth reaching 76.3 years in 2010 and 77.8 years in 2019, recorded at 77.2 years for males and 78.4 years for females (ONS, 2023).

4.Causes of Death

Analysing causes of death is a fundamental tool for assessing the general health situation and for designing effective health policies, especially those related to prevention and reducing avoidable deaths. Data on causes of death help identify major risk factors, monitor epidemiological changes, implement necessary measures to address main risk factors, avoid complications, reduce treatment costs, and delay premature death (FORTAKI & B, 2019).

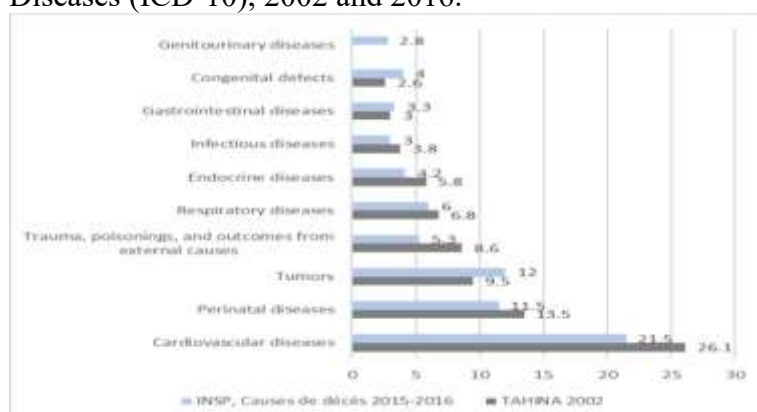
However, Algeria's statistical system still suffers from significant shortcomings in this area, as a large proportion of deaths are recorded

without precise cause-of-death information, despite the mandatory use of detailed medical certificates since 2014. The medical record remains the main source of information related to the disease that caused death and the medical history that may have influenced the course of the disease (INSP, 2015-2016). This reflects weak institutional coordination between the Ministry of Health, the National Statistics Office, and civil registry services (Barbieri & Vallin, 2014).

The results of the national investigation on causes of death (Tahina, 2002) show that non-communicable diseases caused the largest proportion of deaths (58.6%), led by cardiovascular diseases, followed by malignant tumours, respiratory diseases, and diabetes. Next came deaths due to infectious diseases, perinatal conditions, malnutrition, and trauma, accounting respectively for 22.7% and 10.6% (INSP, 2008).

Available data according to the 10th International Classification of Diseases (ICD-10) show that cardiovascular diseases continue to top of the list of causes of death, despite a decline in their rate from 26.1% in 2002 to 21.5% in 2016. Moreover, an increase in deaths resulting from tumours and gastrointestinal diseases was noticed. At the same time, the impact of accidents and injuries related to violence and traffic accidents has grown alongside Algeria's rapid shift towards an urban lifestyle. These shifts are attributed to changes in lifestyle and diet, reduced physical activity, and the rise of risky behavioural factors such as smoking and obesity, which increase the likelihood of chronic diseases and add to the burden of premature mortality.

Figure N° 07: Distribution of the main causes of death in Algeria according to the 10th International Classification of Diseases (ICD-10), 2002 and 2016.



Source : INSP, 2016, causes médicales de décès Années 2015-2016

INSP, Analyse des causes de décès Année 2002

On the other hand, road traffic accidents and violence-related injuries have reached alarming dimensions. This is linked to the Algerian society's transition from an industrialising society to an urbanised one, characterised -according to the epidemiological transition model- by the gradual replacement of infectious diseases with non-communicable and chronic diseases, and thus becoming one of the main causes of death, in addition to the replacement of malnutrition issues with overweight problems in the field of nutrition. Simultaneously with the demographic and epidemiological transition, that occurred and are still occurring in Algeria, another transition is taking place: a shift in food consumption patterns and eating habits, particularly in urban areas, where there is a growing prevalence of fast food outside and the widespread of mass-catered meals in cities. Additionally, the traditional type of food, based on fresh vegetables and natural products, has been gradually replaced by an unbalanced diet that includes more industrial products such as canned and frozen foods. Furthermore, the consumption of unhealthy drink, smoking, physical inactivity, and lack of exercise have become common. According to data from (MSPRH, 2016-2017), 81.2% of people aged 18-69 do not engage in any physical inactivity, with the highest rate observed among those aged 60-69 (94.2%), followed by 85.6% in 30-44 and 89.1% in 45-59 age groups. These are primary risk factors responsible for the rise in rates of diabetes, hypertension, and especially obesity, which reached a prevalence of 55.6% in 2017 (48.3% among men and 63.3% among women). According to the same source, the risk of cardiovascular disease was estimated at 30%, determined based on age, sex, blood pressure, smoking status, and total cholesterol and blood glucose levels.

CONCLUSION

Since the independence, Algeria has witnessed profound changes in fertility and mortality indicators, which made it pass through advanced stages of demographic and epidemiological transition. This has positively impacted life expectancy and improved human development indicators. The health policies, such as mandatory vaccination and improvements in health care services, have succeeded in eliminating a number of infectious diseases.

Nevertheless, these health gains have been accompanied by new challenges represented in the widespread of chronic and non-communicable diseases, which are considered the leading causes of death, especially among older age groups. This calls for a radical review of health policies to strengthen preventive health, enhance the quality of mortality data, and establish precise national registers for chronic diseases to enable evidence-based planning.

The epidemiological transition in Algeria is not only a shift in cause of death; it represents a structural transition in health burden, which urge decision makers to adopt a comprehensive vision based on prevention, reducing geographic and social disparities in access to care, and promoting healthy lifestyles. Efforts must also be made in improving medical information system, as it represents a pivotal foundation for any sustainable health reform capable of addressing the current demands of the epidemiological transition.

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