Mortality Profiles

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Chapter 7
Mortality Profiles

Abstract The Mediterranean is currently characterised by rather low mortality. Indeed, life expectancy at birth exceeds the global average in almost all countries of the region. But this was not always the case. Mortality in the Mediterranean has fallen sharply since 1950: average life expectancy at birth was 78 years in 2019 compared to only 53 years in 1950. This dramatic increase in life expectancy at birth is a sign of great convergence between Mediterranean countries, but also of a profound shift in mortality patterns concerning both causes of mortality and ages at which people die. Despite these general trends of overall convergence in mortality, disparities persist between countries. This chapter takes a look at the evolution of mortality in the Mediterranean since 1950. We will start by describing trends in overall mortality by studying the indicator of life expectancy at birth. We will then analyse mortality by major age groups: child mortality (0–5 years), adult mortality (15–64 years) and mortality at advanced ages (65 years or older). Finally, to explain the identified mortality differences, we will take a look at the health transition in the Mediterranean in relation to the major causes of mortality.

Keywords Mortality · Mortality profiles · Infant and child mortality · Adult mortality · Mortality at advanced ages · Health transition · Mediterranean

7.1 Introduction

The Mediterranean is currently characterised by rather low mortality. Indeed, life expectancy at birth exceeds the global average in almost all countries of the region. But this was not always the case. Mortality in the Mediterranean has fallen sharply since 1950: average life expectancy at birth was 78 years in 2019 compared to only 53 years in 1950. This dramatic increase in life expectancy at birth is a sign of great convergence between Mediterranean countries, but also of a profound shift in

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mortality patterns concerning both causes of mortality and ages at which people die. Despite these general trends of overall convergence in mortality, disparities persist between countries. This chapter takes a look at the evolution of mortality in the Mediterranean since 1950.

We will start by describing trends in overall mortality by studying the indicator of life expectancy at birth. We will then analyse mortality by major age groups: child mortality (0–5 years), adult mortality (15–64 years) and mortality at advanced ages (65 years or older). Finally, to explain the identified mortality differences, we will take a look at the health transition in the Mediterranean in relation to the major causes of mortality.

7.2 Mortality at All Ages: Life Expectancy at Birth

7.2.1 A Very Heterogeneous Picture in 1950

In 1950, overall mortality levels were very disparate in the Mediterranean (Fig. 7.1). Life expectancies at birth (e_0)[1] ranged from 34 to 68 years. This meant that some countries were already progressing well in the transition from high to low mortality rate, while others still had a way to go. The former had e_0s above 60 years as seen in Southern Europe and in the majority of the Balkans, along with some countries in the Near East (Israel, Lebanon and Cyprus to a lesser extent). On the other hand, the latter were characterised by much higher mortality levels. Life expectancies at birth in North African countries were thus generally less than 40 years and those in the Near East between 45 and 50 years, corresponding respectively to the mortality trends of France at the beginning of the nineteenth century and Italy in the 1920s. Balkan countries (Albania, Bosnia-Herzegovina, and Macedonia) were in an intermediate situation with e_0s approaching 50 years of age.

Despite sometimes high mortality levels, the situation in 1950 would indicate that the Mediterranean populations were all nevertheless engaged in the process of mortality transition. Indeed, before mortality began to decrease with the Industrial Revolution in the late 18th to the early nineteenth century, the e_0 generally did not exceed 30–35 years in Europe (Weeks, 2020). However, all the Mediterranean countries more or less exceeded this threshold in 1950, showing that the mortality transition had potentially begun before the Second World War. For example, Egypt and Algeria saw their mortality gradually decrease from the beginning of the twentieth century (Fargues, 1986; Tabutin et al., 2002). This characteristic of the mortality transition in the Mediterranean is surely explained by the "Mediterranean hygienisation"[2] (Pouget, 2021). Indeed, rich exchanges of knowledge and medical practices have taken place between all the shores of the Mediterranean since the nineteenth

[1] For ease of reading, we use the annotation "e_0" in this chapter to mean "life expectancy at birth".
[2] This text has been translated into English by the authors. The original text in French is as follows: "hygiénisation méditerranéenne".

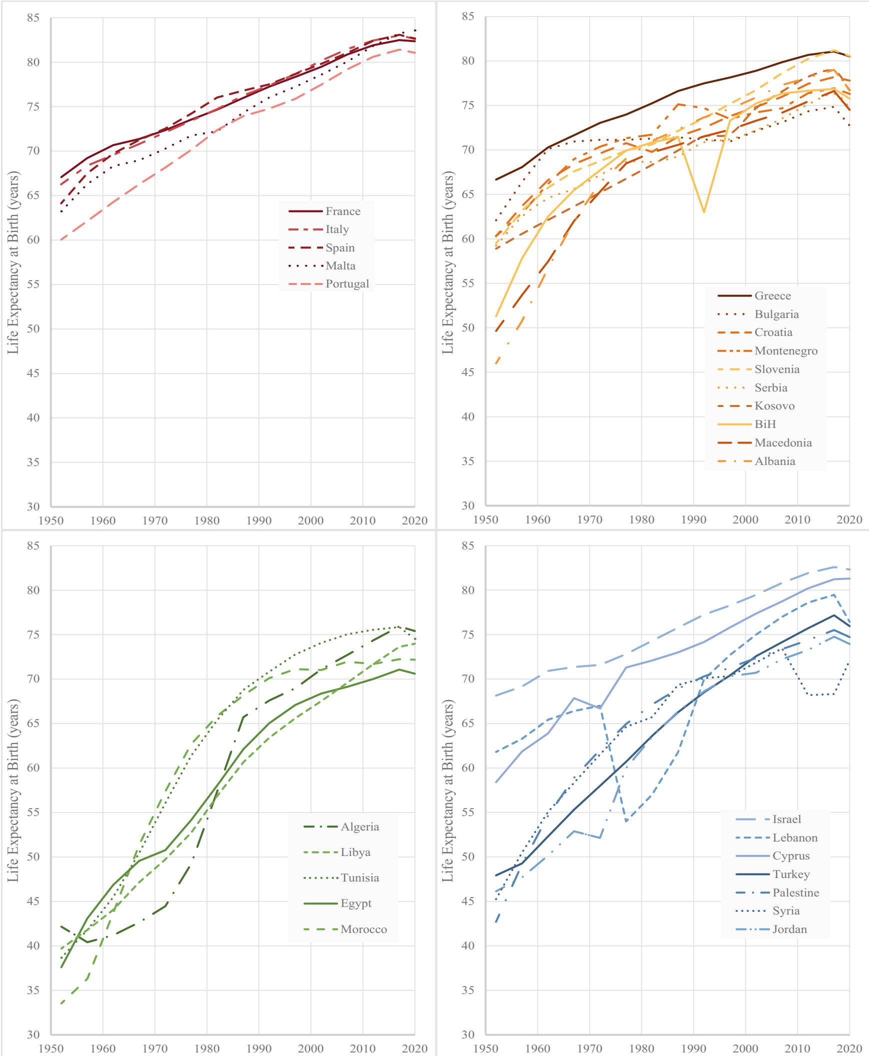

Fig. 7.1 Evolution of life expectancy at birth in the Mediterranean (1950–2021) (*Source* World Population Prospects 2022. Calculations made by the authors. *Note* The time units used are five-year periods)

century (Speziale, 2018). Doctors, nurses, sisters and missionaries were the vectors of the Pasteur revolution during the first half of the twentieth century.

Nevertheless, even though mortality declined relatively early in the Mediterranean, the health situation in many countries was still dire in 1950: child mortality was particularly high and few people reached old age. Indeed, a life expectancy at birth of 35 years, as in Egypt in 1950, meant that about one in four children died before one year and only 30% of a generation reached the age of 65. By way of comparison, during the same period, the proportions were respectively 2 children out of 10 and 50% in Macedonia (e_0 of 50 years), or 5 out of 100 and 68% in France (e_0 of 66 years). Thus, within the Mediterranean of the 1950s, there were very contrasting demographic realities, with populations located at an early stage of the mortality transition and others at an advanced stage.

7.2.2 General Convergence Since 1950[3]

Since 1950, mortality has declined significantly across the region, currently exceeding an e_0 of 70 years in all Mediterranean countries (Fig. 7.1). Mediterranean populations are all in a phase of low relative mortality: everywhere less than 2% of children die before the age of 1, and more than 75% of a generation reaches the age of 65. Great strides have been made to reduce mortality; previously, death was a serious threat to human society.

This decline in mortality has not occurred at the same rate everywhere though. It was particularly rapid for countries in a mortality transition that had just begun in 1950. France took almost 120 years to go from an e_0 of 40 to 70 years. Italy and Spain have done this in about 70 years, while Morocco and Egypt have done it in just under 60 years, Jordan in 40 years and Libya in 30 years. With this very rapid increase, the countries with the highest mortality in 1950 have bridged much of the gap that separated them from the populations most advanced in the mortality transition. It might be expected that some lagging countries would catch up with, or even overtake, the earlier countries and that the ranking of countries at the end of the period would be different from that at the beginning of the period. On the contrary, there is no upheaval in the hierarchy that prevailed in 1950. However, some trajectories are interesting to note, such as Lebanon and Turkey whose current e_0 equals (and exceeds) that of several Balkan countries, even though they experienced a more unfavourable situation in the 1950s. In 2019, Turkey's e_0 (77 years) was slightly higher than that of Serbia and Montenegro, whereas it was lower by more than 11 years in 1950. Also noteworthy is the particular situation of Bulgaria, which with an e_0 of 75 years is among the lowest life expectancies in the Mediterranean while it was among the highest in 1950.

A great convergence of mortality has therefore taken place and the current situation is much less heterogeneous than it was before. Mortality gaps in the Mediterranean have narrowed significantly since 1950. However, contrasts remain: 12 years separate the lowest e_0 (Egypt) and the highest (Italy) in 2019 and at least 5 years separate the

[3] In this chapter, even if some graphs represent the period 1950–2021, we will cover (unless otherwise stated) the period 1950–2019 in order to not take into account the mortality related to the Covid-19 pandemic (2020–2022). Indeed, the effects of this pandemic on life expectancy are not yet fully known. We would like to focus on the mortality situation of Mediterranean countries outside of any great shock (or almost).

e_0 of most North African countries ($e_0 < 76$ years) and that of Southern European countries ($e_0 > 81$ years).

7.2.3 Decreases in Life Expectancy at Birth

This tremendous victory over death must not make us forget that this progress can be reversed. If the e_0 increased in all the Mediterranean countries between 1950 and 2019, the evolution was not always steady and some setbacks were experienced. For example, the convergence of the e_0 observed in the Mediterranean has slowed down, and even came to a halt in the 1990s, a period from which the curves evolve almost in parallel. This is the effect of a slowdown in the rates of increase in the risk of death by age, particularly in the countries with the lowest e_0. While the relative disparities between countries reduced by a factor of four between 1950 and 1990, they have remained almost at the same level since then.

We also observe declines in e_0 in several Mediterranean countries during the study period. The most notable are attributable to wars and conflicts: the Algerian war (1954–1962), the Lebanese war (1975–1982), the Yugoslav war (1992–1995), wars and political destabilisation in Libya in the 2010s and the Syrian conflict since 2011. The increase in mortality over a short period of time is sometimes striking: annual data from the *World Population Prospects 2022* show that Bosnia-Herzegovina lost about 20 years of e_0 between 1990 and 1993 for example. In addition, post-conflict recovery time varies from country to country. Whereas Bosnia-Herzegovina seems to have taken 2 years to regain its pre-war e_0, Lebanon took about 10 years. Syria, meanwhile, still has not reached its 2010 e_0, despite being in recovery for several years.

The COVID-19 pandemic has also led to a more or less significant decrease in e_0 almost everywhere in the Mediterranean in 2020–2021. The impact of the virus varied by country: they were not affected at the same time and did not suffer the same number of waves of excess mortality. According to *World Population Prospects 2022* data, Mediterranean countries lost an average of 1.5 years of e_0, with large disparities within the region (Table 7.1). The countries with the greatest loss of e_0 (greater than 2 years) are located in the southern Balkans, along with North Africa and Lebanon.

7.2.4 Gender Inequalities

As elsewhere in the world, inequalities in mortality between men and women are significant in the Mediterranean. Mortality risks for men are generally higher than those for women. This difference in favour of women may be attributed to a biological advantage in the form of immune function, although it is difficult to measure this effect (Weeks, 2020). Thus, in the Mediterranean, the e_0 of men is lower by 5 years on average than that of women. However, the extent of the gender gap is not the same in all countries. It depends on social factors relating to the status of women in society. Thus, when a small gap is noted, it reflects an excess mortality of women, which reflects a rather deteriorated status. The gender gap in e_0 is also a function of progress in the mortality transition: the gaps between men and women, which are rather reduced at the beginning of the transition, are accentuated during the transition by the faster increase in women's e_0, and they finally decrease when men's e_0 progressively catches up with that of women. To illustrate this relationship, we use the evolution of the gender gap of e_0 of France since 1806 in comparison with that of other countries of Southern Europe (Fig. 7.2).

Before the transition, the gap in e_0 between men and women was generally quite small. In France, the gender gap was almost stable until the early 1860s and it was

Table 7.1 Loss of life expectancy at birth during the COVID-19 pandemic (2020–2021)

Scale of e_0 loss	Country
e_0 loss < 1 year	Cyprus, Syria, Morocco, France, Israel, Libya, Malta, Portugal, Montenegro
1 year < e_0 loss < 2 years	Egypt, Greece, Italy, Croatia, Slovenia, Spain, Palestine, Jordan, Bosnia-Herzegovina, Turkey
2 years < e_0 loss < 3 years	Algeria, Tunisia, Kosovo, Serbia, Albania
e_0 loss > 3 years	Bulgaria, Macedonia, Lebanon

Source World Population Prospects 2022. Calculations made by the authors

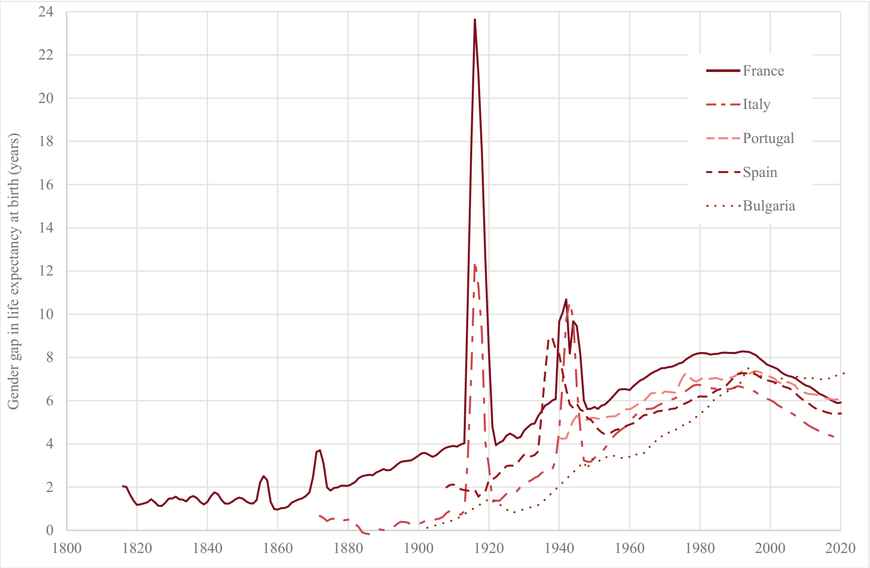

Fig. 7.2 Evolution of the gender gap in life expectancy at birth in some Southern European countries (*Source* Human Mortality Database, Human Life-Table Database. Calculations made by the authors)

less than 2 years (excluding exceptional periods). During the mortality transition, women's e_0 increased faster than men's, widening the gap. France has experienced a gradual increase in the gender gap since the 1860s. Apart from periods of war, it reached a maximum of slightly more than 8 years in the early 1990s, when it began to decrease until the present time (bell curve). This decrease in the gender gap can be explained both by a certain masculinisation of female behaviours (increase in tobacco and alcohol consumption, etc.), but also by changes in the epidemiological profile that we will discuss in the last part of this chapter. The other Southern European countries in Fig. 7.2 have the same evolution model, with some differences compared to that of the French. For Bulgaria, for example, once a maximum was reached, there was no decrease in the gender gap, but a stagnation for 30 years.

The evolution of the gender gap of e_0 in the Mediterranean since 1950 highlights a diversity of trajectories. We have classified them into 5 groups (Fig. 7.3).

The first brings together countries with the same bell-shaped trajectory presented previously, and whose gender gap has been decreasing for at least 20 years (or more). These are the countries of Southern Europe (except Malta), plus Croatia and Slovenia. Similar trajectories with stagnation (or a slight decrease) once the maximum has been reached make up the second group, which is almost exclusively comprised of Balkan countries. The third group concerns only countries on the Southern and Eastern shores, with gender gap trajectories increasing over the entire period. The fourth group includes Albania, Bosnia-Herzegovina and Cyprus, whose trajectories are downward over the entire period. Finally, the trajectories of the last group (Algeria, Kosovo, Lebanon and Palestine) do not have a clear evolution over the entire period. Across the board, the conflicts are clearly identifiable, showing how men's e_0 is more affected during these periods of instability.

The more rapid increase in the e_0 of women during the decline in mortality leads to sometimes considerable time lags between the two genders. In Bosnia-Herzegovina, for example, men in 2019 had an e_0 that women in the same country had reached almost 25 years before. There are considerable disparities, with a gap of about 10 years for Morocco and Algeria, and 30 years for Serbia, Tunisia and Croatia. The maximum was reached by Bulgaria with a lag of 60 years, meaning that in 2019 men reach an e_0 that women had in 1960.

7.3 The Different Mortality Profiles

Life expectancy at birth is a synthetic indicator of the mortality of a population. It gives indications of the health of a population at a given date, but potentially masks different age-specific mortality profiles for the same value (mean age at death). Different mortality patterns can correspond to the same life mean at birth. To better understand the mechanisms underlying the convergence of e_0 in the Mediterranean since 1950, as highlighted above, we will now analyse mortality broken down into 3 major age groups: infant and child mortality (under 5 years old), adult mortality (15–64 years) and mortality at advanced ages (65 years or more).

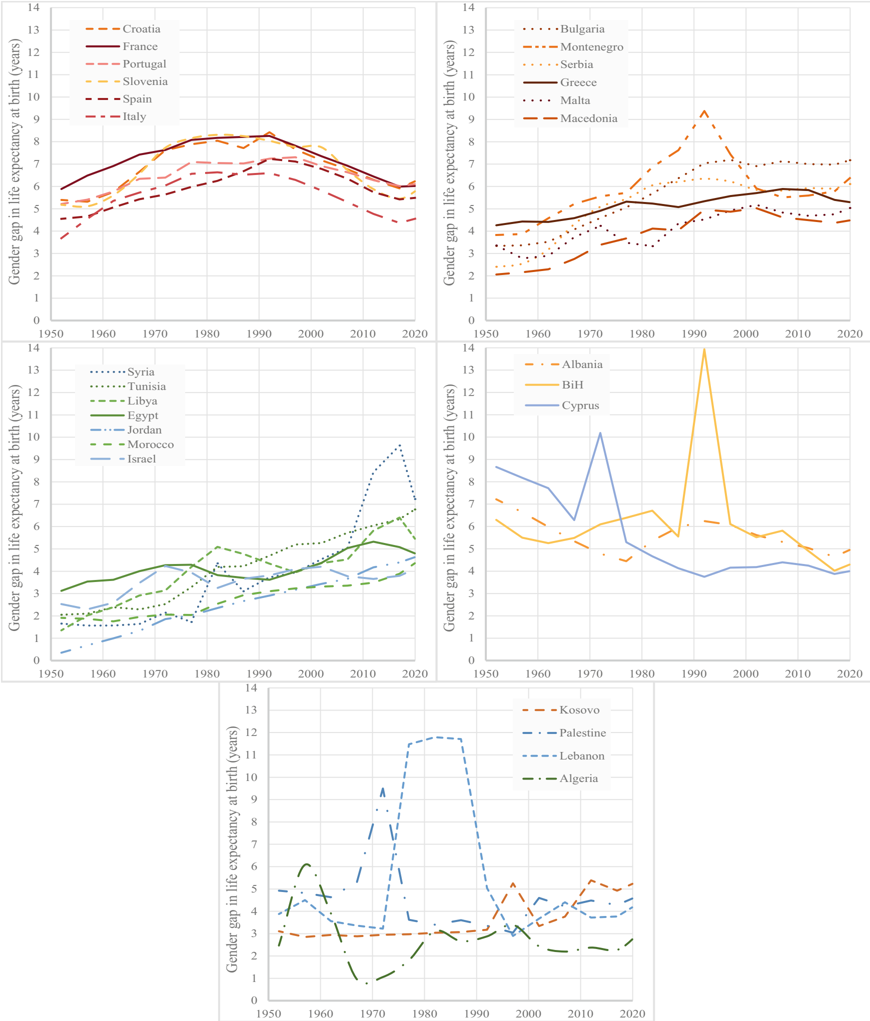

Fig. 7.3 Evolution of the gender gap in life expectancy at birth in the Mediterranean (1950–2021) (*Source* World Population Prospects 2022. Calculations made by the authors. *Note* The time units used are five-year periods)

7.3.1 Infant and Child Mortality (Under 5 Years Old)

For most of human history, infant and child mortality (i.e. children under 5 years old) remained at very high levels. It was not until the nineteenth century that it began to decline in European countries, then in other countries of the world according to various timing. In 1950, the infant and child mortality rate (U5MR)[4] at the global level stood at 225‰; in 2019, it reached the low level of 38‰ in 2019, thus representing a drastic reduction in a short time on a historical scale. Over the same period, in the Mediterranean, the U5MR decreased on average from 180 to 20‰.

In 1950, U5MR values spread over a wide spectrum, ranging from about 40‰ to over 350‰ (Fig. 7.4). This disparity meant that more than 90% of children reached the age of 5 in some countries, and only 55% in others. However, this proportion exceeded 70% in the vast majority of Mediterranean countries. This infant and child mortality strongly converged towards lower levels throughout the Mediterranean, with sometimes very large reductions in some countries. In 2019, the values were concentrated in a narrower spectrum than in 1950: there were indeed 10 Mediterranean countries above the world average in 1950, while there were none in 2019. No country (except Syria[5]) has a U5MR above 25‰. More than 97% of children survive up to 5 years across the Mediterranean. Infant and child mortality is now low.

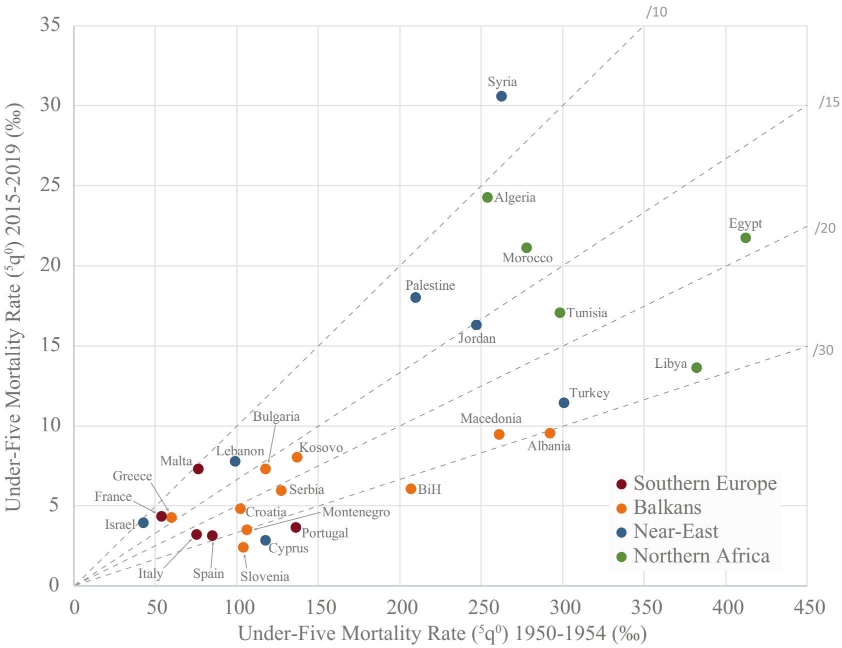

Fig. 7.4 Child mortality in the Mediterranean (1950–2019) (*Source* World Population Prospects 2022. Graphic developed by the authors. *Reading tip* the dotted lines represent the change between 1950–1954 and 2015–2019. For example, points on the "/30" line have child mortality that has been divided by 30 between the two periods. The colour of a dot represents the regional area to which a country belongs)

[4] For ease of reading, we use the expression "U5MR" (Under-five Mortality Rate) in this chapter to mean "infant and child mortality".

[5] This is mainly due to the war, as Syria's U5MR was below 20‰ at the end of the 2000s.

In 1950, there was a contrast between countries that were well underway in the health transition and those that were still at an early stage. The former had a U5MR of less than 150‰, and included the countries of the Northern shore plus the more advanced countries of the Southern and Eastern shores (Israel, Lebanon and Cyprus). The latter had a U5MR higher than 200‰, and were mainly on the Southern and Eastern shores, but also on the Northern Shore (Albania, Macedonia and Bosnia-Herzegovina). This dichotomy can still be seen in 2019, but with much smaller gaps between countries. Figure 7.4 thus shows that the most spectacular increases in the decline of the UM5R concerned countries such as Libya, Turkey and Albania (countries located below the right marked " /30", indicating a division by 30 of infant and child mortality).

7.3.2 *Adult Mortality (15–64 Years Old)*

Whilst the highest risks of death are concentrated at the younger and older age groups, adult mortality (considered here as mortality between 15 and 65 years) should not be underestimated. Indeed, the odds of dying before age 65 were not negligible in 1950, even after surviving to the age of 5; in fact, differences are still observed today. Adult mortality also contributes to inequalities in life expectancy between men and women due to excess mortality following childbearing and pregnancy.

In 1950, all Mediterranean countries saw at least 25% of people who reached the age of 5 die before the age of 65. This proportion reached more than 60% in some countries (Tunisia, Morocco, Jordan, Libya). Since 1950, adult mortality has declined throughout the Mediterranean (Fig. 7.5).

The intensity of this reduction is not commensurate with the reduction in infant and child mortality. While the latter has been divided by a factor of 10 in almost all countries, adult mortality has been divided by a ratio of "only" between 2 and 5, which is nevertheless far from negligible. The current situation is much more enviable than it was 70 years ago, because in all the Mediterranean countries, at least 75% of people who have reached the age of 5 can expect to reach the age of 65.

In 1950, there was clear opposition between the Northern Shore (with Turkey, Cyprus, Israel and Lebanon) with adult mortality levels below 400‰, and the Southern and Eastern shores (with Bosnia-Herzegovina) with levels above 400‰. In 2019, we no longer see this geographical contrast. The highest levels (>200‰) are mainly on the Southern and Eastern shores (Egypt, Syria, Libya, Bulgaria). In contrast, lower levels of adult mortality are routinely found in countries on all shores of the Mediterranean. For example, adult deaths between 120‰ and 175‰ concern countries in North Africa (Tunisia, Morocco, Algeria), the Near East (Palestine, Jordan, Turkey) and the Balkans (Montenegro, Serbia, Croatia, Bosnia-Herzegovina, Macedonia, Kosovo). This means that similar adult mortality conditions can be shared by countries on both sides of the Mediterranean.

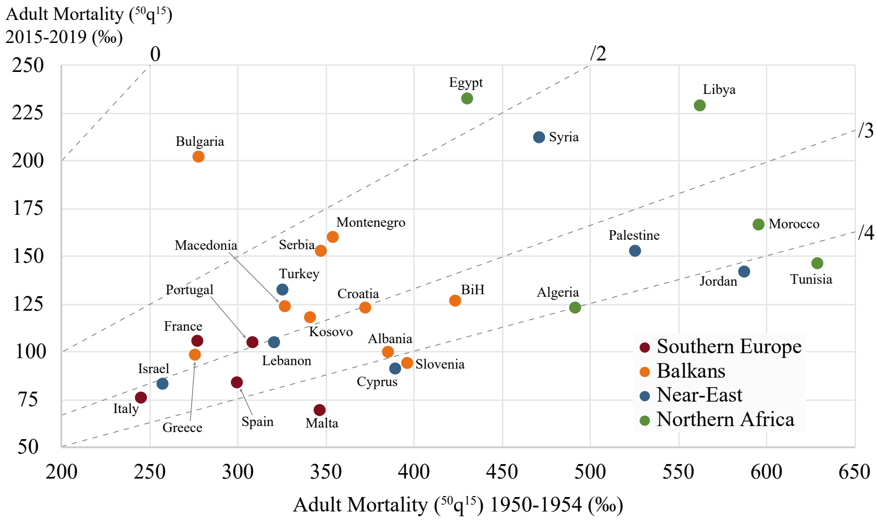

Fig. 7.5 Adult mortality in the Mediterranean (1950–2019) (*Source* World Population Prospects 2022. Graphic developed by the authors. *Reading tip* The dotted lines represent the change between 1950–1954 and 2015–2019. For example, points on the "/4" line have an adult mortality that has been divided by 4 between the two periods. The colour of a dot represents the regional area to which a country belongs)

7.3.3 Mortality at Advanced Ages (65 Years Old or Older)

In 1950, we saw that the high levels of infant, child and adult mortality in the Mediterranean meant that a significant part of a generation did not reach the age of 65 (with great variability between countries). Once this age is reached, how many more years can a person expect to live? To measure this, we use the life expectancy indicator at age 65 (e_{65}),[6] which is the number of years an individual will live on average if they have the same probabilities of death as previous generations at the same time.

All Mediterranean countries had an e_{65} between 10 and 14 years in 1950 (Fig. 7.6). It increased everywhere by 4.5 years on regional average from 12 to 16.8 years (in 2019). However, developments vary greatly from country to country. Over the study period, in contrast to infant and adult mortality, there is a trend over the period towards divergence in the e_{65}. Indeed, differences between countries increased, as many of the countries with the highest e_{65} in 1950 were also those that's experienced the highest increase (see Sect. 7.4 of this chapter). Southern European countries and Israel have all seen their e_{65} increase by more than 50%, even though their e_{65} was already among the highest in the region in 1950 (>13 years). They have thus widened the gap with the other Mediterranean countries, most of which have had a more moderate rate of growth.

[6] For ease of reading, we use the annotation "e_{65}" in this chapter to mean "life expectancy at 65 years".

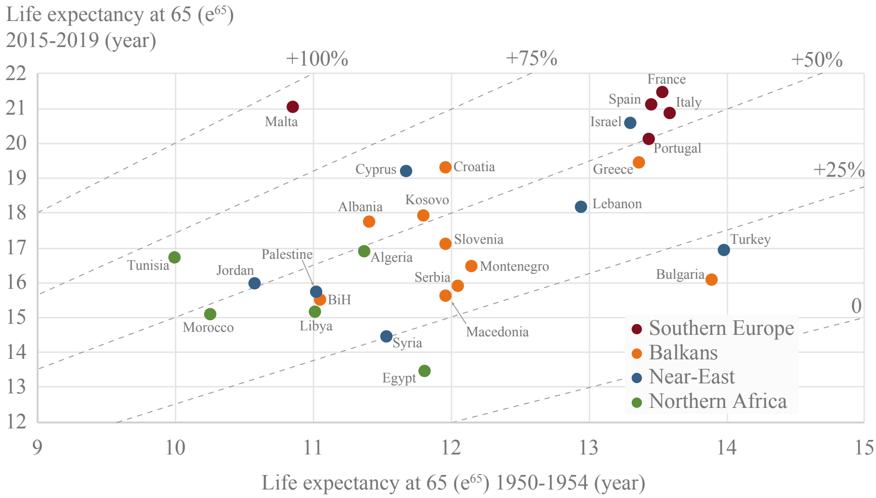

Fig. 7.6 Life expectancy at age 65 in the Mediterranean (1950–2019) (*Source* World Population Prospects 2022. Graphic developed by the authors. *Reading tip*: the dotted lines represent the change between 1950–1954 and 2015–2019. For example, points on the "+75%" line have a life expectancy at age 65 that was increased by 75% between the two periods. The colour of a dot represents the regional area to which a country belongs)

Unusual trajectories are also a noteworthy. Bulgaria had the second highest e_{65} in the Mediterranean in 1950, but it only increased by 2 years, thus arriving at 17th place in 2019. Malta, meanwhile, saw its e_{65} almost double over the study period, moving from 24th to 3rd place.

As a result, countries' e_{65s} are spread over a wider range of values in 2019 than in 1950. There were 9 Mediterranean countries with an e_{65} below the world average in 1950, and 15 in 2019. This situation illustrates the divergence in life expectancy at age 65 that has occurred in the Mediterranean between these two dates.

It is possible to distinguish 4 groups of countries in 2019, reflecting differences between the shores of the Mediterranean. The first group is made up of the countries of Southern Europe and Israel, with an e_{65} over 20 years; they clearly stand out from the other countries. Cyprus, Croatia and Greece form the second group. With an e_{65} between 19 and 20, they follow the previous group. The third group (Syria, Egypt, Morocco, Libya) has the lowest e_{65} (less than 15 years). The last group brings together all the other countries, from all sides, with an e_{65} between 15 and 18 years.

7.4 The Health Transition

This general convergence of the e_0 in the Mediterranean, linked to declines in mortality at different ages, actually reflects a profound change in the diseases causing mortality (epidemiological profile) in a population (Frenk et al., 1991; Omran, 1971).

Historically, the epidemiological profile has long been dominated by infectious diseases. In industrial countries, the increase in e_0 from the end of the eighteenth century until the 1960s was essentially due to the fight against infectious diseases (Vallin & Meslé, 2004). This progress can be attributed to various factors, both sociocultural and medical: the control of major epidemics, the disappearance of famines and food shortages due to food production and distribution improvement; the improvement of nutrition, health and hygiene policies; progress in the distribution of drinking water and sanitation systems; and finally vaccines and antibiotics. The main implication of the massive decline in infectious diseases was the drastic reduction in infant and child mortality, and more generally the decline in mortality under the age of 50. This is why the e_0 was able to increase beyond the ancestral level of 30–35 years.

In the Mediterranean, the general convergence of the e_0 is explained by the timing lags in this victory over infectious diseases. Countries with high e_{0s} in 1950 had been fighting these diseases for a long time and had virtually eliminated them. On the other hand, this was not the case for countries with low e_0s whose infectious diseases still kept infant and child mortality at high levels. These countries benefited from the transfer of public health knowledge and medical technologies developed in Europe and North America. By making them available to all their populations, their e_0 increased very rapidly and these countries have made up some of the ground lost to the pioneer countries. In 2019, infectious diseases also accounted for only 2% of deaths in the Mediterranean, with the prevalence of AIDS being low in this region. Current differences in infant and child mortality between countries are mainly explained by the management of neonatal conditions (prematurity, etc.).

The historic triumph over infectious diseases does not mean that they are definitely a thing of the past, as the COVID-19 pandemic has reminded us. We have seen the emergence of new infectious diseases since 1950, such as AIDS, Ebola, Zika, SARS, West Nile virus, H1N1, H5N1 and so on. They still pose major threats to populations, especially when air travel allows diseases to be spread around the world within hours.

With the control of infectious diseases, societies now face other causes of mortality: chronic diseases (cardiovascular, tumours/cancers, diabetes, etc.) and society diseases (smoking, alcoholism, suicide, homicides, road accidents, etc.). The inability to fight against these various diseases leads to a stagnation of the e_0 or at least a much more moderate increase in it. The e_0 of Western countries, for example, reached similar levels at the end of the 1950s thanks to their control of infectious diseases. On the other hand, there was a stagnation in their e_0 in the 1960s, as the main causes of mortality were more chronic diseases and societal diseases (Vallin & Meslé, 2014). It was not until the 1970s that effective ways of combating cardiovascular diseases were discovered. This "cardiovascular revolution" thus allowed a new progression of the e_0.

However, it is more difficult to reduce mortality from cardiovascular disease than it is for infectious diseases (Meslé & Vallin, 2006). Firstly, medical prevention is more complicated, as the population needs to be made aware of the important risk factors related to diet and lifestyle, in order to change their individual behaviours. This objective is hence more difficult to implement than the prevention of infectious diseases, which relies mainly on vaccination and antibiotics. Secondly, treatment technologies are much more expensive and are not attainable for all countries, which is especially the case for cardiovascular diseases and cancers.

In Europe, Western countries managed to fight against cardiovascular diseases and saw their e_0 increase. It is these countries that also saw increased life expectancy at advanced ages. Conversely, the countries of Eastern Europe were unable to take advantage of the new means of combating this type of disease, and thus had an e_0 which stagnated or even decreased (Vallin & Meslé, 2014). This may be due to economic difficulties, which have not allowed for the dissemination of treatment technologies, but also to the highly centralised political system which has proven to be less effective when individual responsibility was needed. Thus, from the 1970s onwards, there was a divergence in e_0 between the countries of Eastern and Western Europe, even though the former had closed most of their e_0 gap.

Similarly, the Mediterranean countries have not been equal in the face of cardiovascular diseases (Fig. 7.7).

The richer ones were able to take advantage of the new control methods and see their e_0 continue to increase (and now exceed 80 years). In contrast, for the other

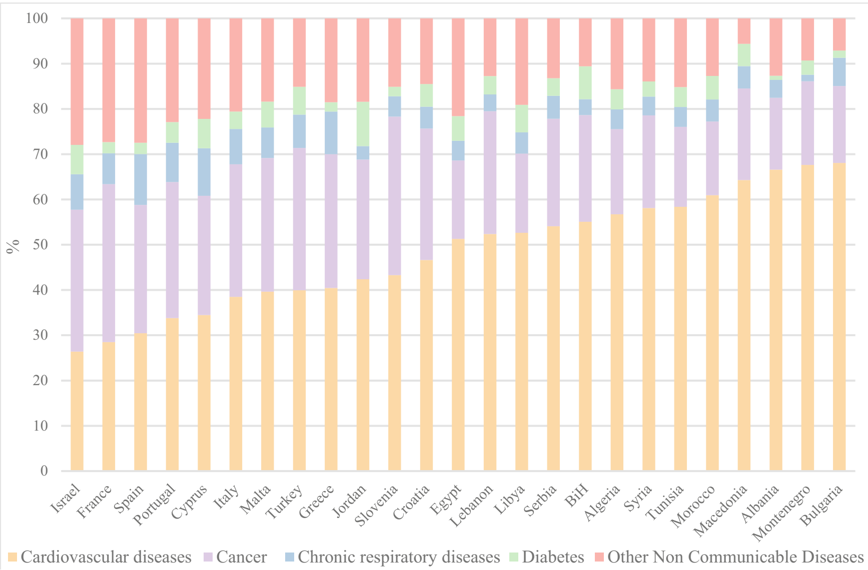

Fig. 7.7 Distribution of causes of death among non-communicable diseases (2019) (*Source* NCD Data [WHO])

countries, economic difficulties and a certain political centralism may have been an obstacle and the increase in e_0 was more moderate. This inequality in the fight against cardiovascular diseases is reflected in the burden of these diseases in the Mediterranean (Fig. 7.7). In half the countries, these diseases account for more than 50% of deaths from non-communicable diseases.[7] In contrast, they represent less than 30% in the most advanced countries in the fight against these diseases (e.g. Israel, France and Spain).

This inequality in mortality from cardiovascular diseases gives rise to different epidemiological profiles in the Mediterranean countries. In general, countries that manage to control cardiovascular diseases are more likely to face cancers and neurodegenerative diseases (Fig. 7.7). Cancers account for 25% of deaths from noncommunicable diseases on average in the region. They exceed 30% in countries such as France, Slovenia, Israel, Turkey or Portugal (although cancer mortality has been decreasing for some decades now) and represent less than 20% in all North African countries and in Albania, Bulgaria and Montenegro.

This unequal situation with regard to cardiovascular diseases and cancers is partly responsible for the divergence in e_{65} observed between 1950 and 2019, and also for the current disparities in adult mortality. The progression of e_{65} is correlated with the ability to manage chronic diseases that occur with age, cancers, neurodegenerative diseases and accidents.

Moreover, not all Mediterranean populations are affected with the same intensity by societal diseases. Arab-Muslim countries are generally much less affected by alcohol-related deaths (three times less than in other Mediterranean countries) and, to a lesser extent, by smoking-related deaths. In contrast, road traffic deaths are higher, particularly in Algeria, Libya and Jordan, which may explain some of the current disparities in adult mortality.

Finally, the Mediterranean countries are very unevenly affected by obesity, which is a risk factor for cardiovascular diseases and diabetes in particular. It is particularly high in countries on the Southern and Eastern shores, which affected one in three adults over the age of 18 on average in 2015, compared with one in five in other countries.

7.5 Conclusion

In 1950, Mediterranean societies experienced very different mortality conditions. Since then, there has been a great convergence of life expectancy at birth, driven by the decline in infant, child and adult mortality with the control of infectious diseases. All countries are now in a low mortality phase. However, the convergence of life expectancy at birth stopped about 30 years ago and the analysis of the data even

[7] The WHO classifies deaths into three main categories: communicable, maternal, perinatal and nutritional diseases; noncommunicable diseases; and accidents. We focus on non-communicable diseases, as they comprise the bulk of chronic and societal diseases.

reveals a divergence of mortality after 65 years. These trends can be attributed at least in part to the uneven capacities of Mediterranean countries to combat cardiovascular disease, neurodegenerative diseases and cancer. There is no doubt, however, that an improvement in these capacities could lead to a resumption of the convergence of mortality after age 65, and thus of life expectancy at birth. This is an important issue because the number of older people will continue to increase by 2060 (see Chap. 2).

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