THE EVOLUTION OF MORTALITY IN ROMANIA IN THE PERIOD 1970-2020

Mădălina Diana DAINA [1], Camelia BUHAŞ [1], Cristina-Paula COSTEA [1#], László FEHÉR [1], Cristian Marius DAINA [1], Bogdan-Andrei BUMBU [1]

[1]University of Oradea, Faculty of Medicine and Pharmacy, Street Piata 1 Decembrie, no.10, Oradea, Romania

RESEARCH ARTICLE

Abstract

Mortality is an important indicator of health status, its study being complex, correlating general mortality data, mortality by diseases or groups of diseases, mortality by age groups, etc. The purpose of the research is the analysis of mortality in Romania, in order to estimate this phenomenon. A retrospective, longitudinal study of general and specific mortality was carried out, in the period 1970-2020, in Romania, with the publications of the National Institute of Public Health as the source of information. General mortality has an upward trend, from 1970-2020, from 9.5‰ in 1970 to 13.5‰ in 2020. In Romania, mortality patterns have undergone important changes in the last 50 years, in the sense of increasing general mortality, especially through diseases of the circulatory system, tumors, diseases of the digestive system, mental and behavioral disorders, diseases of the nervous system and sense organs, in the context of the multiple action of biological, environmental, behavioral risk factors and with the influence of socio-economic conditions and healthcare. The aging of the population, through the increase of the elderly population, leads to a marked increase in the last 50 years of mortality in the age groups over 65 years.

#Corresponding author: cristina.ciobanu88@gmail.com

INTRODUCTION

Information in the field of demographic events, especially mortality, is of vital importance because they directly influence the evolution of the natural increase and, therefore, the evolutions and demographic changes in Romania, with particular implications on demographic aging (Gheţău, 2007; Andrén, 2017, Lazar, 2005). These phenomena decisively influence social policies, especially in the field of the labor market, the health system, the education system and the social protection system (Almond, 2011; Mărginean, 2016; Black, 2015).

Mortality is an important indicator of health status, its study being complex, correlating general mortality data, mortality by diseases or groups of diseases, mortality by age groups, etc. (Checchi, 2005, Galama, 2018; Buckles, 2016).

Mortality is a phenomenon strongly dependent on economic-social development and the characteristics of a society (Cutler, 2006). The economic-social development determined the decrease in mortality and the increase in longevity and quality of life (Cucu, 2016).

In general, there has been a decline in mortality in the world as a result of complex actions aimed at health and economic development (Meghir, 2021; OECD, 2021, Spencer, 2017).

The purpose of the research is the analysis of mortality in Romania, in order to estimate this phenomenon. The obtained results can be useful to decision-makers in the health system, in the implementation of concrete measures to improve these indicators.

MATERIAL AND METHOD

A retrospective, longitudinal study of general and specific mortality was carried out, in the period 1970-2020, in Romania.

In carrying out the study, the methodology characteristic of a socio-economic research was used (analysis method, comparative method, statistical methods), based on specialized literature.

Data and information from the publications of the National Institute of Public Health were collected and processed (INSP-CNSISP, 2021).

The number of the deceased includes persons who, on the date of death, had their domicile or usual residence for a period of at least 12 months in Romania.

RESULTS AND DISCUSSIONS

Mortality in Romania in the last five decades had an increasing trend from values of 9.5 deaths per 1000 inhabitants in the 1970s, to 13.5 deaths per 1000 inhabitants in 2020. During this period, numerous fluctuations were recorded, with three peaks in the periods 1996-1997, 2002-2003 and 2015-2016. Analyzing mortality according to the main groups of medical causes of death, the values are expressed per 100,000 inhabitants, thus in 2020 the specific mortality was 1346.6 deaths per 100,000 inhabitants (figure 1).

Mortality from tuberculosis, part of mortality from infectious and parasitic diseases, describes in the decades between 1970-2020, the year 1970 with the maximum recorded of 18.5 deaths per 100,000 inhabitants, followed by the year 2000, which reaches 9.3 deaths per 100,000 inhabitants, but also an absolute minimum at the end of the analyzed period of 3.5 deaths per 100,000 inhabitants, a difference of approximately 6 times compared to the value at the beginning of the period.

Seen as a whole, the course of mortality from infectious and parasitic diseases differs from that of mortality from tuberculosis, so we will be able to observe the year 1970 with the maximum mortality from infectious and parasitic diseases, respectively 37.7 deaths per 100,000 inhabitants, followed by the year 2020 with 19 deaths per 100,000 inhabitants, and the minimum was recorded in 1980 with 10.8 deaths per 100,000 inhabitants (figures 2).

Regarding the mortality caused by tumors, reported per 100,000 inhabitants, the upward trend can be easily observed in the period 1970-2020. The observable minimum of 123.3 deaths from tumors per 100,000 inhabitants is recorded in 1970, reaching 224.4 deaths from tumors per 100,000 inhabitants in 2020 (figures 3).

2020 represents the year in which mortality caused by mental and behavioral disorders, diseases of the nervous system and sense organs, had the highest value, namely 21.2 deaths per 100,000 inhabitants. Compared to the lowest value recorded in the decades from 1970-2020, a difference of up to 9.9 cases of death can be observed, in other words a minimum of 11.3 cases of death caused by mental and behavioral disorders, diseases of of

the nervous system and sense organs per 100,000 inhabitants, known in 1970 (figures 4).

The discrepancy between the minimum of mortality from diseases of the circulatory system recorded in 1970, compared to the maximum in 2020, shows an increase of up to 275.8 cases per 100,000 inhabitants within 50 years, at the same time the tripling of mortality caused by arterial hypertension, with a maximum of 120.0 deaths per 100,000 inhabitants in 2010, compared to 48.6 deaths per 100,000 inhabitants recorded in 1970. Mortality due to cerebrovascular diseases shows a progressive evolution, from 130.8 deaths per 100,000 inhabitants in 1970 , reaching up to 228.0 deaths per 100,000 inhabitants in 2000, subsequently observing a decrease of 42.7 deaths per 100,000 inhabitants in 2020, reaching 185.3 cases of death from cerebro diseases -vascular (figures 5).

Mortality due to diseases of the respiratory system registers maximum values both at the beginning of the period and at its end, respectively 165.9 cases per 100,000 inhabitants in 1970, and 173.9 cases per 100,000 inhabitants in 2020. It is worth noting the steep increase of mortality in the last decade, approximately 3 times, from 56.6 deaths caused by respiratory diseases per 100,000 inhabitants, in 2010, compared to the maximum of the 2020 decade, 173.9 cases per 100,000 inhabitants, highlighting that the value from which started, also represents the lowest parametric value of the analyzed period. Mortality, caused by pneumonia, on the other hand, describes a downward trend from the early 1970s to 2010, a year in which up to 4 times fewer deaths were reported compared to the maximum shown in 1970 (figures 6).

Regarding mortality caused by diseases of the digestive system, a linear increase can be observed during the decades between 1970-2020, with a minimum reported at the beginning of the 1970 decade, of 36 deaths caused by diseases of the digestive system per 100,000 inhabitants, up to the peak of the 2010 decade, of 73.8 deaths caused by diseases of the digestive system per 100,000 inhabitants. The last ten years of the analyzed period reveal a decrease of almost 4.8 deaths, registering 69 deaths caused by diseases of the digestive system per 100,000 inhabitants (figures 7).

The impact of deaths caused by diseases of the genitourinary organs, compared to general mortality, is described as very small, but slightly downward trends are predicted until

the level of the penultimate decade analyzed, and then an upward, even steep slope in a short period of time. It can be seen that mortality due to diseases of the genitourinary organs has values between 10.5 and 20.7 deaths per 100,000 inhabitants. The first part of the period describes two decades, 1970 and 1980 with similar values, around 16 deaths per 100,000 inhabitants, followed by a decrease to a minimum of 10.5 deaths due to diseases of the genitourinary organs per 100,000 inhabitants in 2000, and ending within 20 years with the doubling of the minimum value recorded - 20.7 deaths due to diseases of the genitourinary organs per 100,000 inhabitants (figures 8).

According to statistical data, the mortality caused by traumatic injuries and poisoning, analyzed by decades, emphasizes the downward trend, only after 1990, from 76.5 deaths to 40 deaths per 100,000 inhabitants

caused by traumatic injuries in 2020, a significant difference from better of 35 deaths per 100,000 inhabitants (figures 9).

Mortality analyzed in the period 1970 – 2020, by age groups, describes significant discrepancies, especially in the case of the 0-4 years age group, from 12.2‰ in 1970 and decreasing to 1.3‰ in 2020, or maintenance of initial values at the beginning and end of the period in the case of the 55-59 age group, respectively 11.1‰. The rest of the age groups show almost linear downward trends, with the exception of the over 85 age group, which has a maximum mortality recorded during 1980 of 227.2‰ (55.5‰ more than in 1970), and a minimum in 2010 of 176.7‰ (50.5‰ less), but also a slight increase at the end of the period of 3.2‰, i.e. 179.9‰ recorded in 2020 (table 1).
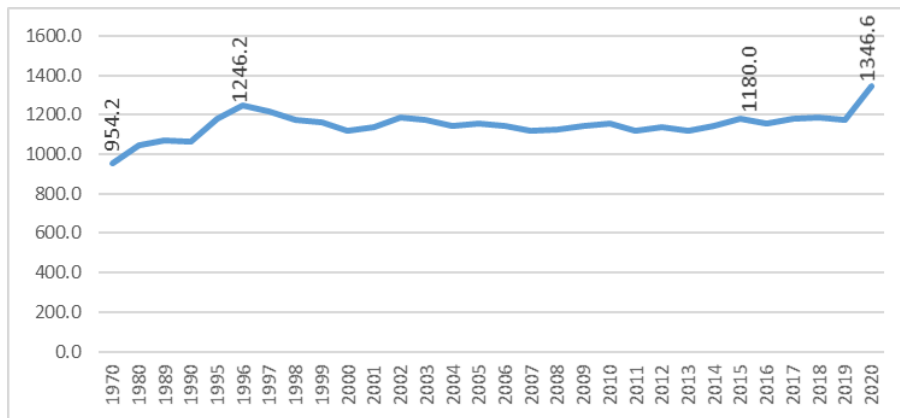

Figure 1. **Mortality in Romania, according to the main groups of medical causes of death, in the period 1970-2020 (number of deaths per 100,000 inhabitants)**
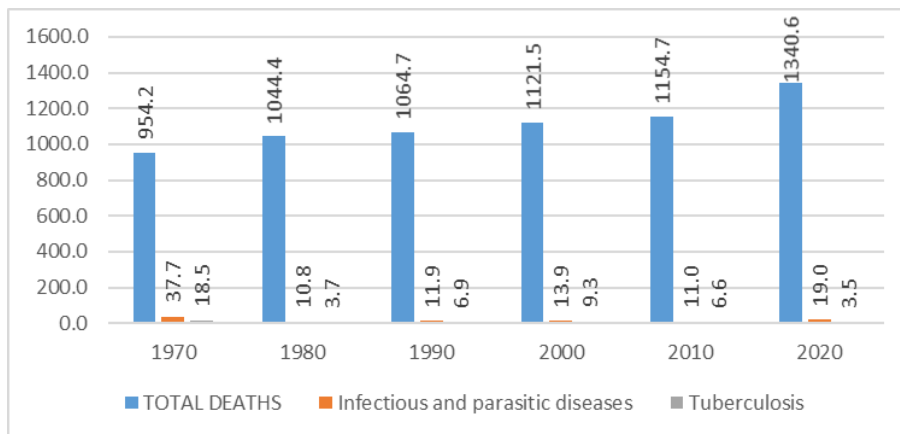

Figure 2. **Mortality in the period 1970-2020, by infectious and parasitic diseases (per 100,000 inhabitants)**
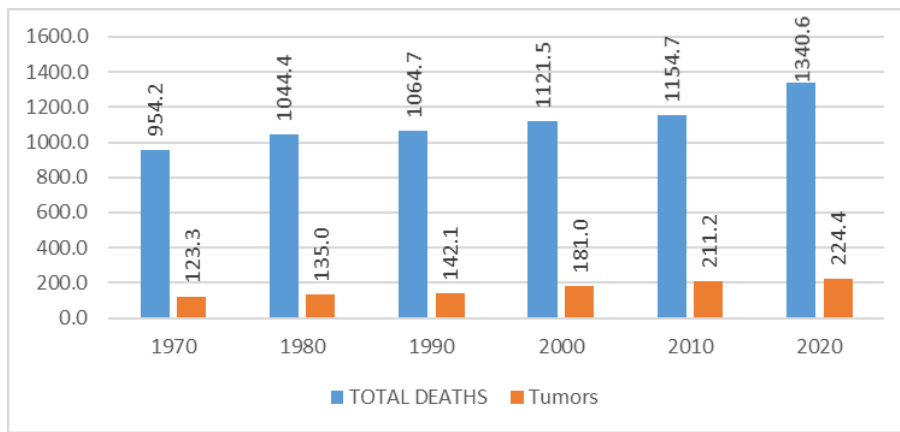
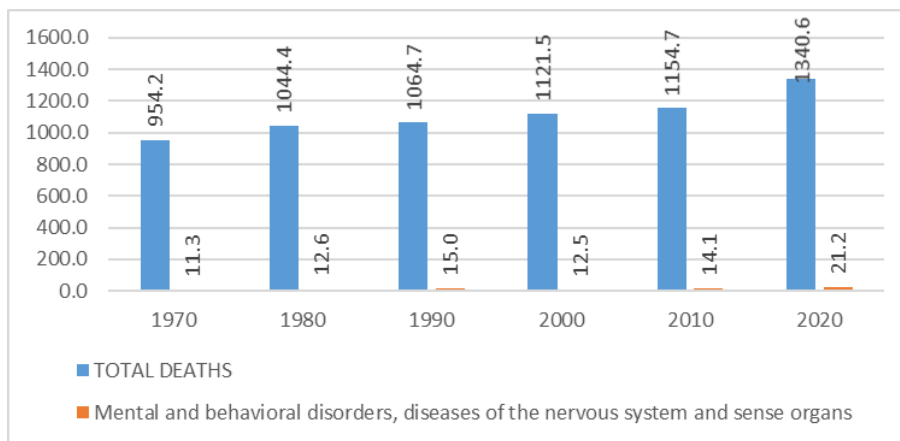Figure 3. **Mortality, in the period 1970-2020, from tumors (per 100,000 inhabitants)**

Figure 4. **Mortality, in the period 1970-2020, by mental and behavioral disorders, diseases of the nervous system and sense organs (per 100,000 inhabitants)**
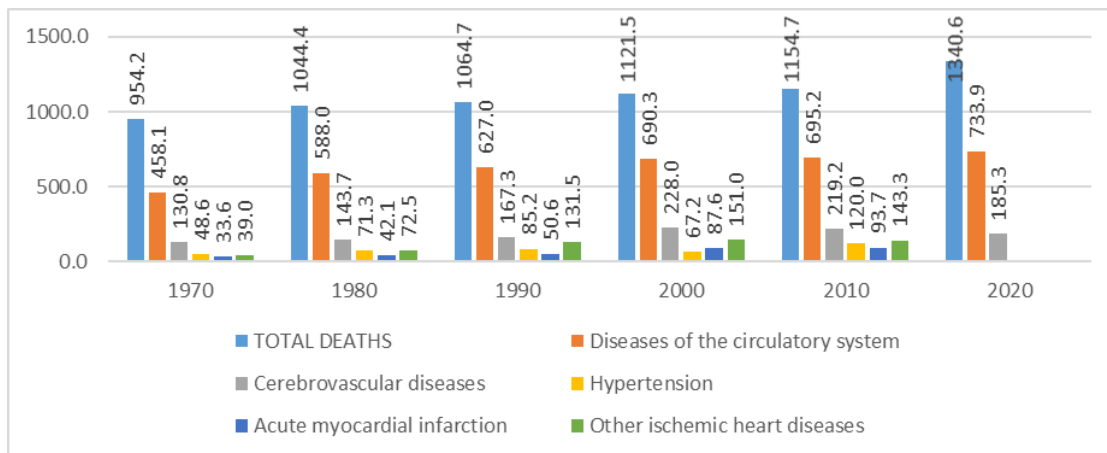

Figure 5. **Mortality, in the period 1970-2020, due to diseases of the circulatory system (per 100,000 inhabitants)**
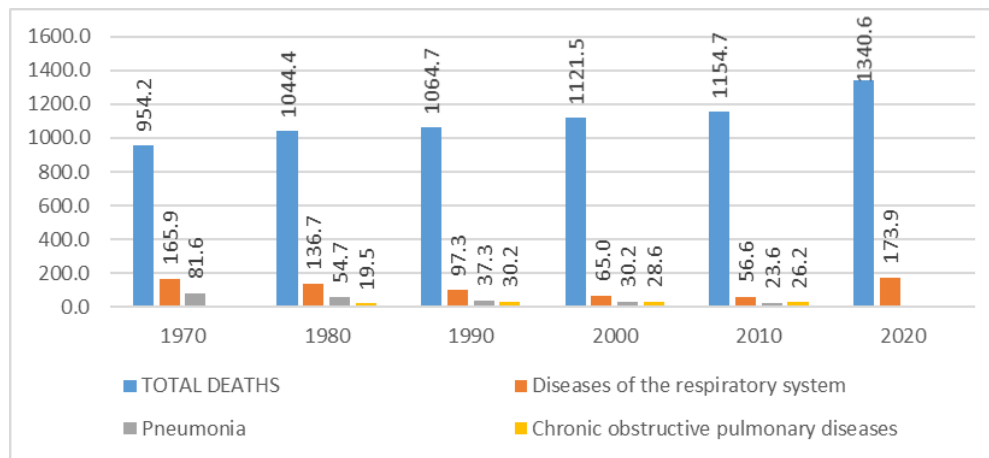
Figure 6. **Mortality, in the period 1970-2020, due to diseases of the respiratory system (per 100,000 inhabitants)**
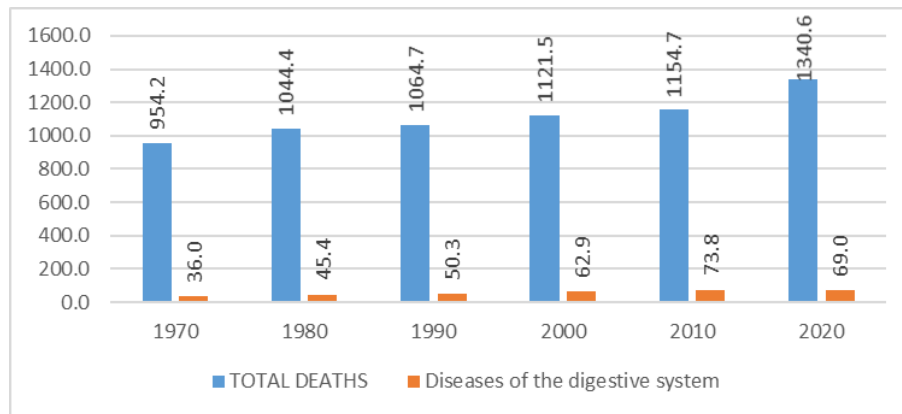

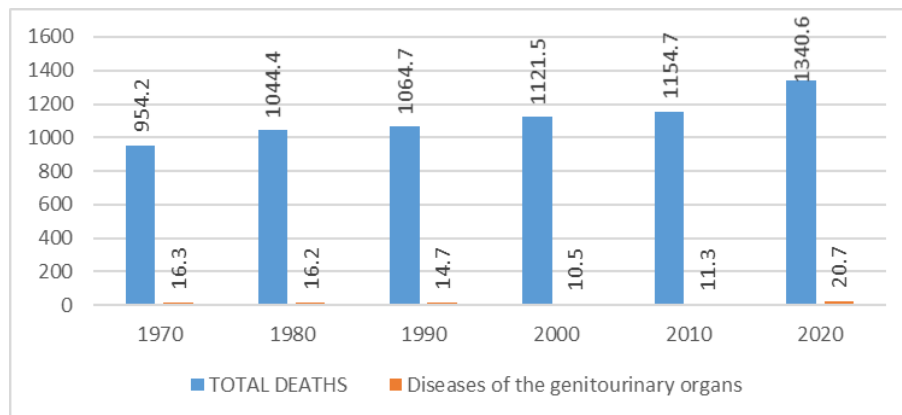Figure 7. **Mortality, in the period 1970-2020, due to diseases of the digestive system (per 100,000 inhabitants)**

Figure 8. **Mortality, in the period 1970-2020, due to diseases of the genitourinary organs (per 100,000 inhabitants)**
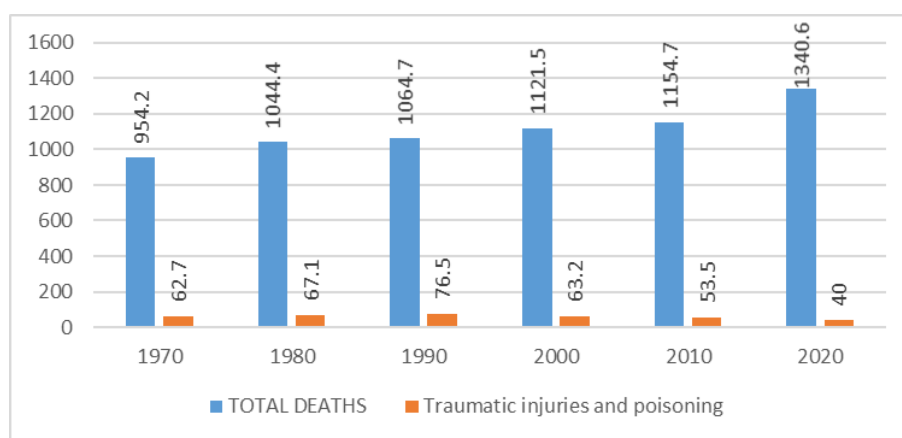
Figure 9. **Mortality, in the period 1970-2020, through traumatic injuries and poisoning (per 100,000 inhabitants)**

Table 1

Mortality by age group, in the period 1970-2020 (per 100,000 inhabitants)

Age group (years)	Mortality (per 100,000 inhabitants)					
	1970	1980	1990	2000	2010	2020
T O T A L	9.5	10.4	10.6	11.2	11.5	13.5
0 - 4	12.2	7.2	6.2	4.5	2.2	1.3
5 - 9	0.7	0.7	0.6	0.4	0.3	0.1
10 - 14	0.6	0.5	0.5	0.6	0.2	0.2
15 - 19	0.9	0.8	0.7	0.6	0.5	0.3
20 - 24	1.2	1.1	1.0	0.7	0.6	0.4
25 - 29	1.3	1.3	1.3	0.9	0.7	0.6
30 - 34	1.8	1.6	1.8	1.3	0.9	0.8
35 - 39	2.2	2.5	2.7	2.3	1.5	1.2
40 - 44	3.0	3.7	3.8	3.9	2.6	2.1
45 - 49	4.4	5.6	6.0	6.0	4.8	3.8
50 - 54	7.1	6.1	8.8	8.5	7.9	6.5
55 - 59	11.1	12.1	12.8	13.0	11.5	11.1
60 - 64	18.6	18.3	18.7	18.7	16.2	17.6
65 - 69	30.7	30.2	28.3	27.7	24.1	25.8
70 - 74	52.8	51.5	44.4	43.4	36.7	37.3
75 - 79	87.8	87.3	75.1	69.8	59.4	59.7
80 - 84	142.1	154.7	128.8	113.0	99.4	97.3
85 +	222.8	277.2	231.8	207.6	176.7	179.9

CONCLUSIONS

General mortality has an upward trend, from 1970-2020, from 9.5‰ in 1970 to 13.5‰ in 2020.

Mortality by causes of death, records decreases due to: Infectious and parasitic diseases, Tuberculosis, Traumatic injuries and poisoning.

Mortality by causes of death is increasing: Tumors, Mental and behavioral disorders, diseases of the nervous system and sense organs, Diseases of the circulatory system, Diseases of the respiratory system, Diseases of the digestive system, Diseases of the genitourinary organs.

Mortality by age groups decreases markedly at 0-4 years but increases at 85+ years.

In Romania, mortality patterns have undergone important changes in the last 50 years, in the sense of increasing general mortality, especially through diseases of the circulatory system, tumors, diseases of the digestive system, mental and behavioral disorders, diseases of the nervous system and organs of sense, in the context of the multiple action of biological, environmental, behavioral risk factors and with the influence of socio-economic conditions and healthcare. The aging of the population, through the increase of the elderly population, leads to a marked increase in the last 50 years of mortality in the age groups over 65 years.

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