ANALYSIS OF MORBIDITY AND MORTALITY FROM DIABETES IN ROMANIA, IN THE PERIOD 2012-2021

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RESEARCH ARTICLE

Abstract

Diabetes mellitus is an extremely important pathological condition, considering its particularly high and continuously increasing prevalence in all countries of the world, the negative impact it has on life expectancy and its quality, as well as the extremely high costs that involves them. The purpose of the research is the analysis of the indicators of morbidity and mortality due to diabetes in Romania, in order to estimate this phenomenon. A retrospective, longitudinal study was carried out, with the publications of the National Institute of Public Health as the source of information.The number of patients with diabetes, recorded at the end of each year, has continuously increased, in the last 10 years, from 832,545 to 1,254,870 patients. In 2021, the average value of diabetes prevalence in Romania was 6561.7‰ loc., and the incidence value was 431.7‰ loc. Most cases are registered in the urban environment and in the male gender. The trend of deaths due to diabetes is upward (from 2294 deaths in 2012, to 4344 deaths in 2021), the mortality being 19.7‰ in 2021. A higher mortality due to diabetes is recorded in rural areas and in the female population.

Keywords: diabetes, morbidity, mortality, Romania

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INTRODUCTION

Diabetes mellitus (DM) defines a metabolic disorder that can have multiple etiopathogenesis, characterized by changes in carbohydrate, lipid and protein metabolism, resulting from deficiency in insulin secretion, insulin resistance or both, and which has as a defining element until the presence of blood glucose (American Diabetes Association, 2010; Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, 1997, Genuth, 2003). The whole world is facing a pandemic of type 2 diabetes, due to the westernization of the way of life, the aging of the population, urbanization, which have as consequences changes in the diet, the adoption of a sedentary lifestyle and the development of obesity. The prevalence of diabetes differs significantly depending on the population studied, age, sex, socio-economic status and lifestyle (Liu, 2020; Geiss, 2006; Geiss, 2014).

In 2017, worldwide, more than 425 million people (20-79 years) lived with diabetes, most of them having type 2 diabetes (352 million). In 2045, a number of 629 million is forecast. Type 2 DM can be prevented through regular physical activity, a healthy, balanced diet and a healthy lifestyle (Green, 2021, International Diabetes Federation, 2019; International Diabetes Federation, 2021).

In 2017, Romania was among the countries with the highest prevalence (%) of DM, i.e. more than 9% of the population aged 18-99 is estimated to suffer from diabetes (Morgovan, 2020; Hâncu, 2023, Sun, 2022).

Conform date Global Health Estimates, în anul 2016 în România, s-au înregistrat un total de 118.100 de ani de viaţă pierduţi datorită dizabilităţii şi a decesului prematur (Disability Adjusted Life Years – DALYs) cauzate de diabet zaharat (GBD, 2018; Global Burden of Disease Collaborative Network, 2017).

The purpose of the research is to carry out a complex and in-depth study of the indicators of morbidity and mortality due to diabetes in Romania. This analysis is important for knowing the problems at the national level in order to implement health strategies.

MATERIAL AND METHOD

An observational, retrospective and descriptive study was carried out, based on official statistical data published in the field. The work includes sanitary statistical data on some aspects of morbidity and mortality, covering the period 2012-2021.

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The sources of information needed for this study were represented by the data recorded at the level of the National Institute of Public Health - National Center for Statistics in Public Health (INSP-CNSISP, 2021).

The data were collected from the county offices of nutrition and metabolic diseases.

RESULTS AND DISCUSSIONS

The number of patients with diabetes, remaining in evidence at the end of the main year, increased continuously, in the last 10, from 832545 to 1254870 patients (table 1). The year-over-year comparison shows the largest increase in 2017, namely 102,820 cases, 10% more than in 2016. The smallest difference was in 2019 compared to 2018, namely 1% more in 2019 , representing 12869 cases. Comparing the diabetes cases in each year of the sugar period studied 2012-2021 with the year 2012, which sector the first year of the study, in 2019 the increase was 41% compared to 2012, representing 341654 cases, which implies a financial effort of the system of considerable health. The smallest increase compared to 2012 was in 2013, namely 42315 cases representing 5.1%.

The prevalence (number of new cases and old cases) of diabetes has an increasing trend, from 4150.2 cases per 100,000 inhabitants in 2012, to 6561.7 cases per 100,000 inhabitants in 2021 (figure 1).

By county, the highest prevalence rates were in Hunedoara (9316.6%oooo loc.), Olt, M. Bucharest, Braşov, low values were in Mehedinţi (2392.0%oooo loc.), Giurgiu, Ilfov , Cluj (figures 2).

On average, most DM cases are in the urban environment (approximately 60%) compared to the rural environment, throughout the studied period. It is worth noting the increasing evolution of DZ in the rural environment in the period 2012-2021 (figure 3).

The distribution by gender in the period 2012-2021 is as follows: most cases, over 50%, are of the female gender until 2013, but starting from 2014, the proportion changes, most cases are of the male gender (figures 4).

In 2021, the DZ incidence value for Romania was 431.7%oooo loc., the highest incidence rates were in Caraş-Severin (1648.4%oooo loc.), Călăraşi, Bistriţa-Năsăud, Vâlcea, values they were small in Alba (103.7%oooo loc.), Iaşi, Cluj, Galaţi (figure 5).

Following the dynamic evolution of deaths from diabetes, it is found that in the period 2012-2021 their number oscillates from the lowest value in 2013 (2219), to the highest value in 2021 (4344), more by 390 deaths than in 2020 and 2125 more deaths than in 2013 (double the number of deaths this year), when the lowest number of diabetes deaths was recorded. From 2013 to 2021, diabetes deaths are continuously increasing, with the exception of 2017, when a decrease was recorded compared to the previous year (figures 6).

The mortality rate from diabetes oscillates between 9.9%oooo places. in 2013 (the lowest rate of the interval) and 19.7%oooo place. in the year 2021 (the highest rate of the interval) (figures 7).

Following the dynamics of diabetes deaths by gender, the difference between the two genders can be observed, with the female gender having much higher values than the male gender, in the period 2012-2021. The highest values of deaths from diabetes were recorded in the female gender in 2021 (22316 deaths), and the lowest value was recorded in the male gender in 2018 (944 deaths) (figures 8).

The trend of deaths due to diabetes by environment of origin in the period 2012-2021 is upward for both environments (urban and rural). In the dynamics of the evolution of deaths from diabetes by environment of origin, it shows a difference, with the urban environment having much higher values than the rural environment, in the period 2012-2021. The highest values are recorded in rural areas in 2021, and the lowest value was recorded in rural areas in 2012 (figures 9).

Table 1

The number of patients with diabetes remaining on record, in the period 2012-2021

Year	DM - Totally stand out	From which:				
		DM - type 1	DM - type 2	DM - clinical form of malnutrition	DM - other clinical forms	DM - clinical form without specification
2012	832545	145421	676999	142	9982	1
2013	874860	148955	714227	74	11600	4
2014	918886	128881	772197	74	17706	28
2015	992891	144321	836715	816	17335	4
2016	1018849	140680	861790	1333	15043	3
2017	1058510	146418	895162	247	15843	841
2018	1161330	163040	980613	11	17310	356
2019	1174199	164646	991291	20	17940	302
2020	1220486	173491	1027276	22	19646	51
2021	1254870	179024	1053173	65	22458	150

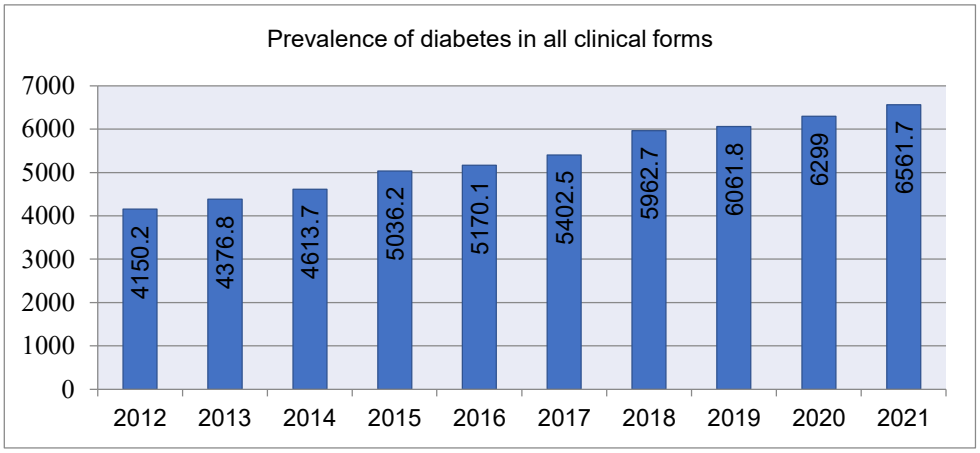

Figure 1. **Prevalence of diabetes in all clinical forms, in the period 2012-2021**

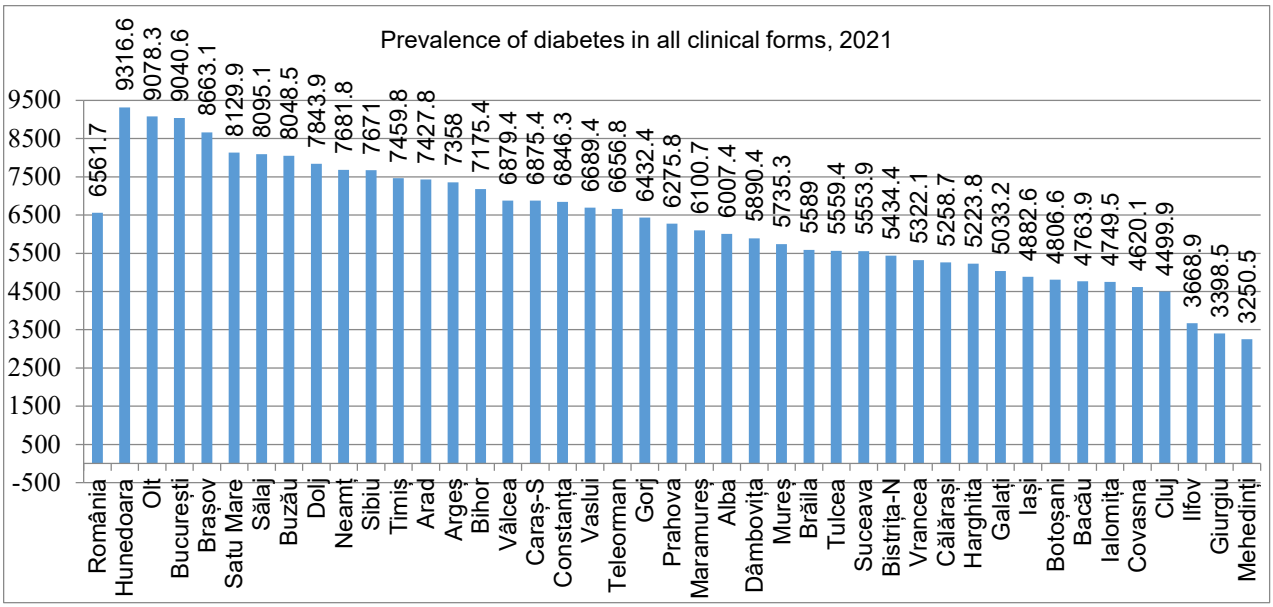

Figure 2. **Diabetes prevalence in 2021**

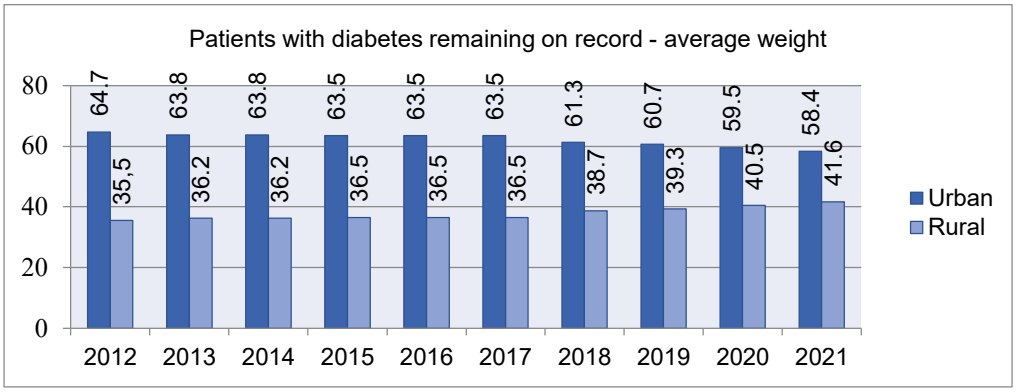

Figure 3. **Patients with diabetes remaining on record - average weight, in the period 2012-2021**

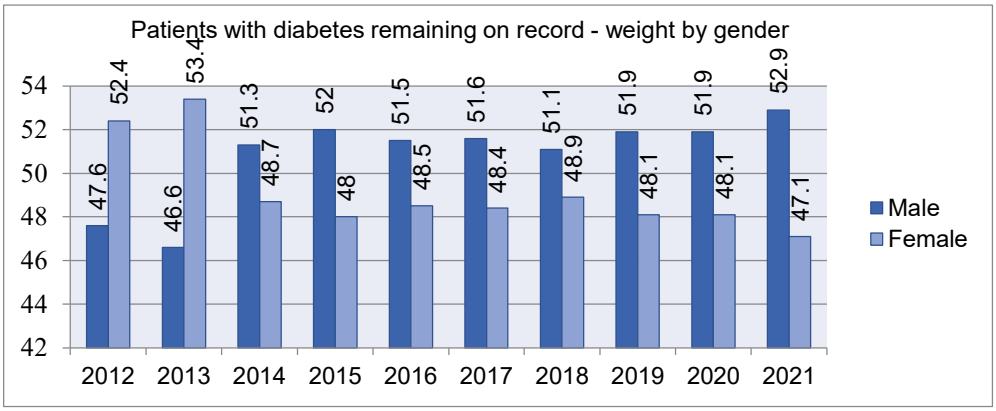

Figure 4. **Patients with diabetes remaining on record - weight by gender, in the period 2012-2021**

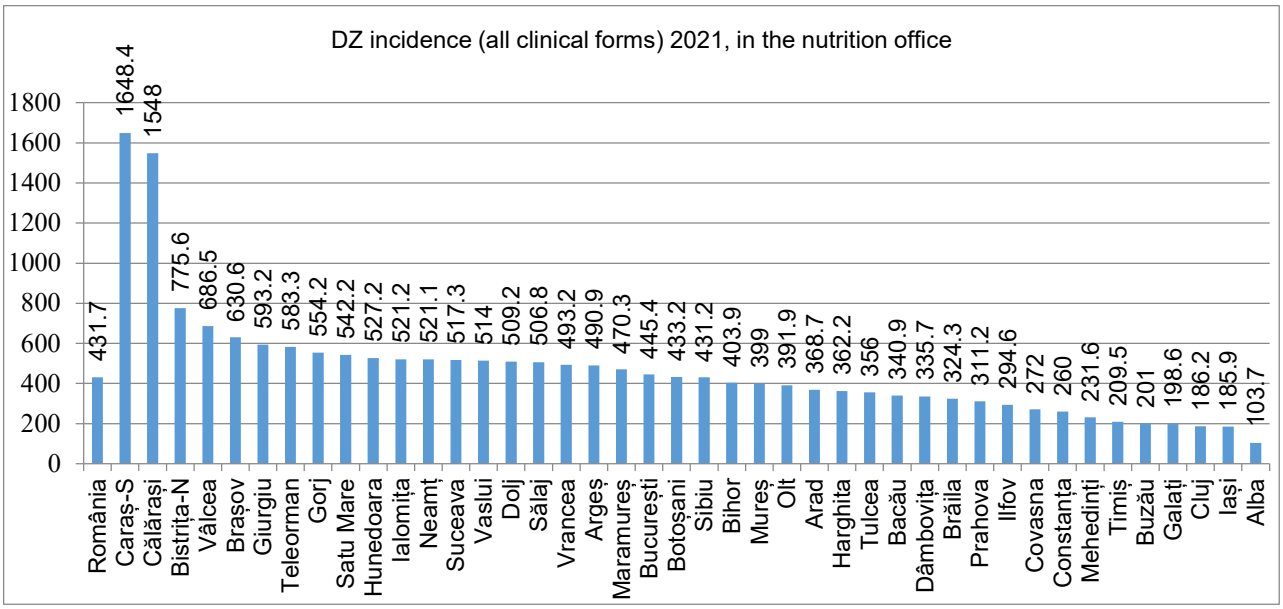

Figure 5. **The incidence of diabetes in 2021**

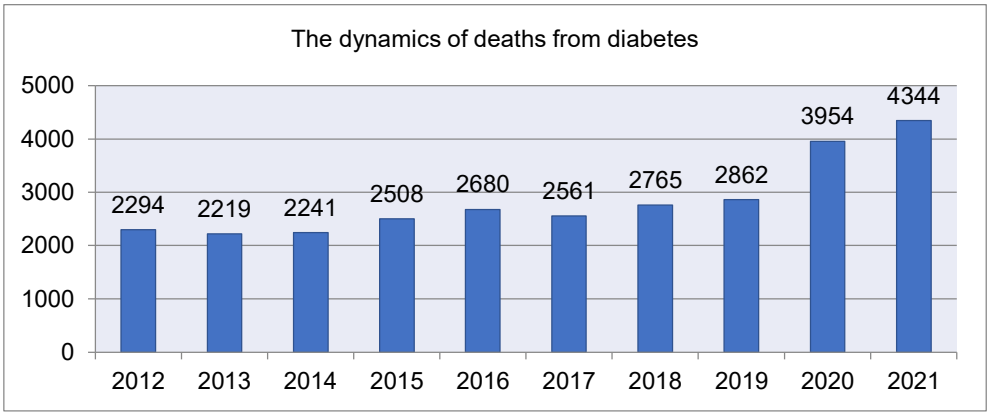

Figure 6. **The dynamics of deaths from diabetes in the period 2012-2021**

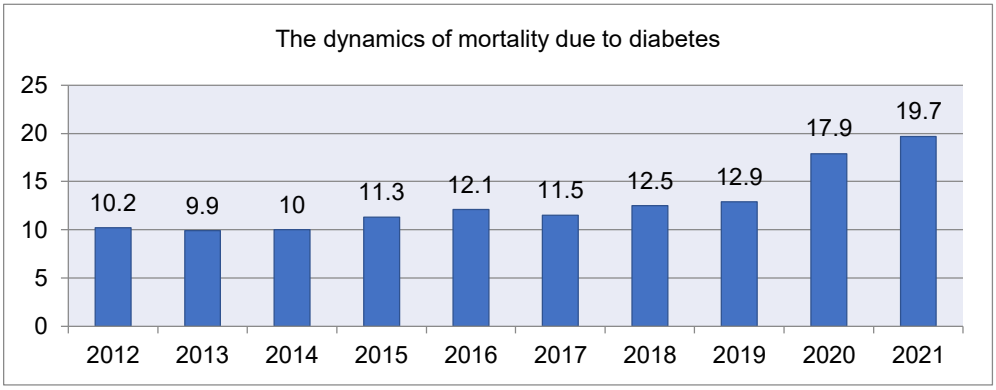

Figure 7. **The dynamics of mortality due to diabetes in the period 2012-2021**

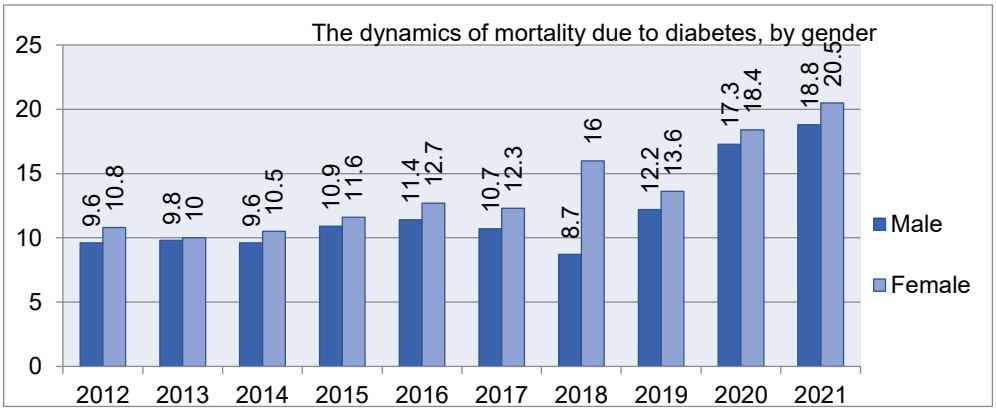

Figure 8. **The dynamics of mortality due to diabetes, by gender in the period 2012-2021**

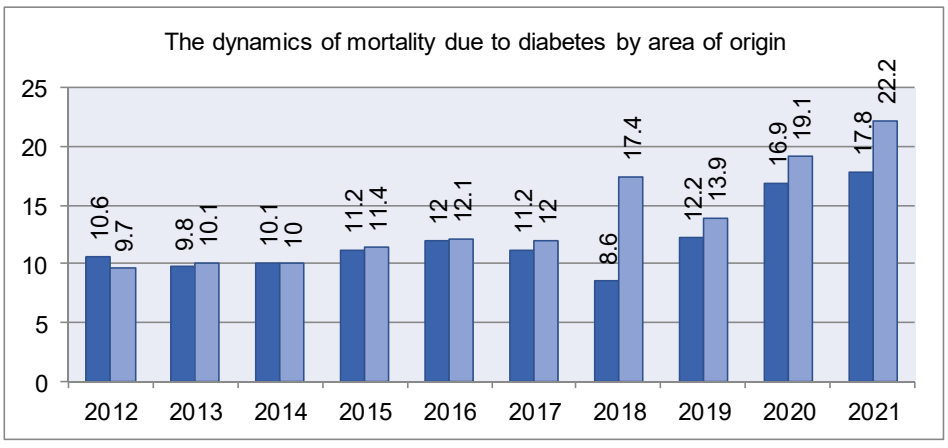

Figure 9. **The dynamics of mortality due to diabetes by area of origin in the period 2012-2021**

CONCLUSIONS

The number of patients with diabetes, recorded at the end of each year, has continuously increased, in the last 10 years, from 832,545 to 1,254,870 patients.

In 2021, the average value of diabetes prevalence in Romania was 6561.7%ooo loc., and the incidence value was 431.7%ooo loc. Most cases are registered in the urban environment and in the male gender.

By county, the highest value of prevalence was recorded in Hunedoara, and of incidence in Caraş-Severin. The lowest values were recorded for prevalence in Mehedinţi, and for incidence in Alba.

The trend of deaths due to diabetes is upward (from 2294 deaths in 2012, to 4344 deaths in 2021), the mortality being 19.7‰ in 2021. A higher mortality due to diabetes is recorded in rural areas and in the female population.

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