

NUTRITIONAL AND METABOLIC DISEASES CAUSE PREMATURE DEATHS IN BIHOR COUNTY?

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Abstract

Years of life potentially lost refers to the number of years that a person, group of persons or a population lose in case of a premature death. Metabolic diseases are due to disorders in the metabolism of nutrients. The causality of these diseases can be endogenous (insufficient secretion of insulin), exogenous or mixed; hereditary factors may be involved. The work applies a methodology to calculate the years of life potentially lost in the Bihor County's population. Deaths caused by endocrine, nutrition and metabolic diseases were analyzed separately. There are limitations of the study, which are mentioned. The decreasing trend in the number of premature deaths from diseases of nutrition and metabolism in Bihor county may be due to better health services (increasing the number of specialists in diabetes, nutrition and metabolic diseases, improve the health infrastructure of the county and gratuity of the diabetic treatment), actually resulting in increasing the life duration and the death possible through complications.

Key words: PYLL, methodology, ICD 10, metabolic diseases, premature deaths

INTRODUCTION

Years of life potentially lost (PYLL) is included in the "social indicators" category. It refers to the number of years that a person, group of persons or a population lose in case of a premature death. Any death before the age considered life expectancy at birth, which can be 65, 70 or 75 years - depending on the economic development of the geographical area in question, is considered a premature death. (Marcu et al., 2007).

Metabolic diseases are due to disorders in the metabolism of nutrients. The causality of these diseases can be endogenous (insufficient secretion of insulin), exogenous or mixed; hereditary factors may be involved. The endocrine dysfunctions have an impact on the metabolism; it is also influenced by other risk factors: stress, sedentary lifestyle, and smoking. Some diseases are caused by mismatches between the food intake and the energy consumption, meaning that you may have an increased intake in relation to consumption, obesity or, conversely, the nutritional intake is low compared to the consumption, in malnutrition.

The endocrine, nutritional and metabolic diseases represent a distinct class in the 10th edition of International Classification of Diseases (ICD-10), codified between E00 and E89. Within this class of coding it is included the diabetes, a metabolic disease caused by deficiency in whole or

in part, of insulin. The American Diabetes Association considers that there are four major types of diabetes: type 1 (by destroying the pancreatic beta cells), type 2 (progressive decrease in insulin secretion by insulin resistance), gestational diabetes, and there are types of diabetes due to other causes (American diabetes Association, 2016). A study conducted in Finland between 1998-2007, which analyzes the main and secondary causes of death, believes the contribution of diabetes in PYLL 8% in men and 6% in women (Manderbacka et al., 2011).

In Bihor county, we are witnessing an increase in the number of cases of diabetes; in 2009 there were 2586 new cases - 24100 pending cases registered at end of the period (DSP Bihor, 2010), and in 2015 there were 2642 new cases - 31398 pending cases registered at end of the period (DSP Bihor, 2016).

MATERIAL AND METHOD

The work applies a methodology to calculate the years of life potentially lost in the Bihor County's population, taking into account the underlying cause of death (Rahotă et al., 2015). We used the database of deaths recorded in Bihor County for 2009-2015. In the database, the deaths of each year are recorded in an Excel spreadsheet. A limit was established for the premature deaths at 70 years old (Table 1 - Number of deaths per year, by gender - total and under 70 years of age, years of life potentially lost, total and by gender).

Table 1

Number of deaths in Bihor county and years of life potentially lost in the period 2009-2015

Year	2015	2014	2013	2012	2011	2010	2009	Cumulative period 2009-2015
Deaths at all ages								
Total No.	7585	7224	7416	7403	7183	7407	7640	51858
M	3873	3818	3805	3807	3727	3844	3988	26862
F	3712	3406	3611	3596	3456	3563	3652	24996
Deaths under 70 years								
Total No.	2629	2531	2593	2505	2493	2647	2846	18244
M	1741	1734	1733	1697	1652	1748	1860	12165
F	888	797	860	808	841	899	986	6079
APVP								
Total No.	36942	34869	37677	37506	37901	40603	44825	270323
M	24140	24421	25675	25720	25874	27282	30115	159087
F	12802	10448	12002	11786	12027	13321	14710	74294

For example, a person who dies at the age of 50 have recorded 20 years of life potentially lost ($70-50 = 20$). By adding up the years of life potentially lost, at every death before the age of 70 years it was obtained a total of the years of life potentially lost for the deaths registered in Bihor County. After the filtration of the spreadsheet by gender, cause of death (according to the ICD 10 coding), there were obtained the number of years of life potentially lost, by gender and cause of death, separately. Summing the potential life years lost at deaths of a particular case, led to the total years of life potentially lost per case. By dividing the number of years of life potentially lost by cause to the deaths before the age of 70 years by causes, gave an average number of years of life potentially lost on each cause of death according to ICD 10 coding.

Deaths caused by endocrine, nutrition and metabolic diseases were analyzed separately in order to grasp the trend of the phenomenon over time (number of cases of death causing PYLL, per years) and cumulatively for the analyzed period.

RESULTS AND DISCUSSION

Cumulatively for the period, deaths before the age of 70 years is 35.18% of all deaths (maximum in 2009 - 37.29% and minimum in 2012 - 33.84%) with male super-mortality (66.68%).

Following the calculations, the proportion on causes of premature deaths and the number of years of life potentially lost are shown in Table 2.

Table 2

Number of deaths before the age of 70 years and APVP, absolutely and proportions, the causes, cumulative for 2009-2014 in Bihor County

Causes of death	Number of deaths		Years of life potentially lost	
	Absolute value	%	Absolute value	%
Certain infectious and parasitic diseases (A00-B99)	159	0,87%	3788	1,40%
Neoplasms(C00-D48)	5373	29,45%	66841	24,73%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)	6	0,03%	276	0,10%
Endocrine, nutritional and metabolic diseases (E00-E89)	68	0,37%	924	0,34%
Mental and behavioural disorders (F00-F99)	13	0,07%	259	0,10%
Diseases of the nervous system (G00-G99)	211	1,16%	6105	2,26%

Diseases of the eye and adnexa (H00-H59)	0	0,00%	0	0,00%
Diseases of the ear and mastoid process (H60-H95)	0	0,00%	0	0,00%
Diseases of the circulatory system (I00-I99)	7094	38,88%	72521	26,83%
Diseases of the respiratory system (J00-J99)	1227	6,73%	24256	8,97%
Diseases of the digestive system (K00-K93)	1617	8,86%	22628	8,37%
Diseases of the skin and subcutaneous tissue (L00-L99)	4	0,02%	127	0,05%
Diseases of the musculoskeletal system and connective tissue (M00-M99)	2	0,01%	100	0,04%
Diseases of the genitourinary system (N00-N99)	221	1,21%	2594	0,96%
Pregnancy, childbirth and the puerperium (O00-O99)	1	0,01%	45	0,02%
Certain conditions originating in the perinatal period (P00-P96)	173	0,95%	12110	4,48%
Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	142	0,78%	9566	3,54%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)	338	1,85%	7779	2,88%
Injury, poisoning and certain other consequences of external causes (S00-T98)	1595	8,74%	40404	14,95%

The 68 cases of death causing PYLL in the period under review were due to: Diabetes mellitus (E10-E14) - 56 cases; Malnutrition (E40-E46) - 10 cases; Metabolic Disorders (E70-E90) - 2 cases. The evolution on years and the type of cause of these deaths is shown in Figure 1.

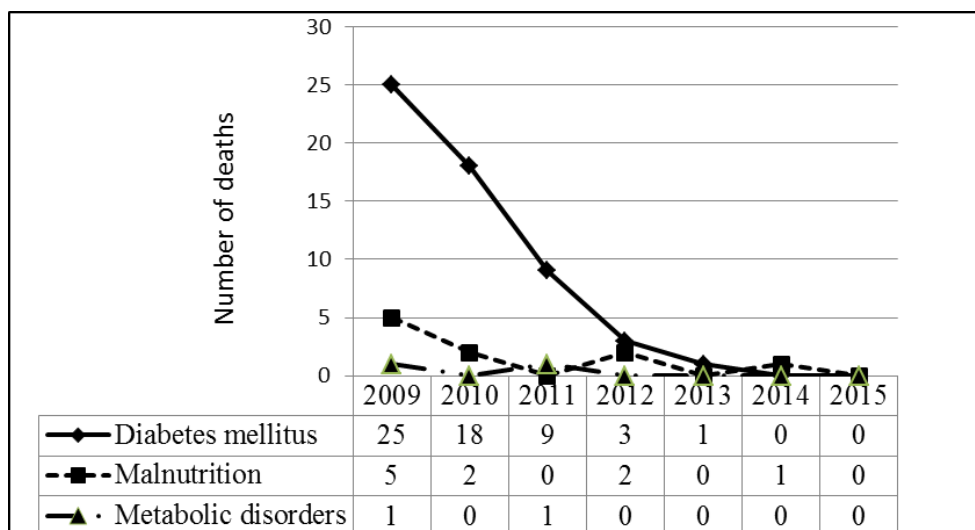


Fig. 1. Evolution of the number of deaths before the age of 70 years and metabolic diseases, nutrition in Bihor County in 2009-2015

Cumulatively for the period 2009-2015 was calculated the PYLL by nutrition and metabolic diseases in Bihor county, the result being shown in Figure 2.

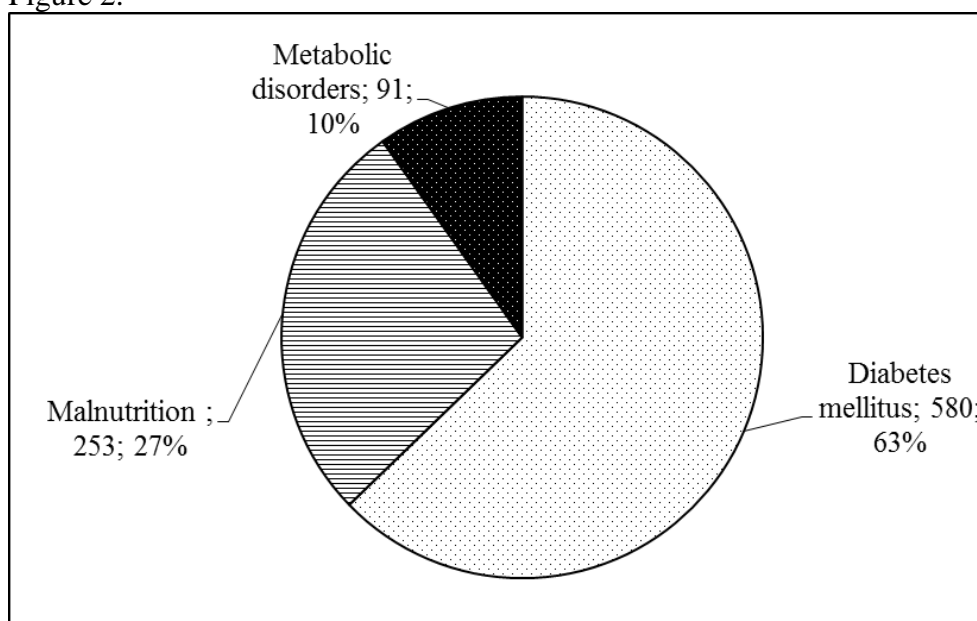


Fig. 2. PYLL through nutrition and metabolic diseases in the period 2009-2015 in Bihor County (absolute value; %)

The study of mortality, and hence of the years of life potentially lost, have limitations due to coding the causes of death by the doctor confirming the death. A particular limitation of this study is that there were only considered the premature deaths, which were the main cause, and no secondary causes, with endocrine, nutrition and metabolic diseases.

CONCLUSIONS

Cumulatively for the analyzed period, the years 2009-2015, regarding the deaths in Bihor County, gave the following results:

- The main causes of premature deaths in terms of number of deaths are the cardiovascular diseases, tumors and digestive system diseases,
- The groups of diseases with the most AVPP are represented by cardiovascular diseases, tumors, injuries and poisonings,
- Nutritional and metabolic diseases are responsible for 0.37% of premature deaths and 0.34% of years of life potentially lost

- At the end of the analyzed period, in 2015 it was not registered any premature death from diseases of nutrition and metabolism compared to 2009 when 31 deaths were recorded.

The decreasing trend in the number of premature deaths from diseases of nutrition and metabolism in Bihor county may be due to better health services (increasing the number of specialists in diabetes, nutrition and metabolic diseases, improve the health infrastructure of the county and gratuity of the diabetic treatment), actually resulting in increasing the life duration and the death possible through complications (cardiovascular, renal, infectious etc.). The subsequent studies on years of life potentially lost through nutritional and metabolic diseases may be directed to quantify where diabetes is a secondary cause of death.

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