

PRACA POGLĄDOWA
REVIEW ARTICLE**ANALYSIS OF THE MORTALITY RATE AMONG THE POPULATION OF THE POLTAVA REGION AND THE WAYS OF ITS REDUCTION****Valentyn M. Dvornyk¹, Inna V. Bielikova¹, Ludmyla M. Shylkina¹, Valentyna L. Filatova¹, Natalia M. Martynenko²**¹UKRAINIAN MEDICAL STOMATOLOGICAL ACADEMY, POLTAVA, UKRAINE²KHARKIV NATIONAL MEDICAL UNIVERSITY, KHARKIV, UKRAINE**ABSTRACT**

Introduction: Saving and improvement of population health is one of the main priorities of the policy in any country. Studying of the level and causes of mortality is a powerful tool for assessing the effectiveness of health care systems. WHO recommends using of the European classification of preventable causes of death that based on three levels of prevention.

The aim of this study is to compare the level and structure of mortality of the population of Ukraine and the Poltava region, to substantiate scientific approaches to the study and identification of those causes of death that can be prevented in order to formulate prevention programs at different level.

Materials and methods: In research are used the information from the State Statistics Service of Ukraine and from the Center for Medical Statistics of the MoH of Ukraine.

Review: Despite the positive dynamics of mortality in recent years, both in the Poltava region and in Ukraine, the indicators remain extremely negative. About 73.3% of all fatalities in Ukraine are three main types of causes cardiovascular diseases, external causes of death and neoplasms. In the Poltava region, 70.56% of all causes of death are due to cardiovascular disease; neoplasms occupy 13.88%; external causes - 4.87%; diseases of the digestive system - 3.06%; respiratory diseases - 1.31% of the causes of death.

Conclusions: The mortality rate both in the Poltava region and in Ukraine has tendency for declines, but remains rather high. General trends in the structure of causes of death: in the first place are diseases of the cardiovascular system, the second - neoplasms, the third - external causes. Structuring of the causes of death that based on the principle of prevention in Ukraine do not conduct.

KEY WORDS: Public health; avoidable mortality; statistical information

Wiad Lek 2019, 72, 5 cz. II, 1087-1091

INTRODUCTION

Saving and improving the health of the population is one of the main priorities of the policy of many countries. In itself, the European policy Health 2020 is aimed at improving health and increasing the well-being of the population, reducing inequities in health and developing human-oriented health systems [Target benchmarks].

Indicators of population health, including demographic indicators, and especially mortality rates due to causes of death in different age groups, and indicators of various types of morbidity are the main objects of public health management [1,2].

In addition to studying the prevalence of illness and injury, studying the level and causes of death among people is the most effective means of assessing the effectiveness of health care systems in any country.

According to the World Health Organization (WHO), about 70% of all causes of deaths in whole world there are infectious diseases (NCDs). Traumatism on road refers to the top ten causes of death in countries with different income levels. There 27% of deaths from external causes are precisely on road accidents.

One of the ways to reduce mortality rates is to determine the priorities for identifying the causes of mortality that can be prevented by further defining a strategy to reduce it. The modern approach to the analysis of mortality is the use of the European classification of preventable causes of death, which

is based on different levels of prevention, combined into 3 groups, and 14 groups of diseases are classified as preventable causes. [3].

The World Health Organization has developed an indicators for the six target benchmarks of Health - 2020 policy. The first and main guideline was the reduction of anticipatory mortality in Europe by 2020. The main indicators for this purpose were the following: the age-standardized rate of total premature mortality (aged 30 to 70 years) for 4 groups of major non-infectious diseases: cardiovascular diseases, malignant neoplasms, diabetes mellitus and chronic respiratory diseases, with distribution by gender. There is also a proposal to separately consider diseases of the digestive system. Indicative will be the reduction of these indicators by 1.5% annually. [4].

It should be noted that the quality of the received information and as a result of the management decision directly depends on the organization and ordering of the mortality accounting system. [5,6].

THE AIM

The purpose of this study is to compare the level and structure of mortality of the population of Ukraine and the Poltava region, to substantiate scientific approaches to the study and identification of those causes of death that can

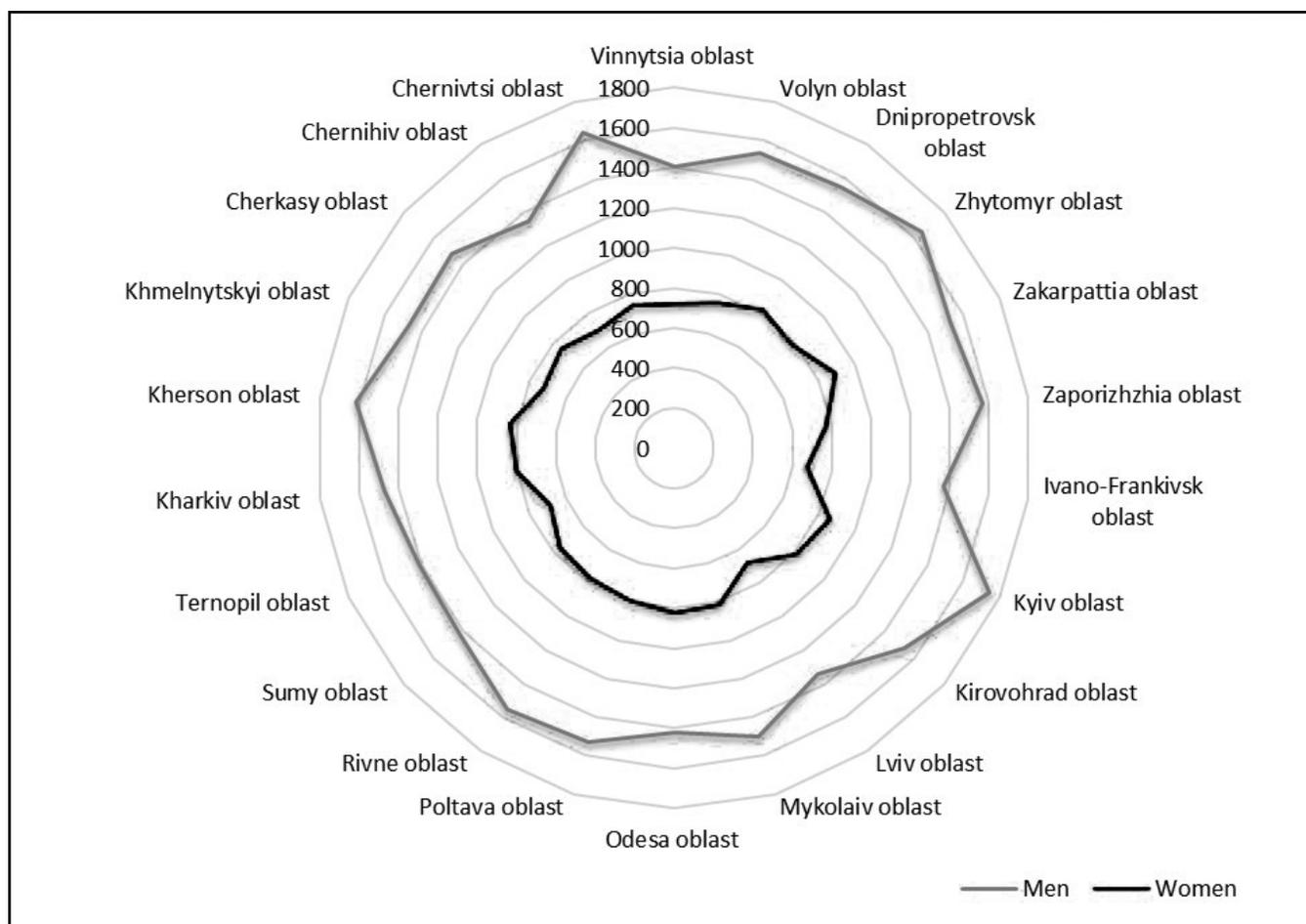


Figure 1. Mortality rate among the population of different regions of Ukraine (per 100 thousand).

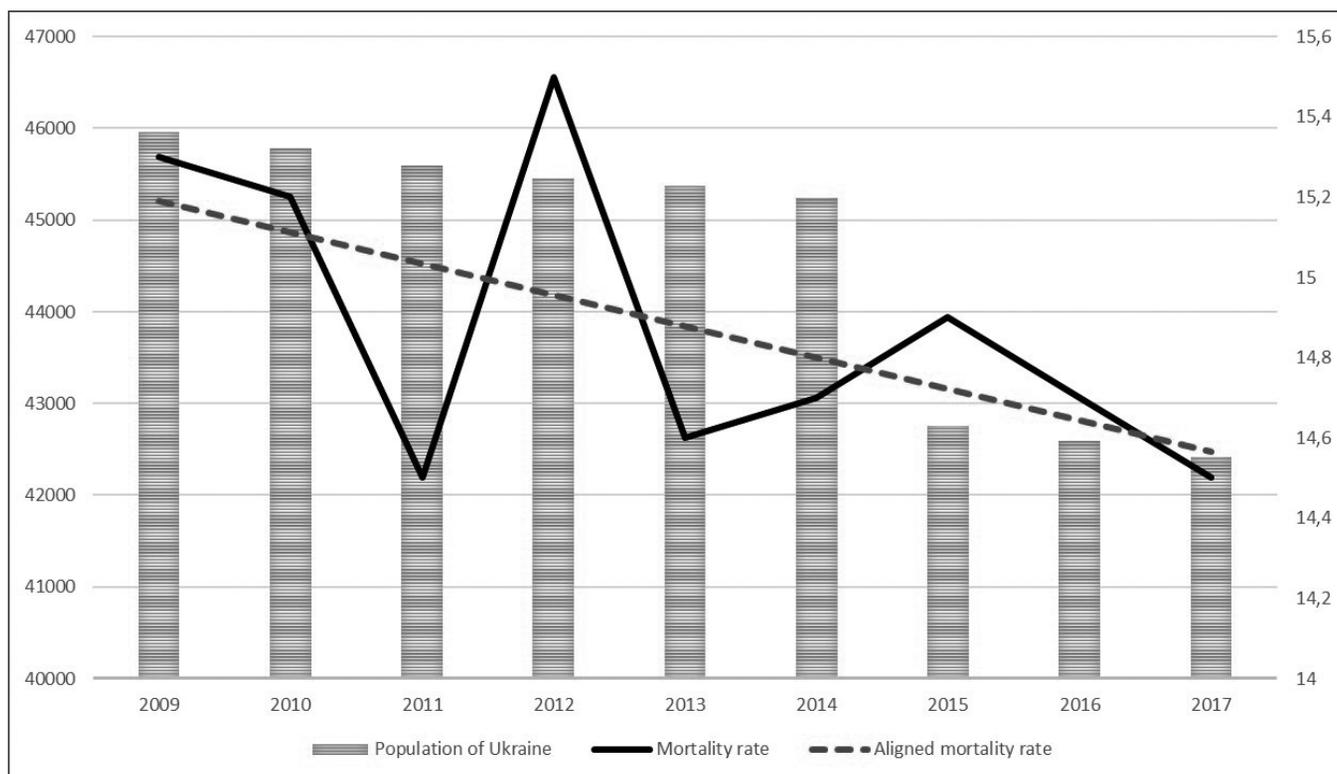


Figure 2. Dynamics of the mortality rate and the number of permanent population of Ukraine (2009-2017).

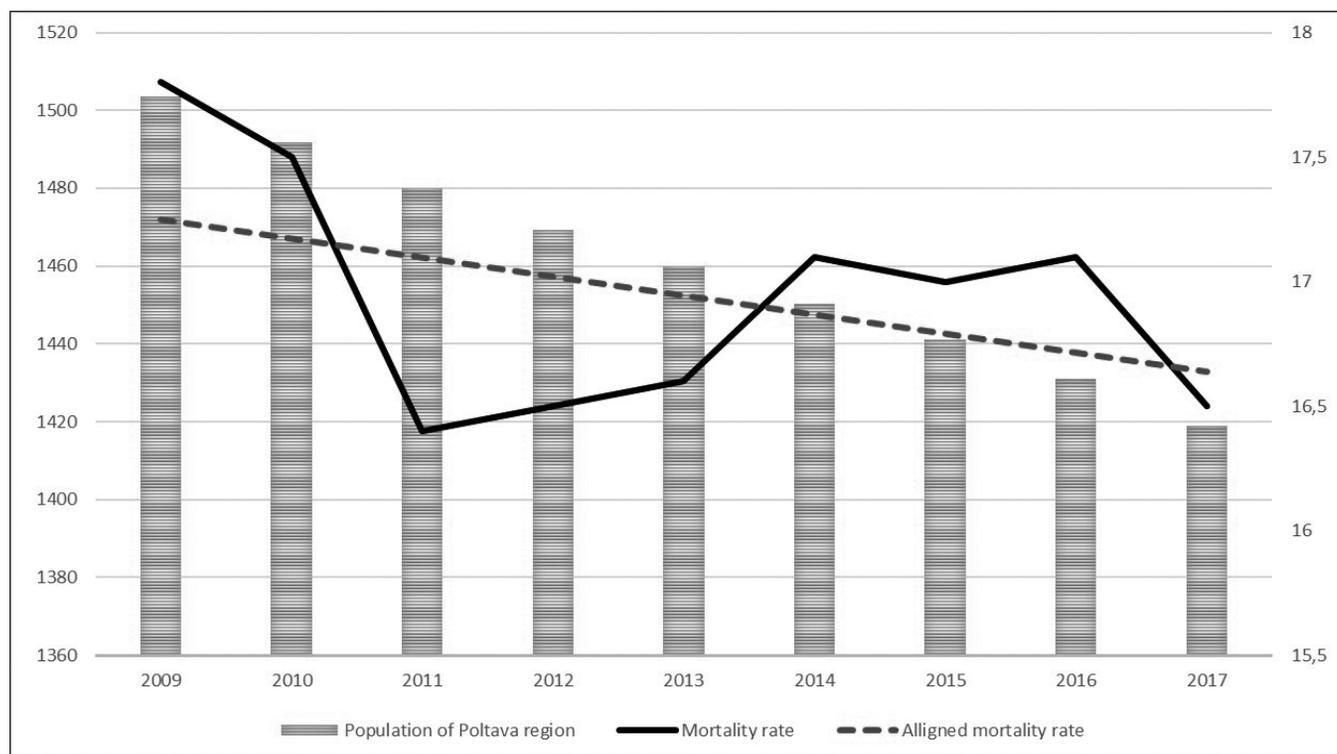


Figure 3. Dynamics of the mortality rate and the number of permanent population of Poltava region (2009-2017).

Table I. Total mortality rates in the Poltava region in 2013-2017.

Year	Urban and rural population	Urban population	Rural population	Urban population in % to rural population
2013	16,79	14,30	20,72	69,02
2014	17,20	14,84	20,92	70,94
2015	17,12	14,79	20,82	71,04
2016	17,22	14,87	20,98	70,88
2017	16,65	14,42	20,24	71,25
y % 2017 до 2013	99,17	100,84	97,68	-

Note: Calculated according to the State Statistics Service of Ukraine

be prevented in order to formulate prevention programs at the regional and the state level.

MATERIAL AND METHODS

The statistical materials which are used in this work is obtained from the State Statistics Service of Ukraine and from the Center for Medical Statistics of the Ministry of Health of Ukraine; applied methods of the system approach, bibliosemantic, graphic.

REVIEW AND DISCUSSION

The demographic situation in Ukraine is well grounded cause for concern both for the authorities and for the general population. Reducing the total amount of population, decrease in life expectancy and the cumulative crashing of fertility, negative balance of migration, which became characteristic signs of demographic processes during the years of independence, all it give grounds

to qualify them as signs of prolonged demographic crisis. [7].

A similar situation exists in most territories of Ukraine, including in the Poltava region.

The chart clearly shows the level and gender structure of the mortality of Ukraine's population by regions of Ukraine. The highest mortality rates are observed among the population of Chernihiv (18.4 ‰), Poltava (16.6 ‰), Kirovograd and Cherkasy (16.3 ‰), Zhytomyr (16.2 ‰) regions (Fig. 1).

Poltava region is an area in the center of Ukraine, which belongs to the agrarian and industrial region. The region covers an area of 28.7 thousand km², which is 4.8% of the total territory of Ukraine. According to the State Statistics Committee of Ukraine, the number of the existing population is 1413.8 thousand people, including urban - 878.9 and rural - 534.9 thousand people.

During the last time, the population of the Poltava region is gradually decreasing, which is mostly due to the natural movement (Fig.3).

Table II. Comparative characteristics of mortality in Ukraine population WHO region for some reasons (per 100 thousand)

Causes of death	ICD-10	Urban population			Rural population			European region
		two sexes	men	women	two sexes	men	women	
Neoplasms	C00–D48	184,88	215,48	158,94	186,98	240,93	138,47	153,8
Diseases of the circulatory system	I00–I99	779,08	755,85	798,77	1206,35	1066,42	1332,15	327,1
Diseases of the respiratory system	J00–J99	22,58	35,60	11,55	42,70	65,53	22,18	34,6
Diseases of the digestive system	K00–K93	51,15	68,12	36,78	54,24	73,36	37,05	44
External causes of morbidity and mortality	V01–Y89	63,87	108,85	25,76	96,12	165,96	33,34	52,1

Table III. Mortality of population of the Poltava region for various reasons during 2013-2017

ICD-10	Population	2013		2014		2015		2016		2017		
		per 100 thousand	%									
Infectious and parasitic diseases	A00–B99	urban	18,93	1,3	16,06	1,08	16,47	1,1	16,47	1,1	13,72	0,9
Tumor	C00–D48	rural	24,5	1,15	22,25	1,06	22,13	1,1	18,34	0,8	14,1	0,7
Endocrine diseases, nutritional disorders	E00–E90	urban	226,64	15,8	238,35	16,1	237,74	16,1	230,7	15,5	226,6	15,7
Diseases of the circulatory system	I00–I99	rural	242,77	11,7	225,78	10,8	252,91	12,1	236,99	11,3	238,66	11,8
Diseases of the respiratory organs	J00–J99	urban	4,05	0,2	3,84	0,2	4,43	0,2	2,97	0,2	3,11	0,2
Diseases of the digestive system	K00–K93	rural	7,8	0,37	3,94	0,18	5,26	0,25	4,21	0,2	2,59	0,1
External causes	V01–Y89	urban	974,87	68,1	1017,11	68,5	1016,88	68,7	1035,22	69,6	1008,12	69,9
		rural	1434,62	69,2	1477,48	70,6	1462,17	70,2	1521,37	72,5	1444,04	71,3
		urban	27,72	1,9	20,36	1,37	19,88	1,3	22,54	1,65	17,06	1,2
		rural	65,88	3,18	55,99	2,68	48,98	2,35	33,2	1,58	29,87	1,47
		urban	48,46	3,38	54,07	3,6	50,79	3,43	49,32	3,31	46,35	3,21
		rural	66,24	3,19	63,17	3	57,87	2,78	58,33	2,77	58,45	2,88
		urban	80,58	5,63	83,14	5,6	78,86	5,33	67,86	4,56	67,27	4,66
		rural	119,87	53,78	113,97	5,45	116,84	5,61	109,32	5,2	103,55	5,11

Despite the positive dynamics of mortality rate in recent years, both in the Poltava region and in Ukraine as a whole, the indicators remain extremely negative. In 2017, the mortality rate of the population of the Poltava region was 16.6 ‰ (in 2016 - 17.2 ‰) (Fig.3). At the same time, in 2017, mortality in Ukraine was 14.53 ‰ (in 2016 - 13.7 ‰) (Fig.2).

It should be noted that there are significant differences in the mortality rate of urban and rural population (Table I).

The structure of the cause of death that has been sustained over the recent years has been formed. About 73.3% of all fatalities in Ukraine are three main types of causes of death: circulatory system diseases, external causes of death

and various neoplasms. The dynamics of the number of deaths is mostly determined by fluctuations in age-related mortality and age-structure changes.

In Table II presentations comparative characteristics of mortality in Ukraine population WHO region for some reasons. A similar situation occurred in the Poltava region. In the Poltava region, 70.56% of all causes of death are due to cardiovascular disease (including 69% among the urban population and 71.34% - among the rural population); neoplasms occupy 13.88% of all causes of death (15.71% among the urban population, 17.79% among the rural population); for external causes it accounts for 4.87% of all deaths (4.66% among the urban population, 5.11% among the rural population); the diseases of the digestive system accounted for 3.06% (3.21% among the urban population, 2.88% among the rural population); respiratory diseases make up about 1.31% of the causes of death (1.18% among the urban population, 1.47% among the rural population).

Among the external causes of death in the first place are the results of deliberate self-harm (21.8% among urban population and 28.0% among rural population), second place occupied by road accidents. The road accidents occupy 17.85% among all the external causes of the death of the urban population in 2017 (10.8% - rural population), and this indicator tends to increase compared to 2013 (Table III).

The concept of preventability ("avoidable" mortality) was primarily developed for the prevention of lethal outcomes of diseases or injuries. Moreover, the list of conditions from which people should not die in the modern development of the health care system, was the result of agreed opinion of the expert community, which included representatives of the scientific community, medical practitioners, specialists in management and economics, epidemiology and statistics.

The World Health Organization (WHO) recommends for all countries conduct systematic investigations of avoidable mortality in accordance with the proposed methodology, which consists of an interdisciplinary anonymous investigation of a representative sample of deaths aimed at identifying the possibility of avoiding death or correcting the factors associated with it. [8].

However, in Ukraine such studies at the state level are not organized and are not conducted.

CONCLUSIONS

The mortality rate of the population both in the Poltava region and in Ukraine as a whole has tendency for declines, but remains rather high.

General trends in the structure of causes of death: in the first place are diseases of the cardiovascular system, the second - neoplasms, the third - external causes. The structure of the causes of death is a discrepancy between urban and rural populations.

Structuring of the causes of death that based on the principle of prevention in Ukraine do not conduct.

The formation of a system of informational background for the analysis of mortality indicators in the aspect of the concept of "avoidable mortality" can provide a public health system with managerial information.

REFERENCES

1. Ciborovskij O.M. Zdorov'ya naselennya i faktori riziku, sho vplyvayut na jogan, yak ob'yektu pravlinnya (oglyad literaturi) [Health of the population and risk factors affecting of its state, as management object (review of literature)] Ukrayina. Zdorov'ya nacyi. 2015; 2 (34): 13-19. (UA)
2. Zhdan V.M., Holovanova I.A., Filatova V.L. et al. Medical evaluation of efficiency of optimized models for early detection and primary prevention of cardiovascular diseases. *Wiad Lek.* 2017;3(1): 433-438.
3. Nolte E., McKee M. Does Health Care Save Lives? Avoidable Mortality Revisited. London: The Nuffield Trust; 2004.
4. Targets and indicators for Health 2020. Version 3 (2016). – 114s. URL: <http://www.euro.who.int>
5. Golubchikov M., Orlova N., Bielikova, I. The main directions of reforming the service of medical statistics in Ukraine. *Wiad Lek.* 2018;1(II): 206-210.
6. Belikova I., Rudenko L. K voprosu usovershenstvovaniya informacionno-analiticheskoy sostavlyayushej v usloviyah reformirovaniya sistemy zdavoohraneniya Ukrainy [The questions of improving the information-analytical component in the reform of the health care system in Ukraine]. *Wiad Lek.* 2016; 69 (II): 249-251. (RU)
7. Shorichna dopovid pro stan zdorov'ya naselennya Ukrainy ta sanitarno-epidemichnu situaciju. 2018 rik. [Annual report about the health status of Ukrainian population and the sanitary and epidemiological situation.]. Kiyiv, 2017. (UA)
8. Lewis G. Beyond the Numbers: reviewing maternal deaths and complications to make pregnancy safer. *Br. Med. Bull.* 2003; 67(1): 27-37.

The work is a fragment of SRR "Medical and social rationale for optimizing approaches to managing and organizing various types of medical care for adults and children in the period of reforming the health care industry" (is registered with UkrISTEI)

Authors' contributions:

According to the order of the Authorship

Conflict of interest:

The Authors declare no conflict of interest

CORRESPONDING AUTHOR

Inna Bielikova

Ukrainian Medical Stomatological Academy
Shevchenka, 23, Poltava, Ukraine
e-mail: byelikova.inna@gmail.com

Received: 29.03.2019

Accepted: 02.05.2019