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THE CONTRIBUTION OF AVOIDABLE MORTALITY TO THE LIFE EXPECTANCY CHANGE IN THE REPUBLIC OF MOLDOVA

During the last decades, life expectancy in the Republic of Moldova has shown slow and fluctuating growth, which has been largely due to high mortality caused by degenerative diseases (cardiovascular diseases and neoplasms) in adult and elderly population. A potential reduction in mortality can be achieved by reducing preventable deaths, which accentuates the necessity for studying this phenomenon in the current conditions of the Republic of Moldova. The purpose of the paper is to analyze avoidable mortality in the Republic of Moldova and its contribution to the life expectancy at birth change during the years 2000–2014. Given the contested quality of the official denominator, the alternative data on population exposure is used for more accurate calculations. In order to compare the life expectancy at birth components, the method of decomposition of mortality is used. In the period 2000–2014 life expectancy increased by 1.21 years for males and 2.45 years for females. It is substantiated that in 2000–2014 avoidable mortality decreased. In 2014 the share of deaths that could be avoided of the total registered number of deaths was 56.6 % for males and 34.1 % for females compared to 61.5 % for males and 43.9 % for females in 2000. It is revealed that reductions in avoidable mortality determine the substantial part of gains in life expectancy

at birth – 1.17 years for males and 1.99 years for females. The highest share of avoidable deaths in total observed deaths is recorded at age 0 and above 50. In the 2000–2014 period, numerical reduction of the avoidable deaths led to a structural change in the causes of death in total mortality. The most considerable part of preventable and amenable deaths is caused by circulatory system diseases, neoplasms, respiratory system diseases and external causes of death. The excess of deaths among the young population is the most disadvantageous factor in the life expectancy changes and highlights a solid number of potential years of life lost. An excess of deaths among the middle of the young population, the most unpleasant factor in the growth of life's triviality, and the reduction in the number of potential life losses. Further studies will be focused on the identification of the most vulnerable age groups exposed to the risk and calculations of the potential resources for increasing the life expectancy.

***Keywords**: mortality, avoidable causes of death, life expectancy, method of decomposition, structural changes in mortality.*

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ВНЕСОК СМЕРТНОСТІ, ЯКОЇ МОЖНА УНИКНУТИ, У ЗМІНУ ОЧІКУВАНОЇ ТРИВАЛОСТІ ЖИТТЯ В РЕСПУБЛІЦІ МОЛДОВА

Протягом останніх десятиліть тривалість життя при народженні в Республіці Молдова демонструє повільне і нерівномірне зростання, що значною мірою пояснюється високою смертністю, викликаною дегенеративними захворюваннями населення дорослого та літнього віку. Потенційне зниження смертності може бути досягнуто за рахунок скорочення уникненної смертності, що потребує ретельнішої уваги до цього явища. Мета статті – проаналізувати еволюцію уникненної смертності в Республіці Молдова, та її внесок у зміну очікуваної тривалості життя протягом 2000–2014 років. Для точнішої оцінки були використані альтернативні дані щодо впливу населення. Для порівняння тривалості життя за компонентами народження застосовано метод декомпозиції тривалості життя (метод Андреєва). Протягом 2000–2014 рр. тривалість життя при народженні збільшилася на 1,21 року для чоловіків і 2,45 років для жінок. Обгрунтовано, що у 2000–2014 роках уникненна смертність зменшилась. У 2014 році частка уникненних смертей від загальної зареєстрованої кількості смертей становила 56,6 % для чоловіків та 34,1 % для жінок, а у 2000 році – 61,5 % та 43,9 % відповідно. Виявлено, що зниження уникненної смертності обумовлює значну частину приросту тривалості життя при народженні – 1,17 рр. для чоловіків та 1,99 для жінок. Більшість випадків уникненних смертей зафіксовані у населення віком до року і понад 50 років. У 2000–2014 рр. кількісне скорочення уникненної смертності призвело до структурної зміни причин загальної смертності. Найбільше уникненних смертей спричиняють захворювання кровоносної системи, новоутворення, захворювання органів дихання та зовнішні причини. Надлишок смертей серед молодого населення є найбільш несприятливим фактором росту очікуваної тривалості життя, що перешкоджає зниженню числа потенційних утрачених років життя. Постійне скорочення уникненної смертності створить передумови для збільшення довголіття.

***Ключові слова**: причини смертності, уникненна смертність, неуникненна смертність, тривалість життя при народженні, метод декомпозиції, структурні зміни.*

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ВКЛАД ПРЕДОТВРАТИМОЙ СМЕРТНОСТИ В ИЗМЕНЕНИЕ ОЖИДАЕМОЙ ПРОДОЛЖИТЕЛЬНОСТИ ЖИЗНИ В РЕСПУБЛИКЕ МОЛДОВА

Ожидаемая продолжительность жизни в Республике Молдова демонстрирует медленный и неравномерный рост. Во многом это связано с высокой регистрируемой смертностью от дегенеративных заболеваний у взрослого и пожилого населения. Потенциальное снижение смертности может быть достигнуто за счет сокращения предотвратимых смертей, что подчеркивает необходимость изучения данного феномена в нынешних условиях Республики Молдова. Основная цель данной статьи – проанализировать эволюцию предотвратимой смертности в Республике Молдова и ее влияние на изменение ожидаемой продолжительности жизни в 2000–2014 гг. Учитывая оспариваемое качество официального знаменателя, в расчетах были использованы альтернативные данные о половозрастном распределении населения. Для сопоставимости компонентов ожидаемой продолжительности жизни использован метод декомпозиции продолжительности жизни (метод Андреева). В 2000–2014 гг. установлен прирост ожидаемой продолжительности жизни – 1,21 года для мужчин и 2,45 года для женщин. В 2000 году доля предотвратимых смертей составила 61,5 % для мужчин и 43,9 % для женщин от общего зарегистрированного числа смертей; в 2014 году они составили 56,6 % и 34,1 % соответственно. Большинство предотвратимых смертей регистрируются у населения в возрасте до года и старше 50 лет. Наиболее значительная часть предотвратимых смертей вызвана болезнями системы кровообращения, новообразованиями, заболеваниями дыхательной системы и внешними причинами смерти. Избыток смертей среди молодого населения, представляет собой наиболее неблагоприятный фактор роста ожидаемой продолжительности жизни, препятствующий снижению числа потенциальных потерянных лет жизни. Непрерывное снижение предотвратимой смертности создаст предпосылки для увеличения продолжительности жизни.

***Ключевые слова**: смертность, предотвратимая смертность, ожидаемая продолжительность жизни, метод декомпозиции, структурные изменения смертности.*

Introduction. During the last decades, life expectancy in the Republic of Moldova has shown slow and fluctuating growth, which is largely due to high mortality caused by degenerative diseases (cardiovascular diseases and neoplasms) in adult and elderly population [1]. Beside this, high intensity of out-migration may have tangential or direct reflection on the health of the population through such phenomena as healthy workers or salmon bias effect [2]. The cumulative impact of these problems (high mortality and emigration of the population) challenges the demographic situation in the Republic of Moldova and influences the stagnation of the life expectancy [3].

The reduction of mortality can be an important factor in diminishing the demographic problems in the Republic of Moldova. Moreover, extensive actions in population's heath

improvement are needed in order to reduce the risk exposure and to increase the longevity of the population; for better efficiency, measures may be oriented to certain structural or casual segments.

In view of the above, a potential mortality decline can be achieved by reducing of the avoidable causes of death, which could assure the maintenance of the number of the population, especially in the young and working ages.

Table 1. **Total avoidable deaths by type**

Amenable deaths			**Preventable deaths**		
Group of cause	**ICD–10 codes**	**Age**	**Group of cause**	**ICD–10 codes**	**Age**
Tuberculosis	A15–A19, B90	0–74	Tuberculosis	A15–A19, B90	0–74
Selected invasive bacterial and protozoal infections	A38–A41, A49, B50–B54, G00, G03, J02, L03	0–74	Alcohol-related diseases, excluding external causes	F10, K70, K73	0–74
HIV/AIDS	B20-B24	TOTAL	HIV/AIDS	B20-B24	TOTAL
Neoplasm	C18–C21, C43, C50, C53, C67, C73, C81, D10–D36	0–74	Neoplasm	C15–C16, C18–C22, C33–C34, C43, C45, C50, C53	0–74
Leukaemia	C91	0–44	Diabetes mellitus	E40–G41	0–49
Diabetes mellitus	E40–G41	0–49	Transport accidents	V01–V99	TOTAL
Diseases of the circulatory system	I01–I25, I60–I69	0–74	Diseases of the circulatory system	I20–I26, I71	0–74
Diseases of the respiratory system	J09–J18, J45–J46	0–74	Diseases of the respiratory system	J09–J18, J40–J44	0–74
Diseases of the digestive system	K25–K28, K35–K46, K80–K85	0–74	Illicit drug use disorders	F11–F16, F18–F19	0–74
Diseases of the genitourinary system	N00–N07, N13, N17–N21, N25–N27, N35, N40	0–74	Accidental injury	W00–X59	TOTAL
Complications of the perinatal period	P00–P96, A33	TOTAL	Suicide and self-inflicted injuries	X60–X84, Y10–Y34	TOTAL
Congenital malformations, deformations and chromosomal anomalies	Q00–Q99	0–74	Homicide/ Assault	X85–Y09	TOTAL
Misadventures to patients during surgical and medical care	Y60–Y69, Y83–Y84	TOTAL	Misadventures to patients during surgical and medical care	Y60–Y69, Y83–Y84	TOTAL

Source: [3].

The notion of avoidable mortality descends from the methodological concept as a tool for measuring the quality of the medical system, on the basis of a number of diseases, disabilities and deaths that can be treated or prevented. **Avoidable** deaths are those defined as preventable, amenable, or both, where: a) a death is amenable if, in the light of medical knowledge and technology at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided through good quality healthcare; b) a death is preventable if, in the light of understanding of the determinants of health at the time of death, all or most deaths from that cause (subject to age limits if appropriate) could be avoided by public health interventions in the broadest sense [4].

Table 1 shows the range of deaths that are amenable and preventable according to the Office for National Statistics (ONS) classifier and distribution on age groups from which these deaths could be avoided. These deaths can be avoided through a range of government policy interventions (improving socio-economic conditions of the population, implementing health programs, improving infrastructure, etc.), as well as by providing health services at an individual level or direct interventions within medical institutions.

Literature overview. E. Nolte and M. McKee found that improvements in mortality from amenable conditions made a positive contribution to life expectancy in observed countries [5]. In the context of some post-soviet countries, E. Andreev et.al show a potential gain in years as a result of avoidable causes of death elimination [6]. From the perspective of the amenable diseases intervention, A. Velkova and co-authors highlighted a different life expectancy evolution in Eastern and Western Europe [7]. A conclusion that an increase in health system expenditure correlates with avoidable mortality improvement was formulated by R. Heijink & X. Koolman [8].

Literature in the field accentuate that in the Republic of Moldova a significant contribution to the mortality is due to cardiovascular diseases [9], transport accidents [10], external causes of death [11], respiratory diseases and diseases of the digestive system. In this context, the working age population is more exposed to risk of death compared to population in developed countries [1]. Behavioural diseases also have a significant impact on mortality [12]. During the period 2006–2013, there was a positive dynamics of the evolution of life expectancy, which emphasized the compression of morbidity in advanced ages, which in turn contributed to the increase of the healthy life expectancy [13].

Relevance of the paper. Taking into account that the gap in the intensity of mortality between the Republic of Moldova and other developed countries is quite pronounced [3], especially in the early years of life and the working age, we can mention that studying avoidable mortality as a demographic phenomenon is absolutely necessary.

The aim of the article and innovation character. Most of the studies, focused on mortality reduction and population heath improvement in the Republic of Moldova, were based mostly on comparison with regional (Eastern European) and developed (OECD) countries. In this context 'ONS avoidable mortality cause list' was not used before.

The aim of the paper is to analyse avoidable mortality in the Republic of Moldova and its impact on changes in life expectancy at birth in the period 2000–2014.

Data and methods. WHO (World Health Organization) data were used for the classification of deaths by avoidable and non-avoidable categories, which shows the aggregate number of deaths (according to ICD 10) at a very detailed level according to the causes of death. WHO mortality database obtains aggregate data on the distribution of deaths by causes from the Ministry of Health of the Republic of Moldova, specifically National Centre for Health Management (NCHM) that deals with centralized death coding based on death certificates.

As a population exposure, alternative data were used [14, 15]; thereby, the NBS data on stable population were ignored [16], in which age-distribution is statistically deteriorated and the denominator considering some methodological factors is overestimated. NBS operates with residents and ignores high intensity of out-migration, in which mostly is involved young and working age population. The HCD (Human Cause-of-Death Database) data, where international migrants are excluded, is highlighted by high accuracy and it is comparable in time. To verify the correctness of the denominator used in the calculations, the age distribution of the population was compared with the data of the 2004 and 2014 censuses [17, 18].

The method of direct standardization was used to measure total mortality, for which New European Standard Population (NESP) [19] was used with the last open-ended age interval of 85+. Avoidable causes of death exclusion was performed according 'ONS avoidable mortality cause list'.

Cause-specific death rates (Table 2) included only avoidable causes of death, which were selected by appropriate age groups. In the calculations presented, multiple causes of death were grouped into the main groups, such as: tuberculosis (A15–A19, B90), HIV/AIDS (B20-B24), neoplasms (C00-C16, C18-C22, C33-C34, C43, C45, C50, C53, C67, C73, C81, C91, D10–D36), diseases of the circulatory system (I01-I26, I60-I69, I71), diseases of the respiratory system (J09–J18, J40–J46), transport accidents (V01–V99), homicide/assault (X85–Y09), other avoidable causes of death (A33, A38–A41, A46, B50–B54, G00–G03, G40–G41, J02–J03, K35–K46, K80–K85, N00–N07, N13, N17–N21, N25–N27, N35, N40, P00–P96, Q00–Q99, W00–X84, Y10–Y34, Y60–Y69, Y83–Y84).

Calculation of life expectancy was performed based on period life tables (abridged) with the last opened age-group interval of 85+. For the comparability of life expectancy components, the method of decomposition of mortality was used (Andreev's method of mortality decomposition) [20]. The same population was compared in different calendar years, where the components were divided into avoidable and non-avoidable causes of death.

Main results of the research. Between 2000 and 2010 (Fig. 1), slight fluctuations in life expectancy were observed which lead to a small decrease from 67.6 to 67.0 years; the next four years (2010–2014) subsequently showed a more pronounced growth, reaching 69.3 years. The pattern of the evolution in life expectancy for males and females had some deviations, which created a balancing effect. Respectively, during 2000–2010 male's life expectancy had a levelling effect but declined for the years 2005–2010 from 63.8 years to 62.4 years and in the next five years raised to 64.9 years. For females, the increase in life expectancy, with some exceptions, has been characterized solely by growth rates, from 71.2 years in 2000 to 71.9 years in 2010, followed by an accelerated increase to 73.7 years in 2014. The general rhythm of life expectancy growth in the years 2000–2014 can be characterized as a slow pace with an increase of 0.18 years for females and 0.03 years for males, which is slightly lower than the Western European countries, where the annual growth is about 0.25 years [21].

Observed changes are largely due to the reduction of infant mortality; according to NBS data, it declined from 18.3 ‰ in 2000 to 9.7 ‰ by 2014 [16]. At the same time, it is observed that in the working age population mortality reduction have not been remarked [3].

The main factor that affected changes in life expectancy was the evolution of general mortality, where particular causes of death had a different impact, of growth and reduction. Each cause of death is the result of various circumstances, dependent on or independent from the quality of specific implemented policies, postponing some particular causes of death by improving the health system and disease prevention. It is a fact that the evolution of general mortality has a close connection with the economic situation, which is also reflected in the quality of social services.

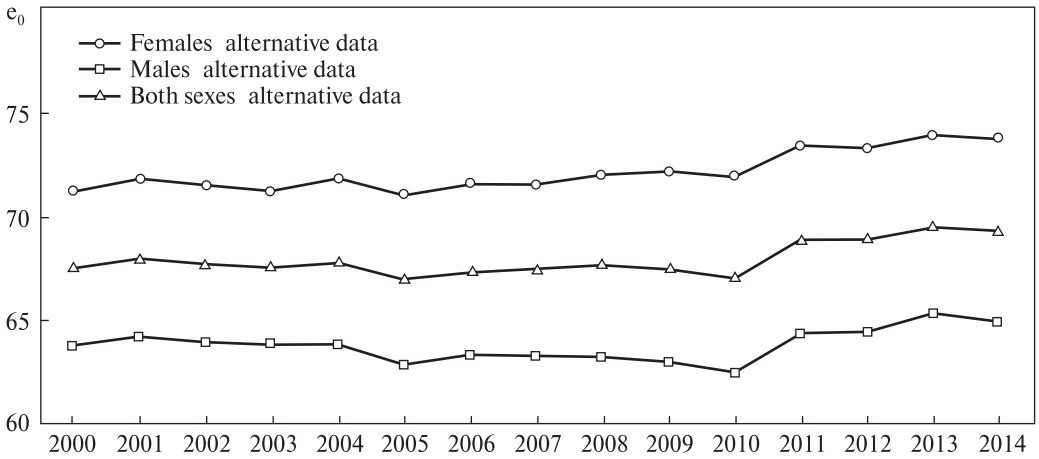

Fig. 1. **Life expectancy in the Republic of Moldova, 2000–2014**

Source: [15].

The evolution of standardized mortality presented in Figure 2 is similar to changes in life expectancy for the same time segment, accentuating some fluctuations and rhythm of mortality change in different years.

Since 2000, the standardized mortality rate has had similar fluctuations for both sexes. Consequently, for males the changes were more pronounced, highlighting three critical periods, where SDR rose to 29.9 ‰ in 2003, to 30.9 ‰ in 2005 and dropped to 30.4 ‰ in 2010. In this period, the recorded SDR slightly decreases; starting in 2011 and reached 27 ‰ in 2014.

Changes in SDR for females, as well as for males, have been closely related to some segments of time in which there have been some variations in the socio-economic situation. Here, two peaks of mortality increase can be highlighted, 21.0 ‰ in 2003 and 20.9 ‰ in 2005, followed by a smooth decrease, reaching 17.8 ‰ in 2014.

It should be noted that for both sexes, there was a significant gap between the number of de facto deaths and those that could be avoided. Consequently, the difference for males is between 10.7 ‰ and 12.9 ‰, with a worsened mortality between 2005–2010, and with a gap reduction between 2011–2014. For females, the differentiation is not as pronounced as for males, but it can also be considered as a noticeable one, given the initial difference in risk exposure, such as car driving, life-threatening occupational activities, predisposition to alcohol and tobacco consumption, violence, and others. Compared with males, the SDR gap between de facto mortality and avoidable causes of death exclusion, for females has reduced from 6.3 ‰ in 2000 to 4.9 ‰ in 2014.

In the 2000–2014 period, numerical reduction of the certain avoidable causes of death led to a structural change in the overall avoidable mortality. Thus, the decrease in the probability of certain causes of death has increased it for other causes, the risk of which increases with age or other circumstances.

During the analysed period, the highest contribution, out of the number of deaths categorised as avoidable, was attributed to diseases of the circulatory system, which in time registered a diminishing trend from 55 % in 2000 to 52 % in 2014 (Fig. 3). It is necessary to note that mortality from cardiovascular disease determine a considerable loses in number of potential years of life [23]. Consecutively, SDR for circulatory diseases has increased from

678 per 100 thousand in 2000 to 725 deaths per 100 thousand in 2005, followed by a decrease until 2014 to 625 deaths per 100 thousand (Table 2). In turn, the reduction in the number of deaths caused by diseases of the circulatory system could influence later the increase in the number of deaths caused by neoplasms, which represented 13 % in 2000–2005, 16 % in 2010 and 18 % in 2014.

Deaths from tuberculosis have steadily declined from about 3 % of the total deaths that can be avoided since 2000 to nearly 2 % in 2014. Although the mortality caused by tuberculosis is partially localized, the incidence and prevalence of this disease are clearly larger compared to the central and western European countries.

Due to the high mortality rate caused by tuberculosis, which was recorded in 2000 (about 39 deaths per 100 thousand for males and 5 deaths per 100 thousand for females) (Table2), the Moldovan government has gradually implemented a national program to alleviate this problem [24]. These actions, as well as the increase in the level of awareness of the population, have reduced the death rates due to tuberculosis by 2014 to 22 deaths per 100 thousand for males and 4 deaths per 100 thousand for females.

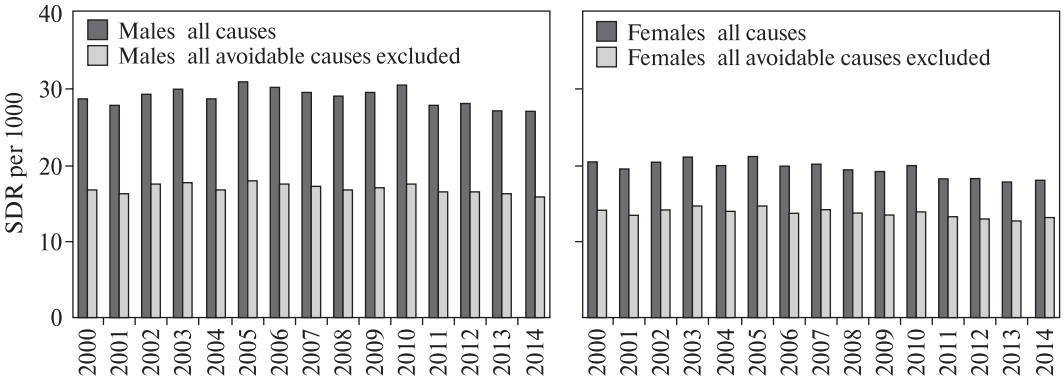

Fig. 2. **Standardized death rate in Moldova per 1000 males and females, 2000–2014**

Source: Own calculations based on the data from [22].

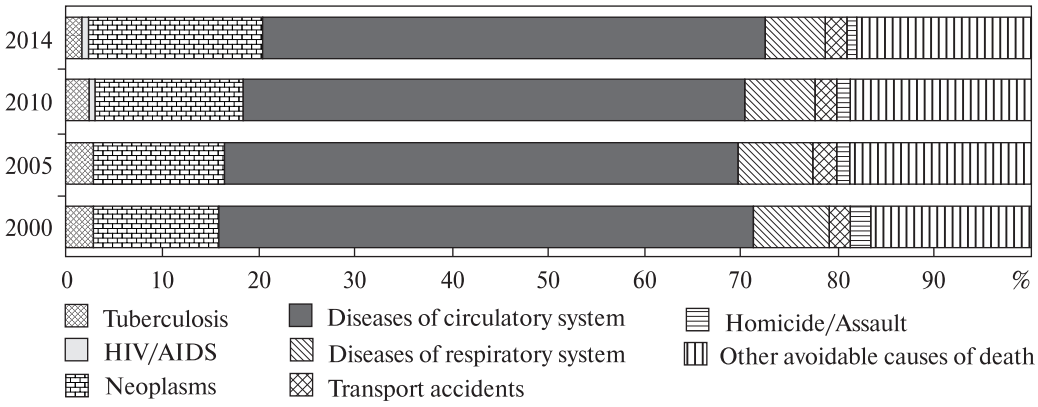

Fig. 3. **Share of major causes of death in the total number of avoidable deaths, both sexes, 2000–2014**

Source: Own calculations based on the data from [22].

Table 2. **The cause-specific avoidable mortality dynamics, 2000–2014 (per 100 thousand), Moldova, by sex**

Causes of death	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Male															
Tuberculosis	39	34	35	35	40	43	40	41	38	40	38	33	31	24	22
HIV/AIDS	0	0	1	1	1	2	3	3	4	3	4	4	3	3	5
Neoplasms	167	169	167	170	176	182	192	192	204	203	202	196	204	195	204
Diseases of the circulatory system	678	659	674	691	691	725	691	694	672	707	719	645	658	619	625
Diseases of the respiratory system	114	106	120	121	110	128	116	119	117	111	112	88	88	80	85
Transport accidents	27	29	28	28	31	27	27	31	33	26	27	26	27	24	23
Homicides / Assaults	21	20	19	16	13	13	13	11	14	12	15	11	11	14	11
Other avoidable causes	184	190	201	215	217	238	232	218	220	217	232	202	193	174	198
Female															
Tuberculosis	5	6	6	6	7	6	7	8	7	8	5	4	4	3	4
HIV/AIDS	0	0	0	0	1	1	1	1	1	1	2	1	2	2	2
Neoplasms	88	90	95	94	92	96	103	103	103	107	103	103	101	102	102
Diseases of the circulatory system	456	437	451	470	432	464	441	421	403	402	407	358	361	336	332
Diseases of the respiratory system	40	31	39	39	32	38	33	30	26	29	31	21	18	19	20
Transport accidents	6	8	7	9	7	8	8	10	7	8	6	8	8	5	5
Homicides / Assaults	8	8	8	8	6	8	5	6	5	6	6	4	5	4	4
Other avoidable causes	64	65	68	71	71	73	73	66	65	66	68	51	60	55	55

Source: Own calculations based on the data from [22].

In the years 2000–2014, the number of deaths caused by transport accidents accounted for about 2–3 % of the total number of avoidable causes of death (Fig. 3). Deaths caused by transport accidents make a significant contribution to mortality by external causes, with a strong impact in young and working age population. Since 2000, SDR by transport accidents increased for males (Table 2) from 27 to 33 deaths per 100 thousand in 2008, then decreased to 23 deaths per 100 thousand in 2014. The same trend was observed for females, with an increase from 6 deaths per 100 thousand in 2000 to 10 deaths per 100 thousand in 2007, and registering 5 deaths per 100 thousand in 2014.

Overall, during the years 2000–2014 the number of deaths caused by homicides and assaults had a downward trend from 2 % to about 1 % (Fig. 3), compared to the total number of deaths that can be avoided. The level of crime in Moldova also had a downward trend during the period 2000–2014, which was reflected in the standardized mortality rate due to homicides and assaults. Mortality caused by violence was reduced by half for both sexes, from 21 deaths per 100 thousand in 2000 to 11 deaths per 100 thousand in 2014 for males, and from 8 deaths per 100 thousand in 2000 to 4 deaths per 100 thousand in 2014 for females (Table 2). These changes were determined by a decrease in the total number of offences related to violence [16].

A significant increase of mortality caused by HIV/AIDS was observed in the analysed period, from practically 0.2–0.4 deaths per 100 thousand for males and females in 2000 to about 5 deaths per 100 thousand for males and 2 deaths per 100 thousand for females in 2014.

Mortality caused by neoplasms in the analysed period increased by about 22 %, which also reflects an increase of longevity, as a result of reduced proportion of deaths caused by cardiovascular diseases. Consequently, with aging the risk of death caused by neoplasm is steadily rising; the most affected ages of deaths due to neoplasms are 45–79 years. To a large extent, according ONS classifier, a very wide range of deaths caused by neoplasms in the age groups 0–74 can be prevented or avoided (C00–C16, C18–C22, C33–C34, C43, C45, C50, C53, C67, C73, C81, D10–D36).

Figure 4 shows the contribution of components to the avoidable and non-avoidable causes of death in life expectancy for males and females. The years 2000 with 2007 and 2000 with 2014 were compared. As mentioned, for males, the period 2000–2007 registered a stagnation, where life expectancy decreased by about 0.5 years. A significant improvement has been noted in reducing infant mortality, which guaranteed an increase of 0.62 years, of which 0.5 years have returned to deaths that can be avoided and only 0.12 years for non-avoidable causes of death. In the ages between 1 and 24, the increase in life expectancy was less significant and provided a total addition of about 0.3 years, most of which being avoidable causes of death. Age groups above age of 25, on the contrary, experienced a decrease in life expectancy, which covered the improvements that took place in the age groups below 25 years.

Compared with 2000, in 2014 the same differentiation was recorded in the first year of life for males, which means that during the years 2007–2014, there were no significant changes in the infant mortality. Ages between 1 and 34 years experienced consistent reductions in avoidable mortality, resulting in a cumulative increase of about 0.6 years in life expectancy; in these age groups, there are also improvements for non-avoidable causes of death, which contributed an increase of 0.14 years in life expectancy. Some improvements in avoidable mortality reduction can also be seen in age groups 55–69, which increased life expectancy by about 0.2 years. Concerning non-avoidable mortality among age groups 30–74, a slight increase was noted, which reduced life expectancy by 0.35 years. Overall, in the period 2000–2014, life expectancy for males increased by 1.2 years; this trend can be considered not so significant given the slow growth of annual increase, with less than 0.1 years.

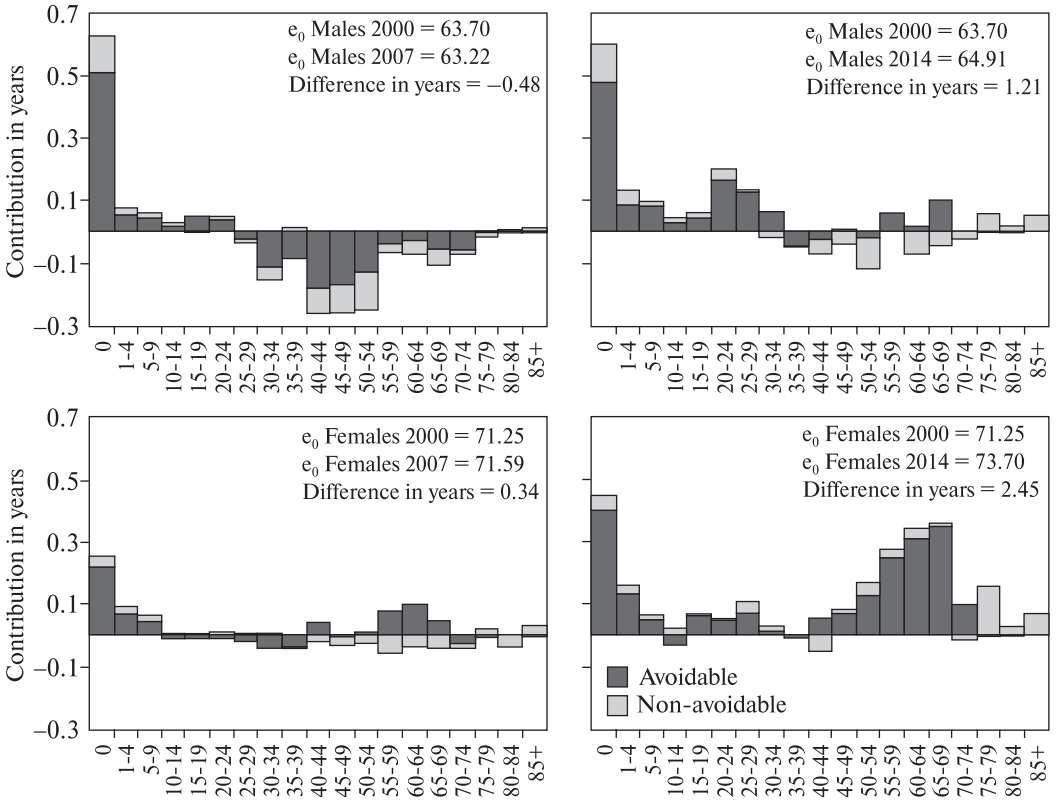

Fig. 4. **Age and cause-specific components of the life expectancy changes in Moldova, 2000 to 2007 and 2000 to 2014, by sex**

Source: Own calculations based on the data from [22].

Life expectancy for females increased by 0.34 years in 2007 and by 2.45 years in 2014 when compared with 2000. In 2007, the main source of life expectancy growth was the reduction of avoidable mortality, with sharp changes in the age groups 0–9, 40–44 and 55–69. Non-avoidable mortality in the age groups 40–74 reduced life expectancy by about 0.24 years.

In the period 2000–2014, an increase in life expectancy for females had been recorded almost in all age groups, accentuating an increase in the first year of life by 0.45 years and in the 50–69 age group, with a cumulative increase of almost 1.2 years. Consequently, during the analysed period, the average annual growth rate of life expectancy was around 0.18 years for females.

Conclusion. In the 2000–2014 period, increase in the life expectancy registered 1.21 years for males and 2.45 years for females, which is more associated with a reduction of infant mortality than with reduction of all causes mortality in another age groups. The annual growth rate of life expectancy can be considered low, about 0.18 years for females and 0.03 years for males.

The results suggest that the reductions in avoidable mortality represented an important source in gain in years of life expectancy, with an increase of 1.17 years for males and 1.99 years for female, which have played the main role in the change in the dynamics of life expectancy during the period 2000–2014. The most considerable part of preventable and

amenable deaths is caused by circulatory system diseases, neoplasms, respiratory system diseases and external causes of death.

During the analysed period, the changes of avoidable mortality registered some fluctuations, with the general trend showing a decrease at the same time. Consequently, if in 2000 the share of deaths that could be avoided was 61.5 % for males and 43.9 % for females of the total number of deaths, then in 2014 they accounted 56.6 % for males and 34.1 % for females. Despite the positive trend, the share of avoidable mortality is high, which requires implementation of programs that will focus on different sectors, such as health care system, socioeconomic areas, infrastructure, and policies which are oriented in risk-factors reduction.

In the case of the Republic of Moldova, a considerable number of deaths can be avoided through the implementation of policies focusing on public health and preventive medicine. A strong contributor to the incidence of cardiovascular disease deaths for the population in the risk group is unhealthy lifestyle (inadequate nutrition, exposure to alcohol and tobacco consumption, sedentary lifestyle, etc.). In order to decrease the number of deaths caused by malignant tumours and identify the presence of the disease at the initiation stage it is necessary to improve the technical capacity of screening and treatment infrastructure, but also to increasingly inform the population. It is important to consider that patients with chronic diseases, depending on the place of residence, have a different degree of access to the medical infrastructure, which can be improved by diversifying the spectrum of medical services at regional level and a better diagnosis of the population in the risk group.

The decrease in tuberculosis deaths is due to the national programs implemented during the analysed period, including the socio-economic improvements. At the same time, even though persons with HIV / AIDS benefit from a wide range of services in the healthcare segment, the number of deaths caused by HIV / AIDS is increasing slightly, which may partly be due to improvements in the segment of patient diagnosis and death coding.

The improvement of the situation regarding the mortality caused by road accidents must be looked at from different perspectives. On the one hand, the authorities are focused on improving the infrastructure and implementing policies to increase traffic safety. At the same time, the number of registered cars and the time spent in traffic rises causing an increase in risk exposure. Despite this, pedestrians continue to be the most involved in road accidents.

Each avoidable cause of death corresponds to a distinct risk exposure contribution across different age groups and requires varied policy approaches. The cost of implementing the reduction of avoidable mortality increases with the longevity of the population, and with increase in the number of people in the risk group of the total population. Consequently, avoided deaths at early ages have a relatively low cost in terms of implementing health policies, and they make a significant contribution to the potential number of years in life expectancy.

In the context of our avoidable mortality analysis, further studies will be focused on the identification of the most vulnerable age groups exposed to the risk and calculations of the potential resources for increasing in life expectancy.

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