

Features of the Frequency of Acute Myocardial Infarction among the Inorganized Population of the Elderly and Old Age

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Abstract – The influence of cardiovascular diseases on the level of health of the population of the whole world forces the entire scientific community today to seek and find new ways to solve this problem. Diseases of the cardiovascular system occupy a leading place among the whole variety of pathologies of modern and practical health care. In our country, it is these diseases that account for 57% of the mortality rate of the population, mainly associated with coronary heart disease. In this case, the most frequent and formidable manifestation of ischemic heart disease, often leading to death, is myocardial infarction. It is well known that with age, and more than half of all cases of AMI occur in the elderly.

Key words: acute or repeated myocardial infarction, chronic rheumatic heart disease, disorganized population of the elderly (DPE) and senile age (SA).

I. Introduction

Over the past decades, the leading position in the structure of morbidity and mortality has been taken by cardiovascular diseases (CVD) [1; 2; 4]. The most common cause of death from CVD is coronary artery disease (CAD), more specifically myocardial infarction. And the myocardial infarction (MI) itself and its consequences are the main cause of the immediate and distant mortality of patients in old and senile age [3;7]. The global aging of the population is becoming a major global problem. The influence of cardiovascular diseases on the level of health of the population of the whole world forces the entire scientific community today to seek and find new ways to solve this problem. Diseases of the cardiovascular system occupy a leading place among the whole variety of pathologies in modern and practical healthcare [5;6]. In our country, it is these diseases that account for 57% of the mortality rate of the population, mainly associated with coronary heart disease. In this case, the most frequent and formidable manifestation of ischemic heart disease, often leading to fatal outcomes, is myocardial infarction [8;10,20].

II. Literature review

It is well known that with age, more than half of all AMI cases occur in the elderly. At the same time, the increased attention to the problem of MI in the population of the older age group is associated not only with the steady growth of this most serious pathology, but also with a high mortality rate. This circumstance necessitates both further study of the features of the development and course of myocardial infarction in the population of geriatric age, and the search for new approaches in organizing and optimizing the treatment of this severe contingent of patients [1;9;11]. There is undoubted scientific evidence showing

that epidemiological studies and CVD prevention measures can not only reduce morbidity, but also contribute to life extension, primarily among the elderly and senile population [2;4;14]. The system for the prevention of CVD, in particular AMI, should traditionally be based on the identification of the so-called modifiable risk factors in older age groups, that is, such acute forms of IHD and conditions, the presence of each of which increases the likelihood of developing cardiovascular accidents and death. Existing and operating systems of total regular clinical examination to identify risk factors for AMI in the population can give positive results, but in most cases it does not justify itself, since it requires rather large financial, structural and organized costs, with low efficiency. In this regard, optimization of the population-prophylactic approach to enhance drug safety and screening efficiency among the population in patients with AMI is one of the urgent tasks for specialists in the preventive field [15;16].

III. Analysis

In recent decades, cardiovascular prophylaxis (CVP) has been actively progressing in the subgroup of the population - older patients, and prevention algorithms and rehabilitation programs are being developed. Almost $\frac{3}{4}$ of deaths from CHD occur in people over 65, and almost 80% of deaths from AMI belong to this age group. Prevention of AMI in persons of older age groups and therapy has its own characteristics associated with the frequent presence of concomitant pathology. This leads to limitations in the use of some methods of primary, secondary and tertiary prevention. Proceeding from this, epidemiological studies play a leading role in disclosing the problems associated with the prevention of AMI among the elderly and senile population [2;3;11,21].

In Uzbekistan, as in most countries, AMI remains a scourge of men after 45 years and women after 55 (Nikishin A.G., 2016), the number of AMI patients in old and senile age is increasing. Actively organized epidemiological and preventive programs to improve the health of the elderly and senile population in various regions of the country, including arid zones, can significantly reduce the incidence and mortality from AMI.

In this regard, the study of the epidemiology of AMI acquires priority importance in modern science and has results on the true prevalence of AMI and its relationship with various (regional) risk factors affecting its development.

Available publications of research results on the study of scientific work is relevant. *Purpose:* To study the features of the incidence of acute myocardial infarction among the unorganized population of the elderly and senile age in the example of Bukhara.

Observational epidemiological studies in each of the regions reveal not only general population patterns, but also a number of specific features of the spread of acute myocardial infarction and "endpoints" from it, which is important both for the development of clinical infarctology, and for planning and implementing effective, innovative prevention of AMI. In this regard, and old age, the development of a population strategy in the regions, which would be based on the development of measures for the early prevention of AMI [9;12;13].

Therefore, the peculiarities of the spread of AMI among the unorganized population of the elderly (UPE) and senile age (SA) were studied in the example of the city of Bukhara.

Table 1 shows data on the epidemiological situation in relation to CVD of chronic diseases and "endpoints" from them among UPE and SA. It is shown that only 2.9% of the examined elderly people have chronic diseases. 97.1% have chronic diseases "endpoints" from these pathologies (mortality mainly) is observed in the levels of 4.6% (at the age of 60-89 years) and 4.2% (in the group of those surveyed 60-74 years) and 6.6% (in the age group 75 - 89 years). That is, during the year of work with the population of "irrecoverable losses", the deceased persons in the period after the first invitation was sent were characterized by growth depending on age by 1.4% ($p < 0.05$) (Table 1).

Table 1
Population characteristics of the epidemiological situation among the elderly and senile population

Population contingent	Statistical indicators	Age groups of the examined		
		60-74 years	75-89 years	60-89 years
Population without pathologies	p	39	8	47
	%	2,9	2,9	2,9
Population with endpoints	p	56	18	74
	%	4,2	6,6	4,6
Population with CVD (1)	p	933	199	1132
	%	69,3	73,2	70,0
Population with other medical conditions (2)	p	318	47	365
	%	23,6	17,3	22,5
Total population	p	1346	272	1618
	%	100,0	100,0	100,0
Statistics, differences in t - test (p)	<0,05	-	-	-
	<0,01	1-2	-	-
	<0,001	-	1-2	1-2

The established data indicate a high prevalence of CVD (22.5%). The highest prevalence of CVD occurs among elderly people (73.2%), in the population of 60-74 years, their frequency is determined and increases with a prevalence of 69.3%. With age, their frequency increases by 3.9% ($p < 0.05$). Other diseases with a significantly lower prevalence, compared with CVD, are observed in the surveyed population (22.5%; $p < 0.001$). The most common chronic diseases (except for CVD) are found among people 60-74 years old (23.6%), in the age group 75-85 years, their frequency is reliably removed (17.3%, $p < 0.05$). Table 2 presents data on the epidemiology of myocardial infarction in the studied population.

Table 2
Comparative assessment of the prevalence of myocardial infarction among different classes of CVD in the elderly population

CVD classes	Statistical indicators	Age groups of the examined		
		60-89 years (p=1132)	60-74 years (p=933)	75-89 years (p=109)
AMI ¹	p	94	33	61
	%	8,3	3,5	30,7 ^{xxx}
Stable ischemic heart disease (2)	p	346	311	35
	%	30,6	33,3 ^x	17,6
IMh ² (3)	p	109	91	18
	%	9,6	9,8 ^w	9,0
Hypertonic disease	p	576	491	85
	%	50,9	52,6 ^x	42,7
CRHD	p	7	7	14

	%	0,6	0,8	1,4 ^x
Difference statistics for t-criterion (p)	<0,05	4-2	4-2,3-1	1-2,3-1,4-1
	<0,01	4-3	4-1	1-3,4-2
	<0,001	1-5,4-1,2-1	1-5,4-1,2-1	1-5,2-5

Note: here and in other tables, the significance of differences is indicated relative to the age group 60-74; • AMI-acute, from 6 hours to 7 days from the onset of MI type 1; • IMh² - acute or repeated MI, healing and healed type 2; • CRHD, chronic rheumatic heart disease.

According to the data obtained (Table 2 and Pic. 1) in the surveyed population 60-89 years old, the prevalence of MI and other CVDs was: AMI¹ - 8.3% (at 60-74 years - 3.5% and at 75-89 years 30, 7%; p <0.001), stable ischemic heart disease-30.6% (including at 60-74 years = 33.3% and at 75-89 years - 17.6%; p <0.005), IMh²-9, 6% (including at 60-74 years old = 9.8% and at 75-89 years old -9.0% p <0.005), hypertension disease - 50.9% (at 60-74 years old -52.6 % and at 75-89 years 42.9%; p> 0.05) and CRHD - 0.6% (at 60-74 years 0.8% and at 75-89 years - 1.4%; p <0, 05).

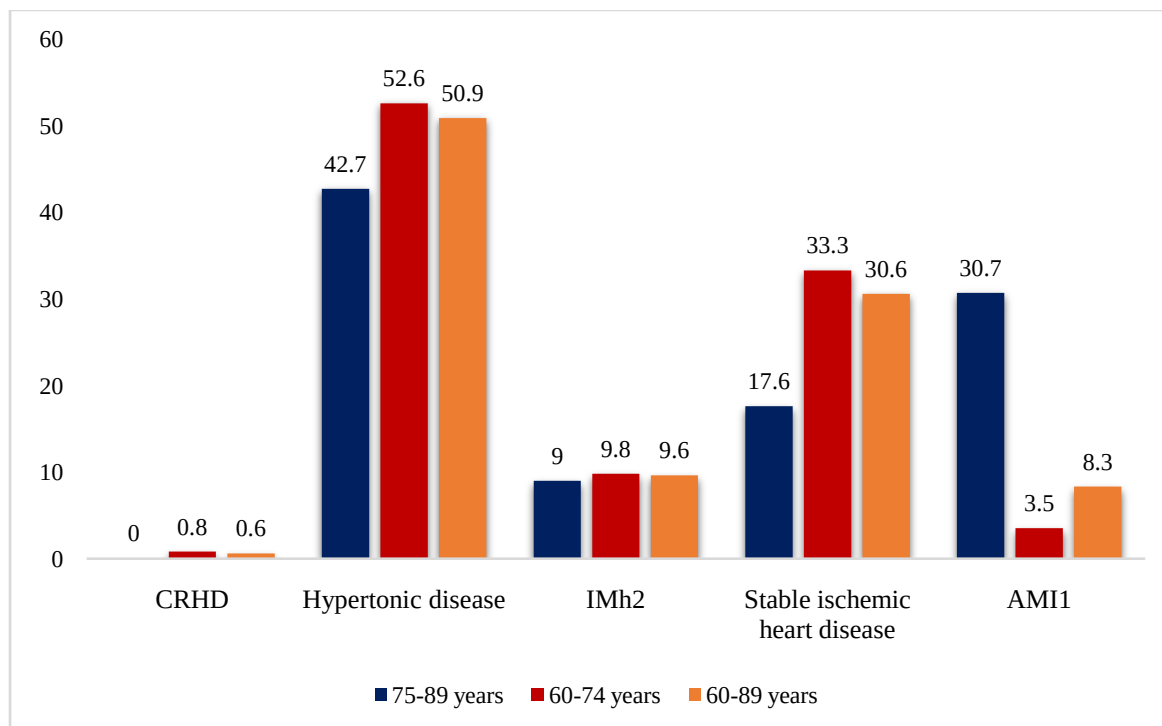
Thus, the data obtained confirm that all forms than among the elderly population occur with a prevalence rate of 17.9% (in the elderly population -13.3% and in the elderly population -39.7%; p <0.001). With the age of the elderly, the incidence of myocardial infarction increases by 26.4%; 3.5 times (p <0.001).

When comparing our results with old literature data, it should be emphasized that the prevalence rate of AMI was relatively low. In Moscow (Russia) and Berlin (Germany), as indicated by the researchers, the incidence of AMI was noted at levels of 54% and 47%, respectively [17]. However, our data were identical with the results obtained in the modern population on the scale of the CIS [16].

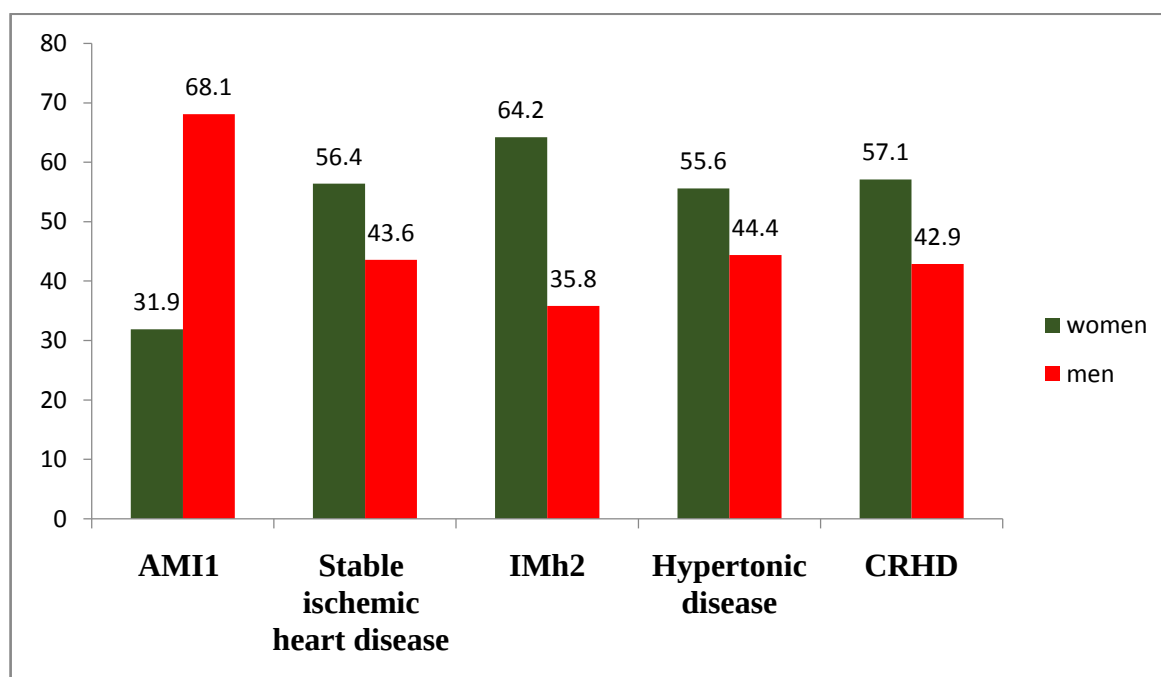
According to modern concepts, there are conflicting data on the influence of gender characteristics on the incidence of AMI [18; 19]. Until now, gender differences in this indicator in patients with MI in the regions of Uzbekistan remain poorly understood. This led to a special analysis in the course of this work, the purpose of which was to study the gender characteristics of the AMI epidemiology in the elderly and senile population (Table 3, Pic. 2).

When comparing the study groups, it was noted that men in terms of the prevalence of myocardial infarction exceeded women: the prevalence of myocardial infarction was set at 65.5% and 42.3%, respectively, i.e. with an increase of 22.8% or 1.5 times in men (p <0.05).

Among women and men 60-89 years old, the prevalence of AMI¹ was established with a frequency of 21.1% and 50.1%, i.e. with a difference of 29.0% (p <0.01), including in the age groups 60-74 years old and 75-89 years old, respectively - 1.8 and 5.7% each (p <0.01), 19, 3% and 44.4% (p <0.01), i.e. with an increase of 3.9% and 25.1% depending on age.



Pic. 1. Distribution of patients with myocardial infarction and its comparative frequency among the elderly and senile population with different CVD (in%).



Pic. 2. Prevalence of various forms of myocardial infarction and major CVDs among women and men of elderly and senile age (in%).

Table 3

Gender characteristics of the prevalence of myocardial infarction among the unorganized population of the elderly and senile age

Study groups	Statistical indicators	Women			Men			Gender differences		
		60-74 years (p=510)	75-89 years (p=90)	60-89 years (p=600)	60-74 years p=433	75-89 years (p=90)	60-89 years (p=513)	60-74 years	75-89 years	60-89 years
AIM ¹ (1)	p	9	21	30	24	40	64	15	19	24
	%	1,8	19,3 ^{xxx}	21,1	5,1	44,4 ^{xxx}	50,1 ^{xx}	+3,9	+25,1	+29,0
IMh ² (2)	p	59	11	70	32	7	39	91	18	109
	%	11,6	10,1	21,7	7,6	7,8	15,4	-4,0	-2,3	-6,3
Total MI	p	68	32	100	56	47	101	106	79	133
	%	13,4	29,4 ^{xx}	42,8	13,3	52,2 ^{xxx}	65,5 ^x	-0,1	+22,8	+22,7
Difference statistics for t-criterion (p)	<0,61	-	1-2	-	-	-	-	-	-	-
	<0,01	-	-	-	-	-	-	-	-	-
	<0,001	1-2	-	-	-	1-2	1-2	1-2	1-2	1-2

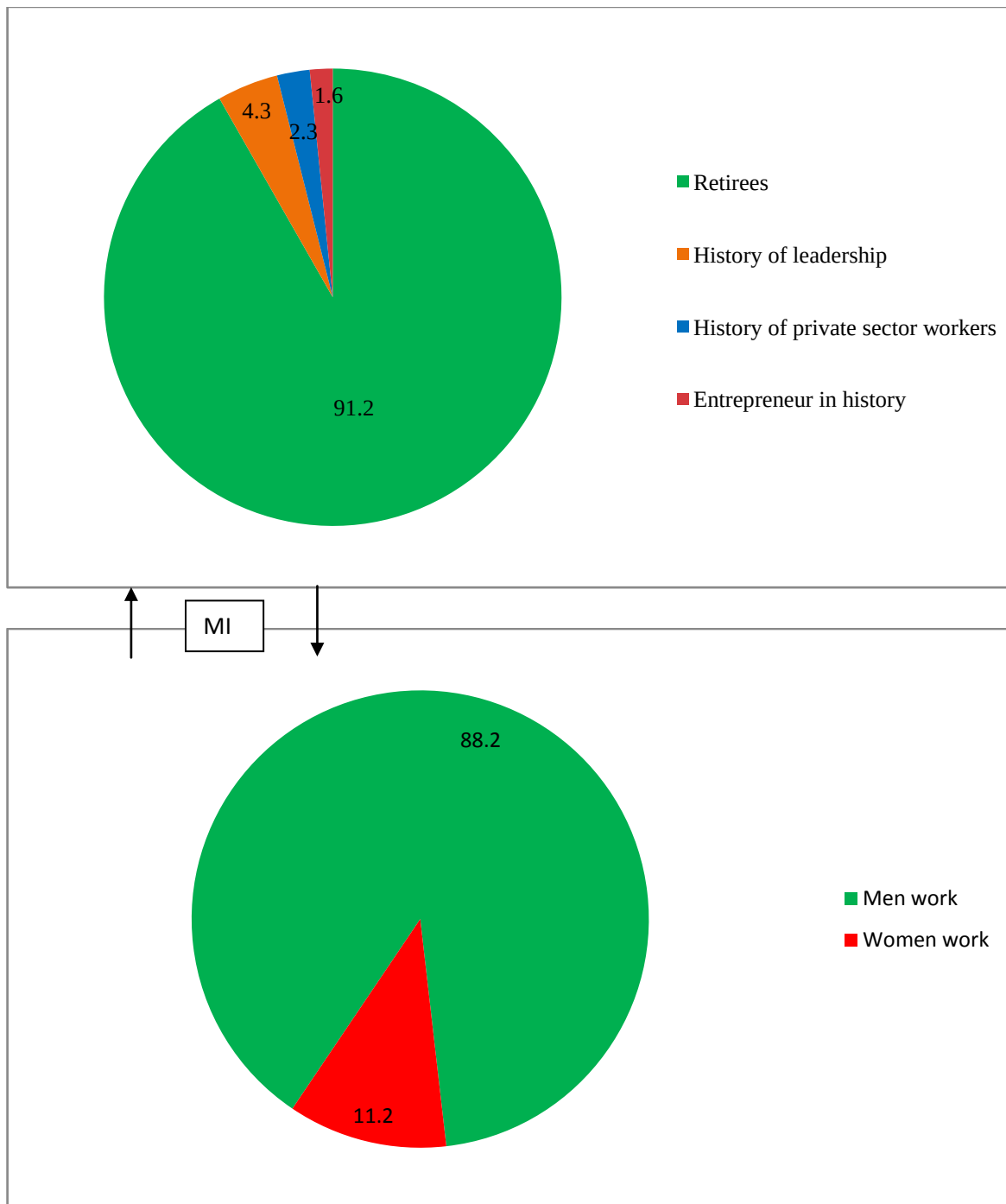
The prevalence of healing and healed myocardial infarction was revealed in the examined women and men of elderly and senile age with a frequency of 21.7% and 15.4% ($p > 0.05$), i.e. with a difference of -6.3%; including in the age groups 60-74 years old and 75-89 years old women - but 11.6% and 10.1% ($p > 0.05$); in the groups of men 60-74 years old and 75-89 years old women - 7.6% and 7.8%, respectively ($p > 0.05$), i.e. with a difference of -4.0%, -2.3% and -6.3% in the indicated age ranges of the surveyed population.

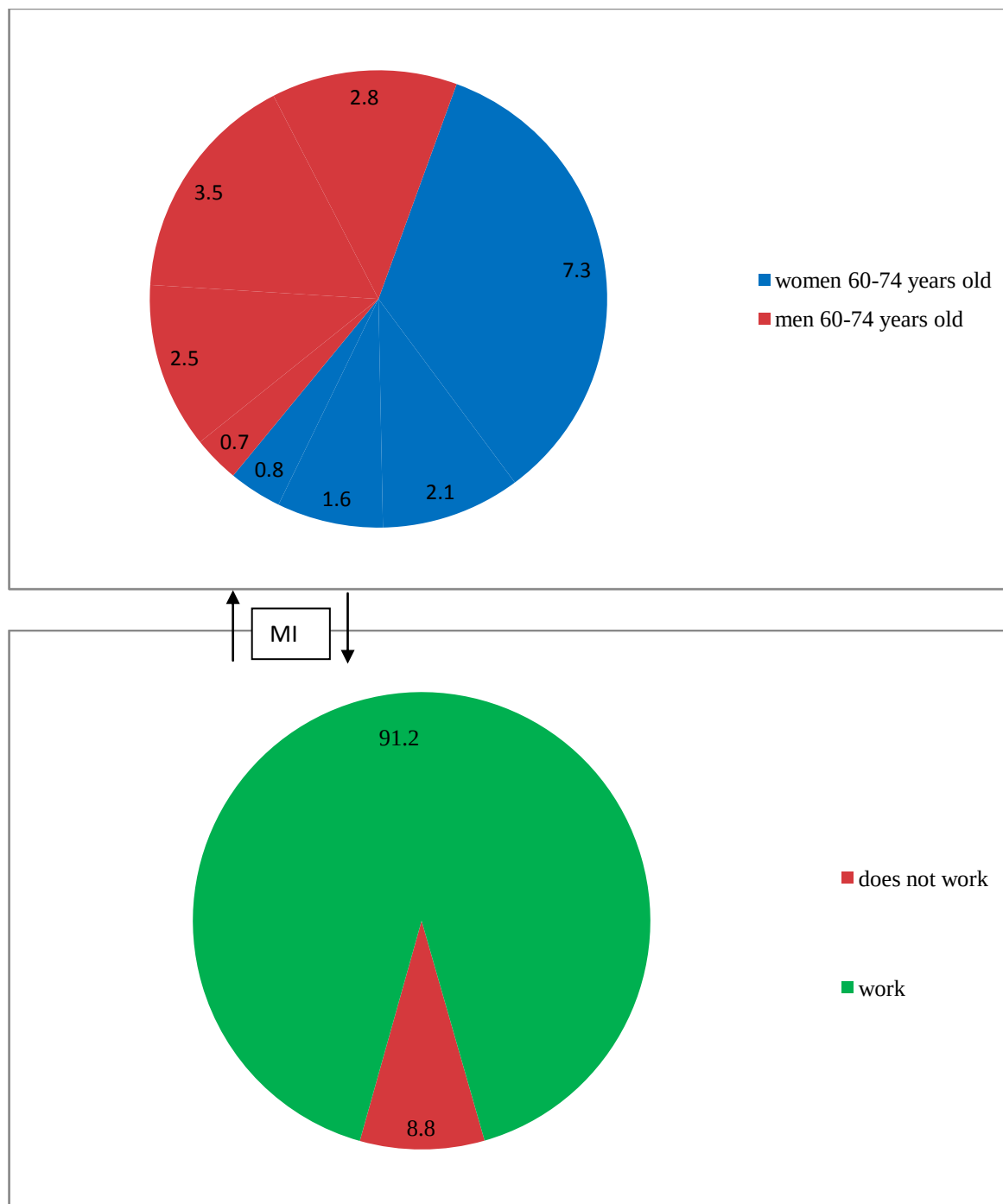
Thus, in elderly and senile men, there were higher rates of MI in general and AMI type 1 in particular. In women, type 2 MI and healing healed forms of this pathology are more often noted. It is reasonable to use the results to assess gender differences in AMI in elderly and senile patients (Pic. 3).

IV. Discussion

The results of this cross-sectional epidemiological study show that for a more successful fight against the high incidence of MI in elderly and senile people, it is necessary not only to improve to the hospital level of medical care, but also to carry out appropriate regional preventive and prophylactic strategies among the population. Apparently, late visits and untimely preventive care determine the onset of “endpoints” from AMI outside hospitals, as well as in specialized centers of emergency medical care in the vast majority of cases.

A comparative study of the prevalence of AMI in the studied region among various professional groups was of interest to us from a scientific and practical point of view (Picture 3).





Pic. 3. Comparative study of the prevalence of AMI in various occupational groups among the surveyed.

As can be seen from Picture 3, the prevalence rates of AMI in the surveyed, depending on the professions, were: • among working and not working - 91.2% and 8.8% each ($p < 0.0001$); • among working women and men - 11.2% and 88.2% each ($p < 0.0001$); • for non-working pensioners - 91.2% and working pensioners - 8.2% ($p < 0.0001$); •, including - among the population of entrepreneurs in the anamnesis - 1.6%, among workers in the private sector - 2.3% and among the population - leaders - 4.3%; • among leaders of men and women - 2.8% each and 7.3% ($p < 0.01$); • among men and women working in the private sector - 3.5% and 2.1% each ($p < 0.05$); • among men and women and entrepreneurs - 2.5% and 2.1% each ($p > 0.05$); • among men and women of other professions - 0.7% and 0.8% each ($p > 0.5$).

These results indicate the need to increase the efficiency of epidemiological studies and differentiated (mass) preventive approaches through active propaganda, improvement of pre nosological diagnosis and prevention, and an increase in its authority both among the elderly and senile population, and among specialists - doctors, researchers. All this should help to increase the readiness of the population and practical health care to participate in screening activities for the prevention of AMI among the population of the older age group, especially in the regions of the country.

V. Conclusion

In our study, elderly and senile men had higher rates of MI in general and, AMI type 1, in particular. In women, type 2 MI and healing / healed forms of this pathology were more often noted. This conclusion also does not contradict the literature data. According to modern literature data, there are conflicting data on the influence of gender characteristics on the incidence of AMI.

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