Innovative Technology in the Prevention of Arterial Hypertension and Coronary Heart Disease

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Abstract: At present, a fairly large number of scientific facts have been accumulated, indicating that a large number of different factors are involved in the development and progression of ms and cardiovascular diseases (CVD), including coronary heart disease (CHD). One of the most important risk factors for cad is arterial hypertension (ah). According to the literature data, coronary artery disease in ah develops more often and is more complicated by myocardial infarction than in normal BP.

Purpose of the study. Development of an innovative program and recommendations to reduce the risks of hypertension and coronary artery disease among the population based on multicomponent analysis and prevention

Results. The prevalence of hypertension is 20.54% and 5.93% have stable heart failure. In the female population, there is a significant underestimation of the significance of a number of diseases in the formation and outcomes of cardiovascular diseases (CVD). 36.84% of women with hypertension do not consider these diseases to be important risk factors for CVD. To optimize diagnostics and treatment and preventive processes, it is necessary to introduce innovative gadget technologies - standard, non-invasive diagnostic methods using special questionnaires and conduct sanitary and educational work among the population.

Introduction

At present, a fairly large number of scientific facts have been accumulated, indicating that a large number of different factors are involved in the development and progression of MS and cardiovascular diseases (CVD), including coronary heart disease (CHD). One of the most important risk factors for CAD is arterial hypertension (AH). According to the literature data, coronary artery disease develops more often in AH and is more complicated by myocardial infarction than in normal BP (1,3,4,7,11).

The questionnaire method for diagnosing coronary artery disease, proposed by Rose J., Blackburn H. in 1968, is quite simple, economical, accessible and of great importance for detecting coronary artery disease in an outpatient setting and conducting mass preventive examinations of the population. However, this method only detects cases of typical exertional angina when there is a clearly defined pain attack. At the same time, in their practice, doctors encounter cases of atypical or painless course of the disease. In such cases, the value of this questionnaire is significantly reduced (2,6,12-16)

The development and implementation of preventive programs for the early detection and prevention of various diseases is based on the assessment of the true prevalence of these diseases and their

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relationship with various socio-demographic characteristics of the population and risk factors (8,9,10).

Purpose of the study. Development of an innovative program and recommendations to reduce the risks of hypertension and coronary artery disease among the population based on multicomponent analysis and prevention

Material and methods. The survey was conducted among the unorganized population of the city of Bukhara. The research program included the identification of the main components of MS. Interrogation according to a special questionnaire, measurement of blood pressure (BP), ECG, anthropometry (height and weight for calculating the Quetelet index), waist circumference, lipid content: cholesterol, triglycerides, a-cholesterol, fasting blood glucose, as well as after 1 and 2 hours after taking 75 grams of glucose, glycated hemoglobin, immunoreactive insulin by the subject.

Measurement of A/D was carried out twice on both hands, with an interval of at least 5 minutes, and when assessing blood pressure (BP), the average values of 2 measurements were taken into account. Normal BP was taken as systolic blood pressure (SBP) $\leq$ 139; diastolic blood pressure (DBP) $\leq$ 89, Arterial hypertension (AH) - SBP $\geq$140; DBP $\geq$ 90.

Results and discussions. The obtained data show that as the age increases, the frequency of AH increases.

Table 1 The prevalence of hypertension among the female and male population

Пол	Age group	have AG	no AG	Total
Men by age groups	20-29 лет	1,59	98,41	100,00
	30-39 лет	7,69 *	92,31	100,00
	40-49 лет	15,22 *	84,78	100,00
	50-59 лет	40,63 *	59,38	100,00
	60-69 лет	51,02	48,98	100,00
Total for men		20,66	79,34	100,00
Пол	Age group	AG is	no AG	Total
Women by age groups	20-29 лет	1,06	98,94	100,00
	30-39 лет	16,52 *	83,48	100,00
	40-49 лет	22,41 *	77,59	100,00
	50-59 лет	37,50 **	62,50	100,00
	60-69 лет	62,50 **	37,50	100,00
Total women		20,54	79,46	100,00

The frequency of hypertension increases after 30 years (from 1.06% at the age of 20-29 to 16.52% at 30-39 years). In subsequent age periods (40-49 years, 50-59 years and 60-69 years), the frequency of AH increases (22.41%, 37.50% and 62.50%, respectively). In men aged 20-29 years, the incidence of hypertension is 1.59%, this figure is slightly higher than among women. At the age of 30-39 years 7.69%, 40-49 years 15.22%, 50-59 years 40.63% and 60-69 years 51.02% the prevalence of hypertension among women was higher than among men. At the age of 50-59 years, hypertension is more common in men, and at the age of 60-69 years - in women.

Next, the prevalence of exertional angina (EA) was studied.

Table 2 Prevalence of stable exertional angina (HF) among the female population.

Age group	There is exertional angina		No angina pectoris	
	n	%	n	%
20-29 years old	4	2,13	184	97,87
30-39 years old	11	9,57 *	104	90,43
40-49 years old	8	6,90	108	93,10
50-59 years old	8	11,11 *	64	88,89
60-69 years old	13	20,31 **	51	79,69

The prevalence of exertional angina (EA) among women is high (7.93%). At the age of 20-29 years, 2.13% of women suffer from EA. In the next age group, the frequency of EA increases by 4.5 times and reaches 9.57%. It should be noted that this increase is statistically significant ($p<0.05$). The next significant increase in the frequency of HF is observed between the age groups of 40-49 years, 50-59 years and 60-69 years (6.9%, 11.11% and 20.31%, respectively).

When studying the detection of EA in medical institutions (MI), out of 44 women who were diagnosed with HF during a screening study, in 34 (77.27%) this diagnosis was established earlier in a medical facility.
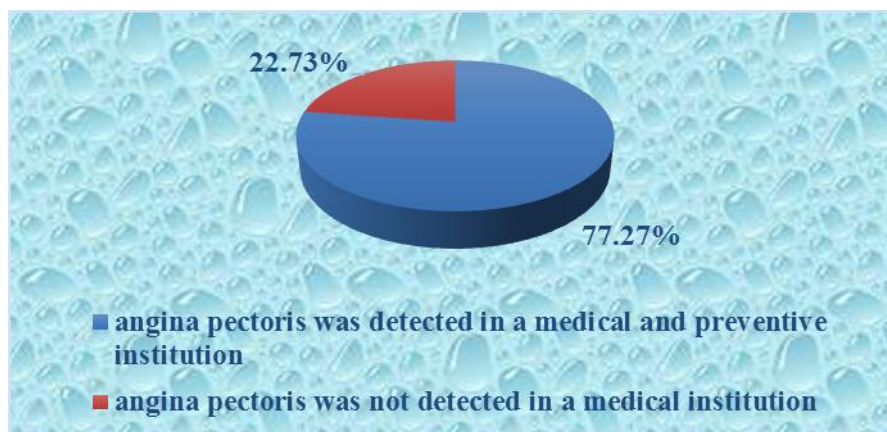

Figure 1 Detection of angina pectoris in health facilities

At the same time, 10 women suffering from EA (22.73%) were not diagnosed with this diagnosis in health facilities.

An analysis was made of women's assessment of their health status in relation to some major internal diseases (Table 3).

Table 3 Assessing your health status in relation to the presence of hypertension among the female population

Woman's opinion	have AG	no AG	Total
Yes	87,72	6,80	23,42
No	12,28	93,20	76,58
Total	100,00	100,00	100,00

Among the women who were diagnosed with hypertension during this study, 12.28% reported that they have normal blood pressure. In other words, every eighth woman with hypertension believes that she has normal blood pressure. On the other hand, among women with normal blood pressure and not receiving antihypertensive therapy, 6.8% believe that they have hypertension.

It should be noted that only 2/3 of women with elevated blood pressure (63.16%) believe that hypertension significantly increases cardiovascular risk (Table). Of particular interest is the fact that the same opinion is shared by about the same number of women with normal blood pressure (60.09%).

Table 4 Evaluation of the predictive degree of risk of hypertension among the female population

Woman's opinion	have AG	no AG	Total
Much	63,16	60,09	60,72
Not good	28,07	29,48	29,19
Does not increase	0,00	0,45	0,36
Other reasons	8,77	9,98	9,73
Total	100,00	100,00	100,00

Attention should also be paid to the fact that more than 1/3 of women with hypertension consider hypertension not a very important factor in cardiovascular risk or consider that such a risk is due to other reasons.

An increase in the frequency and level of risk factors with age indicates the advisability of targeted active detection of these risk factors in order to apply timely preventive measures (Table 5).

Table 5 The frequency of different combinations of the number of risk factors in age groups (%)

Age Number of risk factors	20-29 years old п = 256	30-39 years old п = 255	40-49 years old п = 276	50-59 years old п = 436	60-69 years old п = 112
No RF	53,91	32,94 *	18,48**	9.40 **	8.04
1 RF	33,59	37,25	34,42	33,49	24.11 *
2 RF	11.33	23,92 *	27,17	33.03 *	38,39
3 RF	1.17	5,49 *	17.03 **	19.04	23.21
4 RF (MS)	0	0,39	2,90 *	5.05	6,25

A high increase in the combination of risk factors is observed among the age groups of 30-39 and 40-49 years (3 risk factors - 5.49% and 17.03%, respectively).

In order to improve CVD prevention measures and reduce time and material costs, as well as increase the competence and improve the quality of life of patients with metabolic syndrome, the possibility of using a digital prevention program was studied. For this purpose, the study of the main components of MS, the significance of each of them, and based on prospective observation, a digital model for assessing the patient's condition, identifying risk factors and determining the range of preventive measures was developed. This program reduces the time spent on communication between the patient and the doctor, the need to fill out appropriate documentation (diaries, tests, treatment and prevention methods). At the same time, the burden on the doctor is also reduced.

Conclusions. Thus, the prevalence of hypertension is 20.54% and 5.93% have stable heart failure. In the female population, there is a significant underestimation of the significance of a number of diseases in the formation and outcomes of cardiovascular diseases (CVD). 36.84% of women with hypertension do not consider these diseases to be important risk factors for CVD. To optimize diagnostics and treatment and preventive processes, it is necessary to introduce innovative gadget technologies - standard, non-invasive diagnostic methods using special questionnaires and conduct sanitary and educational work among the population.

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