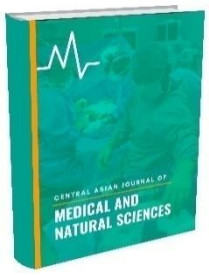
CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES



Volume: 04 Issue: 06 | Nov-Dec 2023 ISSN: 2660-4159

http://cajmns.centralasianstudies.org

Clinical and Functional State of the Kidneys in Middle-Age Patients with Arterial Hypertension

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Received 2nd Oct 2023,
Accepted 19th Nov 2023,
Online 6th Dec 2023

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Abstract: ***Purpose of the study***– assessment of the functional state of the kidneys and the formation of chronic kidney disease in middle-aged patients with arterial hypertension without associated diseases. ***Material and methods.*** 58 patients aged 38 to 60 years with a diagnosis of arterial hypertension were examined. A clinical diagnostic examination was carried out in the hospital: examination and history taking, biochemical blood test, general urine test, determination of glomerular filtration rate, monitoring of the clinical condition and tests during the hospital stay after 3 and 6 months. The study did not include patients with associated diseases or severe diseases of internal organs. ***Results and its discussion.*** In patients with arterial hypertension and without associated cardiovascular diseases, the main factors influencing the formation of renal dysfunction, manifested by hyposthenuria, albuminuria and proteinuria, are smoking, obesity, dyslipidemia and arterial hypertension. When arterial hypertension lasted more than 10 years, hypertensive nephropathy and chronic kidney disease were diagnosed in 67% of cases. *C****onclusions.*** The results of the study confirm that smoking, obesity, dyslipidemia and arterial hypertension influence the formation of kidney dysfunction, manifested by albuminuria/proteinuria. The risk of developing hypertensive nephropathy with a duration of arterial hypertension of more than 10 years is 13 times higher than the risk of developing renal dysfunction with a duration of arterial hypertension of less than 5 years (RR=13.3, CI 95% 1.92–92.61;p<0.001). Nephroprotective antihypertensive therapy promotes reverse regression of albuminuria.

Key words: arterial hypertension, nephropathy, risk factors, albuminuria, chronic kidney disease.

Arterial hypertension (AH) is the most common disease in the adult population. With the onset of the disease, vital organs are involved in the pathological process - the heart, blood vessels, kidneys, brain, while the clinical manifestations of target organ damage are often determined only with advanced changes [1, 2,11,12,15, 28, 30.] . At the initial stages of hypertension, only hemodynamic changes occur in the kidneys, which may not affect its function for a long time and may not be accompanied by structural changes. The kidneys, on the one hand, are the target organs for hypertension, on the other, they are involved in the maintenance and progression of hypertension [3-23]. Kidney damage in hypertension is manifested by the development of hypertensive nephropathy and chronic kidney disease [6]. An early marker of kidney involvement in the pathological process is albuminuria, and a late marker is proteinuria [22-36]. The development of kidney damage in middle-aged patients with hypertension is of interest, since initially there is a lower likelihood of having associated cardiovascular diseases and, accordingly, a lower degree of target organ damage [7,34,35, 36].

Purpose of the study– assessment of the functional state of the kidneys and the formation of chronic kidney disease in middle-aged patients with arterial hypertension and without associated diseases.

Material and methods. The study included 58 patients with hypertension (main group) aged from 38 to 60 years [average age (M±m) – (49.5±3.7) years; 46 men and 12 women] who underwent examination and treatment in the cardiology department. The exclusion criteria from the study were acute diseases and/or exacerbation of chronic diseases of internal organs during the observation period, a history of acute and/or chronic kidney disease, cerebrovascular pathology, combined cardiovascular diseases, including coronary heart disease, atherosclerotic lesions of the central and peripheral arteries. The control group included 32 practically healthy people, comparable in age and gender with the main group [average age – (39.1±4.1) years; p=0.108; 22 men and 10 women, $\chi 2$=1.8; p=0.178]. Anamnesis was studied with an assessment of smoking status, a clinical examination was performed [body mass index (BMI), assessment of systolic (SBP) and diastolic (DBP) blood pressure], biochemical examination of blood (creatinine, cholesterol, triglycerides, albumin) and urine (albumin, protein , relative density). Glomerular filtration rate (GFR) was calculated using the CKD-EPI formula (NKF, 2009). The observation period and assessment of parameters (SBP, DBP, GFR, urine albumin) over time (Δ) was 6 months. Statistical analysis was carried out using parametric and non-parametric statistics methods: mean value (M), standard error (m), relative risk (RR) and confidence interval (CI), $\chi 2$ test, Student t test (t) with Bonferroni correction. Differences between samples were considered statistically significant at $p<0.05$. Results and its discussion. The results of clinical and laboratory examination are presented in table. 1. The duration of hypertension was (7.4±0.8) years. All examined patients irregularly took or did not take antihypertensive therapy before hospitalization, which caused the initially high levels of SBP [(153.8±5.5) mmHg; p=0.000) and DBP [(95.3±1.4) mmHg; p=0.000] compared to the control group [respectively (120.2±6.1) mmHg. and (76.1±0.7) mmHg]. BMI was higher (p=0.000) in the main group [(30.6±1.1) kg/m2] than in the control group [(22.3±0.6) kg/m2]. 34 patients with hypertension (58%) smoked. The lipid spectrum in patients with hypertension was also characterized by high cholesterol levels [(5.9±0.2) mmol/l; p=0.002] and triglycerides [(3.6±0.6) mmol/l; p=0.017] in the blood compared to the control group (4.8±0.3 and 1.5±0.4, respectively). The data obtained allow us to conclude that there are unity of risk factors for cardiovascular and kidney diseases. There were no differences between the groups in the levels of creatinine and blood albumin. However less in patients with hypertension, a lower GFR was determined [(82.1±3.1) ml/min/1.73 m2] compared to the group of healthy individuals (112.1±1.9; p=0.000), a decrease in relative density urine (1.016±0.001; p =0.049), a “high” increase in the level of albumin in urine was detected [(45.6±10.2) mg/g; p=0.004] and proteinuria [(158.2±15.4) mg/day; p=0.000]. Thus, the smoking factor [3, 8], obesity, dyslipidemia [9] and hypertension [3, 10] influence the formation of renal dysfunction, manifested by hyposthenuria, albuminuria and proteinuria. Albuminuria more than 30 mg/g was detected in 29 (50%) people, respectively, the risk of developing moderate albuminuria with

blood pressure above 140/90 mm Hg. 16 times higher than in the control group with blood pressure less than 140/90 mm Hg. (RR=16.0, CI 95% 2.28–112.03; p=0.001). Smoking in patients with hypertension increases the risk of kidney dysfunction with the development of moderate albuminuria by 24 times compared with healthy individuals (RR=24.5, CI 95% 2.52–169.97; p=0.000). Depending on the duration of hypertension, the main group was divided into 3 groups; the functional state of the kidneys was assessed prospectively (over 6 months). The 1st group included 20 people with a duration of hypertension up to 5 years, the 2nd group included 20 people with a duration of hypertension from 5 to 10 years, and the 3rd group included 15 patients suffering from hypertension for more than 10 years. Data of clinical and laboratory parameters are presented in table. 2. As can be seen from those presented in table. 2 data, the groups did not differ from each other (p>0.05) in gender, degree of hypertension, SBP and DBP levels, blood creatinine level. Overweight (BMI>25 kg/m2) was detected in all groups. There were no differences (p>0.05) between the groups in the level of GFR and relative density of urine, however, in the 3rd group of patients a lower GFR and hyposthenuria were determined. With the duration of hypertension, albuminuria (p = 0.002) increases to the "high" level and proteinuria (p = 0.000). Thus, markers of kidney dysfunction are most pronounced in patients suffering from hypertension for more than 10 years. All patients received 2-component antihypertensive therapy (the main drug is an angiotensin-converting enzyme inhibitor or an angiotensin II receptor blocker) in accordance with accepted recommendations [2, 10]. Assessment of SBP and DBP, GFR and urine albumin levels are presented over time after 3 and 6 months (Table 3). In all groups of patients, the effectiveness of antihypertensive therapy was revealed in achieving target levels of SBP (p = 0.000) and DBP (p = 0.000) after 6 months, with the greatest rate of decrease in SBP determined in the 1st group of patients [Δ = (-4.8) mmHg/month] and DBP in group 3 [Δ=(-2.5) mm Hg/month]. According to the rate of decrease in SBP/DBP less than 140/90 mm Hg. There were no differences between groups (p>0.05). By the 6th month of observation, there was a trend towards an increase in GFR without any significant changes in all observed patients with hypertension. Against the background of stable antihypertensive therapy in patients with a duration of hypertension of less than 5 years, the level of urine albumin after 6 months did not change and remained at the "highly normal" level (p = 0.609). Regression of albuminuria without significant changes to the initial level (p>0.05) was detected in the 2nd group of patients (from "high" to "highly normal"

Table 1 Clinical and laboratory characteristics of the examined patients with arterial hypertension

Index	Main group *n*=58 (M±m)	Control group, *n*=32 (M±m)	*R*
Age, years	49.5±3.7	39.1±4.1	0.108
Men	46	22	$\chi 2$=1.8
Women	12	10	0.178
Duration of hypertension, years	7.4±0.8	–	–
Smoking, number of smokers, %	34(58)	–	–
BMI, kg/m2	30.6±1.1	22.3±0.6	0.000
SBP, mmHg	153.8±5.5	120.2±6.1	0.000
DBP, mm Hg.	95.3±1.4	76.1±0.7	0.000
Cholesterol, mmol/l	5.9±0.2	4.8±0.3	0.002
Triglycerides, mmol/l	3.6±0.6	1.5±0.4	0.017
Blood creatinine, μmol/l	93.1±3.4	91.5±1.8	0.739
GFR, ml/min/m2	82.1±3.1	112.1±1.9	0.000
Blood albumin, g	52.6±0.6	51.4±0.5	0.181
Urine albumin, mg/g	45.6±10.2	5.0±0.1	0.004
Protein, mg/day	158.2±15.4	0.00	–
Relative density of urine	1.016±0.001	1.020±0.002	0.049

Note: p– reliability when comparing groups using analysis of variance.

Clinical and laboratory characteristics of patients depending on the duration of arterial hypertension

Table 2

Index	1st group, *n*=20 (M±m)	2nd group, *n*=20 (M±m)	3rd group, *n*=18 (M±m)	*R*
Age, years	46.2±1.7	49.9±1.2	53.1±1.6*	0.009
Men	16	15	15	χ2=0.047
Women	4	5	3	0.977
Duration of hypertension, years	3.3±0.4	7.3±0.5*	12.7±1.3*^	0.000
BMI, kg/m2	31.3±1.4	29.7±2.3	30.6±1.9	0.833
SBP, mmHg	156.0±3.4	159.5±4.2	153.8±8.5	0.778
DBP, mm Hg.	95.5±1.6	94.0±2.3	96.9±3.4	0.715
AG degree: I II III	 12 6 2	 8 8 4	 4 10 4	 χ2=1.586 0.452
Blood creatinine, μmol/l	90.3±4.4	91.8±8.1	98.4±3.7	0.596
GFR, ml/min/m2	86.1±4.7	82.2±6.9	71.6±3.8	0.082
Urine albumin, mg/g	12.2±2.0	42.1±15.9	92.3±21.9*	0.002
Protein, mg/day	34.1±1.1	118.2±2.3*	192.0±3.7*^	0.000
Relative density of urine	1.018±0.002	1.016±0.001	1.014±0.001	0.057

Note: p– reliability for multiple comparisons of groups using analysis of variance; *significant (p<0.05) difference with group 1 (Student's t test with Bonferroni correction); ^significant (p<0.05) difference with group 2 (Student's t test with Bonferroni correction).

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level [Δ=(-2.25) mg/g/month; p=0.415] and group 3 remained at the "high" level [Δ=(-5.7) mg/g/month; p=0.175]. At the same time, the rate of decline

Table 3 Dynamics of clinical and laboratory parameters during regular antihypertensive therapy

Index	1st group, n=20 (M±m)	2nd group, n=20 (M±m)	3rd group, n=18 (M±m)	R
SBP, mmHg, baseline	156.0±3.4	159.5±4.2	153.8±8.5	
SBP, mmHg, 3rd month	129.5±2.3	133.5±1.5	132.5±2.8	
SBP, mmHg, 6th month	126.8±2.1	131.5±1.8	130.2±3.8	0.420
Δ SBP, mm Hg/month **R**to the original	-4.8 0.000	-4.6 0.000	-3.9 0.016	
DBP, mmHg, baseline	95.5±1.6	94.0±2.3	96.9±3.4	
DBP, mm Hg, 3rd month	81.2±2.7	84.5±1.6	88.9±1.7	
DBP, mm Hg, 6th month	81.8±2.9	83.8±1.9	81.9±2.3	0.601
Δ DBP, mmHg/day **R**to the original	-2.3 0.000	-1.7 0.002	-2.5 0.000	
Urine albumin, mg/g, initially	12.2±2.0	42.1±15.9	92.3±21.9	
Urine albumin, mg/g, 3rd month	15.1±4.8	36.8±4.7	76.3±14.1	

Urine albumin, mg/g, 6th month	13.1±3.1	28.6±3.9	58.9±10.1*^	0.000
Δ urine albumin, mg/g/month **R**to the original	0.15 0.609	-2.25* 0.415	-5.7*^ 0.175	
GFR, ml/min/m2, baseline	86.1±4.7	82.2±6.9	71.6±3.8	
GFR, ml/min/m2, 3rd month	88.9±3.9	83.1±7.9	71.9±5.7	
GFR, ml/min/m2, 6th month	91.4±3.7	83.4±8.0	78.6±6.1	0.348
Δ GFR, ml/min/m2/month **R**to the original	0.88 0.381	0.2 0.910	1.17 0.337	

*Note: *significant (p<0.05) difference with group 1 (Student's t test with Bonferroni correction); ^significant (p<0.05) difference with group 2 (Student's t test with Bonferroni correction).*

albuminuria was highest in patients with hypertension for more than 10 years compared with the group of patients with hypertension for less than 5 years (p<0.05). Persistent albuminuria of more than 30 mg/g for 6 months in 12 (67%) patients with hypertension duration of more than 10 years allowed us to establish stage II chronic kidney disease due to the development of hypertensive nephropathy. Analysis of the risks of kidney dysfunction with the development of albuminuria was determined to be highest in patients with a duration of hypertension of more than 10 years and 13 times higher than that with a duration of hypertension of less than 5 years (RR = 13.3, CI 95% 1.92–92.61; p <0.001).

Conclusions

Thus, the results of our study confirm that smoking, obesity, dyslipidemia and hypertension influence the formation of kidney dysfunction, manifested by albuminuria/proteinuria. When hypertension lasted more than 10 years, the development of hypertensive nephropathy and chronic kidney disease was detected in 67% of cases. The risk of developing hypertensive nephropathy with a duration of hypertension of more than 10 years is 13 times higher than the risk of developing kidney dysfunction with a duration of hypertension of less than 5 years (RR=13.3, CI 95% 1.92–92.61; p<0.001). Nephroprotective antihypertensive therapy promotes reverse regression of albuminuria.

Literature

1. Экспериментальные модели поражения тубулоинтерстициальной ткани почек при артериальной гипертензии / Г.П. Арутюнов, А.В. Соколова, Л.Г. Оганезова // Клиническая нефрология. – 2011. – № 2. – С.75–78.
2. 2013 ESH/ESC: guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC) // Eur. Heart J. – 2013. – Vol. 34. – P.2159–219.
3. K/DOQI: Клинические практические рекомендации по хроническому заболеванию почек: оценка, классификация и стратификация. —URL: http://kdigo.org/ wp-content/uploads/2017/02/Russian_KDIGO-CKDGuideline.pdf
4. Национальные рекомендации. Хроническая болезнь почек: основные принципы скрининга, диагностики профилактики и подходы к лечению / А.В. Смирнов,Е.М. Шилов, В.А. Добронравов [и др.]. – СПб.: Левша, 2013. – 54 с.
5. Оценка влияния артериальной гипертонии, гиперлипидемии на формирование нефропатии при ишемической болезни сердца / О.Н. Сигитова, А.Р. Богданова,Е.В. Архипов, Э.И. Саубанова // Практическая медицина. – 2012. – Т. 2, № 8 (64). – С.157–160.
6. Хроническая болезнь почек: методическое руководство для врачей / Е.М. Шилов, М.Ю. Швецов, И.Ю. Бобкова [и др.]. – М., 2012. – 83 с. – URL: http://ru.b-ok.org/ireader/2522501

7. Hypertension prevalence, awareness, treatment, and control in 115 rural and urban communities involving 47 000 people from China / W. Li, H. Gu, K. Teo [et al.] // J. Hypertens. – 2016. – Vol. 34. – P.39–46.
8. Orziqulova Shaxlo Chronic obstructive pulmonary disease and the metabolic syndrome: the state of the problem // ISSN: 2249-7137 Vol. 11, Issue 6, June, 2021 Impact Factor: SJIF 2021 = 7.492 ACADEMICIA:. ppt-305-311
9. Orziqulova Sh. A. Thickness of epicardial adipose tissue as a predictor of Cardiovascular risk; Academicia a n i n t e r n a t i o n a l m u l t i d i s c i p l i n a r y r e s e a r c h j o u r n a l / ISSN: 2249-7137 Vol. 11, Issue 9, September 2021 Impact Factor: SJIF 2021 = 7.492 ppt 73-78
10. Orziqulova Sh.A. Arterial hypertension and metabolic syndrome: specifics of antihypertensive therapy / Analyticaljournal of education and development Volume: 01 Issue: 06 | 2021 ISSN: XXXX-XXXX // ppt 72-76
11. Sh. A. Orzikulova Obesity and the Cardiovascular System// Research journal of trauma and disability studies// Volume: 01 Issue: 05 | 2021 ISSN: XXXX-XXXX www.academiczone.net ppt 9-16
12. Yakhyoyeva H.Sh*; Rizaeva M.A** Analysis and assessment of anthropometric body mass Index for women of fertilized age in bukhara region / academician A n i n t e r n a t i o n a l M u l t i d i s c i p l i n a r y R e s e a r c h j o u r n a l// ISSN: 2249-7137 Vol. 11, Issue 9, September 2021 Impact Factor: SJIF 2021 = 7.492// ppt 44-46
13. Yaxyayeva Hilola Sharifovna. Thyroid Cancer Diagnostics, Classification, Staging/ VOL. 1 NO. 5 (2021): JOURNAL OF INNOVATIONS IN SOCIAL SCIENCES/PPT 63-69
14. Хилола Шарифовна Яхъяева/COVID-19 И ЩИТОВИДНАЯ ЖЕЛЕЗА (ОБЗОР ЛИТЕРАТУРЫ)/ Research journal of trauma and disability studies// Volume: 01 Issue: 05 | 2021 ISSN: XXXX-XXXX // ppt 2-8.
15. Rizayeva Mekhriban Ahmadovna. Disorders of Carbohydrate Metabolism Overweight and Obesity (Innovations in Social Sciences Volume: 01 Issue: 01 | 2021ISSN: 2181-2594 ppt 90-98
16. Tursunova D .E. FEATURES OF THE SORPTION METHOD APPLICATION IN THE CORRECTION OF DYSLIPIDEMIA AND HYPERGLYCEMIA IN DIABETES MELLITUS/ Journal of Innovations in Social Sciences Volume: 01 Issue: 04 | 2021 ISSN: XXXX-XXXX // ppt 66-70
17. Rizayeva Mekhriban Ahmadovna. Metabolic Syndrome in Older Women / Volume: 01 Issue: 05 | 2021 ISSN: XXXX-XXXX www.academiczone.net ppt 24-28
18. Ш.М.Ахмедова, Д.Б.Рахматова. ПОДАГРИКНЕФРОПАТИЯГА ЗАМОНАВИЙ ҚАРАШЛАР // Доктор ахборотномаси №3.1 (96)—2020/стр 118-121
19. Akhmedova Shakhlo Malikovna// Age-Related Features of Changes in the Thymusgland in Children// Special Issue on COVID-19: Yesterday, Today, and Tomorrow//ISSN: 2660-4159 http://cajmns.centralasianstudies.org ppt 272-275
20. Sh. M. Axmedova*; D.B. Raxmatova. ANALYSIS OF THE DISTRIBUTION OF PODAGRIC NEPHROPATHY (COMMENT)// ANALYSIS OF THE DISTRIBUTION OF PODAGRIC NEPHROPATHY (COMMENT)// ACADEMICIA An International Multidisciplinary Research Journal// ISSN: 2249-7137 Vol. 11, Issue 1, January 2021 Impact Factor: SJIF 2021 = 7.492 // ppt 1668-1672 1515TRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
21. Jurakulova Zebiniso Akhmatovna Current Issues of Infertility Diagnosis and Treatment in Women with Internal Genital Endometriosis// SYNERGY: JOURNAL OF ETHICS AND GOVERNANCE Volume: 01 Issue: 05 | 2021 ISSN: 2181-2616// ppt 67-74

22. Rizayeva M.A, Yahyoyeva H.Sh a common symptom of anemia in diabetic nephropathy …. Academicia: An International Multidisciplinary Research Journal 2021.— P. 1683-1686
23. Sh, Djuraeva A., and B. K. Badridinova. "METHODS FOR PREVENTING THE DEVELOPMENT OF TERMINAL RENAL FAILURE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS." British Medical Journal 2.1 (2022).
24. АСЛОНОВА Ш. Ж., БАДРИДИНОВА Б. К. ВЛИЯНИЕ МОКСОНИДИНА НА ОСНОВНЫЕ КОМПОНЕНТЫ МЕТАБОЛИЧЕСКОГО СИНДРОМА //Редколлегия журнала «Биология и интегративная медицина». – С. 86.
25. Kamalidinovna, B. B. (2022). Features of Phosphoric-Calcium Exchange in Patients Treated with Program Hemodialysis. Research Journal of Trauma and Disability Studies, 1(2), 39–45. Retrieved from http://journals.academiczone.net/index.php/rjtds/article/view/60
26. Dzhuraeva A. S., Badridinova B. K. ASSESSMENT OF THE INFLUENCE OF DYSLIPIDIMIA ON THE QUALITY OF LIFE OF PATIENTS RECEIVING PROGRAM HEMODIALYSIS //Art of Medicine. International Medical Scientific Journal. – 2022. – Т. 2. – №. 1.
27. Орзикулова Шахло Акмаловна. Ожирение И Гипертония Среди Мужчин 18-49 Летнего Возраста…..International Conference on Social and Humanitarian Research …2021—P. 160
28. Nurilloeva Sh.N., Juraeva Kh.I. Adequacy pharmacotherapy of metabolic syndrome. // World journal of pharmaceutical research. August-Sept. - 2020. Volume 9. Issue 12. – P. 48 - 53.
29. Shodieva Nilufar Utkirzhonovna. Main risk factors for overweight and obesity in young people// Eurasian medical research Periodical/ Volume 7 ISSN: 2795-7624 ppt 141-144
30. Shodieva Nilufar Utkirzhonovna. Prevalence of the Main Risk Factors for Overweight and Obesity in Young People// Research journal of trauma and disability studies Volume 01 ISSN: 2720-6866 ppt 14-25
31. Shodieva Nilufar Utkirzhonovna. Basic risk factors for obesity in young adults annotation// ACADEMICIA: An International Multidisciplinary Research Journal / Volume 12 ISSN: 2249-7137// ppt 681-688
32. Nurilloeva Sh.N., Juraeva Kh.I. Adequacy pharmacotherapy of metabolic syndrome. // World journal of pharmaceutical research. August-Sept. - 2020. Volume 9. Issue 12. – P. 48 - 53.
33. Худоёрова Дилноза Ризоевна //ОЖИРЕНИЕ В КОНТЕКСТЕ ЭВОЛЮЦИОННОГО РАЗВИТИЯ СОВРЕМЕННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ЛЕЧЕНИЯ.// Analytical Journal of Education and Development // Volume: 02 Issue: 10 | Oct-2022 PP 403-407 .sciencebox.uz
34. М.Ш. Тоиров, Ш.А. Орзикулова. Таълим ва ривожланиш таҳлил. Анализ роли артериальной гипертонии и нарушений липидного обмена в развитии и прогрессировании хронической болезни почек у больных гипертонической Болезнью. Volume: 02 Issue: 10 |Oct- 2022 ISSN: 2181-2624 219-224 бетлар.
35. Ш.А. Орзикулова. Таълим ва ривожланиш таҳлил. Факторы риска развития инфаркта миокарда у мужчин в различных возрастах. Vol. 2 No. 12 (2022), 206-212 бетлар
36. Tusunova Dilobar Erkinovna. MODERN UNDERSTANDING OF THE OCCURRENCE OF COGNITIVE IMPAIRMENTS IN ARTERIAL HYPERTENSION AND THEIR CORRECRION. Asian Journal of Pharmaceutical and Biological Research 2231-2218, Volume 10(Issue 3), 3–10.