ACUTE HEART FAILURE

Tokhirov Shokhjakhon Zohidjon ugli, Eshmurodov Sherzod Shavkatovich

Samarkand State Medical University, Samarkand, Uzbekistan

Abstract: Acute heart failure is a clinical syndrome characterized by the rapid onset of symptoms and complaints characteristic of cardiac dysfunction with decreased cardiac output, pulmonary and/or systemic congestion. AHF often develops without association with the presence of cardiac pathology in the past.

Keywords: Cardiac dysfunction, violations, arrhythmias, congenital, heart failure.

Cardiac dysfunction can be in the form of systolic or diastolic dysfunction, cardiac arrhythmias, preload and afterload disorders. These violations are often life-threatening and require urgent action. AHF can develop as an acute disease de novo (i.e., in a patient without pre-existing cardiac dysfunction) or as an acute decompensation of chronic CHF. With the rapid development of AHF, compared with the gradual development of symptoms in decompensated CHF, there are often no signs of fluid retention in the body.

Thus, AHF should not be viewed as a disease, but rather as a syndrome caused by different mechanisms. The increase in the proportion of elderly people in the population, the increase in survival after acute myocardial infarction has led to a significant increase in the number of patients with CHF and a significant number of hospitalizations due to decompensated heart failure. IHD is the etiological cause of AHF in 60–70% of cases, especially in elderly patients. In younger people, AHF develops as a result of DCM, arrhythmias, congenital and acquired heart defects, and myocarditis. Each year in the United States, at discharge from hospital, the diagnosis of AHF is the main diagnosis in approximately 1 million cases, and concomitant - in another 2 million.

The frequency of early readmissions for heart failure is quite high and is about 20% within 30 days after discharge and 50% during 6 months.The average length of stay in the hospital is 10 days. It should also be noted that over the past two decades, the 30-day mortality rate in AHF has remained unchanged at >10%. Given this, hospitalization for AHF should be considered a serious medical emergency, as in-hospital mortality is 8% and 25–30% within 6 months.

Mortality is especially high in acute myocardial infarction, as a result of which HF develops. Thus, the 12-month mortality rate is 30%. With the development of pulmonary edema, in-hospital mortality is 12%, annual mortality is 40%. These data are supported by large registries such as Acute Decompensated Heart Failure National Registry (National Registry of Acute Decompensated Heart Failure, ADHERE) (2005), Euro Heart Survey Program (European Cardiology Survey Program) (2006) and others. account for 1-2% of total health care costs, approximately 75% of costs are associated with hospital treatment. Severe HF and acute decompensation are the costliest emergencies in cardiology. Acute heart failure is a life-threatening condition in which the heart is unable to function properly. The heart is still beating, but it is unable to supply enough oxygen to the body. This condition necessitates immediate medical attention.

Heart failure is a life-threatening condition. When it occurs, your heart is still working, but it cannot deliver oxygen-rich blood throughout your body. With acute heart failure, you experience a sudden, rapid decline in heart functioning and the amount of blood your heart can pump to the rest of your body. The changes are small at first. They start long before you experience acute heart

failure symptoms. Over time, the changes get worse, making your heart work harder than it should. When your heart is no longer able to keep up, acute heart failure occurs.

Heart failure happens when your heart can't pump as much blood as your body needs. Acute (sudden) heart failure is a medical emergency that can happen without warning. Heart failure means your heart can't pump enough blood to meet your body's demands. This can be chronic, meaning it happens slowly over time. Or it can be acute, meaning it happens suddenly.

Heart failure is not the same thing as a heart attack. But, like a heart attack, acute heart failure can be a life-threatening event. Someone with acute heart failure will typically need emergency hospital care. If your symptoms are sudden or severe, call 911 or your local emergency services for help. If not treated, heart failure can lead to serious complications. These complications can include cardiac arrest, which is when your heart stops beating. Some people with heart failure may have several health conditions. If that's the case, it can be hard to know what's causing your symptoms.

But when it comes to symptoms of heart failure, it's best to get them checked by a doctor right away. According to a 2017 study, fast treatment of acute heart failure can lead to better outcomes. The chambers where your blood is pumped out of the heart are called ventricles. These may stiffen so that they no longer fill properly. Or, if your heart muscle becomes weak, the ventricles can fail to pump hard enough. Heart failure can begin on either the left or right side of your heart. Sometimes, both sides may fail at the same time. The different types of heart failure correspond to where the heart is failing.

This occurs when your left ventricle isn't pumping efficiently. There are two types of left-sided heart failure: Systolic heart failure happens when your left ventricle cannot squeeze (contract) strongly enough. This means it can no longer pump out blood to your body very well. It's also called heart failure with reduced ejection fraction.

Diastolic heart failure happens when your left ventricle becomes stiff. If your ventricle is stiff, it cannot fill up with blood between heartbeats like it should. As a result, your body doesn't get as much blood as it needs. This is also called heart failure with preserved ejection fraction. This usually happens in people who also have left-sided heart failure. When your left ventricle has problems, the change in blood flow can eventually cause damage to the right side of your heart. The right side of your heart moves blood from your veins to your lungs. If the right side of your heart is unable to pump effectively, too much blood can stay in your veins. This may cause swelling in places such as your legs or abdomen. Many conditions can weaken or damage the heart over time. This can lead to heart failure.With chronic heart failure, your heart tries to adapt to the additional strain over time until it just can't adapt anymore. That's when acute heart failure happens.It's also possible for acute heart failure to happen even in people who otherwise seem healthy. There are a number of conditions that can put a sudden strain on your heart. In the United States, Black and Hispanic people receive heart failure diagnoses more often than people from other racial or ethnic groups. And Black people in the United States are also at the highest risk of dying from heart failure.

In addition, your doctor might request tests such as:

- blood tests. these could include a bnp test, which measures a hormone related to heart failure.

- electrocardiogram (ecg or ekg). during this test, your doctor will attach electrodes to your skin and record your heart's electrical activity.
- stress test. this test measures your heart activity during physical exercise. it's not typically recommended if you already have signs and symptoms of heart failure.

Imaging tests that a doctor can use to help diagnose heart failure include:

- chest x-ray. this test allows your doctor to better examine your heart and lungs.
- echocardiogram. this test uses sound waves to form a live, moving image of your heart so your doctor can see which areas of your heart are affected.
- angiogram. if your doctor thinks you may have a blocked artery, they will insert a thin tube into your groin or arm and into your coronary arteries. after injecting dye through a catheter, your doctor can see an image of your arteries.

When needed, other imaging tests can be used to look for underlying causes of heart failure:

- mri scan. this test produces detailed images of your heart using magnets and radio waves.
- ct scan. this test allows your doctor to see detailed images of your heart. it involves lying inside a machine while the images are taken using x-rays.

There is no cure for heart failure, but treatment can help improve your quality of life. Acute heart failure can have lasting effects on your body. Because of this, treatment is centered on managing symptoms and preventing future heart failure. If you experience acute heart failure, you'll likely stay in the hospital until you're in stable condition. During this time, you may need oxygen therapy. You might also need supplemental oxygen after you leave the hospital.The cause of your acute heart failure will determine your treatment plan. In some cases, acute heart failure can be caused by undiagnosed chronic heart failure. Treatment for acute heart failure and chronic heart failure is often the same. Treatment options for acute heart failure include medications, medical devices, and surgery. Your outlook depends on your overall health, as well as the cause and degree of your heart failure. Hospital treatment is generally the first step to recovery. Many people are able to manage their symptoms over time with heart medications or implanted medical devices. After an acute heart failure diagnosis, it's important to follow your treatment plan carefully. Be on the lookout for symptoms of heart failure and call your doctor if your condition changes. If you think you could be having an episode of acute heart failure, get emergency help. Although there's no cure for heart failure, treatment can relieve your symptoms and reduce your risk for future incidents. Heart failure is characterized by the heart's inability to pump an adequate supply of blood to the body. Without sufficient blood flow, all major body functions are disrupted. Heart failure is a condition or a collection of symptoms that weaken or stiffen your heart. In some people with heart failure, the heart has difficulty pumping enough blood to support other organs in the body. Other people may have a hardening and stiffening of the heart muscle itself, which blocks or reduces blood flow to the heart. Heart failure can affect the right or left side of your heart or both at the same time. It can be either an acute (short-term) or chronic (ongoing) condition. The right heart ventricle is responsible for pumping blood to your lungs to collect oxygen. Right-sided heart failure occurs when the right side of your heart can't perform its job effectively. It's usually triggered by left-sided heart failure. The accumulation of blood in the lungs caused by left-sided heart failure makes the right ventricle work harder. This can stress the right side of the heart and cause it to fail. Right-sided heart failure can also occur because of other conditions, such as lung disease or valve disease. Right-sided heart failure is marked by swelling of the lower extremities or abdomen. This swelling is caused by fluid backup in the legs, feet, and abdomen.Diastolic heart

failure occurs when the heart muscle becomes stiffer than normal. The stiffness, which is usually due to heart disease, means that your heart doesn't fill with blood easily. This is known as diastolic dysfunction. It leads to a lack of blood flow to the rest of the organs in your body. Diastolic heart failure is more common in people who are female than in those who are male.Systolic heart failure.Systolic heart failure occurs when the heart muscle loses its ability to contract. The contractions of the heart are necessary to pump oxygen-rich blood out to the body. This problem is known as systolic dysfunction, and it usually develops when your heart is weak and may be enlarged.

Systolic heart failure is more common in males than in females.Both diastolic and systolic heart failure can occur on the left or right sides of the heart. You may have either condition on both sides of the heart. An echocardiogram is the most effective way to diagnose heart failure. It uses sound waves to create detailed pictures of your heart, which help your doctor evaluate the damage to your heart, the squeezing and relaxing function and determine the underlying causes of your condition. Implantable cardioverter defibrillator (ICD).An ICD is a battery-powered device that keeps track of your heart rate and will shock your heart if it detects an abnormal heart rhythm. This shock restores the heart rate back to a normal rhythm. An ICD is suggested for people with an ejection fraction (how much blood your heart pumps out with each contraction) less than 35 percent (if not due to blockages) and <30 percent if due to blockages. Untreated heart failure can eventually lead to congestive heart failure (CHF), a condition in which blood builds up in other areas of your body. In this potential life threatening condition, you may experience fluid retention in your limbs as well as in your organs, such as the liver and lungs.

Additional complications of heart failure can include:

- stroke
- thromboembolism
- arrhythmias, like atrial fibrillation
- kidney dysfunction

Heart failure is usually a long-term condition that requires ongoing treatment to prevent complications. When heart failure is left untreated, the heart can weaken so severely that it causes a life threatening complication.It's important to recognize that heart failure can happen to anyone. It's important to take lifelong preventive measures for your heart health. Always contact your doctor if you suddenly have any new or unexplained symptoms that may indicate a problem with your heart. Because heart failure is most often a chronic condition, your symptoms will likely get worse over time. Medications and surgeries can help relieve your symptoms, but such treatments may not help if you have a severe case of heart failure. In some cases, heart failure can be life threatening.The outlook and treatment of heart failure varies depending on the type of heart failure you have. Early treatment is key in preventing the most serious cases of heart failure.

Literature:

1. Yusupaliev U.A, & Mukhamedov B.I., Ibragimova N.S., Pyagai G.B., Solmetova M.N. (2023). dermatology: not everything is as simple as it seems. difficulties in diagnosis. *conference zone*, 337–344. retrieved from http://conferencezone.org/index.php/cz/article/view/978
2. 2.Pyagay, Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). criteria for selecting therapy for patients with actinic keratosis. conference zone, 156–161. Retrieved from http://conferencezone.org/index.php/cz/article/view/949

3. Pyagay Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). the effectiveness of conservative methods of treatment of actinic keratosis. conference zone, 150–155. retrieved from http://conferencezone.org/index.php/cz/article/view/948
4. G.B. Pyagay, K.A. Yuldashev Comparative analysis of the therapeutic efficacy of various methods of treatment of syphilis patients suffering from drug addiction News of dermatovenereology and reproductive health. 2005, No. 3-4, pp. 118-122.
5. Boris Lyuban, Bahrambek Mukhamedov, Nargiza Ibragimova, Grigory Pyagai, Miyassar Allaeva, Nilufar Malikova, Malika Solmetova cases of medical errors in the primary period of syphilishttp://medin.uz/index.php/jmi/article/view/71 http://medin.uz/index.php/jmi/article/view/71/62
6. Lapasov, O. A., & Latipov, I. I. (2022). basal cell skin cancer. historical aspects, current achievements and problems at the present stage.central asian journal of medical and natural science, 3(5), 381-391. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1109
7. Lapasov, O. A., Zaslavsky, D. V., Sidikov, A. A., Pyagay, G. B., Kozlova, D. V., & Gunchenko, I. V. (2022). Basal cell skin cancer. Historical aspects, current achievements and problems at the present stage. Dermatovenereology. Cosmetology, 8(1), 27-42.. https://www.elibrary.ru/item.asp?id=48197950
8. A.A Sidikov, A.T Makhmudov, G.B Pyagay, J.R Rikhsiboev Importance of questionnaires in the diagnosis of diseases of the urogenital tract-development of new technologies in the diagnosis and 2021https://www.elibrary.ru/item.asp?id=45597101
9. T Lotti, AA Sydikov, Z Zarrab, GB Pyagay… Aesthetic concerns in oncological dermatology: a case of successful treatment with imiquimod and interferon-α for primary anaplastic large-cell cd30+ t-lymphoma of the skin - Journal of Applied Cosmetology, 2019 https://www.elibrary.ru/item.asp?id=44794514
10. M.N Solmetova, M.D Allaeva, B.I Mukhamedov Clinical case of pseudoxanthoma elastica - Dermatovenereology. Cosmetology,2021 https://www.elibrary.ru/item.asp?id=45428711
11. D.V Zaslavsky, A.A Sidikov, L.V Garyutkina A new principle for diagnosing limited scleroderma at the onset of the disease - Russian journal of skin and venereal diseases, 2021 https://scholar.archive.org/work/fkgqphdcizfyjfngqv7x4bqaca/access/wayback/https://rjsvd.com/1560-9588/article/download/72328/pdf_1
12. Пягай, Г., Ибрагимова, Н., Мухамедов, Б., Маликова, Н., & Аллаева М. (2021). клинический случай поздней диагностики пигментной крапивницы. медицина и инновации, 1(1), 148–150. извлечено от https://inlibrary.uz/index.php/medicine_and_innovations/article/view/55
13. Zaslavsky D.V., Sidikov A.A., Garyutkina L.V., Pyagai G.B., Alaeva M.D., Ibragimova N.S., Malikova N.N., Kozlova D.V. A new principle for the diagnosis morphea in the onset of the disease // Russian Journal of Skin and Venereal Diseases. - 2021. - Vol. 24. - N. 3. - P. 263-274 https://doi.org/10.17816/dv72328 https://rjsvd.com/1560-9588/article/view/72328
14. А.А Садыков, Н.С Ибрагимова, А.А Юлдашев Зуд при коморбидных состояниях - VA ESTETIK TIBBIYOT, 2015 https://dermatology.uz/pdf/medic_juranal/Dermatologiya_N1_2015.pdf#page=29
15. A Sidikov, D Zaslavsky, A Sadykov, N Ibragimova,M Megna, O Olisova, D Kozlova, R Nasyrov, E. Shalaeva,T Garcia The new differential diagnostic test for the lichenoid drug eruption Dermatologic therapy, 2020 https://doi.org/10.1111/dth.13784

16. Ваисов А. Ш., Ташкенбаева У. А., Ибрагимова Н. С. Современные аспекты этиологии, патогенеза, течения и ранней диагностики васкулитов: обзор //Новости дерматовенерол. и репрод. здоровья. – 2007. – №. 2. – С. 88.
17. И.У Салимова, Ш.Т Аюпова, Н.С Ибрагимова аспекты псориаза в дерматологии - Spirit Time, 2020 https://www.elibrary.ru/item.asp?id=42780705
18. А.А Садиков, Н.С Ибрагимова, С.И Мавлянов - частота встречаемости кожной патологии у спортсменов при проведении углубленного медицинского осмотра (умо) и степень приверженности лечению. Безопасный спорт-2019. https://www.elibrary.ru/item.asp?id=41357327
19. N Ibragimova, R Tregulova, N Normatova, S Djalalov-comparative analysis of the prevalence of type 2 diabetes according to the screening and register data in Uzbekistan - Endocrine Abstracts ISSN 1470-3947 (print) | ISSN 1479-6848 (online) https://www.endocrine-abstracts.org/ea/0056/abstracts/poster-presentations-diabetes-obesity-and-metabolism/diabetes-to-include-epidemiology-pathophysiology/ea0056p342/ https://doi.org/10.1530/endoabs.56.P342
20. Normatova N., Ibragimova N. Frequency of occurrence and factors of diabetic retinopathy advancement in people with DM type 2 in Uzbekistan //Endocrine Abstracts. – Bioscientifica, 2016. – Т. 41. https://www.endocrine-abstracts.org/ea/0041/ea0041ep520 https://doi.org/10.1530/endoabs.41.EP520
21. Ахмедова Ш.У., Абдуллаева О.И., Даминова М.Н., Алиева Г.Р., Ибрагимова Х.Н. функциональное состояние эритроцитов у детей и подростков с сахарным диабетом 1 типа на фоне микробиоценоза кишечника // нау. 2015. №4-4 (9). url: https://cyberleninka.ru/article/n/funktsionalnoe-sostoyanie-eritrotsitov-u-detey-i-podrostkov-s-saharnym-diabetom-1-tipa-na-fone-mikrobiotsenoza-kishechnika
22. N.N Malikova, K.Y Karimov, K.T Boboev, S.S Arifov - The CYP17A1 rs743572 gene polymorphism and risk of development and clinical features of Acne Vulgaris in the Uzbek population.International Journal of Biomedicine, 2019. https://www.elibrary.ru/item.asp?id=38469333
23. Arifov S.S., Erkinlar Z.E., & Malikova N.N. (2021). modern methods of acne and post-acne therapy. the American journal of medical sciences and pharmaceutical research, 3(09), 147–153. https://doi.org/10.37547/TAJMSPR/Volume03Issue09-24
24. Burxanova Gulnoza Lutfulloevna. (2022). optimization of rehabilitation for lesions of the locomotor apparatus of athletes participated in chess. *conference zone*, 404–409. retrieved from https://conferencezone.org/index.php/cz/article/view/876
25. Ibragimova Malika Shavkatovna. (2022). characteristics of rehabilitation of children with cerebral palsy and speech defects. *conference zone*, 410–414. retrieved from https://conferencezone.org/index.php/cz/article/view/877
26. Мухамедов, Б., Хаджиметов, А., & Садыков, А. (2022). взаимосвязь показателей липидного состава сыворотки крови и ацетиляторного статуса у больных вирусным гепатитом с проявлениями дерматологического характера. *research and education*, *1*(9), 231–240. retrieved from http://researchedu.org/index.php/re/article/view/976
27. Камалова, Ё., Наимова, Х., Мавлянова, З., & Набиев, З. (2014). физиотерапия при острых респираторных заболеваниях у детей и подростков. журнал проблемы биологии и медицины, (3 (79), 108. извлечено от https://inlibrary.uz/index.php/problems_biology/article/view/5063
28. Камалова Ё А, Джуманов Ж А Значение лечебной гимнастики в комплексе методов физической реабилитации больных остеохондрозом поясничного отдела

позвоночника // вестник науки и образования. 2020. №23-3 (101). url: https://cyberleninka.ru/article/n/znachenie-lechebnoy-gimnastiki-v-komplekse-metodov-fizicheskoy-reabilitatsii-bolnyh-osteohondrozom-poyasnichnogo-otdela

29. Akhmedova Shakhnoza Ozodjonovna. (2023). principles of environmental impact assessment. conference zone, 95–107. retrieved from http://conferencezone.org/index.php/cz/article/view/939
30. Akhmedova Shakhnoza Ozodjonovna. (2023). global implications of climate change. conference zone, 79–86. retrieved from http://conferencezone.org/index.php/cz/article/view/937
31. Akhmedova Shakhnoza Ozodjonovna. (2023). relationship of environmental impact assessment and environmental expertise. Conference Zone, 115–121. Retrieved from http://conferencezone.org/index.php/cz/article/view/941
32. Akhmedova Shakhnoza Ozodjonovna. (2023). climate change: everyone's struggle for survival. conference zone, 70–78. retrieved from http://conferencezone.org/index.php/cz/article/view/936
33. КАМАЛОВА Ё. А. ўйин спортлари ва жанг санъатлари вакилларининг таркибий кисмларининг хусусиятлари //журнал биомедицины и практики. –2022. –т. 7. – No. 4. https://tadqiqot.uz/index.php/biomedicine/article/download/5517/522236
34. Хусанова А., & Камалова, Ё. (2022). Дарсонвализация в комплексном лечении у больных с пародонтозом. Дни молодых учёных, 1(1), 323–324. извлечено от https://inlibrary.uz/index.php/young-scientists/article/view/15368
35. Burkhanova, G., Mavlyanova, Z., & Kim, O. (2017). The influence of sports nutrition on the physical development of children and adolescents with increased physical activity. Journal of Problems of Biology and Medicine, (4 (97), 24–26. retrieved from https://inlibrary.uz/index.php/problems_biology/article/view/3242
36. Egamova, M., Mavlyanova, Z., & Burkhanova, G. (2018). The use of physiotherapy exercises for children with cerebral palsy at home. Journal of Physician's Gazette, 1(2), 114–117. retrieved from https://inlibrary.uz/index.php/doctors_herald/article/view/2931
37. G.L Burkhanova, Sh.M Safin, K.H Derevyanko modern possibilities of rehabilitation for craniovertebral pathology- journal of biomedicine and practice, 2022 https://tadqiqot.uz/index.php/biomedicine/article/view/6012 https://tadqiqot.uz/index.php/biomedicine/article/view/6012/5683
38. Sharafova Inobat Akhmedzhanovna, Burkhanova Gulnoza Lutfilloevna basic approaches to the complex treatment of facital nerve neuropathy in children // Bulletin of Science and Education. 2020. №25-2 (103). URL: https://cyberleninka.ru/article/n/osnovnye-podhody-k-kompleksnomu-lecheniyu-neyropatii-litsevogo-nerva-u-detey
39. Burkhanova, G., & Kim, O. (2018). Evaluation of physical performance of young athletes with increased physical activity. Physician's Journal, 1(2), 25–28. retrieved from https://inlibrary.uz/index.php/doctors_herald/article/view/2825
40. Baratova Sitora Sakhidinovna, Mavlyanova Zilola Farhadovna, Burkhanova Gulnoza Lutfulaevna Study of the allowable values of body parameters of athletes using bioimpedancemetry // Problems of science and education.2019. №31 (81).
41. S.M Makmudov, O.A Kim assessment of nutritional status based on bioimpedancemetry in young people - journal biomeditsiny i practice, 2022.
42. Makhmudov Sardor Mamasharifovich the functional state of the cardiorespiratory system of athletes involved in swimming.- "Янги Ўзбекистонда миллий тараққиёт ва инновациялар" 2022.

43. Makhmudov Sardor Mamasharifovich Mavlyanova Zilola Farhadovna Khaidarova Sarvinoz Khaydarzhonovna Vysogortseva Olga Nikolaevna a new approach to the program of rehabilitation treatment of patients with ankylosing spondyloarthritis.2022-04-08.
44. Kim Olga Anatolevna, Abdusalomova Maftuna Akbarovna, Makhmudov Sardor Mamasharifovich, Zhalolitdinova Shaxnoza Akbarzhon kizi, & Ibragimova Leyla Ilxomovna. (2022). the influence of risk factors on the development of cerebral strokes in children. open access repository, 8(04), 179–182.
45. Камалова Ёкутхон Ахмаджановна, Джуманов Жонибек Абдураупович значение лечебной гимнастики в комплексе методов физической реабилитации больных остеохондрозом поясничного отдела позвоночника // вестник науки и образования. 2020. №23-3 (101).
46. Абдусаломова М А, Махмудов С М Достижения науки и образования. 2019. №11 (52).
47. РАВШАНОВА М. З. ранняя реабилитации спортсменов с травмой голеностопного сустава различными методами восстановления //журнал биомедицины и практики. – 2022. – т. 7. – №. 4.
48. Усманходжаева А.А., Исамухаметова Ю.М., Бурханова Г.Л. методы модернизированной корейской медицины в лечении неспецифического болевого синдрома в спине// проблемы биологии и медицины. - 2020. №6. том. 124. - с. 123-126. DOI: http://doi.org/10.38096/2181-5674.2020.6.00320
49. МАХМУДОВ, Сардор Мамашарифович, et al. "анкилозланувчи спондилоартрити бўлган беморлар реабилитация дастурига янгича ёндашув." журнал биомедицины и практики 7.1 (2022).
50. Мавлянова З. Ф., Махмудов С. М., Тохтиев Ж. Б. Морфофункциональный статус и динамика физической подготовленности лиц, занимаюшихся национальным видом спорта кураш //журнал биомедицины и практики. – 2022. – Т. 7. – №. 1.