

ISSN:
2181-3337



ScienceInnovation
INTERNATIONAL SCIENTIFIC JOURNAL

SCIENCE AND INNOVATION

International scientific journal

VOLUME 3 ISSUE 4

D : BIOLOGY
AGRICULTURE
MEDICINE
PHARMACETICS
VETERINARY

April 2024



International Scientific Journal
SCIENCE AND INNOVATION
Series D
Volume 3 Issue 4
April 2024

Tashkent 2024

ISSN: 2181-3337

International Scientific Journal SCIENCE AND INNOVATION. Series D volume 3 issue 4 – 457p.

The collection contains scientific articles accepted for issue 4 for 2024 of the international scientific journal "Science and Innovation".

In this scientific journal, in the form of scientific articles, the results of scientific research conducted by professors and teachers of the Republic of Uzbekistan and international higher educational institutions, independent researchers, doctoral students, undergraduates were published. In addition to higher educational institutions, the journal also includes scientific articles by employees working in other research institutes, production organizations and enterprises of our region and republic.

The materials of the journal can be used by professors, teachers, independent researchers, doctoral students, undergraduates, students, teachers of lyceums and schools, scientists and everyone who is interested in science.

This issue of the journal is indexed in the international scientific databases Index Copernicus, OpenAire, EuroPub, ZENODO, Cyberleninka and Google Scholar.

All articles were placed in the electronic scientific database of the journal (scientists.uz).

© Science and Innovation

© Authors



Editorial team			
Baxtiyor Rustamov	Chief Editor	Gulirano Raxmatullayeva	Deputy Chief Editor
Mahliyo Sotivoldiyeva	Reception Manager	Humoyun Qodirov	Technical Editor
Anvar Rustamov	Technical Editor	Feruza Olomurodova	Reception Manager
Farangiz Sagdullayeva	Technical Editor	Qandiya Poyonova	Ofis Manager
Maftuna Askarova	Translator-Editor	Ruxshona Yangiboyeva	Ofis Manager
Dilfuza Normatova	Translator	Shahzod Meyliyev	Technical Editor

Scientific editorial board	
Khashim Yakhyayev	Doctor of Agricultural Sciences, professor, Leading scientific researcher of the laboratory for pest control of landscape and forest trees at Scientific research institute for plant quarantine and protection.
Azimjon Anorbaev	Doctor of Agricultural Sciences, professor, Director a.i. of the Scientific Research Institute of Plant Quarantine and Protection.
Ajimurat Jumamuratov	Doctor of agricultural sciences, Professor of Nukus State Pedagogical Institute named after Ajiniyaz.
Murodjon Isagaliyev	Doctor of Biological sciences, Associate Professor, Dean of the Faculty of Animal Husbandry of Fergana State University.
Avazbek Turdaliyev	Doctor of Biological sciences, Associate Professor, Head of the Department of Zootechnics and Agronomy of Fergana State University.
Zafarjon Jabbarov	Doctor of Biological Sciences, Head of the Department of Soil Science of the National University of Uzbekistan named after Mirzo Ulugbek, Professor.
Gulnora Djalilova	Doctor of Biological Sciences, Associate Professor a.i. of the Department of Soil Science of National University of Uzbekistan named after Mirzo Ulugbek.
Mokhidil Yusupova	Philosophy Doctor on Biological sciences, Head a.i. of the Department of "Effective Use of Residential Estates" of Fergana State University.
Dilmurod Darmonov	Philosophy Doctor on Biological sciences, Dean of the Faculty of Viticulture, Fruit Growing and Vegetable Growing of Fergana State University.
Ulugbek Mirzayev	Candidate of Biological Sciences, Associate Professor, Head of the Department of Soil Science of Fergana State University.
Bakhtiyor Ruziyev	Candidate of Biological Sciences, Associate Professor of the Department of Zoology of Karshi State University.
Akmal Yuldashev	Philosophy Doctor on Biological Sciences, Dean of the Faculty of Teaching Methodology of Exact and Natural Sciences of Pedagogical Institute of Andijan State University.
Khusanjon Idrisov	Philosophy Doctor on Agricultural Sciences, Head of the Department of Fruit and Vegetable Growing of Fergana State University.
Sherzod Teshabayev	Philosophy Doctor on agricultural sciences, Head of the Department of Agriculture and Forest Reclamation of Andijan Institute of Agriculture and Agrotechnologies.
Shavkat Eshpulatov	Candidate of agricultural sciences, Head of the Department of EIAT of Ferghana State University.
Madinakhon Rakhmonova	Philosophy Doctor on Agricultural sciences, Head of the Department "Quarantine of plants and agricultural products" of the Andijan Institute of Agriculture and Agrotechnologies.
Bobomurod Kuldashov	Philosophy Doctor on Agricultural sciences, Head of the department "Agrotechnology, automation and management of production " of Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology.
Khasanboy Askarov	Philosophy Doctor on Agricultural sciences, Head of the Department "Technology of production, storage and preliminary processing of agricultural products" of Fergana Polytechnic Institute.
Sevara Nazarova	Philosophy Doctor on Agricultural sciences, Associate Professor of the Department of Soil Science of Bukhara State University.
Gayratbek Rakhmatullayev	Philosophy Doctor on Agricultural sciences, Head of the Department "Genetics, selection and seed production of agricultural crops" of Andijan Institute of Agriculture and Agrotechnologies, Associate professor a.i..
Dilfuza Jalolova	Candidate of Medical Sciences, Associate Professor of Samarkand State Medical University.
Abzalova Shakhnoza Rustamovna	Candidate of medical sciences, Head of the Department of Scientific Research, Innovation and Scientific Pedagogical Personnel Training of the Tashkent Pediatric Medical Institute, Associate Professor
Akmaljon Jurayev	Philosophy Doctor on Agricultural sciences, Associate Professor, Head of Andijan Regional Department of the Plant Quarantine and Protection Agency of the Republic of Uzbekistan.
Khusnidakhon Abdukhakimova	Philosophy Doctor on Biological sciences, Assistant professor of the Department of Soil Science of Fergana State University

DEPRESSION AND ANXIETY IN PATIENTS WITH COPD

¹Saipova D.S., ²Egamberdieva D.A., ³Ruzmetova I.A.

^{1,2,3}Tashkent Pediatric Medical Institute, Tashkent, Uzbekistan

<https://doi.org/10.5281/zenodo.10969501>

Abstract. *The incidence of COPD has increased worldwide and is a leading cause of morbidity and mortality. Common symptoms of the disease include shortness of breath, cough, sputum production, and changes in airway composition resulting from chronic exposure to cigarette smoke or pollutants. Depression and anxiety aggravate obesity and lead to exacerbation of COPD, and can also have a profound impact on health status, exercise capacity, lung function and mortality.*

Keywords: *chronic obstructive pulmonary disease (COPD), depression and anxiety*

Introduction. Chronic obstructive pulmonary disease (COPD) is an irreversible but treatable disease characterized primarily by shortness of breath, cough, and sputum production. Tobacco smoking is the main source of exposure, but air pollution and genetic or abnormal lung development may contribute for it [1].

In recent decades, it has been recognized that patients with chronic obstructive pulmonary disease (COPD) with three or more comorbidities are more likely to be hospitalized and have a high risk of premature death compared with patients with COPD without comorbidities. [2].

Untreated and unrecognized symptoms of depression and anxiety in patients with COPD negatively affect physical and social functioning, increasing fatigue and the needs for help [3, 4]. Depression and anxiety are difficult to identify and treat because their symptoms often overlap with COPD symptoms [5]. Identifying depression and anxiety and developing treatment strategies are important to improve the quality of life of patients with COPD and reduce health care utilization. This review examines the current understanding of the prevalence and potential mechanism of this association, and discusses implications for the treatment of patients with COPD with comorbid symptoms of depression and anxiety.

Epidemiology. The prevalence of COPD among people 30–79 years was 10.3% in 2019 using the GOLD criteria [8]. The frequency of depression among patients with stable COPD in a primary care setting ranging, from 10% to 57%, while the prevalence of anxiety varies widely, between 7% and 50% [6]. The variation stems from the patient population under focus and the clinic setting. In a recent longitudinal study [9] of 35,000 patients with COPD and with a follow-up of 10 years, the incidence of depression was 16.2 cases per 1000 person-years in the COPD group compared with 9.4 cases per 1000 person-years in the non-COPD control group. In addition, those with severe COPD were twice as likely to develop depression compared with patients with mild COPD. In patients with severe COPD (FEV1 < 50% predicted), the prevalence of depression was 25.0% compared with 17.5% in controls and 19.6% in patients with mild to moderate COPD [10]. Comorbid depression increased mortality risk by 1.83 (95% CI, 1.00–3.36) and anxiety raised the risk of mortality by 1.27; (95% CI, 1.02–1.58).

Pathophysiology. A systematic review and meta-analysis of 25 studies with long-term follow-up found that the association between COPD and depression is bidirectional [6], as depression can be both, a cause and a consequence of COPD. However, the precise mechanisms linking COPD to depression and anxiety have not been identified. Smoking increases the risk of

developing COPD, and the higher the severity of the disease, the higher the risk of depression and/or anxiety in patients with COPD. Nicotine dependence aggravates anxiety disorders in COPD [7]. Thus, these cross-sectional associations do not allow inference of cause and effect, and depression and anxiety lead to fear, panic and hopelessness, low self-esteem, social isolation and dependency on caregivers, thereby creating a vicious circle that perpetuates anxiety and depression.

There is emerging evidence to suggest that chronic pulmonary inflammation is partly a link between depressive symptoms and pulmonary function impairment, as elevated levels of inflammatory markers have been identified in patients with depression in older age [8] and COPD [9]. In a recent study, a sample of older adults with high levels of interleukin-6 and C-reactive protein showed an association of depressive symptoms with pulmonary obstruction [10].

In addition, there are biological, behavioral and social factors that contribute to increased disability and social isolation among patients with COPD. A study on the prevalence of depression found that among 52,118 patients with COPD the prevalence of depression was 26%, among 5335 smokers without COPD it was 12%, and among 5243 non-smokers without COPD the prevalence of depression was 7% [11]. These results suggest that clinical and biological markers of disease are less important indicators for patients with COPD than disease symptoms and decreased quality of life, which lead to the development of depression.

Clinical Features. In one study, COPD exacerbations were associated with moderate to severe depression in nearly half of COPD survivors. exacerbation episodes during the previous year, moderate to severe anxiety. in more than two thirds of patients, and post-traumatic stress symptoms in one third of patients [12]. Symptoms of anxiety, depression and post-traumatic stress were more often observed in patients with frequent exacerbations of COPD (≥ 2) compared with patients with <1 exacerbation of COPD in the previous year [13,18]. However, a study comparing patient interviews with physician ratings found that physicians may underestimate the psychological impact of exacerbations on patients [14], highlighting the importance of increasing physician awareness of these comorbid mental health problems. Based on this, depression and anxiety in patients with COPD are associated with decreased physical activity and worsened quality of life, increased respiratory symptoms, and the risk of hospitalization and mortality [14–16]. Patients have been found to have high levels of depression, even with mild exacerbation in patients with reduced physical activity.[17]

However, it has been suggested that time-limited symptoms of anxiety and depression occurring during an exacerbation of COPD do not require treatment [19], since the exacerbation may have resolved by the time these drugs begin to work. COPD does not only affect the mental health of patients: almost two thirds of people caring for patients with COPD report symptoms of anxiety and approximately one third report symptoms of depression [20]. Perceived caregiver burden and patient activity limitations have been identified as predictors of anxiety and depression symptoms in caregivers [21].

A randomized controlled trial found that PID-S resulted in higher rates of depression remission and greater reductions in depressive symptoms in dyspnea-related disability than treatment as usual at 28 weeks and 6 months after the last session [22]. Low severity of dyspnea disability and adherence to antidepressant medication predicted subsequent improvement in depression. Improvement in depression was not associated with antidepressant use and was associated with behavioral pulmonary rehabilitation interventions [23]. However, the long-term

benefit of pulmonary rehabilitation therapy in reducing anxiety and depression is unknown. In addition, further research is needed into the effectiveness of maintenance therapy to alleviate these symptoms and achieve complete remission.

Decreased physical activity following a COPD exacerbation may result in them staying home, which in turn may increase the patient's degree of depression, thereby creating a vicious cycle that will lead to further deterioration in the patient's physical activity. When studying the prescription of patients with end-stage COPD - having severe obstruction, serious condition and a high risk of exacerbations - it was shown that 58.5% of patients took anxiolytics, 42.4% - antipsychotics, 19.1% - antidepressants and 3.1% - non-depressants. -benzodiazepine hypnotics [24]. These data suggest that mental health problems are prevalent in patients with end-stage COPD, who are at high risk for exacerbations of COPD.

Exercise and low depression severity predicted improvements in dyspnea-related disability. A recent systematic review examined the effectiveness of comprehensive pulmonary rehabilitation (exercise plus education) in patients with COPD and found that the reduction in symptoms of depression and anxiety in the short term was comparable to usual care [25]. Additionally, a recent uncontrolled, intensive 3-week outpatient pulmonary rehabilitation program (6 hours per day for 5 days per week) showed significant improvements in depression and anxiety in patients with COPD [26]. Again, long-term benefits and their clinical implications require further study. Acute inpatient rehabilitation was followed by improvements in depressive symptoms and disability, even in older patients with severe COPD and major depression.

Zaimin Li et al. conducted a systematic review and meta-analysis of RCTs and found that exercise reduced both anxiety and depression in COPD patients with anxiety and depression. These scientists also studied the effect of various types of physical activity on the psycho-emotional state of patients with COPD. A mathematical analysis revealed that yoga classes for 30-60 minutes 2-3 times a week for 24 weeks had a greater effect on anxiety in patients with COPD over 70 years of age and older with a course of yoga therapy. disease for more than 10 years. And for depression, qigong exercises 2-3 times a week for 30-60 minutes each time had a greater effect in patients with COPD over 70 years of age and with a disease duration of less than 10 years. [12].

Screening and Diagnosis D.L. Matte et al in their meta-analysis found that one study [27] used self-completed depression questionnaires. three studies [29,33,34] used the CES-D, two [28,29] used the Geriatric Depression Score (GDS); one [30,32] used the Hospital Anxiety and Depression Scale (HADS-D) and only one study [31] the Structured Clinical Interview for DSM-I (SCID-DSMIV) was used by a psychiatrist to determine the presence of depression. The authors also identified that the disease severity was associated with higher prevalence of depression in five studies.

Management. There is currently evidence that the effectiveness of treating depression or anxiety with selective serotonin reuptake inhibitors (SSRIs) in patients with COPD is questionable. This is partly due to patient concerns that antidepressants are addictive and have side effects, as well as cognitive impairment associated with depression. In addition, the lack of adequate support and explanation from health professionals about the causes and effectiveness of treatment for depression leads to patients refusing treatment. The patient-family collaborative care model has been found to be beneficial in the treatment of depression in patients with chronic illness [12]. A recent Cochrane review [13] examined studies that examined the benefits of pharmacological interventions in treating anxiety in patients with COPD. Their results show that studies were

heterogeneous and treatment effectiveness was inconclusive. Therefore, well-controlled randomized studies are needed. Recently, a personalized nine-session intervention for depression and COPD (PID-S) was developed for patients with major depression and severe COPD [17]. PID-S is offered by care managers who, through support and targeted interventions, help patients adhere to exercise and antidepressant medications. Care managers also collaborate with patients' physicians to monitor patients' treatment and progress.

There is some evidence to suggest that psychological therapies, including cognitive behavioral therapy and counseling, may improve symptoms of depression and anxiety in patients with COPD [5, 6]. However, there is currently uncertainty regarding the "dosage" and duration of therapy for even mild cases of anxiety and depression. In addition, the availability of psychological therapy in primary care settings for this group of patients is limited. It is worth considering the possibility of providing access to psychological therapy resources through Internet technologies as a complementary therapy.

WALTERS et al. [22] examined the effectiveness of telephone health coaching using cognitive behavioral therapy (n580) compared with usual care (n574) in a 12-month treatment program. The experimental group received 16 30-minute phone calls over 12 months, with increasing time between calls. The control group received usual care from general practitioners and monthly telephone calls from a research nurse. Anxiety decreased in both groups after 12 months. Health coaching improved self-management ability, but both groups had similar quality of life scores at the end of the treatment phase. Moreover, there was no difference in depression scores between the two groups. BUCKNALL et al [23] reported that the minority of patients with COPD who were able to learn effective self-management were younger and more likely to live with others. These patients had a significantly reduced risk of COPD readmission.

Conclusions. COPD patients with comorbid conditions and anxiety or depression experience frequent exacerbations and hospital readmissions within a year. The mortality rate among patients with comorbidities is higher than in patients with COPD without comorbidities. Adequate and effective methods for screening, diagnosing and treating anxiety and depression in patients with COPD are needed to reduce the negative impact on quality of life and also reduce the incidence of readmission and mortality.

REFERENCES

1. Vogelmeier CF, Criner GJ, Martinez FJ, et al. Global strategy for the diagnosis, management, and prevention of chronic obstructive lung disease 2017 report. *Am J Respir Crit Care Med*. 2017;195 (5):557–582. doi:10.1164/rccm.201701-0218PP
2. Sode BF, Dahl M, Nordestgaard BG. Myocardial infarction and other comorbidities with chronic obstructive pulmonary disease: a Danish Nationwide study of 7.4 million individuals. *Eur Heart J* 2011; 32: 2365–2375.
3. Doyle T, Palmer S, Johnson J, et al. Association of anxiety and depression with pulmonary-specific symptoms in chronic obstructive pulmonary disease. *Int J Psychiatry Med* 2013; 45: 189–202.
4. Dalal AA, Shah M, Lunacsek O, et al. Clinical and economic burden of depression/anxiety in chronic obstructive pulmonary disease patients within a managed care population. *COPD* 2011; 8: 293–299.

5. Willgoss TG, Yohannes AM. Anxiety disorders in patients with COPD: a systematic review. *Respir Care* 2013; 58: 858–866.
6. Atlantis E, Fahey P, Cochrane B, et al. Bidirectional associations between clinically relevant depression or anxiety and COPD: a systematic review and meta-analysis. *Chest* 2013; 144: 766–777.
7. Goodwin RD, Lavoie KL, Lemeshow AR, et al. Depression, anxiety, and COPD: the unexamined role of nicotine dependence. *Nicotine Tob Res* 2012; 14: 176–183.
8. Alexopoulos GS, Morimoto SS. The inflammation hypothesis in geriatric depression. *Int J Geriatr Psychiatry* 2011; 26: 1109–1118.
9. Huerta A, Crisafulli E, Mene´ndez R, et al. Pneumonic and non-pneumonic exacerbations of COPD: inflammatory response and clinical characteristics. *Chest* 2013; 144: 1134–1142.
10. Lu Y, Feng L, Feng L, et al. Systemic inflammation, depression and obstructive pulmonary function: a populationbased study. *Respir Res* 2013; 14: 53.
11. Marie Selzler, Cindy Ellerton, Lauren Ellerton, Razanne Habash, Erica Nikolaichuk, Roger Goldstein & Dina Brooks (2023) The Relationship between Physical Activity, Depression and Anxiety in People with COPD: A Systematic Review and Meta-analyses, *COPD: Journal of Chronic Obstructive Pulmonary Disease*, 20:1, 167-177, DOI: 10.1080/15412555.2023.2200826
12. Zaimin Li 1 , Shijie Liu 2 , Lin Wang 3,* and Lee Smith 4 Mind–Body Exercise for Anxiety and Depression in COPD Patients: A Systematic Review and Meta-Analysis *Int. J. Environ. Res. Public Health* 2020, 17, 22; doi:10.3390/ijerph17010022
13. Darlan L. Matte a, b , Marcia M.M. Pizzichini a, c, * , Andrea T.C. Hoepers a , Alexandre P. Diaz a , Manuela Karloh a , Mirella Dias a , Emilio Pizzichini a Prevalence of depression in COPD: A systematic review and metaanalysis of controlled studies *Respiratory Medicine* 117 (2016) 154e161 <http://dx.doi.org/10.1016/j.rmed.2016.06.006>
14. T.S. Wong, Y.T. Xiang, J. Tsoh, et al., Depressive disorders in older patients with chronic obstructive pulmonary disease (COPD) in Hong Kong: a controlled study, *Aging & Ment. health* 18 (5) (2014) 588e592
15. J.G. van Manen, P.J. Bindels, F.W. Dekker, et al., Risk of depression in patients with chronic obstructive pulmonary disease and its determinants, *Thorax* 57 (5) (2002) 412e416
16. N.A. Hanania, H. Mullerova, N.W. Locantore, et al., Determinants of depression in the ECLIPSE chronic obstructive pulmonary disease cohort, *Am. J. Respir. Crit. Care Med.* 183 (5) (2011) 604e611.
17. L.J. Persson, M. Aanerud, P.S. Hiemstra, et al., Chronic obstructive pulmonary disease is associated with low levels of vitamin D, *PloS one* 7 (6) (2012) e38934
18. T.P. Ng, M. Niti, C. Fones, et al., Co-morbid association of depression and COPD: a population-based study, *Respir. Med.* 103 (6) (2009) 895e901.
19. T.A. Omachi, P.P. Katz, E.H. Yelin, et al., Depression and health-related quality of life in chronic obstructive pulmonary disease, *Am. J. Med.* 122 (8) (2009) 778
20. Quaderi, S.A.; Hurst, J.R. The unmet global burden of COPD. *Glob. Health Epidemiol. Genom.* 2018, 3, e4. [CrossRef]
21. Press, V.G.; Konetzka, R.T.; White, S.R. Insights about the economic impact of chronic obstructive pulmonary disease readmissions post implementation of the hospital readmission reduction program. *Curr. Opin. Pulm. Med.* 2018, 24, 138–146. [CrossRef] [PubMed]

22. Safiri, S.; Carson-Chahhoud, K.; Noori, M.; Nejadghaderi, S.A.; Sullman, M.J.M.; Ahmadian Heris, J.; Ansarin, K.; Mansournia, M.A.; Collins, G.S.; Kolahi, A.A.; et al. Burden of chronic obstructive pulmonary disease and its attributable risk factors in 204 countries and territories, 1990–2019: Results from the Global Burden of Disease Study 2019. *BMJ* 2022, 378, e069679. [CrossRef] [PubMed]
23. Zareifopoulos, N.; Bellou, A.; Spiropoulou, A.; Spiropoulos, K. Prevalence, Contribution to Disease Burden and Management of Comorbid Depression and Anxiety in Chronic Obstructive Pulmonary Disease: A Narrative Review. *J. Obstr. Pulm. Dis.* 2019, 16, 406–417. [CrossRef]
24. Atlantis, E.; Fahey, P.; Cochrane, B.; Smith, S. Bidirectional associations between clinically relevant depression or anxiety and COPD: A systematic review and meta-analysis. *Chest* 2013, 144, 766–777. [CrossRef]
25. Pumar, M.I.; Gray, C.R.; Walsh, J.R.; Yang, I.A.; Rolls, T.A.; Ward, D.L. Anxiety and depression-Important psychological comorbidities of COPD. *J. Thorac. Dis.* 2014, 6, 1615–1631. [CrossRef] [PubMed]
26. Schuler, M.; Wittmann, M.; Faller, H.; Schultz, K. The interrelations among aspects of dyspnea and symptoms of depression in COPD patients—A network analysis. *J. Affect. Disord.* 2018, 240, 33–40. [CrossRef]
27. Adeloye, D.; Song, P.; Zhu, Y.; Campbell, H.; Sheikh, A.; Rudan, I. Global, regional, and national prevalence of, and risk factors for, chronic obstructive pulmonary disease (COPD) in 2019: A systematic review and modelling analysis. *Lancet. Respir. Med.* 2022, 10, 447–458. [CrossRef]
28. Schneider, C.; Jick, S.S.; Bothner, U.; Meier, C.R. COPD and the risk of depression. *Chest* 2010, 137, 341–347. [CrossRef]
29. Van Manen, J.G.; Bindels, P.J.; Dekker, F.W.; CJ, I.J.; van der Zee, J.S.; Schadé, E. Risk of depression in patients with chronic obstructive pulmonary disease and its determinants. *Thorax* 2002, 57, 412–416. [CrossRef]
30. Blakemore, A.; Dickens, C.; Guthrie, E.; Bower, P.; Kontopantelis, E.; Afzal, C.; Coventry, P.A. Depression and anxiety predict health-related quality of life in chronic obstructive pulmonary disease: Systematic review and meta-analysis. *Int. J. Chron. Obstruct. Pulmon. Dis.* 2014, 9, 501–512. [CrossRef]
31. Martucci, V.L.; Richmond, B.; Davis, L.K.; Blackwell, T.S.; Cox, N.J.; Samuels, D.; Velez Edwards, D.; Aldrich, M.C. Fate or coincidence: Do COPD and major depression share genetic risk factors? *Hum. Mol. Genet.* 2021, 30, 619–628. [CrossRef] [PubMed]
32. Xu, K.; Li, X. Risk Factors for Depression in Patients with Chronic Obstructive Pulmonary Disease. *Med. Sci. Monit.* 2018, 24, 1417–1423. [CrossRef] [PubMed]
33. Chatila, W.M.; Thomashow, B.M.; Minai, O.A.; Criner, G.J.; Make, B.J. Comorbidities in chronic obstructive pulmonary disease. *Proc. Am. Thorac. Soc.* 2008, 5, 549–555. [CrossRef]
34. Gunasekaran, K.; Murthi, S.; Elango, K.; Rahi, M.S.; Thilagar, B.; Ramalingam, S.; Voruganti, D.; Paramasivam, V.K.; Kolandaivel, K.P.; Arora, A.; et al. The Impact of Diabetes Mellitus in Patients with Chronic Obstructive Pulmonary Disease (COPD) Hospitalization. *J. Clin. Med.* 2021, 10, 235. [CrossRef]
35. Yohannes, A.M.; Alexopoulos, G.S. Depression and anxiety in patients with COPD. *Eur. Respir. Rev.* 2014, 23, 345–349. [CrossRef] *Adv. Respir. Med.* 2023, 91 132

Contents

Ganieva Durdona Kamalovna COUGH IN CHILDREN. A MODERN APPROACH TO TREATMENT	4
Shaykhova Munira Ikramovna, Karimova Dilorom Ismatovna REHABILITATION OF CHILDREN WITH RESPIRATORY DISEASES	8
Daminov B.T., Ernazarova M.M. CHARACTERISTICS OF CLINICAL AND METABOLIC MANIFESTATIONS OF OBESITY IN PATIENTS WITH ARTERIAL HYPERTENSION AND CHRONIC KIDNEY DISEASE	11
Shaykhova Munira Ikramovna, Karimova Dilorom Ismatovna THE USE OF PHYTOTHERAPY IN CHILDREN WITH RESPIRATORY DISEASES	18
A. Soyibjonov, F. Umarov, T. Malikov ZOOHYGIENIC REQUIREMENTS FOR KEEPING BEES	21
Igamberdiev Askar Kimsanovich, Usmanova Gulnoza, Mirzayeva Shaxnoza WORK BASED ON SOIL-RESOURCE CONSUMPTION TECHNOLOGY	24
Abduvakilov Zhakhongir Ubaydullayevich, Irgashev Shokhrukh Khasanovich HYGIENIC ASSESSMENT OF THE CONDITION OF THE ORAL MUCOSA AFTER ORTHOPEDIC TREATMENT	32
M. N Abdurazzokova, N.M. Kurbanov THE IMPORTANCE OF THE HEALTHY PROPERTIES OF CONDENSED SORGUM SUGUM JUICE IN THE PREPARATION OF FOOD FOR BEES	37
Mekhmanov Murodulla Maqsudkhan ogli, Khaidarova Dilrabo Rakhimjonovna CHEMICAL COMPOSITION OF BROCCOLI AND ITS USE IN MEDICINE	44
Saipova D.S., Egamberdieva D.A., Ruzmetova I.A. DEPRESSION AND ANXIETY IN PATIENTS WITH COPD	49
Saipova D.S., Egamberdieva D.A., Ruzmetova I.A. EXACERBATIONS OF COPD AND THE IMPACT ON THE QUALITY OF LIFE OF PATIENTS	55
Ollabergenov O.T., Terebaev B.A., Nematov A.Sh. A COMPARATIVE STUDY OF THE SURGICAL PROCEDURES TO TREAT HIRSCHSPRUNG DISEASE IN CHILDREN	63
Gafurova N.S. DYNAMICS OF FEATURES OF ETIOLOGY, CLINICAL COURSE AND STRUCTURE OF PURULENT-INFLAMMATORY DISEASES IN CHILDREN	68
Khan. I., Kurovsky A.V., Babenko. A.S. THE ROLE OF MICROBIAL ENZYMES IN VERMICOMPOSTING OF ORGANIC WASTES	73
Rogov A.V. CLINICAL FEATURES OF CEREBRAL VASCULAR REACTIVITY WITH NEGATIVE SYMPTOMS IN PATIENTS WITH PARANOID SCHIZOPHRENIA	85
Mukhamedova V. M., Yusupova Sh. K. ON THE RELATIONSHIP OF NON-LIPID RISK FACTORS IN THE DEVELOPMENT OF PREDIABETES AND TYPE 2 DIABETES MELLITUS	93
Sadikov Rustam Abrarovich, Babadjanov Azam Khasanovich, Nosirov Muzaffar Madaminovich DEVELOPMENT OF A NEW DOMESTIC BIOCOMPATIBLE COMPOSITE MESH IMPLANT AND EVALUATION OF ITS EFFECTIVENESS IN VENTRAL HERNIA SURGERY IN AN EXPERIMENT	97
Sagdiev Mirkasim Takhirovich, Alimova Rano Abbasovna EFFECT OF GROWTH REGULATORY DRUGS ON CUCUMBER PRODUCTIVITY AND QUALITY	113
Turakulov Nodir Chorievich PREVALENCE OF MYOPIA DISEASE IN ADOLESCENTS AND MEASURES FOR ITS PREVENTION	117
A.N. Fayziev IMMUNOANTIGEN STRUCTURE OF BLOOD GROUP IN CHILDREN WITH CHRONIC TONSILLITIS	120
Rasulov A.Sh., Kevorkov A.G., Tursunov E.Ya., Maxkamova M.M., Uralov X.I. DYNAMICS OF QT INTERVAL VARIANCE AND HEART RATE VARIABILITY AGAINST THE BACKGROUND OF SURGICAL MYOCARDIAL REVASCULARIZATION IN PATIENTS WHO HAVE SUFFERED A MYOCARDIAL INFARCTION WITH A MULTIVESSEL LESION OF THE CORONARY BED	124
Tillabaeva A.A. ACTUAL ISSUES OF ORGANIZING NURSING CARE BY ESSENTIAL ARTERIAL HYPERTENSION IN ADOLESCENTS IN PRIMARY HEALTH CARE	131
Allayarov A.T., Rizaev J.A., Yusupov A.A. CLINICAL EFFICACY OF LASER TREATMENT OF DIABETIC RETINOPATHY	137
Allayarov A.T., Rizaev J.A., Yusupov A.A. ADVANTAGES OF LASER TREATMENT OF DIABETIC RETINOPATHY: ANALYSIS OF CLINICAL DATA	141
Kayumova Iroda Komolovna, Kadirova Gulchekhra Khakimovna, Shonakhunov Tulkin Erkinovich EFFECT OF NITROGEN COMPONENTS ON GROWTH AND PIGMENT FORMATION OF MICROALGAE CHLORELLA VULGARIS 4 AND SCENEDESMUS QUADRICAUDA 32	145
Sh. A. Agzamova, F. Sh., Yusupova, M.N. Daminova CLINICAL FUNCTIONAL CHARACTERISTICS OF CARDIOVASCULAR AND RESPIRATORY SYSTEMS ADAPTATION IN SCHOOL CHILDREN WITH CORRECTED CONGENITAL HEART FAILURE	152
I.T.Isamiddinov, M. Sh.Rasulova IMMUNITY IS THE MAIN CRITERION FOR PROTECTING PLANTS FROM DISEASES	162
Ch.K. Khudayberdieva, B.M. Tajiev, S.M.Shajalilova ACUTE INFECTIOUS DIARRHEA IN CHILDREN	164
Khaydarov N.S., Sattarov J.B., Kobilov E.E. METHODS FOR DETECTION AND CONSERVATIVE RESOLUTION OF ADHESION DISEASE IN CHILDREN	170

Xolboboyeva Shoxnozaxon Asadullayevna CLINICAL AND ORGANIZATIONAL ASPECTS OF CARDIAC ARRHYTHMIAS AT THE HOSPITAL STAGE OF MEDICAL CARE	175
Babaev Yashin Amanovich, Orazbayeva Gulmira Egambergenovna, Gulyamov Ulugbek Gafurovich INHERITANCE OF DEVELOPMENTAL PHASES OF VEGETATION PERIOD DURATION IN INTRASPECIFIC HYBRIDS OF HOPCHATNIK DEPENDING ON THE TYPE OF FRUIT BRANCHES	179
H.A. Rasulov, Mavlonov U.O. PATHOMORPHOLOGICAL CHANGES IN THE PLACENTA OF PREGNANT WOMEN INFECTED WITH CORONAVIRUS INFECTION COVID-19	185
Majidova Y.N., Akhmedova D.S., Azimova N.M. CLINICAL AND NEUROLOGICAL MANIFESTATIONS OF ENCEPHALITIS IN CHILDREN	190
Izzatullaev Zuvaydulla Izzatullaevich, Boymurodov Khusniddin Tashboltaevich, Aliiev Bakhtiyor Khojayarovich, Kuchboev Abdurakhim Ergashevich MORPHOLOGICAL AND MOLECULAR-GENETIC ANALYSIS OF THE SPECIES CORBICULA FLUMINALIS DISTRIBUTED IN WATER ECOSYSTEMS OF SOUTH UZBEKISTAN	194
Koshimbetova G.K., Shamansurova E.A. PREVALENCE OF FUNCTIONAL DISORDERS OF THE DIGESTIVE SYSTEM IN CHILDREN AND ADOLESCENTS	199
Satvaldieva E.A., Shakarova M.U., Mitryushkina V.A., Mamatkulov I.B., Poenov M.Y. SPINAL ANESTHESIA UNDER ULTRASONIC CONTROL	204
S.K. Muratova, N.T. Shukurova, N.N. Xabibova TO STUDY PERIODONTAL, HYGIENIC INDICES OF THE ORAL CAVITY, MINERAL COMPOSITION OF ORAL FLUID IN DENTAL PATIENTS WITH ISCHEMIC PATHOLOGY	210
S.K. Muratova, N.T. Shukurova, N.N. Xabibova THE PREVALENCE OF A COMBINATION OF THE THREE MAIN DENTAL DISEASES OF DENTAL CARIES IN PATIENTS WITH CHRONIC CORONARY HEART DISEASE	215
Kosimova S.A., Kodirov Sh.N., Abdurahmadov A.A. ACUTE APPENDICITIS IN PREGNANT WOMEN	220
Arifov Saidkasim Saidazimovich, Erkinova Zilola Elbekovna ANALYSIS OF THE ROLE OF POLYMORPHISM 1997C/A OF THE COL1A1 GENE IN THE FORMATION OF ATROPHIC POST-ACNE SCARS IN THE UZBEK POPULATION	229
Sabirova Diana Ruslan kizi, Eshmuratov Marat Tangatarovich FORTIFICATION OF DAIRY PRODUCTS WITH VITAMINS	234
L. U. Makhmudov, N.L. Vypova, F.K. Ashurova, R.A. Yakubova, Sh.T. Usmonov, N.A. Tagayalieva PROSPECTS FOR USE OF SUPRAMOLECULAR COMPLEXES OF MONOAMMONIUM GLYCERYLRHIZINATE WITH POLYPHENOLS AND AMINO ACIDS AS THE HEPATOPROTECTORS	238
Raximov Matnazar Shomurodovich, Boymurodov Sukhrob Khusniddinovich, Jumaboev Bahadir Eregepovich, Khasanov Nadir Khamrokulovich, Mirzamurodov Omon Khasanovich POPULATIONS OF CORBICULA FLUMINALIS IN WATER ECOSYSTEMS OF UZBEKISTAN	249
Yakubjonova Nodiraxon Avazxon kizi, Xasanova Kamola Shavkatovna, Jalilov Jamshid Azamatovich IMPORTANCE OF BIOLOGY AND GENETICS IN OUR LIFE TODAY	253
Yusupov A.S., Mamatkulov I.A., Ismailova M.U., Omonov S.Kh., Joldasova A.D. POTENTIZED ANALGESIS AFTER THORACIC OPERATIONS IN CHILDREN	259
Nishanov M.F., Aliboev M.R., Usmanov Kh.A., Abdurakhmadov A.A. WAYS TO IMPROVE THE RESULTS OF SURGICAL TREATMENT OF DIFFUSE TOXIC GOITER	265
Nishanov M.F., Khojimetov D.Sh., Usmonov Kh.A., Abdurakhmadov A.A. RESULTS OF USING LASER THERAPY IN SURGERY FOR STOMACH AND DUODENAL ULCERS	272
Sh. F. Karimova SOME BIOCHEMICAL ASPECTS OF THE BREASTFEEDING PERIOD	282
Omonova Umida Tulkinovna, Khaitbaeva Nargiza Temurovna FEATURES OF NEUROLOGICAL DISORDERS IN CYSTIC FIBROSIS	287
Tillashaykhova M.Kh. CHARACTERISTICS OF THE FUNCTIONAL STATE OF THE HYPOTHALAMIC-PITUITARY-OVARIAN SYSTEM IN WOMEN OF REPRODUCTIVE AGE WITH OVARIAN EXHAUSTION SYNDROME	292
Voronina Natalya HYGIENIC ASSESSMENT OF PESTICIDE RESIDUES IN VEGETABLE PRODUCTS OF PROTECTED SOIL	296
Salima Nazarova, Nilufar Rasulova, Zokirjon Otashexov E-HEALTH REFORM IN THE APPLICATION OF ICT AND DIGITAL TECHNOLOGIES IN UZBEKISTAN	302
Shamatov Islom Yakubovich, Shopulotova Zarina Abdumuminovna THE EFFECTIVENESS OF ULTRASOUND NON-PUNCTURE TECHNOLOGY WITH ENDONASAL INTRADERMAL ANTIBIOTIC THERAPY IN THE TREATMENT OF CHRONIC PURULENT POLYSINUSITIS	306
Nazarov N.N. MODERN VIEWS ON DIAGNOSIS AND TREATMENT OF SWELLY SCRUM AND TESTLES SYNDROME IN CHILDREN	311
Yuldashov I.R., Nematova X.G. THE PRESENCE OF RELATED CONDITIONS IN PATIENTS WITH DRUG ALLERGIES	318
Yusupov A.S., Ismailova M.U., Mamatkulov I.A. CHANGES IN THE LEVEL OF STRESS HORMONES WHILE USING LOW-OPIOID ANESTHESIA IN CHILDREN'S ORTHOPEDICS	322
Yuldasheva Kh.F. ALPHA-PVP: EXPLORING A NEW PUBLIC HEALTH CHALLENGE	328
Ziyaeva Shokhida Tulaevna, Mirzaakhmedova Kamola Tokhirovna REHABILITATION AFTER CORONAVIRUS COVID-19	341
Safarova Madina Lutfulla kizi, Axmatova Moxira Jumaboy kizi, Mukhamedova Sevara Nigmatulla kizi THE ROLE OF IRON IN THE HUMAN ORGANISM	344

Ernazarova Gulzoda Mamatkul kizi, Norbekova Dilfuza Xolmat kizi, Mukhamedova Sevara Nigmatulla kizi THE ROLE OF CREATINE PHOSPHATE IN THE HUMAN BODY	347
Ortiqova Tursunoy Avaz kizi, Raxmankulova Sayyora Raimkul kizi, Mukhamedova Sevara Nigmatulla kizi POLYMERASE CHAIN REACTION	351
Ayyubova Sevinch Murodjon kizi, Hakimova Fayyoza Jahongir kizi, Mukhamedova Sevara Nigmatulla kizi WAYS OF NEUTRALIZING AMMONIA IN THE HUMAN BODY, URINARY SYNTHESIS. ORNITHINE CYCLE	354
Kaldibayeva Akmaral Orinbasarovna, Yunusov Abdushukur Abdulakhatovich, Karimova Gulchehra Almardanovna MODERN PHARMACOTHERAPY OF TREATMENT OF LIVER DISEASES	358
Marufov Shakhzod THE PATHOPHYSIOLOGY OF FEVER. CHARACTERISTIC FEATURES OF CHILDREN	362
Mirzayeva Nargiza Asrarovna SOURCES, INFLUENCE AND PRACTICAL METHODS OF PREVENTION OF EDUCATIONAL STRESS IN STUDENTS	366
Akhrarova N.A., Sharipova Z.U., Umarova M.C. FEATURES OF THE POSTOPERATIVE PERIOD IN CHILDREN WITH TETRALOGY OF FALLOT ACCORDING TO A RETROSPECTIVE ANALYSIS	371
Normurodova E'zoza Sharofiddinovna, Yulchieva Sugdiyona Sherkhodova, Ziyamutdinova Zuhra Kayumovna CREATINURIA	376
Pazilova Sevara Bakieva PHYSIOLOGICAL ASPECTS OF PAIN SENSITIVITY	379
U.Sh. Rikhsiev ADEQUATE TREATMENT OF ACNE IN ADOLESCENTS	383
Akhmedova I.M., Musurmonov K.A. RISK FACTORS FOR PNEUMONIA IN CHILDREN WITH CONGENITAL HEART DEFECTS	388
Babajanova F.A., Pardaeva Fatima STUDYING THE FACTOR MODEL OF PSYCHOPHYSIOLOGICAL AND SOMATOTYPIC STATUS OF YOUNG PEOPLE WITH THE AIM OF MODERATING THEIR PROFESSIONAL TRAINING	394
Askaryants V.P. INFLUENCE OF ORGANOCHLORINE COMPOUNDS ON SECRETORY ACTIVITY OF THE PANCREAS	397
Niyozmetov M.A., Koranbaev S.B., Otaev L., Matchanov M., Jumaniozov Zh., Umurzokov Z. DISEASES CAUSED BY CONSUMPTION OF UNPURIFIED DRINKING WATER	401
Mukhamejhanova F.R., Sadikov A.A. FEATURES OF NEUROFUNCTIONAL MANIFESTATIONS OF MENTAL TENSION IN CHILDREN CHESS PLAYERS	409
Isomov Miraskad CURRENT TRENDS AND PROSPECTS FOR DENTAL SERVICES IN UZBEKISTAN	414
Yakubov Khayot Hamidulloyevich, Kadirov Kuralbay Urzabayevich, Ismatov Abror Askarovich DETERMINATION OF THE PATIENT'S CONDITION WITH BRUISING FROM VARIOUS FACTORS	418
Khidoyatova Zulfiya Sharifovna, Azimova Munira Takhirovna, Yusupova Ziyodakhon Kadirkanovna CONTENT ANALYSIS OF DRUGS USED IN URINARY TRACT INFECTIONS	421
Makhkamova Gulnoza Turaxodjaeva VACCINE PREVENTION OF PNEUMOCOCCAL RESPIRATORY DISEASES OF CHILDREN	432
Yakubov Khayot Khamidullaevich, Kadirov Kuralbay Urzabayevich, Otakulov Sohibjon Ismatillaevich FORENSIC TOXICOMETRY AND TANATOGENESIS IN ACUTE COMBINED POISONINGS	443



**International Scientific Journal
Science and Innovation Series D
Volume 3 Issue 4**

ISSN: 2181-3337

Published: 30.04.2024. Font: "Times New Roman".

LLC “Science and innovation”
License Mass Media №:1597 27.04.2022
License Publisher №:038864 15.09.2022
Address: 100155, Uzbekistan, Tashkent city, Sergeli district, Quruvchi, 22/43.
www.scientists.uz, info@scientists.uz, +998901259654