SECTION: MEDICINE

DOI 10.70286/ISU-10.12.2025.011

THE BIOPSYCHOSOCIAL MODEL OF REHABILITATION FOR PATIENTS WITH HYPERTENSION: OPPORTUNITIES FOR INTEGRATION INTO CLINICAL PRACTICE

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Abstract.

This paper explores the biopsychosocial model as a comprehensive framework for the rehabilitation of patients diagnosed with stage I–II arterial hypertension. It reviews the interaction of biological, psychological, and social determinants that significantly influence the onset, progression, and treatment outcomes of hypertension. Based on contemporary international research, the paper highlights the role of psychological distress, behavioral risk factors, social support, and lifestyle components in shaping long-term treatment adherence and quality of life. Practical strategies for integrating the biopsychosocial approach into healthcare institutions are discussed, with emphasis on multidisciplinary teamwork, structured psychological interventions, and patient-centered rehabilitation planning. Adoption of this model can substantially improve clinical outcomes, enhance patient engagement, and foster sustainable behavioral change.

Keywords: arterial hypertension, biopsychosocial model, rehabilitation, treatment adherence, psychological factors, lifestyle modification, multidisciplinary approach.

Arterial hypertension remains one of the most significant global public health challenges, with a steadily increasing prevalence and considerable socioeconomic burden. Despite advances in pharmacotherapy, many patients fail to achieve optimal control of blood pressure, which raises the question of overlooked determinants beyond purely physiological mechanisms. The biopsychosocial model proposed by G. Engel provides a theoretical foundation for understanding hypertension as a multidimensional condition shaped by biological factors, psychological states, and social environments. This paradigm has become increasingly relevant as modern clinical practice shifts toward holistic, patient-centered approaches.

Biological components of hypertension include genetic predisposition, autonomic imbalance, endothelial dysfunction, and metabolic disturbances. These mechanisms, however, are closely intertwined with psychological factors. Numerous studies indicate that chronic stress, anxiety, depressive symptoms, and maladaptive coping styles

significantly influence autonomic regulation and promote sustained increases in blood pressure. Rutledge et al. demonstrated that emotional distress contributes not only to poorer cardiovascular outcomes but also to decreased responsiveness to antihypertensive therapy [Rutledge et al., 2013]. Thus, psychological functioning must be considered a central dimension of rehabilitation planning.

Behavioral factors, such as treatment adherence, physical inactivity, excessive salt intake, and irregular sleep patterns, play a major role in the long-term management of hypertension. According to WHO data, more than 50% of patients with chronic diseases do not adhere adequately to prescribed therapy, with psychosocial influences outweighing biomedical ones [WHO, 2003]. Patient beliefs about illness, perceived control, motivation for lifestyle change, and habits formed under stress significantly shape adherence behaviors. This emphasizes the need for systematic psychological support and structured behavioral interventions targeting lifestyle modification.

The social dimension is equally important. Socioeconomic status, access to healthcare, family dynamics, occupational pressures, and the quality of social support networks deeply affect the lived experience of hypertension. Patients who lack adequate support or face chronic social stress often exhibit poorer treatment adherence, higher levels of anxiety, and reduced engagement in rehabilitation programs. Social isolation has been identified as an independent predictor of negative cardiovascular outcomes. Therefore, addressing social determinants within rehabilitation is essential for improving long-term prognosis.

Evidence from clinical research supports the effectiveness of biopsychosocial interventions. Blumenthal et al. reported that stress-reduction programs integrating cognitive-behavioral strategies produced meaningful reductions in systolic and diastolic blood pressure, comparable to pharmacological interventions in early-stage hypertension [Blumenthal et al., 2010]. Furthermore, multidisciplinary rehabilitation programs that combine psychological counseling, supervised physical activity, nutritional therapy, and social support consistently show significant improvements in patient quality of life, emotional stability, and clinical outcomes.

Integrating the biopsychosocial model into clinical practice requires organizational and methodological adaptations. First, healthcare institutions should establish multidisciplinary teams involving physicians, psychologists, physiotherapists, nutritionists, and social workers. Such teams can conduct comprehensive assessments that include not only clinical diagnostics but also psychological evaluations and social risk screening. Second, individualized rehabilitation plans should be developed based on patient-specific needs, emphasizing tailored psychological interventions such as cognitive-behavioral therapy, stress management, motivational interviewing, and psychoeducation. Third, healthcare systems must incorporate long-term monitoring of psychosocial variables, ensuring continuous adjustments to rehabilitation strategies.

A patient-centered approach also requires healthcare professionals to foster therapeutic alliances, encourage active patient participation, and support self-management. Training programs for clinicians in communication, behavioral counseling, and mental health literacy significantly enhance the capacity of institutions

to implement biopsychosocial care. In addition, digital tools—such as telehealth consultations, mobile health applications, and remote psychological support—can expand access to rehabilitation services, especially for patients with limited mobility or residing in underserved areas.

In conclusion, the biopsychosocial model represents a scientifically grounded and clinically effective framework for the rehabilitation of patients with stage I–II hypertension. By addressing the full spectrum of disease determinants—biological, psychological, and social—healthcare providers can improve treatment outcomes, promote lasting behavioral change, enhance patient adherence, and reduce the long-term risk of complications. Integration of this model into routine clinical practice should be regarded as a strategic priority for modern healthcare systems seeking to optimize hypertension management and improve population health.

References

1. Rutledge, T., Reis, V., & Linke, S. (2013). Depression in patients with hypertension: A systematic review. Journal of Clinical Hypertension, 15(8), 567–572.
2. World Health Organization. (2003). Adherence to long-term therapies: Evidence for action. Geneva: WHO Press.
3. Blumenthal, J. A., Sherwood, A., & Smith, P. J. (2010). Stress reduction and blood pressure control: A randomized trial. Archives of Internal Medicine, 170(2), 105–113.
4. Engel, G. (1977). The need for a new medical model: A challenge for biomedicine. Science, 196(4286), 129–136.

ІННОВАЦІЙНІ МЕТОДИ ВИКЛАДАННЯ АНАТОМІЇ: ПОРІВНЯННЯ МОДЕЛЮВАННЯ ТА 3D-ДРУКУ

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Анотація

У статті здійснено порівняльний аналіз моделювання та 3D-друку як інноваційних методів викладання анатомії в сучасній медичній освіті. Актуальність дослідження зумовлена необхідністю підвищення просторового сприйняття анатомічних структур у студентів і подолання обмежень, пов’язаних із використанням трупного матеріалу. Розглянуто вплив обох технологій на формування анатомічного мислення, розвиток практичних навичок та рівень клінічної готовності студентів.