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Fund “Nauka” Project № 22008 Resume – Competition-Based Session 2022:

“Physical activity in patients on hemodialysis and opportunities for its optimization”

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Chronic kidney disease (CKD) is a condition causing irreversible loss of the major renal functions: excretory, regulatory and incretory, leading to a significant disruption of the function of all organs and systems in the body. It is a global health problem associated with reduced life expectancy. In patients with end-stage renal disease (ESRD) on haemodialysis (HD), the life expectancy is reduced by nearly 75% compared to their healthy peers. There is also a limited functional physical capacity, (about 70% of clinically healthy individuals, with values decreasing to 50% with the onset of HD). HD patients also have a high level of disability due to the major complications of CKD and a sedentary lifestyle which negatively affects their ability to perform activities of daily living.

The research objective of this project is to perform a comprehensive study of the levels of physical activity in hemodialysis patients with stratification of risk factors for disability and to evaluate the impact of aerobic intradialytic exercise on functional status and clinical outcome with a view to the prognosis, rehabilitation and quality of life of the ESRD patients.

In order to accomplish the set goal, the following tasks are differentiated:

1. To study the impact of chronic dialysis treatment on physical capacity and individual quality of life of patients;
2. To identify the main causes of deterioration of physical capacity and risk stratification;
3. To evaluate the impact of specialized intradialytic exercises on clinical, functional status and individual quality of life of chronic dialysis patients.

The subjects of the study are 80 HD patients randomized into work and control groups.

The research methods to be used are: documentary, clinical, sociological, statistical and laboratory.

As a result of this study, it is expected to create and implement into routine clinical practice an original aerobic intradialytic exercise algorithm for improvement of prognosis, better clinical outcome and quality of life of HD patients.

Expected results:

1. ESRD patients have low levels of physical activity. To identify the causes of low physical activity in these patients and to develop strategies to address them.
2. To validate the hypothesis that intradialytic cardio-velo exercise training is appropriate for positively influencing functional status, physical and emotional health, and individual quality of life of patients on dialysis treatment.
3. Intradialytic exercise positively influences patients' attitudes towards exercise.
4. To establish a clinically applicable methodology for intradialytic exercise at reduced financial cost and improved patient outcome and prognosis.