Title: Assessment of functional fitness, level of dependence and quality of life of people aged 80 and more hospitalized in the geriatric ward in the Podkarpackie Province.

Introduction: The current demographic situation of the aging society in Poland is characterized by an accelerated increase in the percentage of people in the oldest age groups. Due to the frequent occurrence of many health problems, the frequency of hospitalizations increases with age. The period of inpatient treatment is often associated with a decrease in the level of functional fitness, quality of life and an increased need for care services. Therefore, early identification of people at risk of a decrease in functional independence, quality of life and the development of dependence as well as related factors is necessary in order to determine the current or future health, rehabilitation and care needs in this group.

Objective: The aim of the study was to assess the functional fitness, level of dependence and quality of life of people aged 80 and more hospitalized in the geriatric ward in the Podkarpackie Province.

Material and Methods: The analysis covered 282 people hospitalized in the Geriatric Ward of the hospital in Przeworsk between January 2019 and March 2020. Inclusion criteria for the study included age 80 and over, informed consent to participate in the study, and no use of institutional care. The exclusion criteria were age under 80, cognitive impairment that prevented communication, and bed rest that prevented functional tests from being performed. For the assessment of the nutritional status, the exclusion criteria were also the possession of implanted electronic devices, prostheses and metal implants as well as skin discontinuity. The study was conducted using the direct interview method and physical examination in a two-stage manner. A 30-minute rest break is provided for the patient between the various stages of the study. In the first stage, the medical qualification, preliminary direct interview and the questionnaire part of the study were carried out. In the second stage, a study with the use of standardized scales and questionnaires was carried out, functional tests, height and weight measurements, and body composition analysis were performed. The research tools used in the study were the original questionnaire, the MMSE scale, the Katz scale, the Lawton scale, the WHOQOL-Bref quality of life scale, ICF Core Set for level of dependency assessment, measurement of height and weight, assessment of the body fat and lean mass by the bioimpedance method, assessment of hand grip strength using a dynamometer, a Chair Stand Test for lower limb strength, a Timed Up & Go test for mobility assessment and a Berg Balance Scale test for balance assessment. Descriptive statistics measures, statistical tests and logistic regression models were used for data analysis. Statistical significance was determined at the level of $p < 0.05$.

Results: Reduction of functional fitness in terms of basic activities of daily living was found in 43.62% of the study group and the reduction of functional fitness in terms of instrumental activities of daily living was found in 67.38% of the study group. Dependency concerned 48.94% of the respondents. The lowest level of the quality of life of the respondents was found in the physical domain ($\overline{x}$=47.58 points), and the highest in the social ($\overline{x}$=66.95 points) and environmental ($\overline{x}$=66,66 points) domains.

It was found that the female sex (by 78.4% in relation to the male sex), each subsequent year of life (by 11.5%), each subsequent drug taken (by 14.3%), each subsequent chronic disease (by 14, 6%), low hand grip strength of the right and left hand (2.584 times and by 87.9% in relation to the correct strength, respectively), low strength of the muscles of the lower limbs (6.124 times in relation to the normal force) and each subsequent second needed to perform the test Timed Up & Go (by 13.5%) statistically significantly increases the risk of functional fitness limitations in the scope of basic activities of daily living. On the other hand, the risk of occurrence of functional fitness limitations in the scope of basic activities of daily living is lowered by each subsequent point on the MMSE scale (by 19.2%) and each subsequent point scored on the Berg Balance Scale (by 13.4%).

It was found that each subsequent year of life (by 16.0%), each subsequent drug taken (by 18.2%), the presence of each subsequent chronic disease (by 12.9%), low hand grip strength of the right and left hand (2.377 times and by 75.2% in relation to the normal strength), decreased muscle strength of the lower limbs (4.667 times in relation to the normal strength) and each subsequent second needed to perform the Timed Up & Go test (by 16%) statistically significantly increase the risk of limitations in fitness functional in terms of instrumental activities of daily living. On the other hand, the risk of the occurrence of functional limitations in terms of instrumental activities of daily living is reduced by each subsequent point in the MMSE scale (by 15.3%%), the body fat mass content above the reference range (by 51.4% in relation to the fat mass content in the reference range) and each subsequent point on the Berg Balance Scale (by 13.7%).

It has been shown that the risk of dependence in the study group is statistically significantly increased by the female sex (by 80.1% in relation to the male sex), each subsequent year of life (by 10.8%), each subsequent drug taken (by 13.7%), the presence of each subsequent disease (by 11.8%), the content of fat mass in the body below the reference range (2.24 times compared to the reference range), reduced hand grip strength of the right and left hand (2.607 times and by 93.4% in relation to normal strength), decreased muscle strength of the lower limb (11.871 times in relation to normal strength) and each subsequent second needed to perform the

Timed Up & Go test (by 26.5%). On the other hand, the risk of dependence is reduced by having secondary education (by 69.3% compared to primary education) by each subsequent point on the MMSE scale (by 24.0%) and by each subsequent point obtained in the Berg Balance Scale (by 19.6%).

The higher level of quality of life was statistically significantly associated with the male gender (in the physical domain), with the greater number of points scored in the MMSE scale (in the environmental domain) and with the greater number of points obtained in the Berg balance scale (in all domains of the WHOQOL-Bref scale). The lower level of quality of life in the study group was associated with a higher age (in the environmental domain), more drugs taken (in the physical and environmental domain), more chronic diseases (in the environmental domain), and fat mass below the reference range (in the psychological domain), reduction of the muscle strength of the upper and lower extremities and a higher time needed to perform the Timed Up & Go test (in all domains of the WHOQOL-Bref scale).

Conclusions: Functional fitness in terms of basic activities of daily living in more than half of the subjects was not reduced. More than half of the respondents had a reduction in functional fitness in terms of instrumental activities of daily living. Most of the respondents were not considered dependent. The quality of life of the respondents in all analyzed domains of the WHOQOL-Bref scale was assessed at an average level. A lower level of functional fitness, the occurrence of dependency and a lower quality of life were associated with female sex, higher age, low muscle strength in the upper and lower limbs, worse mobility, more medications taken, and a greater number of comorbidities. A higher level of functional fitness, a lower risk of dependence and a higher quality of life were associated with a better balance and a better state of cognitive functioning of the respondents It was also found that the content of fat mass in the body was related to the level of functional fitness, the occurrence of dependence and the quality of life in the studied group. It is necessary to continue research on the level of functional fitness, quality of life and dependence and related factors in the group of hospitalized elderly people.

Keywords: older people, functional fitness, dependence, quality of life, hospitalization