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## Assessment of the functional efficiency of the elderly

### Abstract

**Introduction.** Functional efficiency is a product of various deficits, regardless of the diseases that cause them and other factors. The assessment of the functioning status allows for focusing of activities on diagnostic and therapeutic ones and is a platform for agreement between the parties involved in geriatric care.

**Aim.** The aim of the study was to assess the functional efficiency of geriatric patients under long-term care.

**Material and method.** The research was carried out in a group of 518 elderly people receiving long-term care. The age of the respondents was in the range of 65-92 years old. The research was carried out using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients). This scale allows to quickly and easily assess the psychological, mental and social condition of the patient.

**Results.** When assessing with the NOSGER scale, the average result was 80.64 points. Among the component areas, the largest deficits were reported in the field of instrumental activities of everyday life (mean 17.41 points), and the best score was in the area of disruptive behaviors (mean 8.67 points).

**Conclusions.** The studied group of geriatric patients was characterized by a reduced level of functional fitness. The greatest deficits were found in the basic activities of everyday life. Education significantly differentiated the functional efficiency of the surveyed seniors.

**Keywords:** functional fitness, the elderly, the NOSGER scale.

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### INTRODUCTION

Functional fitness of an elderly person can be considered as the possibility of performing everyday, normal activities independently and without effort. Physical fitness, which decreases with age, causes the elderly to lose independence and generates the need for help from others. Impaired mobility increases the risk or worsens the course of diseases which are conditioned, among others, by lack of exercise. Reduced mobility may also lead to immobilization of the patient and, consequently, to the occurrence of pressure ulcers, atrophy and muscle contractions [1].

Functional efficiency is a product of various deficits, regardless of the diseases that cause them and other factors. The assessment of the functioning status allows for focusing of activities on diagnostic and therapeutic ones and is a platform for agreement between the parties involved in geriatric care [2].

### AIM

The aim of the study was to assess the functional efficiency of geriatric patients under long-term care.

### MATERIAL AND METHOD

The research was carried out in a group of 518 elderly people receiving long-term care. The respondents gave their informed and voluntary consent to participate in the research. The age of the respondents was within the range of 65-92 years old. A detailed description of the surveyed seniors is presented in Table I.

TABLE 1. Characteristics of the research group.

	variable	%
Sex	men	35.00
	women	65.00
Age	65-69	35.00
	70-79	56.90
	80-96	8.10
Marital status	Single	20.90
	Married	22.00
	Widowed	57.10
Education	Primary/basic	87.30
	Occupational	10.80
	Middle/Higher	1.9

The research was carried out using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients). This scale allows to quickly and easily assess the psychological, mental and social condition of the patient. The scale covers six areas: memory; instrumental activities of everyday life; activities of daily life; moods and emotions; social behavior; destructive, disruptive, asocial behavior. The values of the scale were specified with numbers from 1 to 5. The patient could obtain a minimum of 30 points, a maximum of 150 points. The greater the number of points obtained in the observation, the worse the patient's condition was. Validation studies using the NOSGER scale have shown that it is a well-accepted tool, for high internal consistency and reliability, as well as high correlation of results in all 6 areas with the results obtained with other measurement tools [3-6].

The collected research material was statistically analyzed using the Statistica 10.0 program (StatSoft, Poland). The values of the analyzed measurable parameters were presented by means of the mean value and standard deviation, and for non-measurable ones – by the number and percentage. A significance level of  $p < 0.05$  was adopted, indicating the existence of statistically significant differences or dependence.

## RESULTS

When assessing with the NOSGER scale, the average/mean result was 80.64 points. Among the component areas, the largest deficits were reported in the field of instrumental activities of everyday life (mean 17.41 points), and the best score was in the area of disruptive behaviors (mean 8.67 points). Table 2 presents a detailed analysis of the patient's condition in its individual areas.

Table 3 presents the mean values of the NOSGER score depending on the selected sociodemographic variables. When assessing the condition of seniors depending on sex, no statistically significant difference was found between the groups,

except for the area of instrumental activities of everyday life ( $p=0.030$ ). Women, however, had a slightly worse functional status than men (80.79 points vs. 80.35 points). The seniors from the youngest age group showed the best fitness. Only in terms of moods/emotions, people from the oldest age group functioned the best (mean 12.52 points). There was no statistically significant difference between the groups, except for the area of instrumental activities of daily life ( $p=0.022$ ).

Marital status significantly differentiated the fitness of the respondents only in terms of everyday life activities ( $p=0.018$ ) and instrumental activities of everyday life ( $p=0.026$ ).

It was found that single persons performed the best. Only in the social terms married persons got the best scores (average 14.60 points), and in terms of disturbing behaviors the widowed people got the best scores (average 8.59 points).

The results of the research allowed to state that people with middle/higher education in almost all areas of NOSGER were the most independent. Only in terms of moods and emotions (average 11.60 points) and memory (9.78 points) the best functioning people were persons with vocational education. A statistically significant difference between the groups was in the overall assessment ( $p=0.022$ ), in the social area ( $p=0.015$ ) and in memory (0.002).

TABLE 2. NOSGER scale evaluation.

	Mean	DS	Median	Minimum	Maximum
NOSGER	80.64	22.39	81.00	30.00	138.00
Activities of everyday life	14.27	5.24	15.00	5.00	23.00
Instrumental activities of everyday life	17.41	4.75	18.00	5.00	25.00
Mood	12.85	4.34	12.00	5.00	25.00
Disruptive behaviors	8.67	3.04	8.00	5.00	22.00
Social behavior	15.50	4.75	16.00	5.00	25.00
Memory	11.91	4.75	11.00	5.00	24.00

TABLE 3. Sociodemographic variables and NOSGER scale evaluation (mean±standard deviation).

	Zmienna	NOSGER	Activities of everyday life	Instrumental activities of everyday life	Mood	Disruptive behaviors	Social behavior	Memory
Sex	Men	80.35±23.02	13.89±5.43	16.73±4.92	13.21±4.54	8.80±3.00	15.87±5.24	11.79±4.76
	Women	80.79±22.07	14.48±5.13	17.77±4.62	12.65±4.22	8.59±3.07	15.29±4.89	11.98±4.74
	Statistical analysis	Z=0.015 p=0.987	Z=-1.128 p=0.259	Z=-2.160 p=0.030	Z=1.206 p=0.227	Z=1.121 p=0.261	Z=1.332 p=0.182	Z=-0.407 p=0.683
Age	65-74 years old	78.35±21.87	13.80±5.39	16.58±5.11	12.72±4.02	8.51±2.97	15.10±5.11	11.62±4.81
	75-89 years old	81.94±22.74	14.58±5.17	17.95±4.47	12.98±4.50	8.66±3.04	15.73±4.96	12.01±4.79
	90-96 years old	81.33±21.80	14.11±5.01	17.23±4.64	12.52±4.60	9.40±3.32	15.54±5.06	12.50±4.13
	Statistical analysis	H=2.079 p=0.353	H=2.619 p=0.269	H=7.565 p=0.022	H=0.180 p=0.913	H=2.418 p=0.298	H=1.342 p=0.511	H=2.278 p=0.320
Marital status	Single	76.81±23.72	13.02±5.28	16.20±5.15	12.39±4.55	8.66±3.11	15.05±5.11	11.45±4.76
	Married	78.60±21.62	13.94±5.09	17.23±4.85	12.58±4.12	8.78±3.03	14.60±4.84	11.46±4.57
	Widowed	82.31±22.28	14.82±5.24	17.94±4.49	12.95±4.39	8.59±3.06	15.77±4.95	12.21±4.84
	Statistical analysis	H=4.976 p=0.173	H=10.014 p=0.018	H=9.220 p=0.026	H=3.973 p=0.264	H=2.067 p=0.558	H=4.826 p=0.185	H=2.751 p=0.431
Education	Basic	81.60±22.88	14.40±5.22	17.53±4.77	12.99±4.39	8.78±3.09	15.69±5.12	12.19±4.82
	Occupational	74.41±16.21	13.75±5.32	16.92±4.30	11.60±3.76	7.80±2.34	14.53±3.77	9.78±3.31
	Middle/Higher	72.00±24.29	11.70±5.31	14.60±5.81	13.60±4.62	8.50±3.68	12.20±4.96	11.40±5.39
	Statistical analysis	H=7.554 p=0.022	H=2.688 p=0.260	H=4.171 p=0.124	H=3.696 p=0.157	H=4.146 p=0.125	H=8.366 p=0.015	H=11.914 p=0.002

## DISCUSSION

The aging process naturally affects the functioning of the elderly. Increasing age is one of the most characteristic and constant factors differentiating the functional efficiency of seniors [7]. Independent functioning in everyday life is associated with the possibility of self-service and self-care. Self-care includes all activities that are undertaken to maintain good health. These activities include not only taking care of your health by following medical recommendations, but also a healthy lifestyle. Changes in the body related to the aging process and existing diseases can significantly hinder independent functioning in everyday life [8].

The results of own research showed that the elderly had a reduced level of functional fitness. Similar results were obtained in their studies by Wysokiński et al. [9] assessing the efficiency of elderly people hospitalized in the departments of lung diseases. The average score in their research was 73.91 points. However, different results were obtained in their studies by Fidecki et al. [10] when assessing neurogeriatric patients, in this case the subjects functioned at the mean level of 54.43 points. Also Głowacka et al. [11] found in their research that seniors showed a higher level of functional fitness (mean 57.65 points).

Our studies showed no significant difference in the level of fitness between men and women. Both groups presented a similar level of psychosocial functioning. However, studies by Wysokiński et al. [9] found that gender significantly differentiated the fitness of seniors. Elderly men were much more affected by fitness.

In the presented research, it was found that age did not significantly affect the fitness level of the examined elderly people. However, better fitness in terms of physical functioning and psychosocial performance was demonstrated by seniors from the youngest age group. This efficiency deteriorated with age. Similar results in their research were obtained by Głowacka et al. [11] assessing seniors in their living environment. The authors found that both in the overall assessment with the NOSGER scale and in all component areas, people from the younger age range showed much better efficiency, and this difference showed statistical significance. This is also confirmed by the research by Bogusz et al. [12], where age significantly differentiated the fitness of seniors, with increasing age the independence of the respondents decreased. In the studies by Lewko et al. [13], the functional efficiency of patients was assessed in terms of everyday activities and it was found that this efficiency deteriorates with age, and it was also statistically significant. Our research shows that the largest deficits in terms of functional fitness were presented by widowed people.

The studies by Wysokiński et al. [14] also confirm our results. The authors showed that the marital status significantly differentiated the performance of the respondents, and the greatest deficits in terms of functional fitness occurred in widowed people.

The analysis of own research showed that the efficiency of the respondents increased with the level of education. The best results of the assessment were obtained by people with secondary/higher education, while the least able were those with primary education. Research by Rybka et al. [15] showed that education significantly affects the fitness level of the elderly. The authors stated that people with higher education are more efficient in the basic activities of everyday life than people with basic education. The dependence of fitness on education is also confirmed by the studies by Haor et al. [16], where with

the increase of the level of education, the efficiency of the elderly increased.

## CONCLUSIONS

The studied group of geriatric patients was characterized by a reduced level of functional fitness. The greatest deficits were found in the basic activities of everyday life. Education significantly differentiated the functional efficiency of the surveyed seniors.

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