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Assessment of functional capacity of elderly patients hospitalized in the departments of lung diseases

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Abstract

Introduction: Changes in the body related to the aging process and occurring diseases can significantly impede independent functioning in everyday life. Functional fitness of an elderly

person can be seen as the ability to perform every day, normal activities independently and with no effort.

The aim of the study: The aim of the study was to determine the functional efficiency of elderly patients hospitalized in the department of lung disease.

Material and methods: The research was carried out in the lung diseases department of the Clinical Hospital No. 4 in Lublin. The group consisted of 153 patients aged from 65 to 89 years. 53.60% of the respondents were women. The research material was collected using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients).

Results: In the assessment of patients, the result for the whole group was obtained at the average level of 73.91 ± 11.42 points. The respondents functioned the worst in the area of instrumental activities of everyday life (13.53 points) and in the field of social behavior (13.54 points). The respondents functioned in the best way in the field of memory (8.01 points). Younger respondents (65-70 years old) performed better at 71.05 ± 1.12 points. Women had higher functional fitness (72.03 ± 11.23 points). The best biopsychosocial efficiency was demonstrated by people with higher education 68.91 ± 9.00 points. Patients from the urban environment performed better compared to people from rural areas (79.32 ± 10.12 points vs. 82.20 ± 11.00 points).

Conclusions: Elderly patients hospitalized in the department of lung diseases were characterized by reduced biopsychosocial efficiency. The largest deficits occurred in the field of instrumental activities of everyday life and social behavior. Age, gender, education and place of residence significantly differentiated the degree of functional efficiency of the examined patients.

Key words: geriatric assessment, functional fitness, elderly people, department of lung diseases

Introduction

Independent functioning in everyday life is associated with the possibility of self-service and self-care. Self-care is all actions that are taken to preserve health at a good level. These activities include not only taking care of your health through adhering to medical prescriptions, but also a healthy lifestyle [1].

The functional efficiency of an elderly person can be seen as the ability to perform every day, normal activities independently and effortlessly [2].

Nowadays, the overall geriatric assessment is a standard care of a senior. Comprehensive geriatric care is a multidimensional, multidisciplinary diagnostic process, used to collect data on medical, social and functional limitations of elderly people [3].

Geriatric evaluation differs from a typical medical assessment because it also covers non-medical aspects, emphasizing functional fitness and quality of life of a senior through including multidisciplinary team (e.g. a doctor, nurse, nutritionist, social worker and therapists). Such an assessment method often gives a more complete and realistic picture of medical and psychosocial problems of an elderly person [4].

The aim of the study

The aim of the study was to determine the functional capacity of elderly patients hospitalized in the departments of lung diseases.

Material and methods

The study was carried out in the area of the lung disease department of the University Hospital No. 4 in Lublin. The permission of the hospital management was obtained for conducting the study. The study was carried out in accordance with ethical principles. The respondents were informed about the voluntary nature and anonymity of the study, they also expressed their conscious and voluntary consent.

The group included 153 patients aged from 65 to 89 years old. Detailed characteristics of the examined group are presented in Table 1.

Table 1. Characteristics of the research pool

		%
Gender	Female	53.60
	Male	46.40
Age	65- 70 years old	55.60
	71-89 years old	44.40
Education	Elementary	33.00
	Vocational	20.00
	Secondary	37.00
	Higher	10.00
Place of living	Urban area	63.00
	Rural area	37.00

The research material was collected using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients). This scale allows you to assess the biological, mental and social status of an elderly person. It contains 30 questions and covers 6 areas: activities of everyday life, instrumental activities of everyday life, moods and emotions, destructive behaviors, social behavior, memory. Each area contains a scale defined by numbers from 1 to 5. The patient may receive a minimum of 30 points and a maximum of 150 points. The greater the number of points, the worse the patient's condition [5-10].

Statistical analysis of the obtained material was performed. In order to point out a statistically significant difference or dependence, $p \leq 0.05$ was accepted as the level of significance.

Results

When assessing patients, the result for the whole group was obtained at the average level of 73.91 ± 11.42 points. The respondents functioned the worst in the area of instrumental activities of everyday life (13.53 points) and in the field of social behavior (13.54 points). The respondents functioned in the best way in the range of memory (8.01 points). Table 2 presents the mean values of the patients' assessment with the NOSGER scale.

Table 2. Patients' assessment with the NOSGER scale (mean and standard deviation)

NOSGER dimension	Mean	SD
Nosger	73.91	11.42
Memory	8.01	2.10
ADL	11.24	3.67
Social behavior	13,54	4.21
IADL	13.56	3.89
Mood	11.34	3.23
Disturbing behavior	8.23	1.75

The patients' condition was analyzed according to age. The respondents from the younger age bracket functioned better in all ranges of the NOSGER score (Table 3). Statistical analysis allowed to show a significant difference in functional capacity between the analyzed age groups.

Table 3. NOSGER vs. Age

NOSGER dimension	65-70		71-89		Statistical analysis	
	Mean	SD	Mean	SD		
					Z	p
Nosger	71.05	11.22	84.04	10.12	-9.04	p<0.05*
Memory	9.91	3.10	12.93	4.65	4.001	p<0.05*
ADL	8.90	3.92	12.00	5.43	3.611	p<0.05*
Social behavior	14.25	4.17	16.66	4.55	3.232	p<0.05*
IADL	12.80	4.89	16.33	5.24	4.041	p<0.05*
Mood	11.23	3.23	13.03	4.44	2.512	p<0.05*
Disturbing behavior	7.59	1.94	8.05	2.44	0.743	p>0.05

Z - Mann-Whitney U test

The efficiency of the examined seniors depending on their gender was also examined. The results showed that women statistically significantly presented better efficiency compared to men. Both men and women functioned the best in terms of disturbing behavior (7.35 and 8.27, respectively). Also in both groups, the field of social behavior was rated the worst (14.3 and 16.69 points respectively).

Table 4. NOSGER vs. Gender

NOSGER dimension	Female		Male		Statistical analysis	
	Mean	SD	Mean	SD		
					Z	p
Nosger	72.03	11.23	83.04	12.21	-9.02	p<0.05*
Memory	10.70	3.84	12.35	4.52	-2.32	p<0.05*
ADL	8.85	4.33	12.15	5.15	-3.97	p<0.05*
Social behavior	14.31	4.23	16.69	4.52	-3.39	p<0.05*
IADL	13.44	4.95	15.91	5.19	-2.96	p<0.05*
Mood	11.44	3.27	12.93	4.51	-2.21	p<0.05*
Disturbing behavior	7.35	1.97	8.27	2.38	-2.49	p<0.05*

Z - Mann-Whitney U test

The next stage assessed the efficiency of the respondents in the context of their education. The results of the study indicated that both in the overall assessment of NOSGER and in its constituent areas, persons with higher education functioned the best, and the worst results were in the group of patients with primary education. Statistical analysis showed a significant relationship between the education of the respondents and their degree of biopsychosocial efficiency (Table 5).

Table 5. NOSGER vs. Education

NOSGER dimension	Elementary		Vocational		Secondary		Higher		Statistical analysis	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
									H	p
Nosger	81.21	12.21	75.32	11.96	72.23	10.01	68.91	9.00	23.00	p<0.05*
Memory	13.34	4.50	11.54	3.38	10.61	4.23	9.62	3.72	14.94	p<0.05*
ADL	12.60	5.30	10.39	3.62	9.50	4.95	9.25	5.67	12.64	p<0.05*
Social behavior	17.52	4.26	15.83	3.16	14.28	4.61	13.62	5.30	15.71	p<0.05*
IADL	16.78	5.58	14.50	3.59	13.68	5.25	12.69	4.88	11.83	p<0.05*
Mood	13.50	4.08	12.48	3.48	11.75	3.99	9.50	3.76	13.99	p<0.05*
Disturbing behavior	8.42	2.38	7.90	2.07	7.60	1.97	6.75	2.59	10.10	p<0.05*

H – Kruskal -Wallis test

The last analyzed issue was to determine the status of patients depending on their place of residence. The respondents from the rural environment showed greater deficits in terms of functional efficiency (NOSGER = 82.20 points). The largest deficits in this group were in the field of social behavior (16.61 points), and the best results were in the area of disturbing behaviors (8.03 points). The average result for the city's residents was on the average level of 79.32 points. In this group, the disturbing behaviors were also rated best (7.73 points) and worst in the area of disturbing behaviors (7.73 points). The statistical analysis made it possible to show the existence of a significant relationship (except ADL and Disturbing

behavior) between the place of residence and the evaluation of the efficiency of the patients examined.

Table 6. NOSGER vs. Place of living

NOSGER dimension	Urban area		Rural area		Statistical analysis	
	Mean	SD	Mean	SD	Z	p
Nosger	79.32	10.12	82.20	11.00	-2.78	p<0.05
Memory	11.04	4.41	12.51	3.94	-2.36	p<0.05*
ADL	10.28	5.34	11.19	4.50	-1.71	p>0.05
Social behavior	14.98	4.78	16.61	3.92	-2.56	p<0.05*
IADL	14.07	5.33	15.93	4.84	-2.16	p<0.05*
Mood	11.77	4.24	13.02	3.58	-2.21	p<0.05*
Disturbing behavior	7.73	2.30	8.03	2.13	-0.99	p>0.05

Z - Mann-Whitney U test

Discussion

The elongation of human life does not always go hand in hand with satisfying psychophysical fitness. The situation of seniors is often determined by disability and multi-disability. Studies show that every third 60-year-old, over 60% of 70-year-olds and almost 85% of people aged 80 and more declare difficulties in performing housework resulting from their health condition. The number of disabled people is also growing [11].

Our studies have shown that patients showed reduced efficiency in biopsychosocial functioning. Seniors showed better performance in studies conducted in internal medicine departments [12]. In these studies, the NOSGER score for the entire study group was at an average of 66.10±18.93 points. In the studies on the assessment of the biopsychosocial status of the elderly hospitalized in neurology departments, even better results were obtained. Neurogeriatric patients received a NOSGER score with an average score of 54.43±18.96 points. [13].

Our own research showed that older people, from the younger age range, functioned better in the area of biopsychosocial efficiency. Comparable results in their study were obtained by Głowacka et al. [14] assessing seniors in their living environment. The authors found that both in the overall assessment by the NOSGER scale and in all the constituent areas, significantly better performance was demonstrated by people from the younger age group, and

this difference showed statistical significance. This is also confirmed by research conducted by Bogusz et al. [15], where the age significantly differentiated the seniors' efficiency, together with the age increase, the independence of the respondents decreased. In the Lewko et al. study [16], the functional efficiency of patients in terms of daily activities was assessed and it was found that with age, this performance deteriorated and it was also statistically significant.

In our own research, it was found that women in the area of physical and mental fitness functioned better. This is concurrent with the results of other studies carried out using the NOSGER scale [17,18]. The study by Bogusz et al. [15] also showed that women had better efficiency in everyday functioning.

The analysis of own research showed unequivocally the influence of education on the degree of efficiency of the examined persons. The best results were obtained by people with higher education, while the least capable persons were those with primary education. Studies by Rybka et al. [19] show that education significantly affects the physical fitness of elderly people. The results of their research show that people with higher education are more efficient in the basic activities of everyday life than people with primary education. The dependence of fitness on education is also confirmed by the study of Haor et al. [20] where, together with the increase in the level of education, the efficiency of older people increased.

In our own research, it was found that people from the urban environment had better fitness. This is concurrent with the results of Głowska et al. [14]. The results of the research of the authors confirmed the relationship between the place of residence and the efficiency of seniors, people from the city were in a better biopsychosocial condition.

Conclusions

1. Elderly patients hospitalized in the department of lung diseases were characterized by reduced biopsychosocial efficiency.
2. The largest deficits occurred in the field of instrumental activities of everyday life and social behavior.
3. Age, gender, education and place of residence significantly differentiated the degree of functional efficiency of the examined patients

Conflicts of interest

The authors declared no potential conflicts of interest.

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