

Assessment of functional impairment concerning fundamental and instrumental everyday activities amongst geriatric ward patients

Ocena funkcjonowania w zakresie podstawowych i instrumentalnych czynności dnia codziennego pacjentów oddziałów geriatrycznych

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Abstract

Introduction. Functional efficiency ensures independence from other people in meeting individual needs. A higher level of functional fitness can have a positive effect on the quality of life of the elderly and indirectly affect the extension of life expectancy. **The aim.** The study aimed to assess functional impairment of patients hospitalized in geriatric wards in the field of fundamental and instrumental daily activities. **Material and methods.** The study was conducted amongst 308 patients hospitalized in geriatric wards. All three geriatric wards located in the Lubelskie Voivodeship were included: Biała Podlaska, Parczew and Włodawa. Female patients constituted a majority of respondents, 63.97% women. The largest group were people aged 75-89. Most of the respondents were widowed (66.23%), with primary education (78.25%) and living in the rural area (64.30%). **Results.** By assessing the subjects using the Lawton Instrumental Activities of Daily Living (IADL) Scale, an average of 3.53 ± 2.29 points was obtained. It was found that men (3.56 ± 2.31 points) showed slightly better performance than women (3.52 ± 2.28 points). The studies also looked at patients' performance in daily instrumental activities. The result for the entire studied group was at an average level of 14.41 ± 5.32 points. **Conclusions.** Geriatric ward patients showed a reduced level of fitness in fundamental and instrumental activities of everyday life. The respondents' age, marital status, education, place of residence, and place of hospitalization significantly differentiated the functional efficiency of the examined group of patients. (Gerontol Pol 2020; 28; 75-80)

Keywords: functional efficiency, ADL scale, IADL scale, geriatric ward

Streszczenie

Wprowadzenie. Sprawność funkcjonalna zapewnia niezależność od innych osób w zaspokajaniu indywidualnych potrzeb. Wyższy poziom sprawności funkcjonalnej może oddziaływać pozytywnie na komfort życia seniora i pośrednio wpływać na wydłużenie się długości życia. **Cel.** Celem badań była ocena stopnia sprawności funkcjonalnej pacjentów oddziałów geriatrycznych w zakresie podstawowych i instrumentalnych czynności codziennych. **Material i metody.** Badania przeprowadzono w grupie 308 pacjentów oddziałów geriatrycznych. Były to wszystkie trzy oddziały geriatryczne w województwie lubelskim: w Białej Podlaskiej, Parczewie i Włodawie. W badanej grupie było 63,97% kobiet. Największą grupę stanowiły osoby w wieku 75-89 lat. Zdecydowanie najwięcej było osób owdowiałych (66,23%), z podstawowym wykształceniem (78,25%) i mieszkających na wsi (64,30%). **Wyniki.** Dokonując oceny badanych skalą ADL uzyskano średni wynik na poziomie $3,53 \pm 2,29$ punktów. Stwierdzono, że nieco lepszą sprawnością odznaczyli się mężczyźni ($3,56 \pm 2,31$ pkt) w porównaniu z kobietami ($3,52 \pm 2,28$ pkt). W badaniach przeanalizowano również sprawność pacjentów w zakresie instrumentalnych czynności codziennego życia. Wynik dla całej badanej grupy kształtował się na poziomie średniej $14,41 \pm 5,32$ pkt. **Wnioski.** Pacjenci oddziałów geriatrycznych wykazywali obniżony poziom sprawności w zakresie podstawowych i instrumentalnych czynności codziennego życia. Wiek badanych, stan cywilny, wykształcenie, miejsce zamieszkania oraz miejsce hospitalizacji istotnie różnicowały sprawność funkcjonalną badanej grupy pacjentów. (Gerontol Pol 2020; 28; 75-80)

Słowa kluczowe: sprawność funkcjonalna, skala ADL, skala IADL, oddział geriatryczny

Introduction

The assessment of the functional performance of the elderly has become the primary goal of geriatrics and gerontology. Therefore it is an essential component of the overall geriatric assessment.

Functional efficiency ensures independence from other people in meeting individual needs. A higher level of functional fitness can have a positive effect on the quality of life of the elderly and indirectly affect the extension of life expectancy [1,2].

The aim

The study aimed to assess functional impairment of patients hospitalized in geriatric wards in the field of fundamental and instrumental daily activities.

Material and methods

The study was conducted amongst 308 patients hospitalized in geriatric wards. All three geriatric wards located in the Lubelskie Voivodeship were included: Biała Podlaska, Parczew and Włodawa. Hospital management approval was obtained for the research. The research was conducted according to ethical principles. Patients gave their willing and informed consent to participate in them. Patients were assessed by nursing staff working in the enumerated wards.

Female patients constituted a majority of respondents, almost 64 % of all respondents. The largest group were people aged 75-89. Most of the respondents were widowed (66.23%), with primary education (78.25%) and living in the rural area (64.30%). The characteristics of the studied group are presented in Table I.

Table I. Characteristics of the studied group

	Variable	%
Gender	Women	63.97
	Men	36.03
Age (years)	65-74	21.43
	75-89	70.45
	90+	8.12
Marital status	Widowers/widows	66.23
	Married	33.77
Education	Basic	78.25
	Vocational	13.66
	Middle	6.82
	Higher	1.27
Place of residence	Urban area	35.70
	Rural area	64.30
Place of hospitalization	Biała Podlaska	32.47
	Parczew	33.77
	Włodawa	33.76

The research was carried out using two standardized research tools: the Activities of Daily Living (ADL) scale and the Lawton Instrumental Activities of Daily Living (IADL) Scale.

The Activities of Daily Living (ADL) scale - ADL (Katz scale) assesses functional fitness in everyday activities. It contains six statements regarding the degree of independence. Achieving a low score indicates functional impairment of the examined person. Score: 5-6 – functionally independent person; 3-4 – moderately disabled; 0-2 – people with considerable disabilities [3].

The Instrumental Activities of Daily Living Scale – IADL (Lawton scale) assists in determining the independence of the patient's functioning in the surrounding reality. The instrument assesses eight elements: using the telephone, traveling outside the home, shopping, preparing meals, doing little housework, taking medications and managing money. The maximum points the patient can gather is 24 points [3,4].

The obtained test results were subjected to statistical analysis. A level of significance of $p < 0.05$ indicated the existence of statistically significant differences or dependencies was adopted.

Results

By assessing the subjects with the ADL scale, an average score of 3.53 ± 2.29 points was obtained. Table II presents the assessment of the fitness of seniors in the aspect of selected sociodemographic variables. It was found that male respondents (3.56 ± 2.31 points) exhibited slightly better performance levels than female respondents (3.52 ± 2.28 points). However, this difference was not statistically significant. Published research has shown that the functional impairment of seniors increases significantly with age. The lowest performance level exhibited patients from the oldest age group (1.92 ± 2.43 points), and the highest functional performance level was demonstrated by patients aged 65-74 (3.87 ± 2.28 points). There was a statistically significant difference between the analyzed age groups ($p = 0.000$). Likewise, a statistically significant difference occurred in the case of the variable marital status. The respondents in a relationship showed a higher level of performance in everyday functioning (3.96 ± 2.23 points) than widowed ones (3.32 ± 2.29 points).

When analyzing the degree of patient independence depending on education, it was found that the most considerable deficits characterized people with vocational education (2.90 ± 2.36 points) whereas patients with higher education (4.13 ± 1.3 points) and secondary education (4.12 ± 2.12 points) exhibited the highest le-

vel of performance. However, no statistically significant difference was found between the analyzed groups in the case of their education level. Next, the efficiency of seniors in relation to the place of their residence was subsequently analyzed. People living in rural areas demonstrated greater efficiency in everyday activities (3.58 ± 2.31 points) than people from the urban area (3.45 ± 2.26 points). However, this difference was not statistically significant. Final analyses determined the level of performance amongst elderly patients depending on the place of hospitalization. The highest level of independence was demonstrated by people hospitalized in Włodawa (4.70 ± 1.73 points), while the lowest level of functional performance was found in patients from Parczew (2.75 ± 2.15 points). There was a high, statistically significant difference between the place of hospitalization and the efficiency of the examined patients.

The research also analyzes the efficiency of elderly patients in the field of instrumental activities of daily living. The result of the entire research group reached an average level of 14.41 ± 5.32 points. Table III presents the results of the IADL scale assessment in relation to selected sociodemographic variables. The results obtained in the female respondents were slightly higher (14.60 ± 5.40 points) compared to male participants (14.09 ± 5.19 points). However, this difference was not statistically significant. Though, a high statistically significant difference occurred in the respondents' level of instrumental performance and age ($p = 0.000$). The youngest elderly patient had the highest efficiency in everyday instrumental activities (16.34 ± 5.57 points).

With age, this efficiency decreased and was the lowest in patients aged 90 and older (10.72 ± 4.13 points). When comparing the respondents in regards to their marital status, the results showed the people in the relationship exhibited a higher level of instrumental performance (15.55 ± 5.33 points) than widowed ones (13.83 ± 5.24 points). In this respect, the difference between the groups was statistically significant ($p = 0.009$). In the next stage of the study, the patients' instrumental functionality and education were analyzed. It was found that respondents with higher and secondary education were characterized by the highest instrumental performance (17.44 ± 5.14 points). While patients with vocational education were characterized by the lowest instrumental efficiency (13.35 ± 5.37 points). The implemented analysis highlighted a statistically significant difference between the analyzed groups in terms of the educational variable ($p = 0.004$). The respondents' place of residence did not significantly affect the degree of their independence in the field of instrumental activities of everyday life. Nevertheless, people living in rural areas displayed a slightly higher instrumental performance (14.43 ± 5.20 points). The place of hospitalization differentiated the degree of patient independence significantly ($p = 0.000$). The most independent on the IADL scale were people hospitalized in Włodawa (17.83 ± 4.55 points), and the most dependent patients hospitalized in Parczew (11.46 ± 3.67 points).

Table II. Sociodemographic variables and ADL scale results (mean \pm standard deviation)

Variable		ADL	Statistical analysis
Gender	Women	3.52 ± 2.28	$Z = -0.123$ $p = 0.901$
	Men	3.56 ± 2.31	
Age (years)	65-74	3.87 ± 2.28	$H = 23.157$ $p = 0.000$
	75-89	3.62 ± 2.21	
	90+	1.92 ± 2.43	
Marital status	Widowers/widows	3.32 ± 2.29	$Z = -2.340$ $p = 0.019$
	Married	3.96 ± 2.23	
Education	Primary	3.58 ± 2.28	$H = 4.983$ $p = 0.082$
	Vocational	2.90 ± 2.36	
	Secondary	4.12 ± 2.12	
	Higher	4.13 ± 2.13	
Place of residence	Urban area	3.45 ± 2.26	$Z = -0.690$ $p = 0.490$
	Rural area	3.58 ± 2.31	
Place of hospitalization	Biała Podlaska	3.14 ± 2.47	$F = 24.060$ $p = 0.000$
	Parczew	2.75 ± 2.15	
	Włodawa	4.70 ± 1.73	

Z — Mann-Whitney U test; H — Kruskal-Wallis test; F — analysis of variance

Table III. Sociodemographic variables and IADL scale results (mean ± standard deviation)

	Zmienna	IADL	Statistical analysis
Gender	Women	14.60 ± 5.40	$Z = -0.684$ $p = 0.493$
	Men	14.09 ± 5.19	
Age (years)	65-74	16.34 ± 5.57	$H = 23.157$ $p = 0.000$
	75-89	14.25 ± 5.13	
	90+	10.72 ± 4.13	
Marital status	Widowers/widows	13.83 ± 5.24	$Z = -2.580$ $p = 0.009$
	Married	15.55 ± 5.33	
Education	Primary	14.29 ± 5.25	$H = 10.938$ $p = 0.004$
	Vocational	13.35 ± 5.37	
	Secondary	17.44 ± 5.14	
	Higher	17.44 ± 5.14	
Place of residence	Urban area	14.39 ± 5.57	$Z = -0.065$ $p = 0.947$
	Rural area	14.43 ± 5.20	
Place of hospitalization	Biała Podlaska	13.94 ± 5.54	$F = 49.813$ $p = 0.000$
	Parczew	11.46 ± 3.67	
	Włodawa	17.83 ± 4.55	

Z — Mann-Whitney U test; H — Kruskal-Wallis test; F — analysis of variance

Discussion

The aging process naturally reduces the level of performance, even in a situation of self-reliance, which is why the advanced age is one of the most permanent factors that distinguish independent elderly and respondents with impaired physical and intellectual fitness in studies assessing their independence level and increases with age in people with IADL and ADL disabilities [5].

Described research revealed that geriatric patients were characterized by reduced efficiency in everyday activities (average 3.53 points). Similar results were obtained in the research by Przybyś et al. The authors in the group of seniors with neurological disorders obtained the result at the average level of 3.67 points [6]. Skubal et al. obtained a higher level of performance amongst elderly patients without dementia, where very good efficiency was demonstrated in performing fundamental everyday activities, with the average ADL score of 5.4 points. The lowest number of 3.8 characterized participants with moderate dementia. A statistically significant relationship between the degree of dementia and the independence of performing fundamental daily activities was demonstrated. Most elderly were characterized by moderate disability [7]. In described research, elderly patients presented a low level of instrumental activities of everyday life. In the studies by Strugała et al., the average number of points obtained by the participants on the IADL scale was 20.5, which indicated a good level of performance in the field of fundamental activities [8]. Other researchers obtained a slightly lower result (18

points) than geriatric patients hospitalized in internal medicine wards [9]. Presented original research indicated that female and male patients presented a similar degree of functional performance. Studies by other authors confirmed the trend, where the level of independence in everyday activities was at a similar level in both genders [6, 10].

The aging process naturally limits the functioning of older people. Advanced age is one of the most characteristic and permanent factors differentiating seniors' functional efficiency [11]. Presented research uncovered that the functioning of seniors in both fundamental and instrumental daily activities deteriorates with age. The fact is also confirmed in studies by other authors conducted among elderly patients in various environments [10,12,13].

In the presented research, the authors described widowed respondents as often less efficient in everyday functioning than married respondents. This coincides with the research results by Bogusz et al. [14] and Rybki et al. [15]. In both studies, widowed participants more often showed increased impairment in everyday functioning.

The described original research demonstrated the impact of education on the level of functionality amongst the respondents. The best results were obtained by patients with higher education, while the lowest level of performance characterized those with vocational education. Also, research by Rybki et al. [15] showed that education significantly affects the level of functionality in older people. The research results showed that people

with higher education were more efficient in fundamental everyday activities than people with primary education. Haor et al. also confirmed the dependence between functionality and education; the functionality of the elderly increased with the increased level of education [16].

Presented original research did not demonstrate a clear impact of the place of residence on the functional efficiency of the studied patients. Residents of the urban and rural areas obtained similar results on the ADL and IADL scale. Whereas, research by other authors often presented different results. Bogusz et al. [14] indicated that the surveyed rural inhabitants mostly presented a high degree of functional fitness. Borowiak and Kostka [17] and Rybka et al. [15] proved that the place of residence significantly affected seniors' efficiency in carrying out everyday activities, except that the rural inhabitants received higher results.

Presented original research revealed that seniors hospitalized in Włodawa exhibited the highest level of

performance amongst three included in the analyses, whereas the least independent were patients hospitalized in the geriatric ward in Parczew. This result gives food for thought, as both hospitals are powiat (basic) hospitals with the same degree of reference. Determining the reasons for this difference requires more in-depth analysis.

Conclusions

Geriatric ward patients presented a reduced level of functionality in fundamental and instrumental activities of everyday life. The age of the respondents, marital status, education, place of residence and place of hospitalization significantly differentiated the functional efficiency of the examined group of patients.

Konflikt interesów / Conflict of interest
Brak/None

References

1. Williams ME. Kontakt z pacjentem w starszym wieku. W: Rosenthal TC, Williams ME, Naughton BJ (red.). Geriatria. Pączek L, Niemczyk M (red. wyd. pol.). Lublin: Czelej; 2009. p. 1-20.
2. Starczewska M, Prociak L, Agnieszka Markowska A, et al. Ocena sprawności funkcjonalnej osób w podeszłym wieku. *Probl Pielęg.* 2018;26(3):222-7.
3. Borowiak E, Kostka T. Analiza sprawności funkcjonalnej osoby w starszym wieku. Rola pielęgniarki w zespole terapeutycznym. W: Wieczorowska-Tobis K, Talarska D. (red.). Geriatria i pielęgniarstwo geriatryczne. Warszawa: Wyd. PZWL; 2008. p. 81-95.
4. Kostka T, Koziarska-Rościszewska M. Choroby wieku podeszłego. Warszawa: Wydawnictwo Lekarskie PZWL; 2009.
5. Skalska A. Ograniczenie sprawności funkcjonalnej osób w podeszłym wieku. *Zdrow Publ Zarządz.* 2011;1:50-9.
6. Przybyś R, Fidecki W, Wrońska I, et al. Wybrane aspekty sprawności funkcjonalnej osób starszych ze schorzeniami neurologicznymi. W: Wysokiński M, Sienkiewicz Z, Fidecki W. (red.). Medyczo-społeczne aspekty starości. Warszawa: WUM; 2019. p. 154-164.
7. Skubal A, Sudoł I, Ciapała G, et al. Assessment of functional capacity and the risk of falls in the elderly with mild and moderate stage dementia. *Med Rev.* 2016;14(4):427-38.
8. Strugała M, Wieczorowska-Tobis K. Ocena stanu odżywienia pacjentów Oddziału Geriatrycznego w kontekście ich sprawności funkcjonalnej. *Geriatria.* 2011;5:89-93.
9. Wysokiński M, Fidecki W, Gębala S. Ocena samodzielności osób starszych hospitalizowanych na oddziałach internistycznych. *Gerontol Pol.* 2013;21(3):89-97.
10. Postrożny D, Żurawska R, Mziary M, et al. Ocena poziomu samodzielności funkcjonalnej powyżej 65 roku życia. *Gerontol Pol.* 2020;1:17-22.
11. Bujnowska-Fedak MM, Kumięga P, Sapilak BJ. Ocena sprawności funkcjonalnej osób starszych w praktyce lekarza rodzinnego w oparciu o wybrane skale testowe. *Fam Med Primary Care Rev.* 2013;15(2):76-9.
12. Lewko J, Kamińska KM, Doroszkiewicz H, et al. Ocena narażenia na upadki a wydolność funkcjonalna wśród osób starszych w środowisku zamieszkania. *Probl Piel.* 2014;22(2):159-64.

13. Lenartowicz H, Wysokiński M, Fidecki W. Ocena samodzielności seniorów z chorobami płuc. W: Fidecki W, Sienkiewicz Z, Wysokiński M. (red.). *Medyczne i społeczne problemy osób w podeszłym wieku*. Warszawa: WUM; 2018. p. 146-57.
14. Bogusz R, Charzyńska-Gula M, Szkuat M, et al. Sprawność funkcjonalna osób powyżej 70. roku życia na wsi a zapotrzebowanie na opiekę. *Med Og Nauk Zdr.* 2013;19(4):517-22.
15. Rybka M, Rezmerska L, Haor B. Ocena sprawności osób w wieku podeszłym. *Pielęgniarstwo w Opiece Długoterminowej.* 2016;2:4-12.
16. Haor B, Pielaszewska B, Ślusarz R, et al. Wybrane aspekty sprawności seniorów w złożonych czynnościach dnia codziennego a praktyka pielęgniarstwa w podstawowej opiece zdrowotnej. *Zeszyty Naukowe. Włocławek: WSHE;* 2013. p. 145-155.
17. Borowiak E, Kostka T. Oczekiwania na świadczenia opiekuńcze starszych mieszkańców obszaru miejskiego i wiejskiego oraz instytucji opiekuńczo-pielęgnacyjnych. *Gerontol Pol.* 2010;18(4):207-14.