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Selected Factors Affecting Biopsychosocial Functioning of Neurogeriatric Patients

Wybrane czynniki wpływające na funkcjonowanie biopsychospołeczne pacjentów neurogeriatrycznych

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Abstract

Introduction. At present, in Poland and other European countries we are witnessing an increase in the number of elderly people. Of particular importance is the psychophysical evaluation of the patient and defining the deficits in their everyday functioning.

Aim. The aim of the study was to analyze selected demographic factors affecting biopsychosocial functioning of neurogeriatric patients.

Material and Methods. The research was carried out in the Department of Geriatrics at University Hospital No. 1 in Bydgoszcz on a group of 122 patients aged from 60 to 95 years, hospitalized for diseases of the nervous system. The biopsychosocial assessment was performed with the use of the NOSGER scale (Nurses' Observation Scale for Geriatric Patients) — the Nursing Care Scale of Geriatric Patients and the Barthel scale.

Results. As a result of the analysis, it was found that the average assessment of the functioning of older people in the assessment of the NOSGER scale was 89.89 for 150 maximum points. As a result of the analysis, it was found that respondents aged up to 64 years functioned best in each aspect of the NOSGER scale, whereas respondents aged over 90 years functioned the worst, with the exception of moods and emotions subscales. In the age groups 65–74 and 75–89, functioning was similar in all subscales. The statistical analysis carried out showed that the respondents who were in the second group of fitness had significantly worse functioning in each subscale and the overall NOSGER assessment than those who were in the first fitness group ($p < 0.05$).

Conclusions. There were no statistically significant differences found between gender, age, marital status, education, and functional fitness of patients on the Barthel score. There was also no significant effect of gender, age and education on the NOSGER patients assessment. Significant influence of marital status on the assessment in the area of destructive and disruptive behaviors on the NOSGER scale was observed. (JNPN 2018;7(3):118–123)

Key Words: the NOSGER Scale, the Barthel scale, neurogeriatrics, biopsychosocial functioning

Streszczenie

Wstęp. Obecnie w Polsce i w innych krajach europejskich jesteśmy świadkami wzrostu ilości ludzi w podeszłym wieku. Szczególne znaczenie ma ocena psychofizyczna chorego oraz określenie deficytów jego funkcjonowaniu w życiu codziennym.

Cel. Celem pracy była analiza wybranych czynników demograficznych mających wpływ na funkcjonowanie biopsychospołeczne pacjentów neurogeriatrycznych.

Materiał i metody. Badania przeprowadzono w Klinice Geriatrii Szpitala Uniwersyteckiego nr 1 im. dr. A. Jurasza w Bydgoszczy na grupie 122 pacjentów w wieku od 60. do 95. roku życia, hospitalizowanych z powodu schorzeń układu nerwowego. Oceny biopsychospołecznej dokonano za pomocą skali NOSGER (Nurses' Observation Scale for Geriatric Patients) — Pielęgniarskiej Skali Obserwacji Pacjentów Geriatrycznych oraz skali Barthel.

Wyniki. W wyniku przeprowadzonej analizy stwierdzono, że średnia ocena funkcjonowania osób starszych w ocenie skali NOSGER wyniosła 89,89 na 150 pkt maksymalnych. W wyniku przeprowadzonej analizy stwierdzono, że ankietowani w wieku do 64 lat najlepiej funkcjonowali w poszczególnych aspektach skali NOSGER, natomiast najgorzej funkcjonowali badani w wieku powyżej 90. lat z wyjątkiem podskali nastroje i emocje. W grupie wiekowej 65–74 lata i 75–89 lat funkcjonowanie było zbliżone we wszystkich podskalach. Przeprowadzona analiza statystyczna wykazała, że ankietowani, którzy byli w II grupie sprawności mieli istotnie gorsze funkcjonowanie w poszczególnych podskalach oraz ogólnej ocenie NOSGER niż badani, którzy byli w I grupie sprawności ($p < 0,05$).

Wnioski. Nie stwierdzono różnic istotnych statystycznie pomiędzy płcią, wiekiem, stanem cywilnym i wykształceniem a sprawnością czynnościową pacjentów w ocenie skalą Barthel. Nie stwierdzono również istotnego wpływu płci, wieku i wykształcenia na ocenę pacjentów w skali NOSGER. Stwierdzono istotny wpływ stanu cywilnego na ocenę w obszarze zachowań destrukcyjnych i zakłócających w skali NOSGER. (PNN 2018;7(3):118–123)

Słowa kluczowe: skala NOSGER, skala Barthel, neurogeriatria, funkcjonowanie biopsychospołeczne

Introduction

Currently, we are witnessing an increase in the number of elderly people in Poland and other European countries. It is associated with numerous factors, and above all with reduced natural increase and prolongation of human life as a result of improved living conditions and significant development of medicine. Every year, the number of older people increases, requiring the provision of necessary care, treatment as well as nursing care.

Multidisease, characteristic for the period of old age, as well as gradually deteriorating functional capacity, increase the need for professional and comprehensive nursing care. Most diseases lead to dysfunction of each systems and, as a consequence, to patient's disability.

Of particular importance is the psychophysical evaluation of the patient and defining the deficits of their functioning in everyday life. Disorders in independent functioning in the course of the disease may have a significant impact on the sense of satisfaction and further life activity of the patient.

The aim of the study was to analyze selected demographic factors (age, gender, education, marital status) affecting biopsychosocial functioning of neurogeriatric patients.

Material and Methods

Subjects

The research was carried out in the Department of Geriatrics of dr. A. Jurasz University Hospital No. 1 in Bydgoszcz on a group of 122 patients aged from 60 to 95 years hospitalized for diseases of the nervous system (Table 1). The biopsychosocial assessment was performed with the use of the NOSGER scale (Nurses' Observation Scale for Geriatric Patients) and the Barthel Index.

Table 1. Characteristics of the study group

Variable	N	%
Gender		
Woman	82	67.2
Man	40	32.8
Age		
60–64 years	20	16.4
65–74 years	26	21.3
75–89 years	62	50.8
Over 90 years	14	11.5
Level of education		
Primary	60	49.2
Secondary	30	24.6
Vocational	21	17.2
Higher	11	9
Marital status		
Single	10	8.2
Married	48	39.4
Divorced	4	3.2
Widow/widower	60	49.2

Instruments

The first tool applied was the NOSGER scale (Nurses' Observation Scale for Geriatric Patients), or the Nurse Scale of Geriatric Patients. This scale enabled quick and easy assessment of the psychological, mental and social condition of the patient [1,2]. The scale consists of 30 questions and covers six areas: memory [M], instrumental activities of daily living [IADL], self-care (activities of daily living) [ADL], moods and emotion [ME], social behavior [S], disturbing behavior [B].

The Barthel Index (BI) [3,4], was published in 1965 and is by far the most common method of assessing activities of daily living (ADL). In literature, it also appears under the terms: Barthel Score or Maryland

Disability Index. By granting a certain number of points 0, 5, 10, 15, the self-service ability is assessed. When scoring, 10 daily activities are assessed, including eating meals, moving from bed to chair, maintaining personal hygiene, using the toilet, bathing, moving around the flat, climbing and going down the stairs, getting dressed, stool and urine control. For the purposes of statistical analyzes, the following criteria for qualifying the patient were adopted: group I (100–86 points) — slight impairment of fitness, group II (85–21 points) — average fitness limitation and group III (20–0 points) — very serious limitation of fitness.

Statistical Analysis

The obtained results were subjected to statistical analysis using the STATISTICA 10.0 software (StatSoft, Poland). The values of the measurable parameters analyzed were presented using the mean value, median and standard deviation whereas for non-measurable ones the number and percentage were used. For measurable features, the normality of the distribution of the analyzed parameters was evaluated with the use of the Shapiro–Wilk test. A significance level of $p < 0.05$ was adopted indicating the existence of statistically significant differences or dependencies.

Results

Assessment of Respondents' Fitness (BI) According to Demographic Factors

The average assessment of respondents' fitness according to the Barthel Index was 84.75 ± 13.99 points (from 100 to 0 points). It was found that 64.75% ($n=79$) of those surveyed were in the first efficiency group (100–86 points), whereas 35.25% ($n=43$) in the second group (85–21 points). The results obtained are presented in Table 2.

Table 2. Assessment of respondents according to the Barthel Index

Barthel Index	N	%
Group 1 (100–86 points) — slight limitation of fitness	79	64.75
Group 2 (85–21 points) — average limitation of fitness	43	35.25
Group 3 (20–0 points) — very serious limitation of fitness	0	0.0

As a result of the statistical analysis, no significant relationship was found between the assessment of the

patients' performance and age ($p=0.5$). Most often, the respondents aged up to 64 years (50.00%) were classified in group I compared to those aged 65–74 (30.77%), 75–89 years (32.26%) and over 90 years (35.71%).

As a result of the studies, no significant differences in the assessment of efficiency between men and women were found ($p=0.87$). It was found that 35.8% of men were in the second group of fitness and 65.00% in the first group. In the female group, 35.37% had the first degree of fitness and 64.63% II. Statistical analysis did not indicate any significant differences in the assessment of fitness between the respondents' gender.

It arises from the conducted research that among the respondents with primary education a slightly higher number of respondents were in the first group of fitness (75.00%) than in the group with secondary education (53.33%), vocational one (52.38%) or higher (63.64%). The differences found were not statistically significant ($p=0.12$).

As a result of the conducted research, it was found that the respondents who remained in the marriage slightly more often were classified to the second degree of fitness (38.78%) than those who were single (32.88%). The differences found were not statistically significant ($p=0.5$).

Assessment on the NOSGER Scale According to Demographic Factors

As a result of the analysis, it was found that the average assessment of the functioning of older people on the NOSGER scale amounted to 89.89 out of 150 maximum points. Taking into account each subscale, it was stated that the respondents functioned the worst in the field of instrumental activities of daily life (18.27), social behavior (16.25), self-care activities of daily living (15.88) as well as on the mood and emotions subscale (14.61). Better functioning was found in the assessment of the severity of disturbing behaviors (11.23) and memory (13.65). The results obtained are presented in Table 3.

As a result of the statistical analysis, there were no significant differences found between men and women in the assessment of functioning of the respondents in each area ($p > 0.05$). However, it was found that women functioned slightly better on each scale.

As a result of the analysis, it was found that respondents aged up to 64 years functioned best in particular aspects of the NOSGER Scale, whereas respondents aged over 90 functioned the worst except for the mood and emotions subscales. In the age groups 65–74 and 75–89, functioning was similar on all subscales. The obtained results are not statistically significant ($p > 0.05$).

There were no statistically significant differences found between education and the assessment of

Table 3. Patient's assessment in each aspect (NOSGER)

	Domain	Mean	Median	Min	Max	SD
M	Memory	13.65	15.00	5.00	25.0	6.33
ADL	Self-care (Activities of Daily Living)	15.88	17.00	5.00	23.0	4.90
S	Social behaviour	16.25	18.00	5.00	25.0	6.47
IADL	Instrumental Activities of Daily Living	18.27	19.00	5.00	25.0	5.43
ME	Mood and emotions	14.61	15.00	5.00	25.0	5.27
B	Disturbing behaviour	11.23	10.00	5.00	22.0	4.31
NOSGER	Overall assessment	89.89	96.00	34.00	142.0	27.64

SD — standard deviation

Table 4. Assessment of patients in each aspect (NOSGER) according to marital status

	Subscale	Single		Married		Analysis	
		Mean	SD	Mean	SD	Z	p
M	Memory	14.16	6.29	12.88	6.38	1.13	0.26
ADL	Self-care (Activities of Daily Living)	16.04	4.87	15.63	4.99	0.32	0.75
S	Social behaviour	17.03	6.25	15.10	6.68	1.64	0.10
IADL	Instrumental Activities of Daily Living	18.33	5.34	18.18	5.61	0.07	0.95
ME	Mood and emotions	14.90	5.16	14.16	5.45	0.83	0.40
B	Disturbing behaviour	11.93	4.38	10.18	4.02	2.29	0.02
NOSGER	Overall assessment	92.40	26.88	86.14	28.62	1.24	0.21

SD — standard deviation

functioning in each area ($p>0.05$). However, it was found that those with higher education functioned slightly better on each scale.

As a result of the conducted research, it was found that the respondents who were single had slightly worse functioning in the scope of each subscale compared to those who lived in a marriage. The exception was the assessment of instrumental activities of daily living, where the differences were minimal. Statistical analysis showed significant differences between the marital status and the assessment of disturbing behaviors ($p=0.02$), however no significant differences were found in the assessment of the remaining subscales and the overall NOSGER evaluation ($p>0.05$) (Table 4).

Discussion

Fitness of the elderly depends on an individual aging process, lifestyle, environmental, social and psychological factors as well as on diseases.

As a result of the statistical analysis, there were no significant differences found between men and women

in the assessment of functioning of the respondents in particular areas of the NOSGER Scale ($p>0.05$). However, it was found that women performed slightly better on each scale. In the research carried out by Fidecki et al. [5], women were also better rated. Pruszyński et al. [6], in their research, found that women were also more independent.

As a result of the statistical analysis, no significant relationship was found between the Barthel's Index performance assessment and the age of the respondents. However, as regards the NOSGER Scale, it was found that respondents aged 64 and younger worked best in each aspect of this tool. The worst functional condition was found in the respondents aged over 90 years. Biercewicz et al. [7], confirm that with age, the functional efficiency of the body deteriorates and the incidence of various diseases increases. Such persons require constant professional care.

The research conducted shows that respondents with primary education had worse performance on all NOSGER subscales, whereas respondents with higher education

functioned the best. The Barthel's Index shows that among the respondents with primary education there were slightly more people with the first group of fitness. Previous research by Biercewicz et al. showed, however, that people with lower education show more frequent limitations in the performance of everyday activities [8].

As a result of the research, it was found that unmarried respondents performed slightly worse on each subscale than those who were married (except for the assessment of instrumental activities of everyday living, where the differences were minimal). Statistical analysis showed significant differences in the assessment of destructive, disruptive behavior. As a result of the conducted research, it was found that the respondents who were in the relationship slightly more often presented the second degree of fitness (38.78%) compared to those who were single (32.88%). Analyzing the impact of marital status on functional fitness, it was found that married people were doing much better than others in various areas of the NOSGER Scale. Our own research showed a relationship between the marital status of elderly patients and their fitness, and due to that the need for nursing care. The research by Biercewicz et al. [7], confirm the

results of our research. The authors stated that the elderly, divorced and widowed, showed lower efficiency in everyday activities.

In their studies, Biercewicz et al. showed that neurological disorders significantly affected the deterioration of functional capacity of older people. This is related to the nature of neurological disorders [8]. The studies conducted by Wojszel and Bień [9] indicate that the functional capacity of older people is highly correlated with their locomotion efficiency. The authors also emphasize that mobility disorders reduce the quality of life of older people and cause dependence on others. The study conducted by Borowiak et al. [10], on a group of 1,600 elderly patients with cardiovascular disease, showed that with age, problems with moving and performing basic activities were more frequent.

The statistical analysis showed that the respondents who were in the second group of fitness had significantly worse functioning on individual subscales and in the overall NOSGER assessment than the respondents who were in the first group of fitness ($p < 0.05$).

Taking into account individual components of the NOSGER scale, it was found that the respondents functioned the worst in terms of the instrumental activity of daily living (18.27%) and in social behavior (16.25%), daily activities (15.88%), on the moods and emotions subscale (14.61%). Better functioning was found in the assessment of the severity of destructive behaviors (11.23%) and memory (13.65%). Szczerbińska [11] in her research states that older people, as the disability progresses, in the area of daily life activity, more often indicate the need for care, nursing and social services. In the studies carried out by Zielińska et al. [12], the elderly demonstrated a considerably lower level of functional fitness as a part their activity related to their ability to walk and move. Research by other authors [13] shows that with age, the number of health problems is increasing, thus affecting the quality of life of older people.

Conclusions

There were no statistically significant differences found between gender, age, marital status and education, and functional fitness of patients in the assessment according to the Barthel Index. There was also no significant influence of gender, age and education on the NOSGER patient assessment. Significant effect of marital status on the assessment in the area of destructive and disruptive behaviours on the NOSGER Scale was found.

Implications for Nursing Practice

Characteristic for the period of old age, multi-disease, as well as gradually deteriorating functional capacity, increase the need for professional and comprehensive nursing care. The psychophysical evaluation of the patient and the determination of deficits of their functioning in everyday life are of significant importance in nursing care. In order to provide comprehensive and holistic care, it is necessary to assess systematically the condition of the patient using various tools, such as the Barthel Index and NOSGER Scale by nurses.

References

- [1] Spiegel R., Brunner C., Ermini-Fünfschilling D. et al. A new behavioral assessment scale for geriatric out- and in-patients: the NOSGER (Nurses' Observation Scale for Geriatric Patients). *J Am Geriatr Soc.* 1991;39(4):339–347.
- [2] Fidecki W., Wysokiński M. Zastosowanie skali NOSGER w praktyce pielęgniarskiej. W: Kachaniuk H. (Red.), *Pielęgniarska opieka nad osobami starszymi*. Wyd. Raabe, Warszawa 2008:13–21.
- [3] Mahoney F.I., Barthel D.W. Functional evaluation: The Barthel Index. *Md State Med J.* 1965;14:61–65.
- [4] Kostka T., Koziarska-Rościszewska M. *Choroby wieku podeszłego*. Wyd. Lekarskie PZWL, Warszawa 2009.
- [5] Fidecki W., Wysokiński M., Wrońska I. Zapotrzebowanie na opiekę pielęgniarską wśród kobiet w podeszłym wieku. *Probl Pielęg.* 2009;17(4):277–282.
- [6] Pruszyński J.J., Cicha-Mikołajczyk A., Gębska-Kuczerowska A. Ocena wydolności czynnościowej i sprawności motorycznej osób przyjmowanych do pielęgniarskiego domu opieki w Polsce. *Prz Epidemiol.* 2006;60(2):331–338.
- [7] Biercewicz M., Kędziora-Kornatowska K. Problemy pielęgnacyjne pacjentów geriatrycznych. *Pielęg Pol.* 2005; 1(9):133–137.
- [8] Biercewicz M., Szrajda J., Ślusarz R., Kędziora-Kornatowska K., Beuth W. Nervous system disorders in elderly patients and their influence on activities of daily living. *Ann UMCS Sect D.* 2005;60:19–23.
- [9] Wojszel B., Bień B. Wielkie problemy geriatryczne jako przyczyna upośledzenia sprawności osób w późnej starości. *Gerontol Pol.* 2001;9(2):32–38.
- [10] Borowiak E., Kusiak M., Kostka T. Czynniki determinujące jakość życia osób starszych hospitalizowanych z przyczyn kardiologicznych — badania wstępne. *Pielęg XXI w.* 2005;1–2(10–11):77–81.
- [11] Szczerbińska K. Wpływ sprawności osób starszych w zakresie ADL na ich korzystanie z opieki zdrowotnej i pomocy społecznej. *Gerontol Pol.* 2004;12(2):89–96.
- [12] Zielińska A., Strugała M., Stachowska M. Ocena funkcjonowania czynnościowego, poznawczego oraz ryzyka rozwoju odleżyn, jako zasadniczych elementów w planowaniu zapotrzebowania na opiekę pielęgniarską u pacjentów w wieku podeszłym. *Probl Hig.* 2007;88(2): 216–220.

- [13] Zysnarska M., Biskupska M. Ocena sprawności mieszkańców Domu Pomocy Społecznej w aspekcie skali Barthel. *Zdr Publ.* 2006;116(2):337–339.

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