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An Attempt at Evaluating the Risk of Dementia in Elderly People under Long-term Care

Próba oceny ryzyka demencji wśród osób starszych objętych opieką długoterminową

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Abstract

Introduction. An increase in the number of elderly people and hence in dementia is the consequence of extended lifespans worldwide. Difficulties in organising and financing care for elderly patients as well as considerable treatment costs have become major issues for contemporary healthcare systems because of a large number of people affected by dementia.

Aim. This research aimed at attempting to specify the risk of dementia in elderly people under institutional long-term care.

Material and Methods. The research cohort was comprised of 300 elderly patients who were staying in long-term care institutions all over Poland. The investigation employed the NOSGER scale (Nurses' Observation Scale for Geriatric Patients), which allows both professional and non-professional carers of the elderly to evaluate physical, mental, and social state of their patients quickly and easily.

Results. An overall evaluation of the elderly averaged out at 74.76 ± 20.80 . Investigated patients functioned best in the domain of distracting activities (7.83 ± 2.58) and memory (10.38 ± 3.81). Mood (12.18 ± 4.39) and activities of daily living (13.19 ± 5.31) averaged out at slightly lower levels. Finally, greatest deficits were discovered in the domain of social behaviour (14.42 ± 5.16) and instrumental activities of daily living (16.74 ± 4.82).

Conclusions. Research findings show that the group of geriatric patients staying in long-term care institutions faces low risk of dementia changes. Within the domains that are significant for changes of this type (memory, mood, disruptive behaviour) patients functioned at a relatively good level. Greatest deficits were only found in the domain of physical functioning, which was related to restricting their functional ability caused by already existing ailments and age-related constraints. (JNNS 2014;3(3):116–120)

Key Words: dementia, elderly people, long-term care.

Streszczenie

Wprowadzenie. Konsekwencją wydłużającego się życia społeczeństwa światowego jest wzrost liczby osób starszych a przez to częstszego występowania demencji. Ze względu na dużą liczbę osób nią dotkniętych, trudności z organizacją i finansowaniem opieki nad pacjentami oraz poważne koszty leczenia, stały się wyzwaniem dla współczesnych systemów opieki zdrowotnej.

Cel. Celem badań była próba określenia ryzyka wystąpienia demencji u osób starszych objętych instytucjonalną opieką długoterminową.

Materiał i metody. Badania przeprowadzone zostały w grupie 300 pacjentów w podeszłym wieku, przebywających w zakładach opiekuńczo-leczniczych (long-term care institutions) na terenie Polski. Badania przeprowadzono przy użyciu skali NOSGER (Nurses' Observation Scale for Geriatric Patients). Skala ta umożliwia profesjonalnym, jak i nieprofesjonalnym opiekunom seniora szybkie i łatwe dokonanie oceny fizycznego, umysłowego i socjalnego stanu pacjenta.

Wyniki. Całościowa ocena osób starszych była na poziomie średniej $74,76 \pm 20,80$. Badane osoby najlepiej funkcjonowały w obszarze zachowań zakłócających ($7,83 \pm 2,58$) oraz pamięci ($10,38 \pm 3,81$). Nieco gorzej oceniono emocje ($12,18 \pm 4,39$) i aktywności codziennego życia ($13,19 \pm 5,31$). Największe deficyty stwierdzono w obszarze zachowań społecznych ($14,42 \pm 5,16$) oraz instrumentalnych aktywności codziennego życia ($16,74 \pm 4,82$).

Wnioski. Badania pozwoliły stwierdzić, że w grupie pacjentów geriatrycznych przebywających w zakładach opieki długoterminowej występuje małe ryzyko zmian o charakterze demencyjnym. W obszarach istotnych dla diagnozowania tego rodzaju zmian (pamięć, emocje, zachowania zakłócające) pacjenci funkcjonowali na dość dobrym poziomie. Największe deficyty stwierdzono jedynie w zakresie funkcjonowania fizycznego, związane to było z ograniczeniem sprawności funkcjonalnej spowodowanej istniejącymi chorobami oraz ograniczeniami związanymi z wiekiem. (PNN 2014;3(3):116–120)

Słowa kluczowe: otępienie, osoby starsze, opieka długoterminowa

Introduction

An increase in the number of elderly people and hence in dementia is the consequence of extended lifespans worldwide. Difficulties in organising and financing care for elderly patients as well as considerable treatment costs have become major issues for contemporary healthcare systems because of a large number of people affected by dementia [1].

Dementia poses serious problems for diagnostics, treatment and taking care of geriatric patients. In the research cohort, it impaired the functional state, intellectual functioning and considerably decreased patients' quality of life [2]. An increase in the societies' ageing process causes dementia to become more widespread. 24 million people are estimated to suffer from dementia-related disorders and this number is forecast to double every 20 years. Consequently, approximately 80 million people will be suffering from dementia in 2040 [3]. According to the international classification of diseases, injuries and causes of deaths, dementia is a complex of symptoms triggered by chronic or progressing brain diseases which impair higher cortex functions, i.e. memory, thinking, spatial orientation, comprehension, counting, communication, and assessment. These disorders hamper intellectual functioning, mood and social behaviour. Frequent emotional disorders, behaviour and motivation disorders might precede an impairment of comprehension functions [4]. The more advanced the age the more common dementia disorders become. Furthermore, the number of elderly people hospitalised in long-term care institutions is increasing [5].

This research aimed at attempting to specify the risk of dementia occurring in elderly people under long-term institutional care.

Material and Methods

The investigation was administered in the research cohort of 300 elderly patients staying in long-term care institutions all over Poland. Detailed characteristics of the research cohort was presented in Table 1.

An agreement was obtained from the Bioethical Committee at the Medical University of Lublin for

Table 1. Characteristics of the research pool

Variables		%	No.
Gender	Female	63.22	196
	Male	36.78	104
Age	65–74 years	38.10	120
	75–89 years	54.20	168
	Over 90 years	7.70	22
Education	Elementary	82.60	256
	Secondary	17.40	54
Marital Status	Single	21.60	67
	Married	12.00	37
	Divorced	9.00	28
	Widow/Widower	57.40	178

conducting this research. Patients were informed that the investigation was anonymous and voluntary, and research findings would be used for scientific purposes only.

The study involved using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients), which allows both professional and non-professional carers of the elderly to evaluate physical, mental, and social state of their patients quickly and easily. The scale is comprised of 30 questions and covers six dimensions: memory, instrumental activities of daily living (IADL), activities of daily living (ADL), mood, social behaviour, destructive behaviour, and disturbing behaviour. Values on the scale range from 1 (always) to 5 (never). A minimum score a patient can score is 30 and the maximum score is 150. Within each domain, a patient's score can range from 5 to 25 points. The higher the score one obtains during observation, the worse their condition is [6–11].

Statistical Analysis

Having been collected, the material was analysed statistically by means of the Statistica 8.0 statistical package. Calculations made use of the Mann-Whitney U test and the Kruskal-Wallis test. A 5% judgement error was adopted and subsequently the significance level of $p < 0.05$ was established indicating existence of statistically significant differences or correlations.

Results

The research cohort was evaluated both generally using the NOSGER scale and individually in the six domains. Research findings were presented by means of the median and standard deviation. An overall assessment made by elderly people averaged out at 74.76 ± 20.80 . Investigated patients functioned best in the domain of disturbing behaviour (7.83 ± 2.58) and memory (10.38 ± 3.81). Mood (12.18 ± 4.39) and activities of daily living (13.19 ± 5.31) scored slightly lower. Greatest deficits were reported in the domain of social

behaviour (14.42 ± 5.16) and instrumental activities of daily living (16.74 ± 4.82).

Table 2 shows the evaluation of patients depending on their gender. It shows females to be in a worse shape except for the domain of mood and social behaviour. Males scored higher in the four other domains. Nevertheless, the difference between genders was not statistically significant.

The study also involved evaluating patients depending on their age. People from the younger age group functioned better in all NOSGER domains. Statistical analysis proved a significant difference to exist between investigated groups only in the IADL and ADL domains (Table 3).

Table 2. NOSGER vs. Gender

NOSGER dimension	Female		Male		Statistical analysis	
	Mean	SD	Mean	SD	Z	p
Memory	10.41	3.51	10.32	4.29	-0.655	0.511
IADL	17.12	4.46	16.07	5.32	-1.370	0.170
ADL	13.41	5.07	12.80	5.71	-1.040	0.298
Mood	12.03	4.09	12.45	4.87	0.350	0.726
Social behavior	14.22	4.71	14.76	5.87	0.716	0.473
Disturbing behavior	7.87	2.55	7.76	2.66	-0.707	0.479
NOSGER	75.09	18.69	74.19	24.07	-0.416	0.677

Z — Mann-Whitney U test

Table 3. NOSGER vs. Age

NOSGER dimension	65–74		75–89		90+		Statistical analysis	
	Mean	SD	Mean	SD	Mean	SD	H	p
Memory	9.86	3.81	10.66	3.83	11.09	3.53	4.765	0.092
IADL	15.62	5.23	17.60	4.43	16.22	4.08	10.108	0.006
ADL	12.25	5.52	13.88	5.14	13.00	4.84	7.187	0.027
Mood	12.05	4.34	12.49	4.46	12.59	3.88	3.468	0.176
Social behavior	13.59	5.30	15.00	5.10	13.76	4.55	3.902	0.142
Disturbing behavior	7.72	2.62	7.73	2.46	9.22	3.03	5.704	0.057
NOSGER	71.28	20.95	77.38	20.75	73.72	18.05	5.129	0.076

Z — Mann-Whitney U test

Table 4. NOSGER vs. Education

NOSGER dimension	Elementary		Secondary		Statistical analysis	
	Mean	SD	Mean	SD	Z	p
Memory	10.63	3.96	9.20	2.79	2.151	0.031
IADL	16.78	4.88	16.51	4.52	0.530	0.596
ADL	13.23	5.27	12.98	5.57	0.215	0.829
Mood	12.44	4.57	10.98	3.20	1.880	0.060
Social behavior	14.65	5.38	13.33	3.81	2.062	0.039
Disturbing behavior	7.98	2.67	7.11	2.01	2.057	0.039
NOSGER	75.74	21.73	70.12	14.91	1.822	0.068

Z — Mann-Whitney U test

Table 5. NOSGER vs. Marital Status

NOSGER dimension	Single		Married		Divorced		Widow/Widower		Statistical analysis	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	H	p
Memory	9.22	3.71	10.05	3.58	11.00	2.93	10.79	3.95	10.465	0.015
IADL	14.76	5.12	16.05	4.81	17.32	5.09	17.53	4.45	16.050	0.001
ADL	10.94	4.49	12.94	5.06	13.21	5.10	14.08	5.46	17.48	0.006
Mood	11.38	4.79	11.48	3.35	13.53	2.70	12.42	4.58	7.586	0.045
Social behavior	13.76	4.99	13.21	4.79	15.82	6.28	14.70	5.07	5.334	0.148
Disturbing behavior	7.82	3.03	8.29	2.24	8.46	2.70	7.64	2.44	6.280	0.048
NOSGER	67.89	22.04	72.05	18.18	79.35	19.66	77.19	20.47	11.339	0.010

H — Kruskal-Wallis test

Education of investigated patients was the next variable to be analysed. Those with secondary education (70.12 ± 14.91) enjoyed greater fitness than those with primary education (75 ± 21.73). This tendency manifested itself in all component domains. Statistical analysis proved that the difference between groups was statistically significant only in the domains of social behaviour and disturbing behaviour (Table 4).

Having analysed patients' marital status (Table 5), the authors found that unmarried people were evaluated highest (67.89 ± 22.04). Married people enjoyed slightly lower fitness in physical and psychosocial domains (72.05 ± 18.18). The widowed (77.19 ± 20.47) and the divorced (79.35 ± 19.66) proved least independent. Statistical analysis disclosed a statistically significant difference between investigated groups in all NOSGER domains, except social behaviour.

Discussion

The number of patients suffering from age-related ailments, i.e. conditions whose risk increases with age, is growing in the group of elderly people. Current demographic processes give ground for predicting that the frequency of dementia will increase as the number of elderly people grows [12]. The nature of dementia is heterogeneous when it comes to its course and causes. Statistically, Alzheimer's disease is the most common cause of dementia, as it concerns over 60% of all cases. The way people with dementia behave depends on changes in the brain that lead to developing memory and cognition disorders, and increase difficulty in recognising the surroundings [13–14].

Authors' own research proved elderly people under long-term institutional care to function well intellectually. Domains such as memory and disturbing behaviour were evaluated best, which proves there were no dementia-related disorders. It must be emphasised, that evaluations were made by caregivers who were in close contact with their patients and therefore knew them well.

This allowed to avoid mistakes in evaluating patients' state. Other researchers [15–16] report that decreased functional ability may frequently forecast mild cognitive impairment. Authors' own research proved investigated patients to function poorly in IADL and ADL domains, which was nevertheless caused by diseases that had made patients stay in long-term care institutions.

According to literature of the subject [17–19], females face greater risks of dementia as they grow old. Authors' own research confirmed this tendency. Research findings obtained by means of the NOSGER scale were worse within the group of females than in the group of males. Females were evaluated worse in the domain of memory and disruptive behaviour, which might suggest there was a risk of dementia. Females also functioned worse in ADL and IADL domains.

Authors' own research findings prove patients' functioning in the domains of memory and disruptive behaviour to deteriorate with age. Greatest deficits in these domains were discovered in investigated patients from the age bracket of 90 and older. This is confirmed by research findings published in the literature, as the number of dementia cases grows from approximately 1% after the age of 65 to approximately 90% after the age of 90. The dementia occurrence index doubles approximately every 5 years [20–22].

Authors' own research findings proved patients with secondary education to function better than those with primary education. They were fitter both in general evaluation and in individual domains of the NOSGER scale. Hence, education may be concluded to positively affect geriatric patients' intellectual state and to decrease the risk of dementia.

Conclusions

This investigation has proved geriatric patients staying in long-term care institutions to face a low risk of dementia changes. Within domains significant for diagnosing this type of changes (memory, mood, disruptive beha-

viour), patients functioned on a relatively good level. Greatest deficits were only discovered in the sphere of physical functioning, which was related to reducing functional fitness caused by prior diseases and age-related constraints.

Implications for Nursing Practice

The evaluation focusing on dementia symptoms (e.g. by means of the NOSGER scale) ought to be included into everyday nursing practice for elderly people under long-term care. This would allow a to provide a prompt diagnosis of a patient's state and to undertake necessary and adequate interventions.

References

- [1] Durda M. Organizacja opieki nad osobami z demencją w Polsce na tle krajów rozwiniętych i rozwijających się. *Gerontologia Polska*. 2010;18(2):76–85.
- [2] Wilmańska J., Gułaj E. Ocena zaburzeń funkcji poznawczych osób starszych — próba porównania poszczególnych metod przesiewowych. *Gerontologia Polska*. 2008;16(2):111–118.
- [3] Ferri C.P., Prince M., Brayne C. et al. Global prevalence of dementia: a Delphi consensus study. *Lancet*. 2005;366:2112–2117.
- [4] World Health Organization. The ICD-10 Classification of mental and behavioral disorders. World Health Organization. Geneva 1992.
- [5] Babiarczyk B., Kolonko J. Rola personelu opiekuńczego w zapewnieniu właściwego odżywienia pacjenta z demencją starczą hospitalizowanego w placówce opieki długoterminowej. *Problemy Pielęgniarstwa*. 2008;16(3):304–309.
- [6] Brunner C., Spiegel R. Eine Validierungsstudie mit der NOSGER (Nurses' Observation Scale for Geriatric Patients), einem neuen Beurteilungsinstrument für die Psychogeriatric. *Zeitschrift für Klinische Psychologie*. 1990;19(3):211–229.
- [7] Liszewska M. Zdążyć na czas. Senior z demencją a zastosowanie NOSGER (Nurses' Observation Scale for Geriatric Patients). *Wspólne tematy*. 2005;1:3–9.
- [8] Spiegel R., Brunner M., Ermini-Füenschilling D. et al. A new behavioral Assessment Scale for Geriatric Out- and In Patients: the NOSGER (Nurses' Observation Scale for Geriatric Patients). *Journal of American Geriatrics Society*. 1991;39(4):339–347.
- [9] Tremmel L., Spiegel R. Clinical experience with the NOSGER (Nurses' Observation Scale for Geriatric Patients): tentative normative data and sensitivity to change. *International Journal of Geriatrics Psychiatry*. 1993;8:311–317.
- [10] Wahle M., Häller S., Spiegel R. Validation of the NOSGER (Nurses' Observation Scale for Geriatric Patients): reliability and validity of a caregiver rating instrument. *International Psychogeriatrics*. 1996;8(4):525–547.
- [11] Fidecki W., Wysokiński M. Zastosowanie skali NOSGER w praktyce pielęgniarskiej. W: Kachaniuk H. (Red.). *Pielęgniarska opieka nad osobami starszymi*. Dr Josef Raabe Spółka Wydawnicza Sp. z o.o., Warszawa 2008;13–21.
- [12] Opala G. Epidemiologia otępień. W: Leszek J. (Red.). *Choroby otępienne. Teoria i praktyka*. Continuo, Wrocław 2011.
- [13] Borzym A. *Oddziaływania nefarmakologiczne w otępieniu*. W: Parnowski T. (Red.). *Choroba Alzheimera*. Wydawnictwo Lekarskie PZWL, 2010;49–51.
- [14] Długosz-Mazur E., Bojar I., Gustaw K. Niefarmakologiczne metody postępowania u chorych z otępieniem. *Medycyna Ogólna i Nauki o Zdrowiu*. 2013;19(4):458–462.
- [15] Raji M.A., Ostir G.V., Markides K.S., Goodwin J.S. The interaction of cognitive and emotional status on subsequent physical functioning in older Mexican Americans: Finding from the Hispanic established population for the epidemiologic study of the elderly. *Journal of American Geriatrics Society*. 2002;57A:M678–M682.
- [16] Petesen R.C., Negash S. Mild cognitive impairment: an overview. *CNS Spectr*. 2008;13(1):45–53.
- [17] Wang W., Wu S., Cheng X. et al. Prevalence of Alzheimers disease and other dementing disorders in an urban community of Beijing, China. *Neuroepidemiology*. 2000;19:194–200.
- [18] Vas C.J., Pinto C., Panikker et al. Prevalence of dementia in an Indian population. *International Psychogeriatrics*. 2001;13:439–450.
- [19] Alberca R., Montes-Latorre E., Gil-Neciga E., Mir-Rivera P., Lozano-San M.P. Alzheimers disease and women. *Revista de Neurologia*. 2002;35:571–579.
- [20] Jorm A.F., Jolley D. The incidence of dementia: a meta-analysis. *Neurology*. 1998;51(3):728–733.
- [21] Matthiews F.E., Denning T. Prevalence of dementia in institutional care. *Lancet*. 2002;360:225–226.
- [22] Józwiak A. Otępienie u osób w wieku starszym. *Geriatrics*. 2008;2:237–246.

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(A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation of data, D — Statistical Analysis, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article)

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