



Comprehensive geriatric assessment in clinical nursing practice

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Abstract

Introduction and Objective. Current literature defines comprehensive geriatric assessment as a multi-dimensional, multi-disciplinary diagnostic and therapeutic process aimed at determining medical, psychological and functional capacities of an elderly person and developing a coordinated and integrated treatment and care plan. The aim of the study is to determine the functional capacity of the elderly.

Materials and Method. The study was conducted in a group of 264 elderly people in the Lublin Province of eastern Poland. The seniors were aged 65–92 years, mean age – 74.4 years. The Nurses' Observation Scale for Geriatric Patients (NOSGER) was used in the study.

Results. The seniors' functional performance score with the NOSGER scale for the entire group was at the mean of 57.56 points. The largest deficits in the seniors were recorded in the area of social behaviour (12.27 points), in instrumental activities of daily living (11.70 points), and in the area of moods and emotions (10.07 points). Activities of daily living were assessed at the mean level of 8.50 points. Disruptive behaviours (7.63 points). The memory area (7.73 points) were rated at a similar levels.

Conclusions. The study group of seniors was characterised by fairly good functional performance. Greatest deficits were found in the area of social relations and instrumental activities of daily living. Variables, such as marital status and place of residence, significantly differentiated the degree of fitness in the elderly.

Key words

the elderly, comprehensive geriatric assessment, functional capacity, NOSGER scale

INTRODUCTION

The age distribution in a population greatly affects the burden its disease and disability. With the sharp increase in life expectancy observed in both males and females, virtually every country worldwide is experiencing a rise in the size and proportion of the elderly in the population. Over the next three decades, the global number of the elderly is expected to more than double [1].

This approach to the assessment of elderly people takes into account a complex interdependence of physical illness, psychological disorders and social and environmental challenges in the senior's home. This assessment involves linking medical and social care with medical diagnoses and decision-making, and can be performed by a nurse or a physician, particularly those with a geriatric specialisation [2–4].

Comprehensive geriatric assessment is a multi-dimensional diagnostic process focused on determining the clinical profile, risk of pathology, short-term and long-term diagnosis and personalised therapeutic and care plan for the elderly. The effectiveness of geriatric assessment programmes may depend on the setting in which it is carried out (hospital, nursing home, home environment), as well as on the specific clinical conditions of the elderly [5].

Comprehensive Geriatric Assessment (CGA) is considered the optimal model for medical assessment and care planning for the elderly [6], and should be made in every elderly patient. The complexity of this assessment means that even a geriatrician cannot perform it alone and requires the efforts of a whole interdisciplinary team. The core of this team should consist of the attending physician, a nurse prepared to work with the elderly patient, a physiotherapist, an occupational therapist or a psychologist. The whole group should cooperate with the social welfare department. Each member assesses the patient using dedicated methods specific to the profession. The participation of the patient's family is also essential in the assessment [7].

Maintenance of functional fitness is a component of

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successful ageing. Full functional fitness gives the elderly the ability to function independently in their daily lives, i.e. the ability to perform self-care along with securing their own needs while maintaining intellectual and physical fitness [8]. If functional fitness is low, however, the difference between life expectancy and healthy life expectancy increases which, in turn, intensifies the risk of chronic diseases, rendering independent living difficult [9].

Modern nursing care for geriatric patients is based on assessing their condition, identifying their needs across various aspects of daily functioning, and implementing preventive, therapeutic, and supportive measures. The goal of nursing care is to minimize deficits in functional efficiency and educate patients on managing their changing health conditions. Nursing interventions focus on enhancing the overall comfort and quality of life of elderly individuals.

In the home environment, nursing care for older adults is provided by family nurses and long-term home care nurses. A key component of this care is the systematic use of geriatric nursing assessments.

Although numerous geriatric assessment tools exist, they usually assess an elderly person only in part, not providing a comprehensive picture of the elderly person's condition. The NOSGER (Nurses' Observation Scale for Geriatric Patients) scale seems to be an interesting proposal with which it is possible to assess the functional status of an elderly patient. The authors of the scale noticed that there was a lack of a suitable tool that would facilitate a quick and accurate assessment of the condition of a geriatric patient. The researchers intended such a tool to enable the assessment of behaviour in areas relevant to the daily life of the patient and their carers. It would be applicable to patients in institutional care as well as those in the home environment, and could be used by both professionals and non-professionals. It would assess areas that may change over time as a result of the treatment used or the course of the disease. In creating the scale, the authors drew on their own clinical experience and an analysis of other geriatric assessment tools currently available. The NOSGER scale was created primarily for the behavioural assessment of geriatric patients. In the current study, however, the authors have attempted to extend the use of the NOSGER Tscale to the general population of the elderly, including those living in their own environment. The existing global and Polish experience with the NOSGER scale allows us the conclusion that this scale can be easily applied in broadly understood geriatric care, both professional and non-professional. It is worth emphasising that the ease of assessment is so important in the era of ageing societies and in the development of a home geriatric care model. Not only does such a model reduce economic costs, but above all increases the comfort of an elderly person's life in a broad sense. It is important to be aware that NOSGER is a 'first-line' scale in patient assessment and if there are any doubts about the assessment, a more thorough assessment should be carried out using specific tools [10].

The aim of the study was to apply the NOSGER scale in the geriatric assessment of the elderly living in their own environment in terms of selected socio-demographic variables.

MATERIALS AND METHOD

The study was conducted in the Lublin Province of eastern Poland and comprised a total of 264 participants aged 65 years

and older. To select the study group, a non-random sampling method was used with a purposive sampling technique. The elderly being surveyed came from different parts of the Lublin Province, which made it possible to obtain more objective research results. The sample size was determined by using the Sample Size Calculator.

It was assumed that at the stage of collecting research material it would be unreasonable to categorise the elderly into able-bodied, partially able-bodied and disabled. This would be incompatible with the purpose of the research. Therefore, the context of elderly' health status was deliberately omitted in the process of their qualification into the study group. Study inclusion criteria:

- age 65 and over;
- consent for participation in the study;
- persons residing in their home environment.

Study exclusion criteria:

- age below 65 years;
- no consent for participation in the study;
- persons in institutional care.

The study was conducted between June 2023 – January 2024. The NOSGER scale questionnaire was completed by relatives of the elderly who had intensive contact with the patient (at least 6 hours a day), i.e. family members, neighbours or friends of the elderly participant. The carers were informed about how to complete the questionnaire, and that the assessment of the person in their care referred to the last 14 days.

Research tool. The research material was collected by means of the Nurses' Observation Scale for Geriatric Patients (NOSGER). This scale allows caregivers of seniors to quickly and easily assess their patient's mental, psychological and social state. The scale covers six areas: memory; instrumental activities of daily living; activities of daily living; moods and emotions; social behaviour; destructive, disruptive, and antisocial behaviour. The values of the scale were specified with numbers from 1 (always) to 5 (never). The patient could score a minimum of 30 points and a maximum of 150 points. The higher the number of points obtained during the observation, the worse the patient's condition was rated. Validation studies using the NOSGER scale showed it to be a well-accepted tool, featuring high internal consistency and reliability, and high correlation of scores in all 6 domains with scores obtained with other measurement tools [10–13].

The available source materials show that the NOSGER scale first appeared in Polish literature in 2005, was appropriately described, and its Polish translation presented in Liszewska's work [14]. Before starting the research using the NOSGER scale, the authors first obtained the consent of the creators of the tool for its use. Regardless of the existence of the Polish version of the scale, it was decided to translate it again from the original version. Thus, the version of the scale developed by Fidecki et al. was used in this research [10]. The reliability of the tool used in the research group of 264 elderly patients was checked by Cronbach's alpha coefficient, which was 0.939 for NOSGER-total, 0.805 for ADL, 0.759 for IADL, 0.788 for mood, 0.709 for disturbing behaviour, 0.832 for social behaviour, and 0.893 for memory.

Statistical analysis. Statistical analysis and database check were performed using Statistica 10.0 software (StatSoft, Poland). The value of measurable parameters was presented by mean and standard deviation (SD), as well as minimum and maximum. Non-measurable values were presented by means of the count and percentage. For measurable characteristics, the distribution of the analysed parameters was assessed using the W Shapiro-Wilk test. The Mann-Whitney U test and Student's t-test were used to compare two independent groups. For more groups, the Kruskal-Wallis test was used. A significance level of $p \leq 0.05$ was adopted, which determined the existence of statistically significant differences or correlations.

Ethics approval. The study was conducted in accordance with ethical principles. Before proceeding with the study, the participants had read the instructions and information prepared, after which they gave their informed and voluntary consent to participate. Approval to conduct the study was obtained from the Bioethics Committee of the Medical University of Lublin (Resolution No. KE-0254/45/02/2023).

RESULTS

The study included 264 elderly people, average age – 74.67 ± 7.60 years. The largest group were females (59.09%), married (54.94%), with primary education (43.20%), and those living in rural areas (63.26%) (Tab. 1).

Table 1. Socio-demographic characteristics of the participants

		N	%
Gender	Female	156	59.09
	Male	108	40.01
Marital status	Single	17	6.44
	In a relationship	145	54.94
	Widowed	99	37.50
	Divorced	3	1.12
Education	Primary	114	43.20
	Vocational	53	20.00
	Secondary	71	26.90
	Higher	26	9.90
Place of residence	Rural	167	63.26
	Urban	97	36.74

The NOSGER scale assessment of elderly yielded the mean score of 57.56 ± 19.25 points. Respondents showed the greatest deficits in functional performance in the social domain (12.27 ± 4.71 points), instrumental activities of daily living (11.70 ± 4.55 points), and moods and emotions (10.07 ± 3.66 points). The respondents functioned best in the area of memory (7.37 ± 3.35 points), and in the area of disruptive behaviour (7.63 ± 2.91 points) (Tab. 2).

The study assessed seniors according to their gender which showed that the females had slightly better functional capacity (56.16 ± 18.18 points) compared to males (59.58 ± 20.61 points). Nonetheless, there was a statistically significant difference only in the areas of: ADL and IADL ($p < 0.05$) (Tab. 3).

The study also analysed the assessment of seniors according to their marital status, which for the purposes of the study

Table 2. The NOSGER scale evaluation

	Mean	SD	Minimum	Maximum
NOSGER-total	57.56	19.25	30.00	111.00
ADL	8.50	4.19	5.0	22.00
IADL	11.70	4.55	5.0	23.00
Mood	10.07	3.66	5.0	22.00
Disturbing behaviour	7.63	2.91	5.0	17.00
Social behaviour	12.27	4.71	5.0	23.00
Memory	7.37	3.35	5.0	18.00

Table 3. Gender and NOSGER scale evaluation

NOSGER Scale	Gender				p-value*
	Female		Male		
	Mean	SD	Mean	SD	
NOSGER-total	56.16	18.18	59.58	20.61	$p > 0.05$
ADL	8.03	3.90	9.17	4.50	$p < 0.05$
IADL	11.23	4.45	12.37	4.62	$p < 0.05$
Mood	10.14	3.58	9.96	3.78	$p > 0.05$
Disturbing behaviour	7.50	2.69	7.83	3.20	$p > 0.05$
Social behaviour	11.99	4.63	12.67	4.80	$p > 0.05$
Memory	7.25	3.18	7.55	3.58	$p > 0.05$

*Mann-Whitney U test

was divided into two groups: married and single. Married respondents showed better performance in the overall assessment with the NOSGER scale, the difference being statistically significant ($p < 0.05$). Those in a relationship also performed better in all NOSGER component domains. The difference was also statistically significant, except in the areas of activities of daily living and instrumental activities of daily living (Tab. 4).

Table 4. Marital status and NOSGER scale evaluation

Scale NOSGER	Marital status				p-value*
	Married		Single		
	Mean	SD	Mean	SD	
NOSGER-total	51.00	18.27	60.59	20.03	$p < 0.05$
ADL	7.00	3.89	8.68	4.53	$p > 0.05$
IADL	11.00	4.42	11.98	4.69	$p > 0.05$
Mood	9.00	3.58	10.79	3.65	$p < 0.05$
Disturbing behaviour	6.00	3.02	8.02	2.74	$p < 0.05$
Social behaviour	11.63	4.22	13.05	5.15	$p < 0.05$
Memory	6.81	3.09	8.05	3.53	$p < 0.05$

*Student's t-test

Assessment of the elderly according to their level of education was also analysed. Those with the vocational education showed the best performance, with the exception of disruptive behaviour, where those with higher education performed best. Nevertheless, these differences were only statistically significant in the areas of disruptive behaviour and memory ($p < 0.05$). (Tab. 5).

Table 6 shows the assessment of the elderly according to their place of residence and shows that the place of abode significantly differentiated the subjects' functional

Table 5. Education and NOSGER scale evaluation

Scale NOSGER	Education								<i>p-value*</i>
	Elementary		Vocational		Secondary		Higher		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
NOSGER-total	60.57	21.47	53.37	14.98	56.30	17.30	56.26	20.57	<i>p>0.05</i>
ADL	9.28	4.95	7.39	2.58	8.00	3.63	8.69	4.09	<i>p>0.05</i>
IADL	12.00	4.87	11.16	4.06	11.70	4.27	11.46	4.89	<i>p>0.05</i>
Mood	10.04	3.68	9.83	3.62	10.23	3.60	10.23	4.02	<i>p>0.05</i>
Disturbing behaviour	8.57	3.12	6.77	2.47	7.19	2.65	6.46	2.24	<i>p<0.001</i>
Social behaviour	12.30	4.96	11.90	4.52	12.35	4.38	12.65	4.99	<i>p>0.05</i>
Memory	8.35	3.73	6.30	2.17	6.81	3.01	6.76	3.39	<i>p<0.05</i>

*Kruskal-Wallis test

performance ($p<0.001$) in all areas, with the exception of disruptive behaviour and memory. Residents of rural areas were characterised by better functional performance, with the exception of disruptive behaviour, where those from rural areas performed slightly better.

Table 6. Place of residence and NOSGER scale evaluation

Scale NOSGER	Place of residence				<i>p-value*</i>
	Urban		Rural		
	Mean	SD	Mean	SD	
NOSGER-total	65.52	19.74	52.93	17.40	<i>p<0.001</i>
ADL	10.28	4.68	7.46	3.49	<i>p<0.001</i>
IADL	13.84	4.30	10.46	4.22	<i>p<0.001</i>
Mood	11.45	3.51	9.26	3.51	<i>p<0.001</i>
Disturbing behaviour	7.60	3.18	7.65	2.75	<i>p>0.05</i>
Social behaviour	14.76	4.12	10.82	4.42	<i>p<0.001</i>
Memory	7.56	3.86	7.26	3.02	<i>p>0.05</i>

*Mann-Whitney U test

different results were obtained in the study by Biercewicz of 117 elderly post-stroke patients hospitalised in a geriatric unit. The results showed that the patients had a reduced level of functional performance, with a mean NOSGER scale score of 68.2 points [22]. The current study found that seniors showed the greatest deficits in social behaviour and instrumental activities. In the study by Głowacka et al. [19], seniors also showed the greatest deficits in the areas of social contacts and daily activities, and showed females to be more able than men. However, the difference was not statistically significant. Similarly, in the study conducted in a group of 195 elderly residing in nursing homes, females were characterised by a slightly better psychomotor condition compared to men, in all areas of the NOSGER scale, except in the area of moods/emotions, where males scored slightly better [23]. Slightly different results were obtained by Głowacka et al. [19] where better functional performance was presented by males assessed with the NOSGER scale. However, even here, the difference was not statistically significant. Also, in the study by Ulatowska et al. [24] it was shown that males had a significantly higher degree of functional fitness, a difference that was statistically significant.

In this study, single people were shown to have significantly lower functional capacity compared to people in a relationship. This difference was statistically significant ($p<0.05$). In a study of elderly in nursing homes, completely different results were obtained. Divorced and widowed persons had best functional capacity, while married elderly showed greatest deficits [23].

In the current study, the educational level was not shown to significantly differentiate the functional fitness of the elderly. In the overall assessment with the NOSGER scale, the best results were obtained by those with vocational education (53.37 points), and the lowest independence was shown by those with primary education (60.57 points). Most researchers indicate that, as the level of education increases, the fitness of the elderly increases, a relationship confirmed by Głowacka et al. [19], in which a large variation in the assessment of the condition of seniors was obtained. Respondents with tertiary education were assessed with a mean score of 43.90 on the NOSGER scale, while those with primary education showed deficits in functional fitness (mean score of 61.58). A similar relationship was also obtained in a study of elderly in nursing homes [23].

The results of the current study suggest that the place of abode differentiates the functional fitness of the elderly. Those from rural environments had significantly higher

DISCUSSION

Comprehensive geriatric assessment tools assess the elderly in order to identify health problems, formulate coordinated treatment plans and improve health. The assessment, enables healthcare professionals to effectively address the needs of the elderly, with the ultimate goal of supporting independent living at home [15, 16]. It has been shown that there is increasing evidence that conducting a holistic geriatric assessment and providing appropriate interventions reduces hospital admissions and rehospitalizations [17, 18].

In the current study it was found that the functional capacity of the elderly was at a fairly good level. This confirms the results obtained by Głowacka et al. [19], where the authors studied 100 seniors residing in their own environment and obtained almost the same score in the NOSGER scale assessment (mean score of 57.65). In other studies, neuro-geriatric patients showed better performance with a mean score of 54.43 on the NOSGER scale assessment [20]. Nonetheless, the best performance was demonstrated by patients in the study by Kawalec-Kajstura et al. [21] who studied 92 geriatric patients hospitalised in rehabilitation units. When the patients were assessed with the NOSGER scale, they obtained a mean score of 46.71. In contrast,

levels of fitness compared to those living in urban areas. Quite different results, however, were obtained in the study by Glowacka et al. [19] who showed that higher levels of functional fitness were presented by the elderly from urban environments.

As part of the comprehensive geriatric assessment, a set of valid and standardized outcome measures are essential to help healthcare professionals design tailored rehabilitation programmes aimed at improving the functional status of the elderly to maximize their independence and quality of life [25]. Research shows that comprehensive geriatric assessment in nursing practice benefits the patient, diagnosing their bio-psychosocial status, and reducing the need for medical care and improving their functioning [26].

The NOSGER scale has also been used in previous studies to assess elderly individuals in their living environments. In a study by Fidecki et al. [27], the elderly residing in rural areas demonstrated a relatively good level of biopsychosocial functioning. However, the most significant deficits were observed in instrumental activities of daily living and social relationships. Age, marital status, and education were found to significantly influence the functional fitness of the study group. A subsequent study by Fidecki et al. [28] focused on a group of elderly men. The NOSGER scale was used without the prior assumption that it would be limited to evaluating behavioural patterns. A statistically significant correlation was also identified between the NOSGER scale, the Barthel Index, and the Geriatric Depression Scale.

The cited studies conducted in the residential environments of elderly individuals indicate that the NOSGER scale is a valid tool for comprehensive geriatric assessment. Its application extends beyond the evaluation of behavioural pathology, allowing for the assessment of the general aging population, including individuals without significant functional or cognitive deficits.

Limitations of the study. The number of the elderly taking part in the study was too small for the results to be generalised and applied to the whole of Poland, and can therefore be regarded only as a pilot study. The fact that the study was limited to the area of the Lublin Province of eastern Poland is another limitation, and does not claim to provide a full picture of the situation of elderly in the entire population of Poland. Another limitation is its focus on elderly individuals concerning selected socio-metric variables determined by the study assumptions.

Further research is needed to examine a broader range of factors, including health conditions, depression, and social isolation, to provide a more comprehensive understanding of aging-related challenges

CONCLUSIONS

The research cohort of seniors was characterised by fairly good functional ability. The greatest deficits were found in the areas of social relations and instrumental activities of daily living. Variables, such as marital status and place of residence, significantly differentiated the degree of fitness of the elderly.

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