

## Assessment of the Risk of Dementia among Elderly Men as Part of a Geriatric Assessment

### Ocena ryzyka demencji wśród mężczyzn w podeszłym wieku jako element oceny geriatrycznej

Wiesław Fidecki<sup>1</sup>, Mariusz Wysokiński<sup>2</sup>, Irena Wrońska<sup>3</sup>,  
Kornelia Kędziora-Kornatowska<sup>4</sup>, Katarzyna Przylepa<sup>5</sup>, Kamil Kuszplak<sup>2</sup>

❶ Laboratory of Clinical Skills, Medical University of Lublin, Poland

❷ Department of Basic Nursing, Medical University of Lublin, Poland

❸ Collegium Medicum Mazovian Academy in Płock, Poland

❹ Department of Geriatrics, Collegium Medicum in Bydgoszcz Nicolaus Copernicus University of Toruń, Poland

❺ Faculty of Medical Sciences, Medical University of Lublin, Poland

#### Abstract

**Introduction.** Dementia, one of the leading causes of cognitive decline among older people, is becoming a growing problem with a significant burden on families and society as life expectancy increases worldwide.

**Aim.** The aim of the study was to assess the risk of dementia among elderly men as part of a geriatric assessment.

**Material and Methods.** The research was conducted in a group of 192 elderly men receiving institutional care in Central and Eastern Poland. The research material was collected using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients). This scale allows senior caregivers to quickly and easily assess the patient's psychological, mental and social condition. The scale covers six areas: memory; instrumental activities of daily life; daily life activities; moods and emotions; social behavior; destructive, disruptive, asocial behavior.

**Results.** Males obtained an average result of  $70.42 \pm 17.66$  points on the NOSGER scale. The best results were achieved by the respondents in the field of disruptive behavior ( $7.68 \pm 2.46$  points). The subjects showed the greatest deficits in instrumental activities of everyday life ( $16.03 \pm 4.42$  points).

**Conclusions.** The study group of elderly men showed a moderate risk of dementia. In areas important for diagnosing this type of changes (memory, emotions, disruptive behavior), patients functioned at a fairly good level. The greatest deficits were found only in the area of physical functioning, which was related to limited functional capacity caused by existing diseases and age-related limitations. The analyzed sociodemographic variables did not significantly affect the risk of dementia in the study group of men. (JNNN 2023;12(4):151–156)

**Key Words:** dementia, elderly men, geriatric assessment, NOSGER scale

#### Streszczenie

**Wstęp.** Demencja, jedna z głównych przyczyn pogorszenia funkcji poznawczych wśród osób starszych, staje się coraz większym problemem, stanowiącym znaczne obciążenie dla rodzin i społeczeństwa w miarę wydłużania się średniej długości życia na całym świecie.

**Cel.** Celem badań była ocena ryzyka wystąpienia demencji wśród mężczyzn w podeszłym wieku jako elementu oceny geriatrycznej.

**Materiał i metody.** Badania przeprowadzono w grupie 192 mężczyzn w podeszłym wieku objętych opieką instytucjonalną na terenie centralnej i wschodniej Polski. Materiał badawczy zebrano przy użyciu skali NOSGER (Pielęgniarska Skala Obserwacji Pacjentów Geriatrycznych). Skala ta pozwala opiekunom osób starszych na szybką i łatwą ocenę stanu psychicznego, umysłowego i socjalnego pacjenta. Skala obejmuje sześć obszarów: pamięć; instrumentalne aktywności codziennego życia; aktywności codziennego życia; nastroje i emocje; zachowania socjalne; zachowanie destrukcyjne, zakłócające, asocjalne.

**Wyniki.** Badani mężczyźni w skali NOSGER uzyskali wynik na poziomie średniej  $70,42 \pm 17,66$  pkt. Najlepsze wyniki badani uzyskali w zakresie zachowań zakłócających ( $7,68 \pm 2,46$  pkt.). Największe deficyty badani wykazywali w zakresie instrumentalnych aktywności codziennego życia ( $16,03 \pm 4,42$  pkt.).

**Wnioski.** Badana grupa mężczyzn w podeszłym wieku wykazywała umiarkowane ryzyko wystąpienia demencji. 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. Analizowane zmienne socjodemograficzne nie wpływały istotnie na ryzyko wystąpienia demencji w badanej grupie mężczyzn. (PNN 2023;12(4):151–156)

**Słowa kluczowe:** demencja, mężczyźni w podeszłym wieku, ocena geriatryczna, skala NOSGER

## Introduction

Dementia, one of the leading causes of cognitive decline among older people, is becoming an increasing problem with a significant burden on families and society due to increasing life expectancy worldwide [1]. In 2017, the number of dementia patients worldwide was approximately 45 million [2], and dementia is one of the leading causes of disability [3]. Therefore, dementia may increase healthcare burden while reducing patients' quality of life [4].

Elderly patients with dementia usually have specific geriatric problems, including falls, gait disturbances, urinary incontinence, difficulty eating and swallowing, malnutrition, and vision and hearing difficulties and comorbidities. A comprehensive geriatric assessment assesses physical, functional, psychological and environmental status and may be effective in disease prevention [5].

Challenging behaviors in people with dementia are common and multifaceted, attributed to the environment, chronic conditions, health status or medications. In over 80% of nursing homes, residents with dementia exhibit one or more forms of care challenges. Examples of challenging behaviors include: agitation, anger, depression, undressing, poor eating, inappropriate sexual behavior, irritability, physical paranoia and verbal aggression, repetition, swearing, and withdrawal from everyday life [6].

The aim of the study was to assess the risk of dementia among elderly men as part of a geriatric assessment.

## Material and Methods

The research was conducted in a group of 192 elderly men receiving institutional care in Central and Eastern Poland. The study was carried out in accordance with ethical principles, in accordance with the Declaration of Helsinki. The consent to conduct the research was obtained from the Bioethics Committee of the Medical University of Lublin. The surveyed seniors gave their voluntary and informed consent to participate in the

research. The study group included men aged 65–89. Presents detailed sociodemographic characteristics of the study group (Table 1).

**Table 1.** Socio-demographic characteristics of the research pool

Variable	%
Age	
65–74 years	52.20
75–89 years	47.80
Marital status	
Single	30.00
Married	19.20
Widow/Widower	50.80
Education	
Primary	86.00
Vocational	14.00
Place of residence	
City	37.00
Village	63.00

% — percent

The research material was collected using the NOSGER scale (Nurses' Observation Scale for Geriatric Patients). This scale allows senior caregivers to quickly and easily assess the patient's psychological, mental and social condition. The scale covers six areas: memory; instrumental activities of daily life; daily life activities; moods and emotions; social behavior; destructive, disruptive, asocial behavior. The scale values are specified with numbers from 1 (always) to 5 (never). The patient could obtain a minimum of 30 points and a maximum of 150 points. The higher the number of points obtained during observation, the worse the patient's condition was assessed. Validation studies using the NOSGER scale showed that it is a well-accepted tool, with high internal consistency and reliability, as well as high correlation of results in all 6 areas with the results obtained using other measurement tools [7–12].

The obtained research results were subjected to statistical analysis. The values of the analyzed measurable parameters were presented using the mean value and standard deviation, and for non-measurable parameters, using the number and percentage. The significance level of  $p < 0.05$  was adopted, indicating the existence of statistically significant differences or relationships.

## Results

The examined men obtained an average result of  $70.42 \pm 17.66$  points on the NOSGER scale. The best results were achieved by the respondents in the field of disruptive behavior ( $7.68 \pm 2.46$  points). The subjects showed the greatest deficits in instrumental activities of everyday life ( $16.03 \pm 4.42$  points). Detailed results of the NOSGER scale assessment are presented in Table 2.

Table 3 presents a detailed assessment of seniors using the NOSGER scale depending on the analyzed sociodemographic variables. The results showed that in the global assessment, younger people aged 65–74 functioned better (average

70.76 points) compared to the group of people aged 75–89 (average 77.05 points). However, this difference was not statistically significant.

When assessing the respondents depending on their marital status, it was found that married men had the best functional ability (69.51 points). Widowed people had the worst fitness (70.54 points), and single people had slightly better fitness (70.24 points). However, no statistically significant difference was found between the analyzed groups.

**Table 2.** The NOSGER evaluation

NOSGER scale	M	Me	Min	Max	SD
NOSGER	70.42	68.00	37.00	108	17.66
Activities of everyday life	12.11	12.00	5.00	23.00	4.66
Instrumental activities of everyday life	16.03	16.00	6.00	25.00	4.42
Mood	11.18	11.00	5.00	21.00	3.62
Disruptive behaviors	7.68	7.00	5.00	16.00	2.46
Social behavior	13.35	13.00	5.00	22.00	4.34
Memory	10.04	10.00	5.00	18.00	3.56

M — average; Me — median; Min — minimum value; Max — maximum value; SD — standard deviation

**Table 3.** Sociodemographic variables and NOSGER scale evaluation (mean  $\pm$  standard deviation)

Variable	NOSGER	Activities of everyday life	Instrumental activities of everyday life	Mood	Disruptive behaviors	Social behavior	Memory
Age							
65–74 years	70.76 $\pm$ 16.99	11.96 $\pm$ 4.44	15.96 $\pm$ 4.45	11.17 $\pm$ 3.65	7.39 $\pm$ 2.23	12.72 $\pm$ 4.49	9.94 $\pm$ 3.40
75–89 years	77.05 $\pm$ 18.44	12.27 $\pm$ 4.91	16.11 $\pm$ 4.41	11.20 $\pm$ 3.61	7.95 $\pm$ 2.64	12.94 $\pm$ 4.14	10.16 $\pm$ 3.75
Statistical analysis	Z=0.550 p=0.581	Z=-0.283 p=0.776	Z=-0.172 p=0.863	Z=0.080 p=0.935	Z=1.289 p=0.197	Z=1.371 p=0.170	Z=-0.272 p=0.784
Marital status							
Single	70.24 $\pm$ 17.01	11.60 $\pm$ 4.44	15.83 $\pm$ 4.72	11.58 $\pm$ 3.31	7.67 $\pm$ 2.62	13.37 $\pm$ 4.12	10.16 $\pm$ 3.44
Married	69.51 $\pm$ 18.17	11.34 $\pm$ 4.70	15.28 $\pm$ 4.94	11.85 $\pm$ 4.03	8.22 $\pm$ 2.60	12.51 $\pm$ 4.59	10.28 $\pm$ 3.56
Widow/Widower	70.54 $\pm$ 18.40	11.58 $\pm$ 4.79	15.45 $\pm$ 2.27	11.33 $\pm$ 3.34	8.37 $\pm$ 2.93	13.33 $\pm$ 4.15	10.45 $\pm$ 3.40
Statistical analysis	H=0.169 p=0.982	H=4.809 p=0.186	H=2.762 p=0.429	H=3.280 p=0.350	H=5.116 p=0.163	H=1.643 p=0.649	H=1.742 p=0.627
Education							
Primary	70.39 $\pm$ 17.82	12.15 $\pm$ 4.67	16.04 $\pm$ 4.49	11.13 $\pm$ 3.68	7.61 $\pm$ 2.48	13.43 $\pm$ 4.30	9.98 $\pm$ 3.64
Occupational	70.80 $\pm$ 16.90	11.84 $\pm$ 3.11	16.00 $\pm$ 4.05	11.52 $\pm$ 3.29	8.12 $\pm$ 2.35	12.84 $\pm$ 4.66	10.48 $\pm$ 3.11
Statistical analysis	Z=12.404 p=0.200	Z=0.759 p=0.758	Z=0.063 p=0.949	Z=-0.590 p=0.554	Z=-1.238 p=0.215	Z=8.268 p=0.016	Z=-0.824 p=0.409
Place of residence							
City	69.24 $\pm$ 16.45	11.92 $\pm$ 4.06	16.12 $\pm$ 4.12	10.96 $\pm$ 3.93	7.48 $\pm$ 2.44	13.15 $\pm$ 4.26	9.59 $\pm$ 3.27
Village	71.10 $\pm$ 18.34	12.22 $\pm$ 4.99	15.99 $\pm$ 4.60	11.31 $\pm$ 3.45	7.80 $\pm$ 2.47	13.46 $\pm$ 3.39	10.31 $\pm$ 3.71
Statistical analysis	Z=0.554 p=0.579	Z=0.130 p=0.896	Z=-0.112 p=0.910	Z=-0.770 p=0.440	Z=0.959 p=0.337	Z=0.343 p=0.731	Z=1.194 p=0.232

Z — Mann–Whitney U test; H — Kruskal–Wallis test

In the next stage of the research, the assessment of the respondents' fitness was analyzed depending on their level of education. The Mann–Whitney U test showed no significant difference between the studied groups of men ( $p < 0.200$ ). Men with primary education were more fit (70.39 points). compared to people with vocational education (70.80 points).

Finally, the assessment of seniors depending on their place of residence was also analyzed. It was found that men from urban environments (69.24 points) had better functional efficiency than those from rural areas (71.10 points). However, no statistically significant difference was found between the analyzed features.

## Discussion

A comprehensive geriatric assessment (CGA), also known as a holistic assessment, is a multi-dimensional, integrated diagnostic process that aims to determine the extent of mental and physical health disorders, medical problems, and the action potential of the elderly. Results of CGA provide varied data, from the decreasing clarity of the symptomatology of diseases in the course of aging, multiple diseases, the prevalence of nutritional deficiencies, the consequences of polypharmacy, as well as the coexistence of medical, environmental and social diseases and their effects on the functional state, and thus evaluate the quality of life concerning older people. CGA assessment should be conducted by each member of the therapeutic team in cooperation with the family [13].

Dementia is a health condition that involves impairment of memory and thinking as a result of trauma or traumatic brain damage. Common challenges for dementia patients include memory loss, sudden changes in behavior or mood, confusion, loss of the ability to speak and problems with walking and balance. These behavioral changes will lead to social exclusion of affected people, resulting in, among others, agitation, anxiety, aggression and depression in patients with dementia. The main cause of the disease is abnormal changes in the brain or damage to brain cells, which has a negative impact on behavior, memory and the ability to think. Although this situation does not fall within the life cycle of aging, it has gained awareness worldwide due to its increased incidence in recent times [14].

The disability caused in the late stages of the disease is more critical. These types of problems require providing patients with person-centered treatment. In this situation, general health care may not be appropriate and caregivers may need appropriate training to provide effective care [15].

Along with the projected increase in the percentage of elderly people in the Polish population, the incidence of neurodegenerative diseases, including dementia

syndromes, will increase. The occurrence of dementia symptoms quickly impairs the patient's daily functioning, necessitating the need for help from other people. In Poland, care for an elderly person with dementia is mainly non-institutional care provided by immediate family members in their own home. Due to the decreasing care potential of Polish families, an increasing demand for formal forms of support in caring for older people with dementia should be expected [16].

The authors' own research showed that older men functioned well intellectually. Domains such as memory and disruptive behavior were rated highest, demonstrating that there were no such domains for dementia-related disorders. Similar results were obtained in studies on the risk of dementia in other groups of seniors [17–22].

The aging process naturally affects the functioning of the elderly. Advanced age is one of the most characteristic and constant factors differentiating the functional efficiency of seniors [23]. The authors' research revealed that seniors' functional efficiency deteriorates with age. This fact has been confirmed by reports from the literature, which say that the number of dementia increases with age from approx. 1% after 65 to approx. 40% after 90 years of age. The prevalence of dementia doubles approximately every five years [24,25]. The authors' research is consistent with the results obtained by other researchers [26,27]. Our own research also found that the physical and mental functioning of elderly men deteriorates with age.

Our research found that married people functioned best. This is also confirmed by the research of Głowacka and Wysokiński [20,28]. They showed that marital status significantly differentiates functional capacity, and married people are least at risk of dementia.

The literature on the subject reports that the level of education reduces the risk of dementia in seniors [20,22]. Our research does not confirm this relationship. Our own research has shown that seniors with primary education have a slightly lower risk of dementia and have better functional fitness.

Our own research also found that men living in the city had a lower risk of dementia. However, studies assessing the functional capacity of elderly men [22] showed that rural residents have a lower risk of developing dementia.

Dementia is one of the most serious medical, social and economic problems, not only among the elderly. The aging of the global population and the development of increasingly better diagnostic methods contribute to the increase in the number of patients with dementia, caused primarily by Alzheimer's disease (AD). Early diagnosis and quick implementation of pharmacotherapy are helpful in reducing the costs associated with treatment and care [29].



Due to the nature of the clinical picture presented by patients with dementia, its diagnosis is very complex. The problem is just initiating the diagnosis process. Due to the subtlety of symptoms in the early stages of the disease, they are easy to miss not only for patients and their relatives, but also for medical staff. This situation may be improved by the implementation of educational programs intended for the elderly and their relatives, as well as by placing greater emphasis on training family doctors in the field of dementia diagnosis [30].

## Conclusions

The study group of elderly men showed a moderate risk of dementia. In areas important for diagnosing this type of changes (memory, emotions, disruptive behavior), patients functioned at a fairly good level. The greatest deficits were found only in the area of physical functioning, which was related to limited functional capacity caused by existing diseases and age-related limitations. The analyzed sociodemographic variables did not significantly affect the risk of dementia in the study group of men.


## Implications for Nursing Practice

Geriatric assessment should be a standard activity in nursing practice in both institutional and community care. The NOSGER scale can be a useful tool in nursing practice. It can be used to initially assess dementia symptoms in a senior. This will contribute to possible early therapeutic and care intervention and will improve the quality of life of the senior.

## References

- [1] Larson E.B., Yaffe K., Langa K.M. New insights into the dementia epidemic. *N Engl J Med.* 2013;369(24):2275–2277.
- [2] James S.L., Abate D., Abate K.H. et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet.* 2018;392(10159):1789–1858.
- [3] Burns A., Iliffe S. Dementia. *BMJ.* 2009;338:b75.
- [4] Kim M.Y., Jung M., Noh Y. et al. Impact of Statin Use on Dementia Incidence in Elderly Men and Women with Ischemic Heart Disease. *Biomedicines.* 2020;8(2):30.
- [5] Namioka N., Hanyu H., Hatanaka H., Fukasawa R., Sakurai H., Iwamoto T. Comprehensive geriatric assessment in elderly patients with dementia. *Geriatr Gerontol Int.* 2015;15(1):27–33.
- [6] Daly J.M., Bay C.P., Levy B.T., Carnahan R.M. Caring for people with dementia and challenging behaviors in nursing homes: A needs assessment geriatric nursing. *Geriatr Nurs.* 2015;36(3):182–191.
- [7] 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.
- [8] 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.
- [9] Tremmel L., Spiegel R. Clinical experience with the NOSGER (Nurses' Observation Scale for Geriatric Patients): Tentative normative data and sensitivity to change. *Int J Geriatr Psychiatry.* 1993;8(4):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. *Int Psychogeriatr.* 1996;8(4):525–547.
- [11] Thomas P., Peix R., Hazif-Thomas C. L'échelle NOSGER. Nurse's Observation Scale for Geriatric Patients. *La Revue de Gériatrie.* 2009;34:677–679.
- [12] Fidecki W., Wysokiński M., Ślusarz R. Wybrane właściwości psychometryczne skali NOSGER (Nurses' Observation Scale for Geriatric Patients) w odniesieniu do polskiej populacji pacjentów geriatrycznych. *Gerontol Pol.* 2020;2(28):99–104.
- [13] Długosz-Mazur E., Bojar I., Strzemecka J., Gustaw K. Niefarmakologiczne metody postępowania u chorych z otępieniem. *Med Og Nauk Zdr.* 2013;19(4):458–462.
- [14] Aggarwal H., Chaware S., Aggarwal H. A Critical Study on the Impact of Dementia on Older People Undergoing Treatment in Care Homes. *Cureus.* 2022;14(10):e30056.
- [15] Krahn G.L., Walker D.K., Correa-De-Araujo R. Persons with disabilities as an unrecognized health disparity population. *Am J Public Health.* 2015;105(Suppl 2):S198–206.
- [16] Karczewska B., Bień B. Dementia in the aging population of Poland: challenges for medical and social care. *Health Prob Civil.* 2019;13(3):161–169.
- [17] Wysokiński M., Fidecki W., Gębała S. Ocena samodzielności osób starszych hospitalizowanych na oddziałach internistycznych. *Gerontol Pol.* 2013;21(3):89–97.
- [18] Fidecki W., Wrońska I., Wysokiński M. et al. An Attempt at Evaluating the Risk of Dementia in Elderly People under Long-term Care. *J Neurol Neurosurg Nurs.* 2014;3(3):116–120.
- [19] Fidecki W., Wysokiński M., Skupiński K. et al. Elements of the comprehensive geriatric assessment of seniors staying in social welfare homes. *Gerontol Pol.* 2016;24(1):26–31.
- [20] Głowacka M., Brudzińska I., Kornatowski T. et al. Functional ability of elderly people living in their home environment according to the NOSGER. *Gerontol Pol.* 2017;25(4):242–247.
- [21] Fidecki W., Wysokiński M., Wrońska I. et al. Assessment of Neurogeriatric Patients by Means of the NOSGER. *J Neurol Neurosurg Nurs.* 2017;6(1):20–25.

- [22] Fidecki W., Wysokiński M., Ptaszek M. i wsp. Ocena sprawności funkcjonalnej mężczyzn w podeszłym wieku. *Geriatrics*. 2018;12(4):185–192.
- [23] Bujnowska-Fedak M.M., Kumięga P., Sapilak B.J. Ocena sprawności funkcjonalnej osób starszych w praktyce lekarza rodzinnego w oparciu o wybrane skale testowe. *Fam Med Prim Care Rev*. 2013;15(2):76–79.
- [24] Matthews F.E., Denning T., UK Medical Research Council Cognitive Function and Ageing Study. Prevalence of dementia in institutional care. *Lancet*. 2002;360(9328):225–226.
- [25] Józwiak A. Otępienie u osób w wieku starszym. *Geriatrics*. 2008;2:237–246.
- [26] Villafañe J.H., Pirali C., Dughi S. et al. Association between malnutrition and Barthel Index in a cohort of hospitalized older adults article information. *J Phys Ther Sci*. 2016;28(2):607–612.
- [27] Starczewska M., Prociak L., Markowska A., Augustyniuk K., Grochans E. Ocena sprawności funkcjonalnej osób w podeszłym wieku. *Probl Pielęg*. 2018;26(3):222–227.
- [28] Wysokiński M., Lenartowicz H., Fidecki W., Przylepa K., Jędrzejewska A. Assessment of functional capacity of elderly patients hospitalized in the departments of lung diseases. *J Educ Health Sport*. 2018;8(11):397–406.
- [29] Barczak A., Gabryelewicz T. Rozpoznawanie otępienia i postępowanie z pacjentami — rekomendacje. *Aktualn Neurol*. 2021;21(2):65–75.
- [30] Mazurek M., Papuć E., Rejdak K. Demencja — problemy diagnostyczne i terapeutyczne. *Wiad Lek*. 2018;71(6):1235–1238.

**Corresponding Author:**Wiesław Fidecki 

Laboratory of Clinical Skills  
 Medical University of Lublin  
 Staszica 4–6 street, 20-081 Lublin, Poland  
 e-mail: wieslawfidecki@umlub.pl

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**Author Contributions:** Wiesław Fidecki<sup>A–H</sup>,  
 Mariusz Wysokiński<sup>B–H</sup>, Irena Wrońska<sup>F–H</sup>,  
 Kornelia Kędziora-Kornatowska<sup>F–H</sup>, Katarzyna Przylepa<sup>E–G</sup>,  
 Kamil Kuszplak<sup>F–H</sup>

A — Concept and design of research, B — Collection and/or compilation of data,  
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