

PREVALENCE OF INTRINSIC CAPACITY IMPAIRMENTS AMONG ELDERLY PEOPLE BASED ON THE ICOPE SCREENING RESULTS

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Summary

Introduction. Improving the quality of medical and preventive care for elderly patients is an important and timely task. Ensuring access to quality medical care that takes into account the specific needs of older people was proclaimed in the Concept of 'Integrated Care for Older People' (ICOPE), developed in 2017. It is a key element of the 'Decade of Healthy Ageing' – the action plan of the World Health Organization (WHO) Global Strategy for 2020-2030.

Aim. To study the prevalence of intrinsic capacity impairments among older age groups based on the results of ICOPE screening.

Materials and methods. In 2023, a prospective study (selective, cross-sectional) was conducted at the State Institution of Science «Center of innovative healthcare technologies» State Administrative Department to assess functional impairments of intrinsic capacity among patients from older age groups using the adapted questionnaire (WHO ICOPE). The study involved 577 individuals over 60, including 238 men (41.2 %) and 339 women (58.8 %).

Results and discussion. Among 318 individuals aged 60-74 years (127 men and 191 women), 97.2 % (95 % CI 94.7-98.5) had various impairments, with the most common being vision problems (95.9 %; CI 93.1-97.6), followed by symptoms of depression (63.8 %; CI 58.4-68.9), and hearing loss (34.6 %; CI 29.6-40.0). Reduced motor activity and cognitive abilities were found in 15.4 % (CI 11.9-19.8) and 9.1 % (CI 6.4-12.8) of participants, respectively, while nutritional disorders were present in 8.8 % (CI 6.2-12.4). In the group aged 75-89 years (250 individuals), all participants had impairments, with the most common being vision problems (98.4 %; CI 96.0-99.4), followed by symptoms of depression (64.8 %; CI 58.7-70.5) and hearing loss (44.0 %; CI 38.0-50.2). In the 90+ age group (9 individuals), impairments were found in 100 % (CI 70.1-100.0) of cases, with the highest frequency of vision problems and depression (100 %). The frequency of cognitive impairments and reduced motor activity significantly increases with age ($p < 0.001$).

Conclusions. Implementing screening tools is a priority in diagnosing intrinsic capacity impairments in older age groups. The WHO screening tool «Integrated Care for Older People» (ICOPE) enables the effective detection of key disorders associated with reduced intrinsic capacity, allowing for the assessment of their prevalence, planning further diagnosis, and organizing long-term home care based on the collaboration of medical and social services.

Keywords: intrinsic capacity, healthy ageing, healthy aging, ICOPE, screening, individual care plan

INTRODUCTION

The World Health Organization (WHO) emphasizes that the concept of healthy aging does not imply the absence of diseases but rather focuses on maintaining functional ability in individuals even in the presence of certain medical conditions [1]. This means that aging with chronic diseases or disorders can still be considered healthy, as long as the person is able to maintain

independence and vitality. To successfully implement this approach in practice, tools are needed to assess the degree of decline in individual intrinsic capacity, which often accompanies aging.

In response to this need, in 2017, WHO developed the 'Integrated Care for Older People' (ICOPE) concept, which became an important part of the global strategy to support active and healthy aging [2]. This concept calls for a shift to

a patient-centered approach, where healthcare is designed and coordinated to meet the individual needs of each older person. The main focus of the ICOPE concept is on the early identification and intervention of key health conditions that can lead to a decline in intrinsic capacity, including mobility impairments, malnutrition, vision and hearing problems, cognitive decline, and depressive symptoms [3, 4].

Real-world data on the assessment of intrinsic capacity within the ICOPE-Care program show the effectiveness of early detection and health monitoring for older adults, enabling healthcare providers to deliver more personalized care [5]. A study conducted under the VIMCI also demonstrated the effectiveness of the ICOPE tool for assessing intrinsic capacity among older people living in the community [6]. The implementation of such practices helps healthcare systems provide the support needed to maintain independence and improve the quality of life for older adults.

AIM

To study the prevalence of intrinsic capacity impairments among older age groups based on the results of ICOPE screening.

MATERIALS AND METHODS

In 2023, a prospective study was conducted at State Institution of Science «Center of innovative healthcare technologies» State Administrative Department to assess functional disorders of intrinsic capacity in older age groups using the WHO ICOPE questionnaire. The study included 577 individuals aged over 60 years (mean age 73.6 ± 7.5 years), with 238 men (41.2 %) and 339 women (58.8 %).

Statistical analysis of the study results was performed using Microsoft Excel (Microsoft Office, 2013). Quantitative variables were described as the arithmetic mean and standard deviation in the form of $M \pm SD$. Categorical variables were presented as frequency (P) with a 95 % confidence interval (CI), calculated using the Wilson method [7]. Comparisons between groups were made using the Pearson Chi-square test (χ^2) and the two-tailed Fisher's exact test. Differences were considered statistically significant when $p < 0.05$.

RESULTS

The study results on the intrinsic capacity assessment of older patients revealed impairments in 568 individuals aged over 60, which constitutes 98.4 % (CI 97.1-99.2) of the total number of respondents.

A detailed breakdown of the identified impairments among the survey respondents is presented in Table 1.

Among 318 individuals aged 60 to 74 years (127 men and 191 women, mean age 68.2 ± 4.0 years), various types of impairments were recorded in 97.2 % (CI 94.7-98.5) of

cases ($n=309$). The most common impairment was vision problems, which were identified in 95.9 % (CI 93.1-97.6) of this age group. In second place were symptoms of depression, observed in 63.8 % (CI 58.4-68.9) of cases, followed by hearing loss in 34.6 % (CI 29.6-40.0) of cases. Reduced physical activity was recorded in 15.4 % (CI 11.9-19.8) of individuals. Cognitive decline ranked fifth, with 9.1 % (CI 6.4-12.8) of cases, and nutritional disorders ranked sixth, with 8.8 % (CI 6.2-12.4) of individuals.

No significant differences were found between the frequency of detected impairments in men and women in the 60-74 age group ($p > 0.05$ for all comparisons).

In the study, which included 250 individuals aged 75 to 89 years (108 men and 142 women, mean age 79.8 ± 4.2 years), various impairments were recorded in 100 % (CI 98.5-100.0) of cases. Similar to the data from the 60-74 age group, vision impairments were the most common, identified in 98.4 % (CI 96.0-99.4) of all respondents. These data suggest that nearly all participants in the 75-89 age group have vision problems, although the frequency of these impairments was significantly higher in women than in men – 100 % versus 96.3 % ($p < 0.05$). In both groups, symptoms of depression ranked second, with a frequency of 64.8 % (CI 58.7-70.5), followed by hearing loss, reported by 44.0 % (CI 38.0-50.2) of the respondents. Reduced physical activity ranked fourth with a frequency of 28.8 % (CI 23.5-34.7). Cognitive decline was recorded in nearly one in five cases (22.8 %; CI 18.0-28.4), including 23.1 % of men and 22.5 % of women. Nutritional disorders were noted in about 6 % (CI 3.7-9.7) of respondents, with no significant differences between men and women ($p > 0.05$).

Among 9 individuals aged over 90 years (3 men and 6 women, mean age 93.8 ± 3.0 years), various impairments were found in 100 % (CI 70.1-100 %) of cases ($n=9$), particularly vision problems and depression. Cognitive decline was noted in 83.3 % of women and none of the men over 90 years old ($p < 0.05$).

In summary, the data on the frequency of intrinsic capacity dysfunctions in older adults, categorized by age groups, demonstrate a high prevalence, with the likelihood of development significantly increasing with age (Fig. 1).

Vision impairment is the most common condition among older adults across all age groups, ranging from 95.9 % to 100 % ($p > 0.05$ between groups), with a tendency for higher prevalence among women aged 75-89 years ($p < 0.05$). The prevalence of depression symptoms increases from 60 % in the elderly (63.8 %) and senior (64.8 %) age groups to 100 % in all respondents aged over 90 years ($p < 0.05$ compared to the 60-74 and 75-89 age groups). Hearing loss also shows a trend of increasing with age. Specifically, the proportion of individuals with hearing impairments significantly increased from 34.6 % in the 60-74 age group to 44.4 % in those aged 75 and older ($p < 0.05$).

Table 1

Prevalence of Intrinsic Capacity Impairments Among Respondents of Different Age and Gender Groups

Age	Sex	Indicator	Impairments		Domains					
			Absent	Present	Cognitive Decline	Nutritional Disorders	Hearing Loss	Vision Impairment	Depression symptoms	Physical Activity Decline
60-74	total (n=318)	Abs.	9	309	29	28	110	305	203	49
		P % (95 % CI)	2,8 (1,5-5,3)	97,2 (94,7-98,5)	9,1 (6,4-12,8)	8,8 (6,2-12,4)	34,6 (29,6-40,0)	95,9 (93,1-97,6)	63,8 (58,4-68,9)	15,4 (11,9-19,8)
		Rank	-	-	V	VI	III	I	II	IV
	Male (n=127)	Abs.	4	123	9	9	50	122	78	18
		P % (95 % CI)	3,1 (1,2-7,8)	96,9 (92,2-98,8)	7,1 (3,8-12,9)	7,1 (3,8-12,9)	39,4 (31,3-48,1)	96,1 (91,1-98,3)	61,4 (52,7-69,4)	14,2 (9,2-21,3)
		Rank	-	-	V-VI	V-VI	III	I	II	IV
	Female (n=191)	Abs.	5	186	20	19	60	183	125	31
		P % (95 % CI)	2,6 (1,1-6,0)	97,4 (94,0-98,9)	10,5 (6,9-15,6)	9,9 (6,5-15,0)	31,4 (25,3-38,3)	95,8 (92,0-97,9)	65,4 (58,5-71,8)	16,2 (11,7-22,1)
		Rank	-	-	V	VI	III	I	II	IV
75-89	Total (n=250)	Abs.	0	250	57	15	110	246	162	72
		P % (95 % CI)	0,0 (0,0-1,5)	100,0 (98,5-100,0)	22,8 (18,0-28,4)	6,0 (3,7-9,7)	44,0 (38,0-50,2)	98,4 (96,0-99,4)	64,8 (58,7-70,5)	28,8 (23,5-34,7)
		Rank	-	-	V	VI	III	I	II	IV
	Male (n=108)	Abs.	0	108	25	6	50	104	69	27
		P % (95 % CI)	0,0 (0,0-3,4)	100,0 (96,6-100,0)	23,1 (16,2-31,9)	5,6 (2,6-11,6)	46,3 (37,2-55,7)	96,3 (90,9-98,6)	63,9 (54,5-72,3)	25,0 (17,8-33,9)
		Rank	-	-	V	VI	III	I	II	IV
	Female (n=142)	Abs.	0	142	32	9	60	142	93	45
		P % (95 % CI)	0,0 (0,0-2,6)	100,0 (97,4-100,0)	22,5 (16,4-30,1)	6,3 (3,4-11,6)	42,3 (34,4-50,5)	100,0 (97,4-100,0)	65,5 (57,4-72,8)	31,7 (24,6-39,7)
		Rank	-	-	V	VI	III	I	II	IV
≥ 90	Total (n=9)	Abs.	0	9	5	1	5	9	9	5
		P % (95 % CI)	0,0 (0,0-29,9)	100,0 (70,1-100,0)	55,6 (26,7-81,1)	11,1 (2,0-43,5)	55,6 (26,7-81,1)	100,0 (70,1-100,0)	100,0 (70,1-100,0)	55,6 (26,7-81,1)
		Rank	-	-	V	VI	III	I	II	IV
	Male (n=3)	Abs.	0	3	0	1	2	3	3	2
		P % (95 % CI)	0,0 (0,0-56,2)	100,0 (43,8-100,0)	0,0 (0,0-56,2)	33,3 (6,1-79,2)	66,7 (20,8-93,9)	100,0 (43,8-100,0)	100,0 (43,8-100,0)	66,7 (20,8-93,9)
		Rank	-	-	V	VI	III	I	II	IV
	Female (n=6)	Abs.	0	6	5	0	3	6	6	3
		P % (95 % CI)	0,0 (0,0-39,0)	100,0 (61,0-100,0)	83,3 (43,6-97,0)	0,0 (0,0-39,0)	50,0 (18,8-81,2)	100,0 (61,0-100,0)	100,0 (61,0-100,0)	50,0 (18,8-81,2)
		Rank	-	-	V	VI	III	I	II	IV

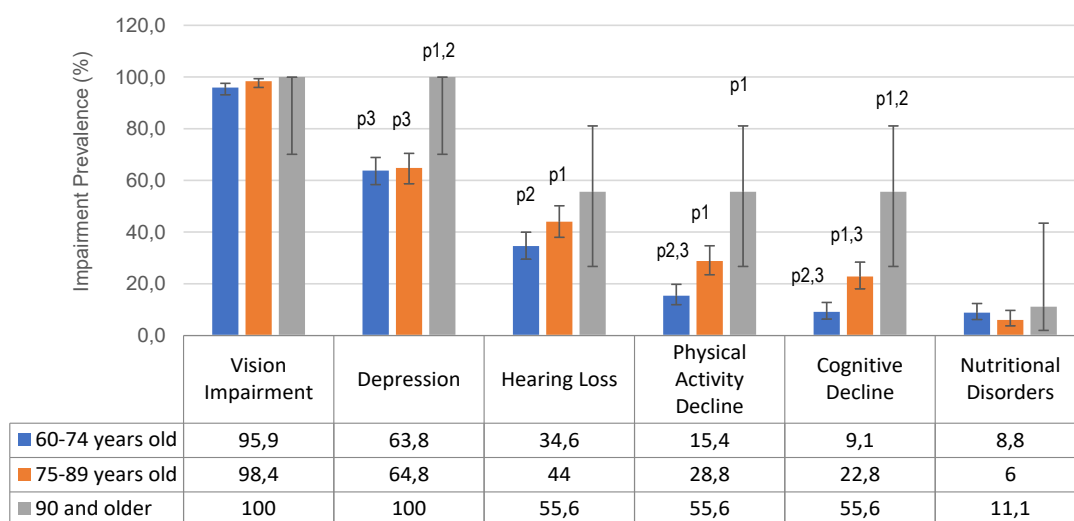


Figure 1. Prevalence of Different Intrinsic Capacity Impairments in Older Adults by Age Groups.

Note. The frequency (P% with 95 % CI) is indicated; p1,2,3 – statistically significant differences with the corresponding age group (p<0.05).

The most significant decline with age occurs in motor and cognitive functions. Thus, the frequency of reduced physical activity rises from 15.4 % in the 60-74 age group to 28.8 % in the 75-89 age group, and to 55.6 % in centenarians ($p < 0.001$). The largest proportion of individuals with cognitive decline is observed in the 90 and older age group, where 55.6 % have cognitive impairments ($p < 0.001$ and $p < 0.05$ compared to the 60-74 and 75-89 age groups, respectively).

The analysis of impairment combinations across the three age categories reveals distinct trends in each group.

For the 60-74 age group, combinations of 2-3 impairments are typical, mainly involving vision problems, depression symptoms, hearing loss, or cognitive decline.

The overall proportion of patients with two impairments is 33.3 % (CI 28.3-38.8), and with three impairments, it is 24.9 % (CI 20.4-30.0). Notably, women more often experience two impairments (37.1 %, CI 30.5-44.2), while men more often have three (33.3 %, CI 25.6-42.1), with a statistically significant difference ($p < 0.05$ between distributions) (Fig. 2).

The presence of 2-3 impairments was characteristic of nearly half of the patients in the 75-89 age group, observed in 51.2 % (CI 45.0-57.3) of patients, with no significant differences between gender groups ($p > 0.05$). The most common impairments among individuals in this age category were hearing loss, vision problems, and symptoms of depression.

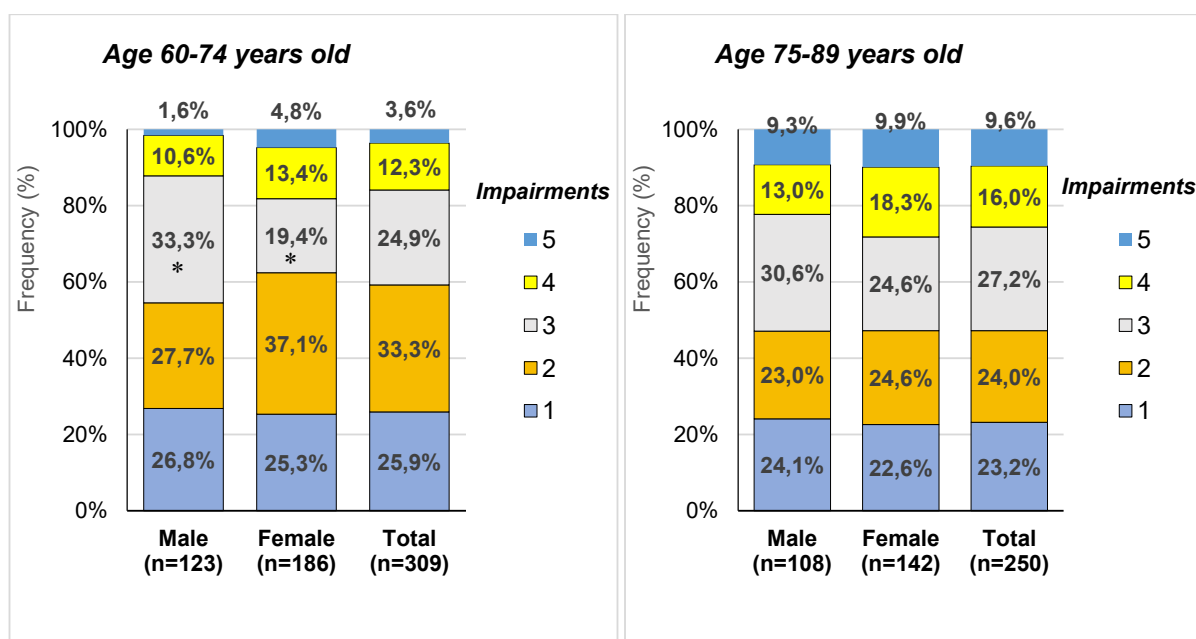


Figure 2. Distribution of Combinations of Different Intrinsic Capacity Impairments in Older Adults.

Note. * – $p < 0,05$ between groups.

For patients aged 90 and older, the presence of 4 impairments was typical, observed in 66.7 % (CI 35.4-87.9) of patients. Notably, all male patients (3 individuals) had exactly 4 impairments, which accounts for 100.0 % (CI 43.8-100.0). The most common impairments were hearing loss, vision problems, depression symptoms, and reduced physical activity. Among women, combinations of 3-4 impairments were more common – 33.3 % (CI 9.7-70.0) and 50.0 % (CI 18.8-81.2), respectively – primarily involving cognitive decline, hearing loss, vision problems, and depression symptoms.

Thus, vision impairment, depression symptoms, and hearing loss are the leading issues among the detected problems, which aligns with the findings of previous

studies that confirm the growing need for monitoring and timely health interventions in older age groups [3].

DISCUSSION

The results of the study indicate a high prevalence of intrinsic capacity impairments among older age groups, emphasizing the relevance of the research goal and the prospects of developing and implementing individualized early diagnostic programs for these disorders based on screening, followed by timely correction.

Vision impairments, identified in the overwhelming majority of those screened, reflect the natural decline of visual functions with age. The study also noted that women aged 75-89 years were more likely to have vision problems,

which may be linked to gender-specific aspects of aging and comorbid conditions. This highlights the need for regular ophthalmological examinations for all age groups.

The prevalence of depressive states is striking, remaining consistently high across all age groups (63.8 %–64.8 %), and is present in 100 % of respondents aged 90 and older. This underscores the importance of early detection of depressive disorders and psychosocial support for older adults. The absence of significant gender differences suggests that this is a universal issue, irrespective of gender. Considering the potential impact of depression on quality of life and physical health, integrating psychotherapeutic support into the medical care system is necessary.

There is a significant increase in cognitive decline with age: from 9.1 % in the 60-74 age group to 55.6 % in the oldest group (90+ years). Notably, cognitive impairments were found exclusively among women in the 90+ age group (83.3 %, $p < 0.05$).

Hearing loss increases progressively with age: from 34.6 % in the 60-74 age group to 55.6 % among those aged 90 and older. The results did not reveal statistically significant gender differences, indicating that this impairment affects both men and women equally. Timely use of hearing aids and audiological support programs could improve the quality of life for older adults.

The need for the development of physical rehabilitation programs and the involvement of older adults in regular physical activity to prevent further deterioration of health is highlighted by the observed trend of significant increases in physical inactivity with age, reaching 55.6 % in the 90+ age group. Nutritional impairments occur less frequently and do not show significant age-related trends.

Thus, the presented research results underline the need to implement an integrated approach to improving the organization of outpatient medical care for older age groups in the following areas:

- Regular vision and hearing examinations to timely identify and correct relevant impairments;
- Early diagnosis, psychological support, and treatment of depression, especially in the oldest age groups;
- Monitoring of cognitive functions with the involvement of multidisciplinary teams, including doctors of various specialties, psychologists, and social workers;
- Implementation of physical activity programs to support mobility function and prevent mobility restrictions.

CONCLUSIONS

The use of screening tools is a priority in diagnosing intrinsic capacity impairments. This will help standardize physical activity programs for older adults, aimed at preserving motor function and supporting cognitive health. It is also important to focus on organizing long-term home care, which should be based on functional interaction between the medical and social services sectors.

The World Health Organization's screening tool, «Integrated Care for Older People» (ICOPE), which focuses on identifying critical health disorders related to the decline in intrinsic capacity, is an effective means of assessing their prevalence among older age groups and planning the next stage of in-depth diagnostics for the identified disorders.

Perspectives for further research. The results obtained have laid the foundation for the next stage of the comprehensive study, focused on in-depth diagnostics of the identified disorders and patient routing into the system of specialized outpatient medical care. Special emphasis is placed on analyzing the work of multidisciplinary teams that bring together specialists from various fields, including doctors, social workers, physiotherapists, psychologists, and other professionals. This research will contribute to the development of optimal approaches to coordinating care for elderly patients with complex needs, as well as provide a scientifically grounded basis for the creation of preventive programs and early intervention strategies in key health areas such as cognitive decline, hearing, and vision impairments. Additionally, it aims to improve methods for identifying and monitoring risk groups, which could potentially reduce the incidence of severe disorders in the future.

COMPLIANCE WITH ETHICAL REQUIREMENTS

The authors declare adherence to ethical standards. The study was conducted in accordance with the World Medical Association's Declaration of Helsinki on Ethical Principles for Medical Research Involving Human Subjects. Patients provided informed consent.

FUNDING AND CONFLICT OF INTEREST

The study did not receive external funding. Authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

Oleg L. Zyukov – work concept and design, critical review, final approval of the article; Tetiana M. Horlach – work concept and design, data collection and analysis, responsibility for statistical analysis, writing the article.

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*Резюме***ПОШИРЕНІСТЬ ПОРУШЕНЬ ІНДИВІДУАЛЬНОЇ ЖИТТЄЗДАТНОСТІ СЕРЕД ЛЮДЕЙ СТАРШИХ ВІКОВИХ ГРУП ЗА РЕЗУЛЬТАТАМИ СКРИНІНГУ ICOPE**

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Вступ. Підвищення якості лікувально-профілактичної допомоги для пацієнтів літнього віку є важливим і своєчасним завданням. Забезпечення доступу до якісної медичної допомоги, що враховує специфічні потреби літніх людей, проголошено у Концепції «Інтегрованої допомоги літнім людям» (ICOPE), розробленої у 2017 році, і є ключовим елементом «десятиліття здорового старіння» – плану дій Глобальної стратегії Всесвітньої організації охорони здоров'я (ВООЗ) на 2020-2030 роки.

Мета. Вивчити розповсюдженість порушень індивідуальної життєздатності серед осіб старших вікових груп за результатами скринінгу ICOPE.

Матеріали та методи. В ДНУ «ЦІТОЗ» ДУС в 2023 році було проведено проспективне дослідження (вибіркове, одночасне) для оцінки функціональних порушень внутрішньої життєздатності пацієнтів старших вікових груп за допомогою адаптованого опитувальника (ВООЗ ICOPE). У дослідження було залучено 577 осіб старше 60 років, з них чоловіків – 238 (41,2 %) осіб, жінок – 339 (58,8 %) осіб.

Результати дослідження та обговорення. 318 осіб віком 60-74 роки (127 чоловіків і 191 жінка) мали різні порушення у 97,2 % (95 % ДІ 94,7-98,5) випадків, найчастіше – порушення зору (95,9 %; ДІ 93,1-97,6), на другому місці – симптоми депресії (63,8 %; ДІ 58,4-68,9), на третьому – втрата слуху (34,6 %; ДІ 29,6-40,0). Зниження рухової активності та когнітивних здібностей виявлено у 15,4 % (ДІ 11,9-19,8) і 9,1 % (ДІ 6,4-12,8) відповідно, порушення харчування – у 8,8 % (ДІ 6,2-12,4). У групі 75-89 років (250 осіб) всі учасники мали порушення, найбільш поширене – порушення зору (98,4 %; ДІ 96,0-99,4), далі – симптоми депресії (64,8 %; ДІ 58,7-70,5) та втрата слуху (44,0 %; ДІ 38,0-50,2). У віковій групі 90+ (9 осіб) порушення зафіксовано у 100 % (ДІ 70,1-100,0) випадків, з найвищою частотою порушень зору і депресії (100 %). Частота когнітивних порушень та зниження рухової активності суттєво зростає з віком ($p < 0,001$).

Висновки. Впровадження скринінгових інструментів є пріоритетом у діагностиці функціональних розладів життєздатності у людей старших вікових груп. Скринінговий інструмент ВООЗ «Інтегрована допомога для людей похилого віку» (ICOPE) забезпечує ефективне виявлення ключових розладів, пов'язаних зі зниженням життєздатності, що дозволяє оцінити їх поширеність, спланувати подальшу діагностику та організувати довгостроковий догляд вдома на основі взаємодії медичних і соціальних служб.

Ключові слова: життєдіяльність, індивідуальна життєздатність, внутрішня спроможність, здорове старіння, ICOPE, люди похилого віку, скринінг, індивідуальний план догляду