

This is a pre-copyedited, author-produced version of an article accepted for publication in *European Journal of Public Health* following peer review. The version of record Jerliu N, Burazeri G, Toçi E, Philp I, Czabanowska K, Ramadani N & Brand H (2019) Application of EASY-Care Standard 2010 instrument in a population-based survey in transitional Kosovo. *European Journal of Public Health*, 29 (2), pp. 367-371 is available online at: <https://doi.org/10.1093/eurpub/cky172>

Application of EASY-Care Standard 2010 instrument in a population-based survey in transitional Kosovo

Naim Jerliu^{1,2}, Genc Burazeri^{3,4}, Ervin Toçi⁴, Ian Philp⁵, Katarzyna Czabanowska³, Naser Ramadani^{1,2}, Helmut Brand³

¹ National Institute of Public Health of Kosovo, Prishtina, Kosovo;

² Faculty of Medicine, University of Prishtina, Prishtina, Kosovo;

³ Department of International Health, School CAPHRI, Care and Public Health Research Institute, Maastricht University, Maastricht, The Netherlands;

⁴ Department of Public Health, Faculty of Medicine, University of Medicine, Tirana, Albania;

⁵ Co-Founder & Chief Scientific Officer, Easy-Care Academy.

Corresponding author:

Naim Jerliu, MD, PhD, Faculty of Medicine, University of Prishtina & National Institute of Public Health of Kosovo, Prishtina, Republic of Kosovo

Address: National Institute of Public Health of Kosovo,
Str. Instituti Shëndetësor, 10000, Prishtina, Republic of Kosovo
Telephone: +38338541432; Email: naim.jerliu@uni-pr.edu

Source of support

This work was supported by The United Nations Population Fund (UNFPA), Office in Kosovo. The financial sponsor played no role in the design, execution, analysis and interpretation of data, or writing of the study.

Word count: 258 (Abstract); 2326 (Text)

Abstract

Background: The aim of this study was to assess the health needs and priorities of older people in Kosovo, the newest state in Europe striving for a functional democracy after the breakdown of former Yugoslavia and the following war in the region.

Methods: A cross-sectional study was conducted in Kosovo in 2011 including a nationwide representative sample of 1,890 individuals aged ≥ 65 years (949 men, mean age: 73 ± 6 years; 941 women, mean age: 74 ± 7 years; overall response rate: 84%). All individuals were

administered the full version of EASY-Care standard 2010 instrument, inquiring about the need for support in activities of daily living (“independence”), the “risk of breakdown in care” (leading to emergency admission to hospital) and the “risk of falls”.

Results: The degree of “independence” was lower, whereas the “risk of breakdown in care” and the “risk of falls” were significantly higher in: older women; the oldest individuals (≥ 85 years); rural residents; participants living alone; those perceiving themselves as poor; participants who could not access medical care; those who perceived their general health status as poor; and older people who reported at least one chronic condition.

Conclusion: This is one of the very few reports from Southeast European region informing about the health needs and priorities of older people in a large and representative population-based sample of older men and women. The poor health status of older people, especially evident in the socio-demographic disadvantaged categories, should raise the awareness of policymakers and decision-makers for appropriate health and social care of elderly in Kosovo and in other European countries.

Keywords: aging, breakdown in care, EASY-Care, Kosovo, falls, independence, older people.

Introduction

Until early 2000, there has been little experience with the use of standardized assessment instruments for older people in primary health care settings and community care settings in different countries (1). As a matter of fact, a comprehensive assessment should include both health needs and social needs of older people in a balanced way supporting decision making with evidence-based screening tools. With this aim, it was developed the EASY-Care, a standard instrument which provides a simple, valid and reliable assessment for early identification of a range of health care needs of older people (1). The items and domains of the assessment were agreed and refined in validation studies undertaken in several European studies in the 1990s (1-7).

To date, the research work conducted, as well as the feedback received from various users of this tool have indicated that the EASY-Care instrument is particularly useful for obtaining an overall assessment of needs and personal response in at-risk older people living in different communities. Indeed, a number of studies have been conducted worldwide and have demonstrated: i) good reliability and validity in psychometric studies (3-7); ii) high levels of cost-effectiveness in improving functional outcomes and reducing hospital admissions with an increase in community service provision (8,9); iii) population studies in several countries using EASY-Care data have shown the value of the instrument in identifying the prevalence of population health and care needs of older people (1,10). As reported previously, the EASY-Care instrument has been also validated in a small sample of older men and women in Albania and Kosovo (11), two countries in the Western Balkans which are currently undergoing a difficult period of socioeconomic transition. However, to date, there is no information from population-based studies regarding the needs and priorities of older people in these Albanian settings. In this context, our aim was to assess the health needs and priorities of older people in a population-based sample of older people in Kosovo, the newest state in Europe striving for a functional democracy after the breakdown of former Yugoslavia and the following war in the region.

Methods

A nationwide survey (cross-sectional study) was conducted in Kosovo in January-March 2011.

The EASY-Care assessment was obtained from a compilation of well-established instruments for the respective domains which were included in the EASY-Care tool. However, where necessary, the source instruments were slightly modified in order to ensure consistency in format and information flow (1).

Study population and sampling

The study population consisted of an age- sex-and residence (urban vs. rural)-stratified sample of 1,890 individuals aged 65 years and over (949 men, mean age: 73±6 years; 941 women, mean age: 74±7 years; overall response rate: 83.5%). Study population and sampling have been described in detail elsewhere (12-14).

Data collection

All individuals who agreed to participate in the study were administered the full version of EASY-Care standard 2010 instrument, which was previously validated in a small sample of older people in Kosovo and Albania (11).

EASY-Care instrument provides useful evidence of older people's current health status, needs and priorities for their health and medical care. The assessment of current needs and priorities is based on the following characteristics of older people: (i) seeing, hearing and communicating; (ii) looking after themselves; (iii) getting around; (iv) safety of older people; (v) accommodation and finance; (vi) older people's ability for staying healthy, and; (vii) mental health and well-being (1).

In our study conducted in Kosovo, after completing the assessment, a summary was recorded for the needs and problems which were identified in order of their importance to older people. Based on responses to questions in EASY-Care standard, an overall summary score was calculated for each participant in terms of: i) the need for support in activities of daily living (referred to as "independence" score, with a range of scores from 0 [complete

independence] to 100 [absolute lack of independence]); ii) the risk of breakdown in care leading to emergency admission to hospital (“risk of breakdown in care” score, with a range of scores from 0 [no risk] to 12 [the highest risk]), and; iii) the “risk of falls” score (with a range of scores from 0 [no risk] to 8 [the highest risk]). Hence, higher scores imply a higher risk across these three study outcomes (independence, risk of breakdown in care and risk of falls scores).

In addition, information on demographic and socioeconomic characteristics (age, sex, place of residence, marital status, educational level and self-perceived poverty level) and health status (self-perceived general health status, presence of chronic conditions and access to medical care) was also collected.

Statistical analysis

Pearson’s correlation coefficients were used to assess the linear associations between independence score, risk of breakdown in care score and risk of falls score.

General linear model was used to assess the association between demographic and socioeconomic characteristics and health status and access to medical care (independent variables) with independence score, risk of breakdown in care score and risk of falls score (outcome variables). Age-adjusted mean values and their respective 95% confidence intervals (95% CIs) were initially calculated. Subsequently, multivariable-adjusted mean values and their respective 95% CIs were calculated.

In all cases, a p-value of ≤ 0.05 was considered as statistically significant.

Statistical Package for Social Sciences (SPSS, version 17.0) was used for all the statistical analyses.

Results

Standardized to the Kosovo distribution of the population aged ≥ 65 years, 46.4% (95% CI=46.2%-46.7%) of participants were men in the population-based sample included in this study; 4.8% (95% CI=4.7%-4.9%) were very old (≥ 85 years); 62.1% (61.8%-62.3%) were residing in rural areas; 33.7% (95% CI=33.5%-34.0%) had no formal education at all; 45.3% (95% CI=45.0%-45.6%) were currently married; and 47.8% (95% CI=47.5%-48.1%) perceived themselves as poor (data not shown in the tables). Overall, 41.7% (95% CI=41.4%-41.9%) were unable to access medical care; 53.3% (95% CI=53.0%-53.5%) reported a poor health status in general; and 83.3% (95% CI=83.1%-83.5%) reported at least one chronic condition (not shown).

Table 1 presents the distribution of independence score, risk of breakdown in care score and risk of falls score. Standardized to the respective strata weights in the sampling frame, mean scores were 26.7 ± 21.4 (range: 0-100), 4.3 ± 2.7 (range: 0-12) and 2.1 ± 1.6 (range: 0-8), respectively. Mean scores were all higher in women than in men, indicating a lower degree of independence, but a higher risk of both breakdown in care and falls among women. As expected, there was a positive linear association with age: mean scores were all the highest among the oldest individuals (≥ 85 years). Furthermore, mean scores were higher among rural residents, participants who were not currently married and those perceiving themselves as poor. Similarly, mean scores of independence, risk of breakdown in care and risk of falls were higher among participants who could not access medical care, those who perceived their general health status as poor and individuals who reported at least one chronic condition.

The independence score, the risk of breakdown in care score and the risk of falls score were highly correlated with each-other (range of Pearson's correlation coefficients was from 0.74 to 0.84; all $P < 0.001$) [data not shown in the tables].

In age-adjusted models (Table 2, model 1), mean value of the independence score was higher in women than in men (37.8 vs. 28.2), among the very old participants (46.6), those residing in rural areas (35.8 vs. 30.1 in urban areas), individuals with no formal education (40.3), those who perceived themselves as poor (37.4 vs. 28.4 among those who did not perceive themselves as poor), participants who could not access medical services (41.9 vs. 26.6 among those who could access medical care), individuals who perceived their health status as poor (41.9 vs. 20.7 among those who perceived their general health as good) and participants who reported at least one chronic condition (34.9 vs. 20.7 among those who did not report any chronic condition). Upon multivariable-adjustment (Table 2, model 2), significant correlates of higher mean independence scores were older age, low educational attainment, self-perceived poverty, poor health status, and lack of access to medical services.

In age-adjusted models (Table 3, model 1), mean value of the risk of breakdown in care score was higher in women than in men (5.4 vs. 4.5), among the very old participants (6.3), individuals with no formal education (5.5), those who perceived themselves as poor (5.7 vs. 4.1 among those who did not perceive themselves as poor), participants who could not access medical services (6.3 vs. 3.9 among those who could access medical care), individuals who perceived their health status as poor (6.1 vs. 3.4 among those who perceived their general health as good) and participants who reported at least one chronic condition (5.2 vs. 3.1 among those who did not report any chronic condition). In multivariable-adjusted models (Table 3, model 2), significant "predictors" of higher mean scores of risk of breakdown in care were older age, low educational attainment, self-perceived poverty, poor health status, presence of chronic conditions and lack of access to medical services.

In age-adjusted models (Table 4, model 1), mean value of the risk of falls score was higher in women than in men (2.8 vs. 2.1), among the very old participants (3.1), individuals with no formal education (2.8), those who perceived themselves as poor (2.7 vs. 2.1 among those who did not perceive themselves as poor), participants who could not access medical services (3.0 vs. 2.0 among those who could access medical care), individuals who perceived their health status as poor (3.0 vs. 1.6 among those who perceived their general health as good) and participants who reported at least one chronic condition (2.5 vs. 1.5 among those who did not report any chronic condition). In multivariable-adjusted models (Table 4, model 2), significant "determinants" of higher mean scores of risk of falls were female sex, older age, lack of formal education, self-perceived poverty, poor health status, presence of chronic conditions and lack of access to medical care.

Discussion

This is the first study conducted in Albanian settings and probably in the wider context of Southeast European region which has assessed health needs and priorities of older people in a large and representative population-based sample of older men and women.

Main findings of our study include a high degree of limitations in activities of daily living in the context of chronic diseases and a rather poor general health status of older men and especially women in transitional Kosovo. In this study, independence score, risk of breakdown in care score and risk of falls score were all related to older age, a low socioeconomic status of older people (in terms education and/or poverty level) and poor

health status and lack of access to medical care. Furthermore, older women were generally more vulnerable than men.

A recent study conducted in Poland (in Poznan and the surrounding areas) including 506 individuals aged 60 years and over who were administered the same instrument (EASY-Care Standard 2010 questionnaire) reported significant differences in functioning between the genders in the areas of meal preparation, falls, mobility outside the home, lack of physical activity, and low tolerance of physical effort (15). Our findings from Kosovo indicate a considerably lower degree of independence among older females compared to their male counterparts, which is a cause of concern considering the higher life expectancy among females.

Similar to our findings and in line with the expected results, with age, the independence of older people diminished also in the Polish study, which was published fairly recently (15). Hence, more problems concerning the activities of daily living were observed in the Polish study among individuals aged over 80 years, especially among those taking two or more medications and suffering from cognitive impairment (15). This was also reported in other recently published studies (16,17).

It has been argued that the relationship between cognitive impairment and efficiency of the activities of daily living results from the need of older people to use cognitive processes such as memory and planning when performing different tasks including administration of money, taking medications, or using the telephone (15,18).

Cognitive impairment aside, other health disorders among older people are associated with many other negative consequences, most importantly functional limitations of this population category, as convincingly documented in the literature (19). In turn, limitations of mobility among older people cause multi-faceted problems, deteriorating significantly their quality of life (15). In addition, limitations of mobility affect the family members of older people in terms of care provision or financial support (15). More importantly, limitations of mobility among older people pose a serious challenge on public health systems as the number of people requiring medical and social support increases and this significantly increases the overall cost of health care (15,20,21).

This study conducted in Kosovo may have some limitations including its design and the measuring instruments. The EASY-Care Standard 2010 instrument was previously validated among older people in Kosovo and Albania (11), which is reassuring. Furthermore, a recent systematic review concluded that, the evidence supports the use of EASY-Care for individual needs assessment (22). Nonetheless, self-reported information on selected socioeconomic characteristics and health status may have been subject to information bias in the current study carried out in the context of post-war Kosovo. Yet, on the face of it, there is no evidence of differential reporting about activities of daily living, risk of breakdown in care or risk of falls between subgroups differing in their socio-demographic factors (including self-perceived poverty), or the self-rated general health status. Our survey included a large nationwide representative population-based sample of Kosovo men and women with a high participation rate in both sexes (the overall response rate was about 84%). Nonetheless, our findings should be interpreted with caution because the relationships from cross-sectional studies are not assumed to be causal.

In conclusion, this is one of the very few reports from Southeast European region informing about the health needs and priorities of older people in a large and representative population-based sample of older men and women. The poor health status of older people,

especially evident in the socio-demographic disadvantaged categories, should raise the awareness of policymakers and decision-makers in Kosovo and in other European countries.

Key points

This study aimed to assess the health needs and priorities of older people in Kosovo, which is the newest state in Europe striving for a functional democracy after the breakdown of former Yugoslavia and the following war in the region.

Our findings indicate that the degree of “independence” was lower, whereas the “risk of breakdown in care” and the “risk of falls” were significantly higher in women, the oldest individuals, the most socioeconomic disadvantaged older people and those with a poor health status.

This is one of the very few reports from Southeast European region informing about the health needs and priorities of older people in a large and representative population-based sample of older men and women.

The poor health status of older people, especially evident in the socio-demographic disadvantaged categories, should raise the awareness of policymakers and decision-makers for appropriate health and social care of elderly in Kosovo and in other European countries.

Funding: This work was supported by The United Nations Population Fund (UNFPA), Office in Kosovo. The financial sponsor played no role in the design, execution, analysis and interpretation of data, or writing of the study.

Conflicts of interest: None declared.

References

1. Lowles RV, Philp I. Simple Measures for Assessing the Physical, Mental and Social Functioning of Older People. *Generat Rev* 2001;11:12-4.
 2. EasyCare Academy. Available at: <https://www.easycareacademy.com/en/> (accessed: 15 May, 2018).
- Melis R, Van Eijken M, Achterberg T, et al. The effect on caregiver burden of a problem-based home visiting programme for frail older people. *Age Ageing* 2009;38:542-7.
- Parker C, Philp I. Screening for cognitive impairment among older people in black and minority ethnic groups. *Age Ageing* 2004;33:447-52.
- Parker C, Philp I, Sarai M, Rauf A. Cognitive screening for people from minority ethnic backgrounds. *Nurs Older People* 2007;18:31-6.
- Philp I, Hoyle E, O'Brien E, Parker C. Screening tools for older people at risk of adverse outcomes. *Geriat Med* 2007;37:10-13.
- Philp I. EASY-Care: A systematic approach to the assessment of older people. *Geriat Med* 2000;30:15-20.
- Melis RJF, Adang E, Teerenstra S, et al. Cost effectiveness analysis of multidisciplinary program to intervene on geriatric syndromes in frail older people who live at home (Dutch EASYcare Study). *J Gerontol: Med Sci* 2008;63:275-82.
- Perry M, Draskovic I, van Achterberg T, et al. Can an EASYcare based dementia training programme to improve diagnostic assessment and management of dementia by general practitioners and primary care nurses? The design of a randomized controlled trial. *BMC Health Serv Res* 2008;8:71.

Bath PA, Philp I, Boydell L, McCormick W, Bray J, Roberts H. Standardised health check data from community-dwelling elderly people: the potential for comparing populations and estimating need. *Health Soc Care Community* 2000;8:17-21.

11. Jerliu N, Toçi E, Burazeri G, Ramadani N, Philp I, Brand H. Cross-cultural adaptation of an instrument measuring older people's health needs and priorities in Albania and Kosovo. *Alb Med J* 2013;2:109-14.

12. Jerliu N, Toçi E, Burazeri G, Ramadani N, Brand H. Socioeconomic conditions of elderly people in Kosovo: a cross-sectional study. *BMC Public Health* 2012;12:512.

13. Jerliu N, Toçi E, Burazeri G, Ramadani N, Brand H. Prevalence and socioeconomic correlates of chronic morbidity among elderly people in Kosovo: a population-based survey. *BMC Geriatrics* 2013;13:22.

14. Jerliu N, Burazeri G, Toci E, Kempen GJM, Jongen W, Ramadani N, Brand H. Social networks, social participation and self-perceived health among older people in transitional Kosovo. *Eur J Public Health* 2014;24:333-7.

15. Talarska D, Kropińska S, Strugała M, Szewczyzak M, Tobis S, Wieczorowska-Tobis K. The most common factors hindering the independent functioning of the elderly at home by age and sex. *Eur Rev Med Pharmacol Sci* 2017;21:775-85.

16. Batsis J, Zbehlik A, Pidgeon D, Bartels S. Dynapenic, obesity and effect on long-term physical function and quality of life: data from the osteoarthritis initiative. *BMC Geriatr* 2015;15:118.

17. Fonad E, Robins Wahlin TB, Rydholm Hedman AM. Associations between falls and general health, nutrition, dental health and medication use in Swedish home-dwelling people aged 75 years and over. *Health Soc Care Community* 2015;23:594-604.

18. Freitas RS, Fernandes MH, De Silva Coqueiro R, Reis WM Junior, Rocha SV, Brito TA. Functional capacity and associated factors in the elderly: a population study. *Acta Paul Enferm* 2012;25:933-9.

19. Sjölund BM, Nordberg G, Wimo A, Von Strauss E. Morbidity and physical functioning in old age: differences according to living area. *J Am Geriatr Soc* 2010;58:1855-62.

20. Griffith L, Raina P, Wu H, Zhu B, Stathokostas L. Population attributable risk for functional disability associated with chronic conditions in Canadian older adults. *Age Ageing* 2010;39:738-45.

21. Paterson DH, Warburton DE. Physical activity and functional limitations in older adults: a systematic review related to Canada's Physical Activity Guidelines. *In J Behav Nutr Phys Act* 2010;7:38.

22. Craig C, Chadborn N, Sands G, Tuomainen H, Gladman J. Systematic review of EASY-care needs assessment for community-dwelling older people. *Age Ageing* 2015;44:559-65.

Table 1. Distribution of independence score, risk of breakdown in care score and risk of falls score by demographic and socio-economic factors and morbidity variables

Variable	Independence score*		Risk of breakdown in care*		Risk of falls score*	
	Sample mean (± SD)	Weighted [†] mean (± SD)	Sample mean (± SD)	Weighted [†] mean (± SD)	Sample mean (± SD)	Weighted [†] mean (± SD)
Total	32.9 (24.4)	26.7 (21.4)	4.9 (3.0)	4.3 (2.7)	2.4 (1.7)	2.1 (1.6)
Sex:						
Men	27.8 (23.6)	21.8 (20.2)	4.5 (2.9)	3.8 (2.7)	2.1 (1.7)	1.7 (1.6)
Women	37.9 (24.2)	30.9 (21.5)	5.4 (2.9)	4.8 (2.6)	2.8 (1.6)	2.4 (1.6)
Age:						
65-74 years	21.6 (19.6)	22.5 (19.5)	3.9 (2.6)	4.0 (2.6)	1.8 (1.6)	1.9 (1.6)
75-84 years	30.8 (21.4)	31.9 (21.4)	4.6 (2.7)	4.7 (2.7)	2.3 (1.6)	2.4 (1.6)
≥85 years	46.8 (25.5)	49.2 (24.5)	6.3 (3.1)	6.4 (3.1)	3.1 (1.6)	3.2 (1.6)
Place of residence:						
Rural area	35.6 (23.4)	29.2 (20.8)	5.0 (2.9)	4.4 (2.7)	2.6 (1.7)	2.3 (1.6)
Urban area	29.9 (25.2)	22.6 (21.8)	4.9 (2.9)	4.1 (2.7)	2.3 (1.7)	1.9 (1.6)
Educational level:						
0 years	43.0 (23.5)	36.7 (21.1)	5.8 (2.9)	5.1 (2.8)	2.9 (1.6)	2.6 (1.7)
1-8 years	26.5 (21.9)	23.2 (19.4)	4.4 (2.7)	4.1 (2.6)	2.1 (1.6)	1.9 (1.5)
≥9 years	15.9 (19.4)	12.9 (17.2)	3.6 (2.8)	3.0 (2.4)	1.5 (1.6)	1.2 (1.4)
Marital status:						
Currently married	26.5 (22.5)	23.9 (20.9)	4.3 (2.7)	4.0 (2.6)	2.0 (1.6)	1.8 (1.6)
Other	37.5 (24.7)	29.9 (21.4)	5.4 (2.9)	4.7 (2.7)	2.7 (1.7)	2.4 (1.6)
Self-perceived poverty:						
Not poor	27.7 (21.3)	22.7 (18.7)	4.1 (2.7)	3.6 (2.5)	2.1 (1.6)	1.8 (1.5)
Poor	37.7 (26.1)	30.9 (23.2)	5.7 (2.9)	5.0 (2.7)	2.7 (1.7)	2.4 (1.7)
Access to medical care:						
Able	25.9 (20.7)	20.6 (17.7)	3.9 (2.5)	3.3 (2.2)	2.0 (1.6)	1.7 (1.4)
Unable	42.4 (25.9)	35.4 (23.1)	6.4 (2.9)	5.7 (2.7)	3.1 (1.7)	2.7 (1.7)
General health status						
Good	18.7 (15.5)	15.9 (14.0)	3.2 (2.1)	3.0 (2.0)	1.5 (1.4)	1.3 (1.3)
Poor	42.9 (24.5)	35.9 (22.2)	6.2 (2.8)	5.5 (2.6)	3.1 (1.6)	2.8 (1.6)
Presence of chronic conditions						
No	17.0 (17.4)	14.3 (16.5)	2.8 (2.4)	2.5 (2.3)	1.3 (1.4)	1.1 (1.3)
Yes	35.3 (24.4)	29.2 (21.4)	5.3 (2.9)	4.7 (2.6)	2.6 (1.7)	2.3 (1.6)

* Range of independence score from 0 to 100; range of breakdown score from 0 to 12; range of risk of falls score from 0 to 8. Higher scores imply a higher risk across all the three parameters (independence, risk of breakdown in care and risk of falls scores).

† Means ± standard deviations (SD) of the independence score, risk of breakdown in care score and risk of falls score in the study sample were standardized for age-, sex- and residence in accordance with the respective strata weights of the sampling frame pertinent to the overall Kosovo population aged ≥65 years.

Table 2. Association of demographic and socioeconomic factors with the independence score; age-adjusted and multivariable-adjusted mean values from the General Linear Model

Variable	Model 1 [†]		Model 2 [§]	
	Mean (95% CI)*	P-value	Mean (95% CI)	P-value
Sex				
Men	28.2 (26.7-29.7)	<0.001	28.5 (26.8-30.2)	0.117
Women	37.8 (36.3-39.2)		30.2 (28.2-32.3)	
Age:		<0.001 (2) [†]		<0.001 (2)
65-74 years	21.5 (19.7-23.5)	<0.001	23.2 (21.2-25.1)	<0.001
75-84 years	30.8 (29.1-32.6)	<0.001	26.5 (24.4-28.5)	<0.001
≥85 years	46.6 (44.6-48.4)	-	38.4 (36.1-40.7)	-
Place of residence:				
Rural area	35.8 (34.3-37.3)	<0.001	30.1 (28.3-32.0)	0.100
Urban area	30.1 (28.6-31.7)		28.6 (26.8-30.3)	
Educational level:		<0.001 (2)		<0.001 (2)
0 years	40.3 (38.6-41.9)	<0.001	35.9 (33.9-37.7)	<0.001
1-8 years	28.9 (27.3-30.5)	<0.001	28.2 (26.4-30.0)	0.011
≥9 years	19.2 (16.0-22.3)	-	24.0 (20.8-27.2)	-
Marital status:				
Currently married	30.6 (28.9-32.3)	<0.001	29.0 (27.1-31.0)	0.552
Other	34.8 (33.3-36.2)		29.7 (27.9-31.5)	
Self-perceived poverty:				
Not poor	28.4 (26.9-29.9)	<0.001	27.5 (25.7-29.3)	<0.001
Poor	37.4 (35.9-38.9)		31.2 (29.3-33.0)	
Access to medical care:				
Able	26.6 (25.2-27.9)	<0.001	24.5 (22.9-26.2)	<0.001
Unable	41.9 (40.3-43.4)		34.2 (32.2-36.2)	
General health status				
Good	20.7 (19.2-22.2)	<0.001	21.0 (19.3-22.8)	<0.001
Poor	41.9 (40.6-43.1)		37.7 (35.7-39.6)	
Presence of chronic conditions				
No	20.7 (17.8-23.7)	<0.001	28.2 (25.5-30.9)	0.110
Yes	34.9 (33.8-36.1)		30.5 (29.3-31.8)	

* Mean value and 95% confidence interval for the mean value (in parentheses).

[†] Overall P-value and degrees of freedom (in parentheses).

[‡] Model 1: Age-adjusted ORs and respective 95% CIs.

[§] Model 2: Multivariable-adjusted ORs and respective 95% CIs (simultaneously adjusted for all variables presented in the table).

Table 3. Association of demographic and socioeconomic factors with the risk of breakdown in care score; age-adjusted and multivariable-adjusted mean values from the General Linear Model

Variable	Model 1 [‡]		Model 2 [§]	
	Mean (95% CI)*	P-value	Mean (95% CI)	P-value
Sex				
Men	4.5 (4.3-4.7)	<0.001	4.5 (4.3-4.7)	0.726
Women	5.4 (5.2-5.6)		4.6 (4.3-4.8)	
Age:		<0.001 (2) [†]		<0.001 (2)
65-74 years	3.9(3.7-4.2)	<0.001	4.1 (3.9-4.4)	<0.001
75-84 years	4.6 (4.4-4.9)	<0.001	4.2 (3.9-4.4)	<0.001
≥85 years	6.3 (6.0-6.5)	-	5.4 (5.1-5.6)	-
Place of residence:				
Rural area	5.0 (4.8-5.2)	0.425	4.5 (4.2-4.7)	0.131
Urban area	4.9 (4.7-5.1)		4.6 (4.4-4.9)	
Educational level:		<0.001 (2)		<0.001
0 years	5.5 (4.3-5.7)	<0.001	5.0 (4.8-5.2)	0.002
1-8 years	4.6 (4.4-4.8)	0.003	4.4 (4.2-4.6)	0.501
≥9 years	3.9 (3.5-4.3)	-	4.3 (3.9-4.7)	-
Marital status:				
Currently married	4.6 (4.4-4.9)	0.001	4.5 (4.2-4.7)	0.106
Other	5.1 (5.0-5.3)		4.7 (4.4-4.9)	
Self-perceived poverty:				
Not poor	4.1 (3.9-4.3)	<0.001	4.2 (4.0-4.4)	<0.001
Poor	5.7 (5.5-5.8)		4.9 (4.7-5.1)	
Access to medical care:				
Able	3.9 (3.8-4.1)	<0.001	3.7 (3.5-3.9)	<0.001
Unable	6.3 (6.1-6.5)		5.4 (5.2-5.6)	
General health status				
Good	3.4 (3.2-3.5)	<0.001	3.5 (3.2-3.7)	<0.001
Poor	6.1 (5.9-6.3)		5.7 (5.4-5.9)	
Presence of chronic conditions				
No	3.1 (2.7-3.4)	<0.001	4.3 (3.9-4.6)	0.002
Yes	5.2 (5.1-5.4)		4.8 (4.7-5.0)	

* Mean value and 95% confidence interval for the mean value (in parentheses).

[†] Overall P-value and degrees of freedom (in parentheses).

[‡] Model 1: Age-adjusted ORs and respective 95% CIs.

[§] Model 2: Multivariable-adjusted ORs and respective 95% CIs (simultaneously adjusted for all independent variables in the table).

Table 4. Association of demographic and socioeconomic factors with the risk of falls score; age-adjusted and multivariable-adjusted mean values from the General Linear Model

Variable	Model 1 [‡]		Model 2 [§]	
	Mean (95% CI)*	P-value	Mean (95% CI)	P-value
Sex				
Men	2.1 (1.9-2.2)	<0.001	2.0 (1.9-2.2)	<0.001
Women	2.8 (2.6-2.9)		2.3 (2.2-2.5)	
Age:				
		<0.001 (2) [†]		<0.001 (2)
65-74 years	1.8 (1.7-1.9)	<0.001	1.9 (1.8-2.0)	<0.001
75-84 years	2.3 (2.2-2.4)	<0.001	2.0 (1.9-2.2)	<0.001
≥85 years	3.1 (2.9-3.2)	-	2.6 (2.4-2.8)	-
Place of residence:				
Rural area	2.6 (2.4-2.7)	<0.001	2.2 (2.1-2.4)	0.082
Urban area	2.3 (2.1-2.4)		2.1 (2.0-2.3)	
Educational level:				
		<0.001 (2)		0.001 (2)
0 years	2.8 (2.7-2.9)	<0.001	2.4 (2.3-2.5)	0.003
1-8 years	2.2 (2.1-2.3)	<0.001	2.1 (2.0-2.3)	0.269
≥9 years	1.6 (1.3-1.9)	-	2.0 (1.7-2.2)	-
Marital status:				
Currently married	2.2 (2.1-2.3)	<0.001	2.1 (2.0-2.3)	0.263
Other	2.5 (2.4-2.6)		2.2 (2.1-2.4)	
Self-perceived poverty:				
Not poor	2.1 (2.0-2.2)	<0.001	2.0 (1.9-2.2)	0.004
Poor	2.7 (2.6-2.8)		2.3 (2.1-2.4)	
Access to medical care:				
Able	2.0 (1.8-2.1)	<0.001	1.8 (1.7-2.0)	<0.001
Unable	3.0 (2.8-3.1)		2.5 (2.3-2.6)	
General health status				
Good	1.6 (1.5-1.7)	<0.001	1.6 (1.5-1.7)	<0.001
Poor	3.0 (2.9-3.1)		2.7 (2.6-2.9)	
Presence of chronic conditions				
No	1.5 (1.3-1.7)	<0.001	2.0 (1.8-2.2)	0.013
Yes	2.5 (2.4-2.6)		2.3 (2.2-2.4)	

* Mean value and 95% confidence interval for the mean value (in parentheses).

† Overall P-value and degrees of freedom (in parentheses).

‡ Model 1: Age-adjusted ORs and respective 95% CIs.

§ Model 2: Multivariable-adjusted ORs and respective 95% CIs (simultaneously adjusted for all independent variables in the table).