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ORIGINAL ARTICLE

An assessment of factors related to disability in ADL and IADL in elderly inhabitants of rural areas of south-eastern Poland

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Abstract

Introduction and objective. Demographic changes in Europe have resulted in anincreased demand for healthcare and social care for the elderly. The aim of this study was to analyze the factors related to disability in ADL and IADL among elderly inhabitants of rural areas of southeastern Poland.

Materials and method. The study involved 426 subjects aged 71–80 years. To assess their activities of daily living, the Katz ADL Scale was used, and the Lawton IADL Scale was used to assess their instrumental activities in daily living.

Results. The subjects reported at least one problem with IADL (43.19%) more often than with ADL (36.85%). The strongest factors related to difficulties with ADL were assessment of satisfaction with life, using assistive devices, and having one's home suitably adapted. The strongest factors related to IADL were the assessment of satisfaction with life, education, using assistive devices and performing moderate physical exercise at a minimum of 150 minutes per week.

Conclusions. Age, education, pain, falls, household not fully adapted for one's needs, using assistive devices, lack of satisfaction with life, and low assessment of quality of life had a significant impact on the prevalence of ADL and/or IADL disabilities in the elderly inhabitants of rural areas. Most of these factors can be subject to modification. They are also a complex of predictors that allow for identifying and supporting those elderly patients from rural areas who are the most vulnerable.

Key words

aged, disability evaluation, humans, frail elderly

INTRODUCTION

The ageing of populations is a long-term tendency that started in Europe several dozen years ago. The percentage of citizens over the age of 65 is increasing in every member State of the European Union (EU) [1]. The ongoing demographic changes have resulted in an increased demand for health care and social care, aimed at preventing multiple diseases and disability and dependence of the elderly [2].

The increase in the number of the elderly is expected to result in an increase in the number of disabled [3]. Disability is widely understood as limitations in performing activities necessary for independent life, such as activities of daily living (ADL) and instrumental activities of daily living (IADL) [4]. ADL functions are used for assessment of the need for care by a third party (e.g. feeding, getting dressed), while IADL functions assess independent functioning in one's environment (e.g. shopping, tidying-up) [5]. The prevalence of disabilities manifested in ADL and IADL among the elderly differs in individual countries. The trends that can be observed are increase of disability with age, in women, and in countries and regions of lower social and economic development [6, 7, 8].

In their systematic review, Stuck et al. proved that risk factors for functional dependence in the elderly were: significant alcohol consumption, cognitive impairment, chronic diseases, limb dysfunctions, lack of physical activity, high or low body mass index, and low social status [9]. According to Tas et al., pain and low assessment of quality of life are additional risk factors for disability [10].

During recent years, the health of the rural inhabitants of Poland has improved, yet the disproportion in health between urban and rural areas is still noticeable. There are noticeable differences in, e.g. accessibility of healthcare and social care services. The number of clinics in rural areas is half the number in urban areas, which results in urban inhabitants not making appointments with doctors, medical rehabilitation and other medical services [11]. Moreover, households of the elderly in rural areas are usually worse equipped than those in urban areas. Urban areas have more households with multiple generations, therefore the elderly can potentially be helped by other people in everyday functioning [12].

Population ageing is a global phenomenon. It increases the need for research on disability and its determinants, as well as the need for planning strategies and interventions that would reduce the prevalence of disability [13].

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OBJECTIVE

The aim of this study was to analyze the factors related to disability in ADL and IADL, and also to identify specific impairments that reduce participation in performing the basic activities of daily living and instrumental activities of daily living in the 71–80-year-old inhabitants of south-eastern Poland.

MATERIALS AND METHOD

The study was cross-sectional and included 426 participants aged 71–80 living in rural areas of south-eastern Poland. The study population was drawn by the Ministry of Internal Affairs and Administration of Poland. The Ministry short-listed 25,000 citizens, from whom 800 were drawn to constitute the main study population from the region of south-eastern Poland. 426 of them lived in rural areas. Figure 1 presents the stages of subject inclusion in the study. The survey in the form of a direct interview was conducted by adequately trained pollsters, at respondents' places of residence. The criteria for subject inclusion in the analysis were: age between 71–80, place of residence – rural area, normal cognitive state (abbreviated mental test score – AMTS >6 points).

Approval to conduct the study was obtained from the Bioethics Commission of the University of Rzeszów. All participants were informed about the aim and the course of the study, and expressed informed consent to participate.

A questionnaire was used to collect socio-demographic data (i.e. age, gender, marital status, education, income) and anthropometric data (height and body mass, and then the body mass index [BMI] calculated). Data was also collected on subjects' chronic illnesses, physical activity, and adaptation of the residence and living conditions to the needs of elderly inhabitants. The questionnaire contained qualitative and quantitative questions about factors related to the health condition of older people. The Katz ADL Scale was used to assess the activities of daily living [14], and the Lawton IADL Scale to assess instrumental activities of daily living [15].

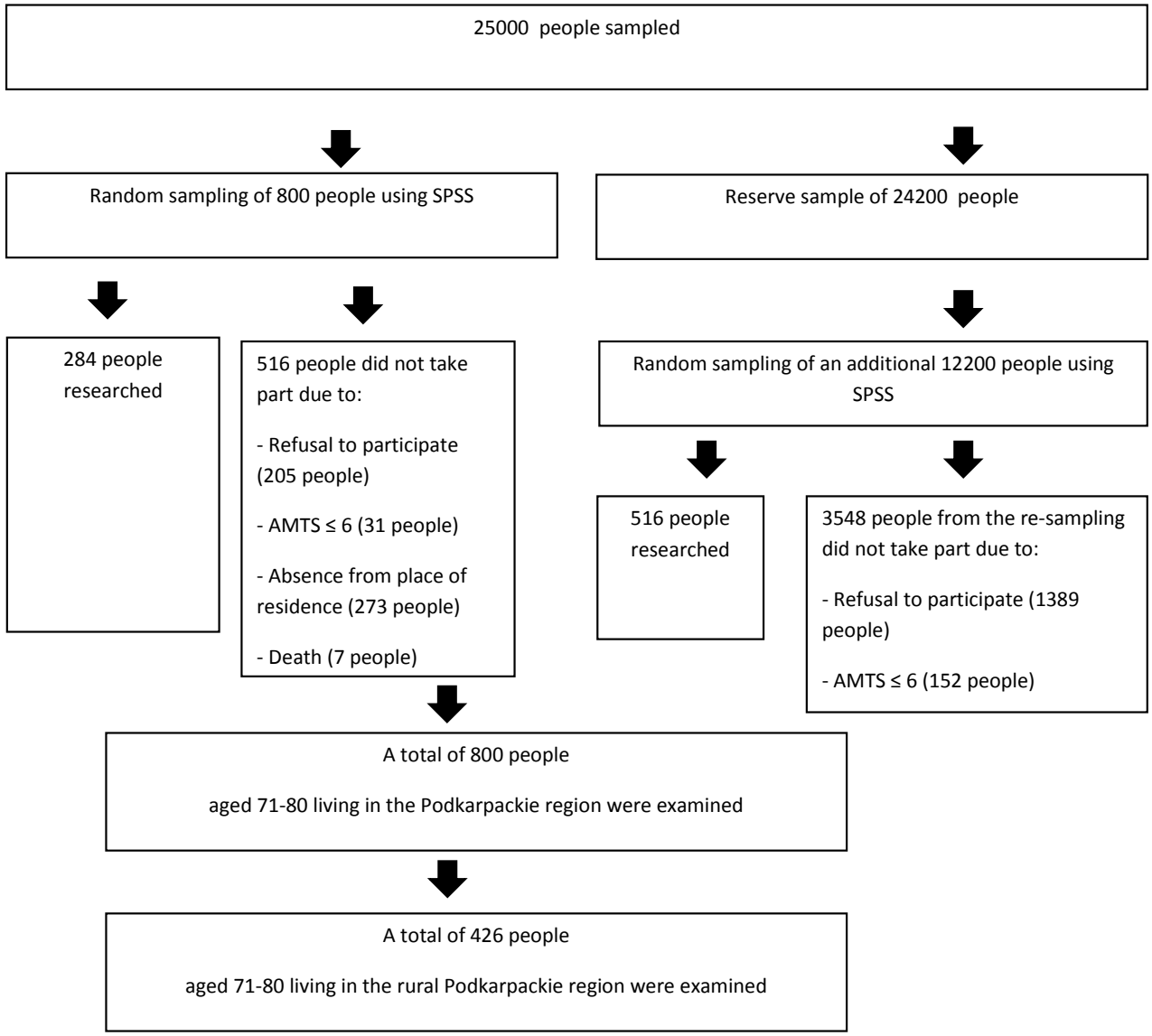

Figure 1. Flow diagram of study in group of people aged 71-80

For the purpose of analysis, the subjects we divided into those without limitations, and those who reported at least one limitation to ADL and at least one hard limitation to IADL [7]. The presented results concern only the subjects with at least one limitation at either ADL or IADL. Statistica software version 13.1 was used the to perform statistical analysis of the data. Demographic data are presented using the measurements of descriptive statistics. Two models or logistic regression were used to identify factors related to ADL and IADL. Statistical significance was set at $p<0.05$. The chi-squared test (for qualitative variables) and the Mann-Whitney U-test (for quantitative data) were used for preliminary analysis of relationships between individual demographic variables and ADL and IADL. The Shapiro-Wilk test was used to analyze the normal distribution of the quantitative data.

RESULTS

Bivariate analysis. The study included a total of 426 respondents aged 71–80, 255 women and 171 men. Mean age was 75.6 years (SD=2.9 years); for women the mean age was 77.5 years (SD=3.0 years), and for men the mean age was 75.6 years (SD=2.9 years). The education of majority of the study population was primary or vocational (82.22%). Most respondents were overweight (40.61%) or obese (26.76%). As many as 57.98% of the study population suffered from 5or more diagnosed chronic diseases. The mean number was 5.5 chronic diseases per respondent. Most of the subjects did not perform physical exercise even on a moderate level of 150 minute per week (68.08%), or did not perform physical exercise to strengthen their muscles or increase fitness (81.46%). Most of the respondents belonged to organized social groups (84.04%), such as associations or social organizations. After retiring, most of them did not perform professional work (88.97%) and were able to use help from other people on daily basis (73.24%). The great majority believed that the interior of their flat or house (76.76%) or their residential environment (77.00%) was not fully adapted to their needs of everyday functioning.

The respondents reported at least one problem with IADL (43.19%) more frequently than with ADL (36.85%). Most frequent problems in ADL were found in getting out of bed and in moving around (23.00%). The most frequent problems in IADL were related to doing housework (38.03%). Problems with ADL and IADL were reported significantly more often by older respondents, with lower income, having less physical activity, using the help of other people on a daily basis, having the interior of their flat or house and the residential environment not fully adapted to their needs of everyday functioning, suffering from a greater number of chronic diseases, taking 4 or more medications, using assistive devices while moving around (e.g. walking stick or crutch), those who had had one or more fall in the period of the past 12 months, suffered pain of greater intensity, were diagnosed with depression, assessed their quality of life lower, and were less satisfied with life. Additionally, problems with IADL only were more frequent in females, respondents with lower education, respondents who did not perform physical exercise that would increase their muscle strength and physical fitness.

Multivariate analysis. In the models for analysis were included those variables that significantly characterized the study population in relation to having at least one problem with ADL and IADL. The model that tested the impact of the factors on ADL was well-fitted for the data. The results of Hosmer-Lemeswhow (χ^2_{HL}=11.43, p=0.179) prove this, as well as the pseudo R^2 value of 0.7681, which indicates that the model classified 76.81% of cases correctly. All the parameters of the model proved to be statistically significant. The factors that were most closely related to the ADL limitations were assessment of satisfaction with life, using assistive devices, having the interior of one's flat or house adapted, and pain. The dissatisfied or very dissatisfied respondents had limitations to ADL almost 4 time as often as satisfied or very satisfied respondents (OR – 3.95). The respondents who used assistive devices for moving about on a daily basis had ADL limitations almost 3 times more often (OR – 2.96). Respondents whose flats or houses were not fully adapted for their functional needs had ADL limitations two and a half times more often (OR – 2.50). With each point scored on the VAS, the likelihood of developing disability increased by a mean of 15% (Tab. 1).

The model that tested the impact of the factors on IADL was well-fitted for the data. The results of Hosmer-Lemeswhow (χ^2_{HL}=7.70, p=0.463) prove this, as well as the pseudo R^2 value of 0.7946, which indicates that the model classified 79.46% of cases correctly. Almost all the parameters of the model proved to statistically significant. The factors most closely related to the IADL limitations were assessment of the quality of life, education, using assistive devices, performing a minimum of 150 minutes of moderate physical activity per week, pain, and the number of chronic diseases. Respondents who assessed their quality of life as bad or very bad were four and a half times more likely to have IADL limitations than respondents who assessed their quality of life as good or very good (OR – 4.55). Respondents with primary or vocational education were 2–3 times as likely to have IADL limitations than respondents with secondary or higher education (OR – 2.44;3.31). Respondents who used assistive devices for moving around on a daily basis were twice as likely to have IADL limitations (OR – 2.27). Respondents whose flat or house interiors were not fully adapted to their functional needs were also twice as likely to have IADL limitations (OR – 2.10). With each point scored on the VAS, the likelihood for developing disability increased by a mean of 21% (Tab. 2).

DISCUSSION

Recent years have marked a significant increase in life expectancy and a significant increase in the proportion of the elderly in societies. Consequently, increased consideration is expressed in healthy life expectancy [16]. Unfortunately, a significant proportion of the elderly, particularly after the age of 70, are more vulnerable to internal and external stressors that lead to decreased functional ability and development of frailty [17, 18]. These result in necessity for long-term care, hospital stays, and in an increased mortality rate among the elderly [19]. Therefore, a complex understanding of factors that affect the activities of daily living [ADL] and instrumental activities of daily living [IADL] are crucial for forward planning of healthcare services.

Table 1. Bivariate analysis of predictors for respondents aged 71–80 with limitations in ADL and IADL (n=426)

Variables		Total Number (%) Mean (SD)	Difficulty with ADL	p values	Difficulty with IADL	p values
Age	71–75	222(52.11)	59(26.58)	<0.001[a)]	71(31.98)	<0.001[a)]
	76–80	204(47.89)	98(48.04)		113(55.39)	
Gender	Females	255(59.86)	94(36.86)	0.996[a)]	120(47.06)	0.049[a)]
	Males	171(40.14)	63(36.84)		64(37.43)	
Marital status	Married or living with a partner	242(56.81)	83(34.30)	0.209[a)]	100(41.32)	0.371[a)]
	Single or widowed	184(43.19)	74(40.22)		84(45.65)	
Education	Primary	267(62.68)	103(38.58)	0.149[a)]	132(49.44)	<0.001[a)]
	Vocational	79(18.54)	32(40.51)		33(41.77)	
	Secondary/Tertiary	80(18.78)	22(27.50)		19(23.75)	
Income[c)]	2,000 PLN per person or less	284(82.32)	113(39.79)	0.026[a)]	124(43.66)	0.072[a)]
	2,001 PLN per person and more	61(17.68)	15(24.59)		19(31.15)	
Physical activity performed daily, minimum 150 minutes per week	No	290(68.08)	117(40.34)	0.029[a)]	153(52.76)	<0.001[a)]
	Yes	136(31.92)	40(29.41)		32(22.79)	
Physical exercises performed to strengthen muscles and improve physical performance	None	347(81.46)	135(38.90)	0.155[a)]	159(45.82)	0.048[a)]
	1–3 times a week	35(8.22)	11(31.43)		13(37.14)	
	Four and more times a week	44(10.33)	11(25.00)		12(27.27)	
Membership of at least one organization/group/association	No	358(84.04)	134(37.43)	0.571[a)]	154(43.02)	0.866[a)]
	Yes	68(15.96)	23(33.82)		30(44.12)	
Work after retirement	No	379(88.97)	143(29.79)	0.287[a)]	167(44.06)	0.303[a)]
	Yes	47(11.03)	14(37.73)		17(36.17)	
Able use other people's help on daily basis	No	114(26.76)	32(28.07)	0.023[a)]	37(32.46)	0.006[a)]
	Yes	312(73.24)	125(40.06)		147(47.12)	
Adaptation of interior of flat / house to the needs of everyday functioning	Not fully adapted	327(76.76)	135(41.28)	<0.001[a)]	151(46.04)	0.023[a)]
	Fully adapted	99(23.24)	22(22.22)		33(33.33)	
Adaptation of residential environment to the needs of everyday functioning	Not fully adapted	328(77.00)	136(41.46)	<0.001[b)]	151(46.04)	0.030[b)]
	Fully adapted	98(23.00)	21(21.43)		33(33.67)	
Number of chronic diseases		5.54 (3.20)	6.55(3.18)	<0.001[b)]	6.91(3.41)	<0.001[b)]
BMI		27.39(4.92)	27.64(5.69)	0.990[b)]	27.56(5.45)	0.899[b)]
Number of medicines	0 – 3	186(44.08)	49(26.34)	<0.001[a)]	54(29.03)	<0.001[a)]
	4 and more	236(55.92)	106(44.92)		129(54.36)	
Using assistive devices for moving around	No	309(72.54)	75(24.27)	<0.001[a)]	93(30.10)	<0.001[a)]
	Yes	117(27.46)	82(70.09)		91(77.78)	
Suffering from at least one fall in the past year	No	297(69.72)	79(26.60)	<0.001[a)]	94(31.65)	<0.001[a)]
	Yes	129(30.28)	78(60.47)		90(69.77)	
Pain in last 30 days, graded on 0–10 scale		3.73(2.70)	4.86(2.73)	<0.001[b)]	5.01(2.66)	<0.001[b)]
Diagnosed depression	No	387(90.85)	135(34.88)	0.008[b)]	161(41.34)	0.015[b)]
	Yes	39(9.15)	22(56.41)		24(61.54)	
Self-assessed quality of life	Bad or very bad	58(13.62)	48(82.76)	<0.001[a)]	51(87.93)	<0.001[a)]
	Neither good nor bad	162(38.03)	63(38.89)		72(44.44)	
	Good or very good	206(48.36)	46(22.33)		61(29.61)	
Self-assessed satisfaction with life	Dissatisfied or very disssatisfied	111(26.06)	79(71.17)	<0.001[a)]	86(77.48)	<0.001[a)]
	Neither satisfied nor dissatisfied	118(27.70)	43(36.44)		49(41.53)	
	Satisfied or very satisfied	197(46.24)	35(46.24)		49(24.87)	

[a)] Chi-squared test
[b)] Mann-Whitney U-test
[c)] missing data for 81 respondents

Table 2. Logistic regression models illustrating factors significantly associated with disability on at least one ADL and IADL

Variables	Difficulty with ADL			Difficulty with IADL		
	Odds Ratio	95% CI	p value	Odds Ratio	95% CI	p value
Age (reference 71–75) 76–80	1.71	1.04–2.80	0.034	1.83	0.00–0.02	0.020
Education (reference Secondary/ Tertiary) Primary				2.44	1.06–1.30	0.020
Education (reference Secondary/ Tertiary) Vocational				3.31	1.36–8.02	0.008
Having at least one fall in the past year (reference No)yes	1.85	1.08–3.16	0.024	2.03	1.14–3.59	0.015
Adaptation of the interior of a flat / house to the needs of everyday functioning (reference fully, not fully)	2.50	1.31–4.77	0.005	2.10	1.10–3.98	0.024
Experiencing pain in the last 30 days (reference No/Yes; 0–10 scale)	1.15	1.03–1.27	0.011	1.21	1.06–1.36	0.003
Using assistive devices (reference no/yes)	2.96	1.68–5.19	<0.001	2.27	1.21–4.26	0.011
Physical activity performed daily a minimum of 150 minutes per week (reference yes/no)				2.27	1.27–4.04	0.005
Number of diseases				1.18	1.06–1.30	0.002
Assessment of life satisfaction (reference satisfied/very satisfied); dissatisfied/ very dissatisfied	3.95	2.02–7.67	<0.001			
Assessment of life satisfaction (reference satisfied/very satisfied); neither satisfied nor dissatisfied	1.81	1.01–3.26	0.0471			
Assessment of quality of life (reference very good/ good); bad/ very bad				4.55	1.64–12.57	0.004
Assessment of quality of life (reference very good/ good); neither good nor bad				0.98	0.56–1.70	0.960

The presented study revealed a high prevalence of ADL and IADL limitations among the elderly inhabitants of rural areas. The proportion of subjects who reported at least one ADL limitation was 36.85% and with one IADL limitation – 43.19%. This proportion is higher than in other developed countries. In 2008, in the US population of 75 – 79-year-olds, at least one ADL limitation was found in 19.2% of respondents, and at least one IADL limitation in 15.1%. It was as late as in the group of over 85-year-olds that these issues were found in more than a half of respondents [20]. Similarly, a lower proportion with at least one ADL and IADL limitation was found in 75 – 79-year-olds in the English Longitudinal Study of Aging (ELSA) (in men 24.6% and 17.8%, and in women 29.2% and 24.8%, respectively) [21]. A lower proportion of respondents of at least one ADL and IADL limitation was found in a study of 16 European countries in patients over the age of 50 (SHARE). This study found the highest prevalence of ADL in Poland (17.8%) and the lowest prevalence in Austria (9%). Similar proportions of respondents with ADL limitations were found during the SAGE study (2007–2010) which found at least one ADL limitation in 27.7% of respondents aged 60–69, at least one ADL limitation in as many as 44.0% of respondents aged 70 and over [22]. A higher proportion in respondents aged 65 and over (mean age 75.7; SD=7.1) was found in Lebanon, where at least one ADL limitation was found in as many as 65.8% of respondents from rural areas [23].

The presented study assessed the relationship between ADL and IADL limitations and a wide range of factors. The strongest impact on developing ADL and IADL limitations were the following factors: age, falls, interior of flat or house not fully adapted to the needs of functional functioning, pain, and using assistive devices. Additionally, lack of satisfaction with life had a significant impact on ADL limitations, while poor assessment of quality of life, lower education, number or chronic diseases and low level of physical activity had a significant impact on IADL.

The study found that the likelihood of experiencing ADL and IADL limitations increased with age, and proved that the risk of the problems increases twice for 76 – 80-year- olds when compared to 71 – 75-year-olds. This increase in the risk of ADL and IADL problems has also been proved by other studies. Connoly et al. found a two and a half-fold increase in experiencing ADL and IADL problems among 75 – 79-year-old Irish people when compared to 65 – 69-year-olds, as well as a four-fold increase for the group aged 80 and over [24].

In the current study, pain proved to be an important factor related to ADL and IADL. Intensified pain results in a significant increase in risk of disability – 15% in ADL with every point scored on the VAS, and 21% in IADL, respectively. This finding is supported by other studies that proved a relationship between pain and functional limitations [25]. Scudds et al. proved that an increase in pain intensity increases the risk of developing disability, with moderate pain resulting in a 1.54 odds ratio, and severe and extreme pain resulting in a 4.32 odds ratio [26]. Connoll et al. found a two-fold risk increase in experiencing ADL and IADL in the elderly who were troubled with pain in relation to respondents without it [24]. Andrews et al. found that pain is very closely related to disability in the elderly and it may be the reason for immediate disability. Pain affects the functional state in a short time. An assessment of pain prevalence allows for identifying patients with potentially reversible functional limitations and disability [27].

In the current study it was found that at least one fall within the past 12 months increased almost two-fold the risk of experiencing at least one ADL and IADL limitation. Falls have both physical results (bruises, scratches, bone fracture, head injuries, etc.) [28], and psychological consequences, such as depression [29] and fear of falls [30]. Fear of falls may lead to limiting physical activity, which may lead to long-term negative consequences, such as decrease in body function and physical fitness, deteriorated muscle strength, problems with maintaining body posture and decreased

social participation [31]. Modifications to the household environment may decrease the risk of fall by approximately 20%, while interventions that involve one-to-one physical exercise may decrease the risk of falls by approximately 30% [32]. A study by Çinarli and Koç found that both an increased risk of falls and the fear of falls are strongly correlated to a lower ability to perform ADLs [33]. One of the factors that increase the risk of falls and decreased functional ability is taking numerous medicines [34]. Inappropriate medication prescription is a serious issue in elderly healthcare [35, 36]. In the presented study it was found that patients who take 4 or more medicines experienced at least one limitation to ADL and IADL significantly more often. This factor was pushed out of the model by other factors, due to its high correlation with other variables, such as the number of chronic diseases, yet it still was a factor that had a highly significant impact on the deterioration of subjects' functioning ($p<0.001$). Connolly et al. proved that taking 5 or more medicines was the third strongest factor related to disability related to ADL and ADL/IADL (odds ratio 1.6 and 1.5, respectively) [24].

The presented study found that with every additional disease the likelihood of experiencing at least one IADL limitation increased by a mean of 18%. Studies by other authors confirm this increase in disability with the increase in the number of chronic diseases [37]. Marengoni et al. found that the frequency of developing disability is lowest with cardiovascular diseases, and highest with mental disorders and cerebrovascular diseases. Additionally, a combination of disorders, such as dementia, depression, cerebrovascular diseases and musculoskeletal disorders are related to the highest incidence of disability. In particular, a high prevalence of disability was found in patients who suffered from a pair of disorders, one of which was dementia [38]. Some chronic diseases, which often accompany dementia and aggravate dementia's symptoms, such as hip fracture and depression, may be easier to prevent or treat earlier, even at a very advanced age. Additionally, many chronic diseases add up to tiredness that aggravate muscle weakening, pain, anxiety, sleep disorders and lower mental status [39, 40].

The current study proved that subjects who used assistive devices had an almost 3-times higher odds ratio to develop at least one limitation to ADL, and an over twice higher odds ratio to develop at least one limitation to IADL. The study also proved that persons whose flat interiors are not fully adapted to their functional needs are 2.50 times as likely to have at least one ADL limitation and 2.10 times more likely to have at least one IADL limitation. Lack of adaptation of the environment to the functional needs of the patient may result in difficulties in using assistive devices. Assistive devices need to be adequately chosen for the environment of an elderly person to make their functioning easier. The elderly need to have their environment adjusted in line with the configuration of their limitations [41]. A suitable spatial organization and layout, environmental cues and assistive technologies are crucial for maintaining the fitness and independence of elderly patients [42].

Apart from physical limitations, psychological and social difficulties affect the functioning of the elderly. The presented study found that suffering from depression had a significant impact on having at least one limitation of ADL ($p=0.008$) and IADL ($p=0.015$). As only those instances of depression which respondents reported as diagnosed by a doctor were taken into account, it is likely that problems with lowered spirits affected a significantly larger proportion of the elderly. The prevalence of depression among the elderly is estimated to be 18–37% [43]. Depression is often misdiagnosed and left untreated in the elderly, particularly those from rural areas. The elderly are often reluctant to report psychological and emotional difficulties to the doctor in fear of being stigmatized [44]. Despite the good effects of treating depression, most patients in need do not receive support. Depression lowers the quality of life in the elderly [45] and a lowered quality of life is related to more serious problems with ADL and IADL. This study proved a very high relationship between IADL limitations and subjective quality of life. Those respondents who assessed their quality of life as bad or very bad were four and a half times more likely to have at least one IADL limitation. Anderson et al. found a similar relationship. They found a very strong relationship between self-assessed quality of life and IADL limitations in the elderly [46]. In the presented study it was found that satisfaction with life had a very significant impact on ADL limitations. Respondents who were dissatisfied or very dissatisfied with life were almost 4 times more at risk of having at least one ADL limitation. Respondents who were neither satisfied nor dissatisfied, were almost twice more at risk of having an ADL limitation. Similar results were obtained by Buliński and Błachnia [47]. A higher socio-economic status, support from one's family, higher satisfaction with one's environment and living in one's own home, all play a key role in good ageing [48]. There were some other factors that had a significant impact on satisfaction with life by the elderly: gender (women were more likely to assess their life as being poorer), depression [49], safety of life, acceptance and adjustment [50], income and education [51]. This study found that elderly respondents with lower education were 2–3 times more likely to have at least one IADL limitation. France et al found a very strong relationship between lower level of education and higher IADL disability, prevalence and incidence of frailty syndrome in the elderly [52]. Tsai, in his study on Americans aged 65 and over, confirmed the same relationship between education and disability [53]. There is a positive relationship between psychological wellbeing and satisfaction with life and daily functioning. Support and friendly social relations, religion, education, active daily lifestyle, living condition, diet, and emotional support, all have a positive impact on satisfaction with life and the functioning of the elderly [54, 55].

Limitation of the study. Limitation of this study is the assessment of disability according to one criterion only of performing activities of daily life and/or instrumental activities of daily life. The level of disability was not assessed. The socio-demographic data, collected in direct interview with respondents and not in the course of clinical examination and documentation analysis, may limit the reliability of the assessment; e.g. some respondents may not have had all their diseases diagnosed, although may have been suffering from them at the time of the interview. Nevertheless, direct interview is the most reliable method allowing for collecting data from a large number of respondents at a given time. Random sampling and methods of statistics allow for minimization of level of error.

CONCLUSION

Age, education, pain, falls, household not fully adapted for one's needs, using assistive devices, lack of satisfaction with life, and low assessment of quality of life, have a significant impact on the prevalence of ADL and/or IADL disabilities in the elderly inhabitants of rural areas. Most of these factors can be subject to modification. They are also a complex of predictors that allow for identifying and supporting those elderly patients from rural areas who are most vulnerable.

It is necessary to adapt households to the needs and moving abilities of the elderly in order to enable them to function normally. The choice of suitable assistive devices that facilitate daily activities is crucial. In addition, strategies for disability prevention in the elderly inhabitants of rural areas should include improving education, early interventions in pain treatment, popularizing physical activity, early diagnosis and treatment of depression, and monitoring medication. Healthy ageing should be the main aim of all programmes of geriatric care. Active ageing should be oriented towards the optimization of chances for health, participation and safety, to improve the quality of life as society ages.

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