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Relationships between quality of life and comprehensive geriatric assessment among seniors — a cross-sectional study in Krakow, Poland

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Abstract: Background: Due to current increased life expectancy, the quality of life (QoL) of senior patients is gaining in importance. The aims of this study were: to estimate QoL in a group of patients, aged above 64 years, that is cared for by general practitioners (GPs) in Krakow, Poland, and to find relationships between elements of QoL and the results of comprehensive geriatric assessment (CGA) and other important medical and social factors.
Methods: We designed a cross-sectional, questionnaire study among patients who attended GPs' surgeries from April 2018 to April 2019. To examine the patients, we used the Euro-Quality of Life Questionnaire (EQ-5D-5L) and eight scales forming CGA: the Activities of Daily Living, the Instrumental Activities of Daily Living, Mini-Mental State Examination, Geriatric Depression Scale, Timed Up and Go Test, Mini Nutritional Assessment, Clinical Frailty Scale and Athens Insomnia Scale.
Results: The lowest QoL was observed in dimensions of pain/discomfort and mobility, where 70% and 52% of patients, respectively, reported problems in these areas. Only 91 (21%) respondents had highest results in all five dimensions of QoL. The average score in the Visual Analogue Scale (VAS) of the EQ-5D-5L (representing self-rated health on a given day) was 62.36 ± 18.98 points. Statistically significant relationships were observed between QoL and age, physical activity and multimorbidity (in all cases $p < 0.001$). The results of QoL were correlated with every aspect of CGA, while the strongest relationship was noticed between scores in the EQ-5D-5L VAS scale and scales assessing depression and frailty ($p < 0.001$; $r = -0.57$ both).

Conclusions: Our study showed that in senior patients in Krakow QoL was relatively high. Seniors mostly complained of pain/discomfort and problems with mobility. Moreover, dimensions of QoL were connected with the results of CGA. During visits, GPs should specifically question patients about the above mentioned aspects of QoL.

Keywords: quality of life, EQ-5D-5L, general practitioner, comprehensive geriatric assessment, Poland.

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Introduction

In Europe, the ageing of society presents a considerable challenge in many fields including medicine, economics and politics [1]. In recent decades, changes in the age structure of society have posed an urgent problem in Poland [2]. The increase in life expectancy, basically a positive phenomenon, inevitably contributes to these challenges. In the older age group, there are more risk factors for diseases, multimorbidity occurs and health problems are accompanied by deterioration of functionality in everyday life. This is sometimes accompanied by social exclusion.

Currently, quality of life (QoL) is an aspect that should be taken into careful consideration when comprehensively assessing the state of seniors. Therefore, QoL has become a field of numerous investigations [3]. Studies have shown correlations between QoL and various aspects of holistic health in the aged. Occurrence of frailty or prefrailty syndrome is consistently associated with lower QoL [4], although regular physical activity may serve as a protective factor [5].

Over the years, many methods have been developed to assess QoL. The most broadly used tools are, the Euro-Quality of Life Questionnaire (EQ-5D-5L), the WHO quality of life scale (WHOQOL) and the Short Form Health Survey (36-SF) [6].

To evaluate the physical, mental, emotional and socio-economic status of older people, comprehensive geriatric assessment (CGA) was created [7]. It is used to develop a long-term, coordinated plan for treatment, rehabilitation and social care. Numerous investigations have shown that CGA can contribute to improvement in the general condition of older people by reinforcing self-reliance and decreasing morbidity and need for hospitalisation [8]. Some authors advocate that CGA should include questionnaires assessing QoL [9].

In some countries, researchers have attempted to investigate the implementation of CGA in general practitioners' (GPs) surgeries [10, 11]. In Poland, however, only partial elaborations, covering selected aspects of CGA, have been published [12]. Furthermore, in Poland and other Central and Eastern European countries, there have been few studies on QoL [13], particularly concerning the older patients at primary health care level [14]. Both QoL and CGA have been simultaneously assessed in specific groups of patients, for example, those treated because of cancer [15], but

the relationships between them have not been sufficiently explored. Therefore, the correlation between QoL and CGA, in the broader group of the older population is still a field for investigation.

For this reason, we conducted a research project evaluating the possibility of using CGA in primary care. As a result, two articles have been published so far.

Detailed results of the eight tests used in CGA, in different age groups and in relation to gender, were presented in our first study [16]. In brief: the median (Q1–Q3) in the Activities of Daily Living (ADL) questionnaire was 6 (6–6) points and in the Instrumental Activities of Daily Living (IADL) questionnaire was 24 (21–24) points. Regarding mental condition, our study showed that only a moderate number of people had problems with cognition (20%; N = 86) and 32% (N = 138) had depressive symptoms. In Mini-Mental State Examination (MMSE), the median (Q1–Q3) was 27 (25–29) points and in the Geriatric Depression Scale (GDS) it was 4 (2–6) points. Patients performed Timed Up and Go Test (TT), on average, in the time of 13.8 ± 8.7 seconds and the median (Q1–Q3) was 11 (9–15) seconds. According to the results of the Mini Nutritional Assessment Short Form (MNA) questionnaire, most patients were well-nourished (76%; N = 334). One hundred forty four participants (33%) had low level of fitness according to the Clinical Frailty Scale (CFS) and the median (Q1–Q3) was 3 (2–4). Problems with sleeplessness recognised by the Athens Insomnia Scale (AIS), were diagnosed in 182 (42%) people.

In the second article we presented information concerning caregivers of senior patients [17].

This article presents further results of the above project.

Objectives

The aims of our study were: to estimate QoL in a group of patients, above 64 years old, that were cared for by GPs in Krakow; to provide an overview of the frequency of problems in different dimensions included in its assessment and identify which areas of health related QoL are most affected in older people; to find relationships between the dimensions of QoL and the results of CGA, as well as selected social and medical factors.

Material and Methods

Design and settings

A cross-sectional, questionnaire study was conducted among senior patients, who were admitted to 15 GPs' surgeries from April 2018 to April 2019 in and around Krakow. GPs were randomly selected from all 47 practices cooperating with the Department of Family Medicine at the Jagiellonian University Medical College.

Population studied

In the study, we included consecutive outpatients, aged at least 65 years who, between April 2018 and April 2019, attended one of the 15 GP clinics, which were taking part in the study. Subjects had to meet the following inclusion criteria: being on the list of the GP's patients, being 65 years old or above and completing the informed consent form. The exclusion criteria were: estimated life expectancy below six months, inability to speak Polish and being unable to arrive at the practice.

Research tools

The study was conducted using 10 questionnaires, which were: a questionnaire developed by the authors, the EQ-5D-5L and eight tools used in daily practice in CGA. The first questionnaire was used to collect basic information about participants. The form was divided into two parts: "General information" (demographic data) and "Medical data" (chronic diseases, multimorbidity, number of medications, smoking and prophylaxis). Altogether it included 16 closed and 4 semi-open questions.

The EQ-5D-5L questionnaire was developed by European researchers in 1987, revised in 2009 [9], and consists of two parts. The first is a subjective assessment on a five-point scale of one's functionality in five basic areas (walking, caring needs, household duties, feeling of pain and mood), which allows the assessment of five dimensions of QoL associated with health: mobility, self-care, usual activities, pain/discomfort and anxiety and depression. When there were no problems in a given dimension, the patient scored 1 and when they had major difficulties the score was 5. The second part of the EQ-5D-5L is a subjective assessment of one's health state on the current day on a VAS numeric scale. The range of this scale is from 0 to 100, where 0 is the worst health one can imagine and 100 the best. The questionnaire is used worldwide, was translated into Polish and validated. Population standards for Poland were developed in 2015 [18].

During CGA, eight tools were used: ADL, which evaluates the independence in basic activities of daily life e.g. bathing, dressing, moving, eating and urinary and faecal continence [19]; IADL, which assesses the independence in complex activities of daily living like using a phone, shopping, preparing meals, doing household chores etc. [20]; MMSE, which measures deficits in cognitive functions [21]; GDS, which assesses patient's depressive tendency [22]; TT, which evaluates gait, balance, physical fitness and risk of falls [23]; MNA, which measures the risk of malnutrition [24]; CFS, which evaluates overall level of fitness and frailty [25] and AIS, which assesses sleeplessness [26]. A more detailed study method, descriptions of questionnaires used in this study and categorisation of patients based on those results are presented in our previous publication [16].

Procedure of the study and data collection

The data were collected from April 2018 to April 2019. The authors' questionnaire and EQ-5D-5L were completed by the recruited participants in the presence of the researcher and CGA was performed by researchers. Participants were divided into three age groups: 65–74 years (young-old), 75–84 years (middle-old), 85 and more years (oldest-old). Based on their results, participants were divided into two categories: patients with no reported problems and those with at least slight problems in a specific area of QoL. People who had problems in a given area of QoL were also compared with people without problems in these dimensions. Later, we evaluated whether there were relationships between dimensions of QoL and results of eight CGA tests.

Statistical analysis

Statistical analysis was performed using Statistica version 13.3. The Shapiro–Wilk test was used to check if variables are normally distributed. Chi-square, Mann–Whitney test and Spearman's rank correlation coefficient were used according to the type of variables. Using these tests, researchers checked the relationships between QoL and several social and medical factors and results obtained in CGA. Statistical significance was set at 0.05.

Ethical considerations

Bioethical Commission of the Jagiellonian University Medical College approved this study (permission 1072.6120.252.2017). Every participant of the study signed an informed consent form before completing the questionnaires. The study was safe and did not pose any risk to the participants.

Results

Characteristics of the participants

In this study, 438 patients were examined out of which 63% were women. The participants were in the mean age of 75.6 ± 7.9 years (women: 76.0 ± 8.2 years; men: 75.02 ± 7.29 years). 36% (158) of them had secondary and 26% (113) higher education, while the rest had basic (21%; 90) or vocational education (17%; 77). Respondents reported that they were suffering from diseases like hypertension (77%; 338) and obesity (28%; 121). Other frequent complaints were visual problems (89%; 390), chronic pain (51%; 225) and constipation (29%; 126). Seniors reported that they visited their GPs several times during the year (4.27 ± 0.74 visits per year).

Only 3% (15) of patients did not take any medicaments, while 45% (199) took 1–5 drugs, 38% (169) 6–10 and 14% (55) more than 11 per day. More precise information about general characteristics of the studied population is available in our previous article [16].

Quality of life

Results from the EQ-5D-5L questionnaire showing which dimensions of health are most affected in older patients are presented in Table 1.

Table 1. Results of the EQ-5D-5L in five dimensions of quality of life: mobility, self-care, usual activities, pain/discomfort and anxiety/depression in senior patients in Krakow by age group.

Age groups and dimensions of QoL	Mean ± standard deviation [points]	Median (Q1–Q3) [points]	Participants with no problems [n]	Participants with any problems [n]
All				
Mobility	1.97 ± 1.13	2 (1–3)	212 (48%)	226 (52%)
Self-care	1.48 ± 0.95	1 (1–2)	319 (73%)	119 (27%)
Usual activities	1.60 ± 0.97	1 (1–2)	284 (65%)	154 (35%)
Pain/discomfort	2.25 ± 1.02	2 (1–3)	130 (30%)	308 (70%)
Anxiety/depression	1.58 ± 0.78	1 (1–2)	255 (58%)	183 (42%)
Young-old (65–74 years old)				
Mobility	1.60 ± 0.97	1 (1–2)	144 (65%)	76 (35%)
Self-care	1.22 ± 0.70	1 (1–1)	192 (87%)	28 (13%)
Usual activities	1.27 ± 0.71	1 (1–1)	184 (84%)	36 (16%)
Pain/discomfort	1.99 ± 0.99	2 (1–3)	90 (41%)	130 (59%)
Anxiety/depression	1.45 ± 0.72	1 (1–2)	149 (68%)	71 (32%)
Middle-old (75–84 years old)				
Mobility	2.18 ± 1.17	2 (1–3)	53 (39%)	83 (61%)
Self-care	1.54 ± 0.97	1 (1–2)	94 (69%)	42 (31%)
Usual activities	1.73 ± 1.03	1 (1–2)	76 (56%)	60 (44%)
Pain/discomfort	2.46 ± 1.01	3 (2–3)	32 (23%)	104 (77%)
Anxiety/depression	1.72 ± 0.90	1 (1–2)	72 (53%)	64 (47%)
Oldest-old (above 84 years old)				
Mobility	2.63 ± 1.10	3 (2–4)	15 (18%)	67 (82%)
Self-care	2.07 ± 1.18	2 (1–3)	33 (40%)	49 (60%)
Usual activities	2.26 ± 1.11	2 (1–3)	24 (29%)	58 (71%)
Pain/discomfort	2.61 ± 0.90	3 (2–3)	8 (10%)	74 (90%)
Anxiety/depression	1.68 ± 0.66	2 (1–2)	34 (41%)	48 (59%)

The most common problem reported by 2/3 of seniors participating in the study was pain and discomfort. More than half of the patients revealed some problems with mobility. Ninety-one respondents (21%) had highest scores (which indicates that there was no cause for concern) in all five examined dimensions.

The percentage of people who marked particular answers in five QoL-related areas are shown in Fig. 1.

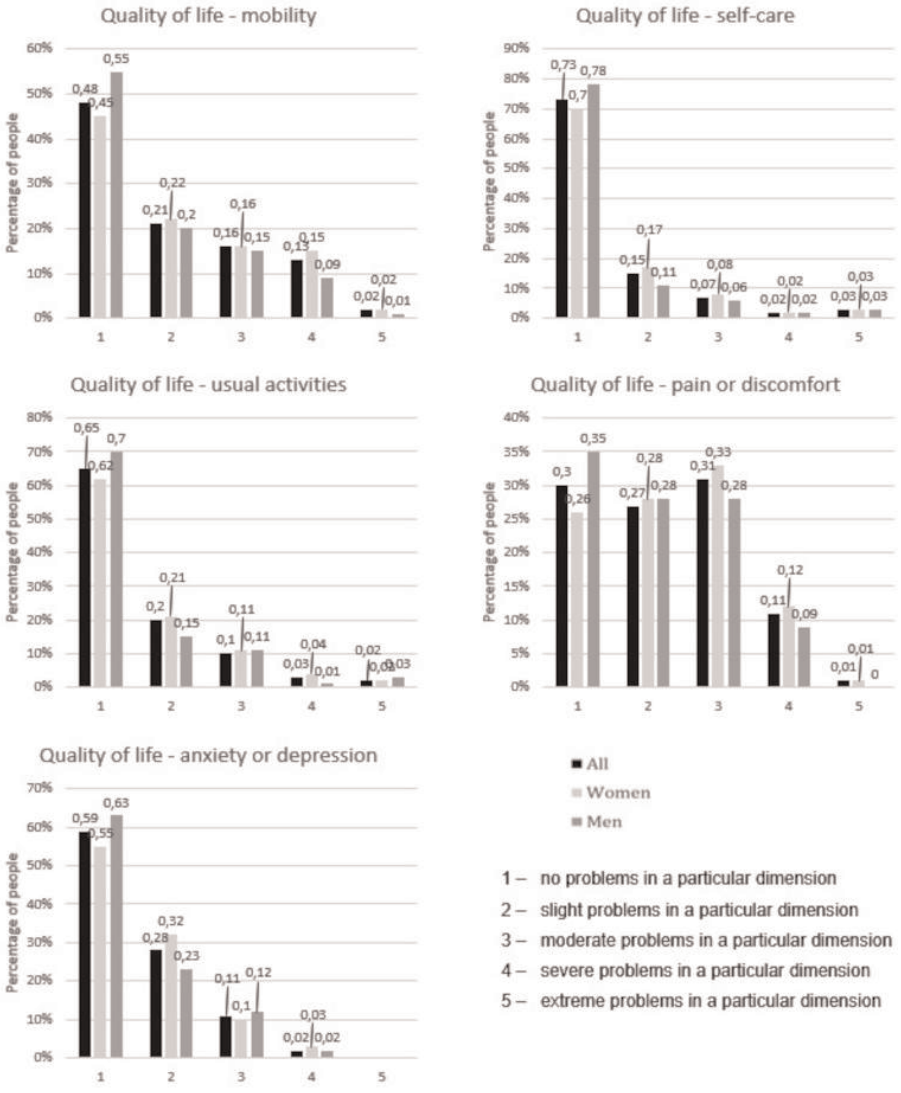

Fig. 1. Percentage of people who marked particular answers in five dimensions of quality of life assessed in the EQ-5D-5L questionnaire by gender.

People, participating in the study, indicated on the one-hundred-point VAS scale of the EQ-5D-5L that their health on the day of examination (self-rated health) was on average 62.36 ± 18.98 points. The median (Q1–Q3) was 60 (50–80) points. More than one fifth of respondents (23%; 99) marked their health status as 50 points. Fig. 2 presents the distribution of results in the EQ-5D-5L VAS questionnaire in the studied population by age.

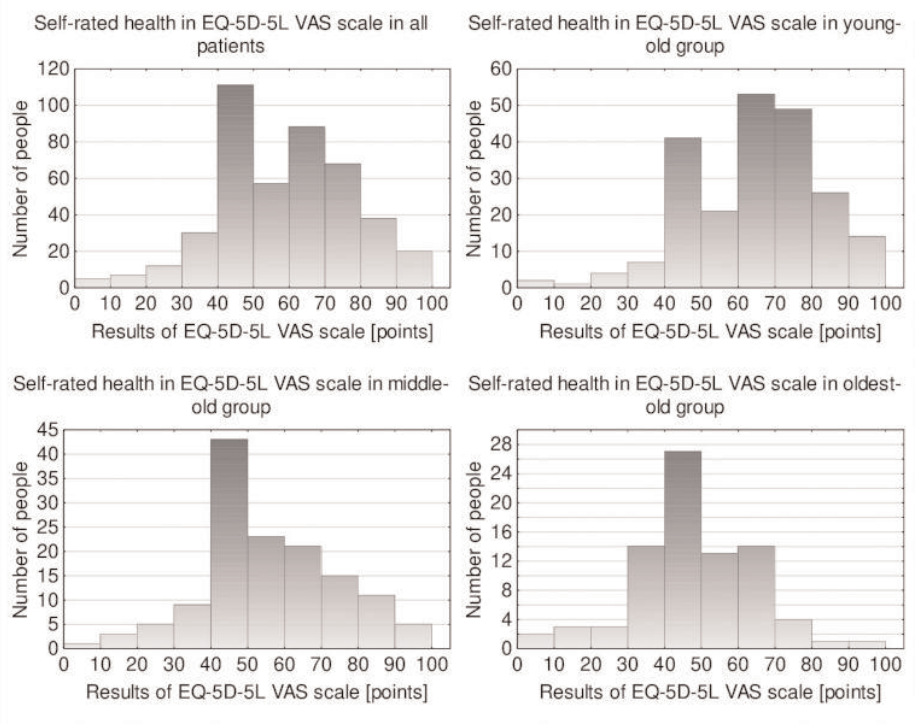

Fig. 2. The EQ-5D-5L VAS frequency distribution by age in the population of older people in Krakow, Poland.

Relationships between QoL and medical or social factors

Statistically significant relationships in chi-square test were observed between QoL and several medical and social factors. QoL was related to age and physical activity (both $p < 0.001$) — younger patients and people who reported that they remain active reached higher scores in EQ-5D-5L. People who were living with their relatives had higher QoL than people living alone ($p = 0.01$). Participants who less frequently visited

their GP had lower QoL (p = 0.03). Seniors suffering from more than three diseases had lower QoL than their healthier coevals (p <0.001).

We did not observe statistically significant relationships between QoL and BMI, smoking, vaccination against influenza or reported vitamin D intake.

Relationships between QoL and CGA

Precise calculations of correlations between QoL in the EQ-5D-5L VAS questionnaire and CGA results are presented in Table 2.

Table 2. Correlations between the results of the EQ-5D-5L VAS questionnaire and particular tests used in CGA.

Name of the test	p	r
ADL	<0.001	0.25
IADL	<0.001	0.46
GDS	<0.001	–0.57
MNA	<0.001	0.31
AIS	<0.001	–0.34
TT	<0.001	–0.46
MMSE	<0.001	0.42
CFS	<0.001	–0.57

ADL — the Activities of Daily Living, IADL — the Instrumental Activities of Daily Living, GDS — Geriatrics Depression Scale, AIS — Athens Insomnia Scale, MNA — Mini Nutritional Assessment Short Form, TT — Timed Up and Go Test, MMSE — Mini-Mental State Examination, CFS — Clinical Frailty Scale.

The strongest correlation was noticed between scores in the EQ-5D-5L VAS scale and frailty and depressive symptoms. Patients with lower scores in the EQ-5D-5L VAS scale had more points in GDS and CFS. QoL was also inversely correlated with the results of TT and AIS — when people had worse scores in TT and AIS, they scored less in the EQ-5D-5L VAS questionnaire. Statistically significant relationships were observed between the EQ-5D-5L VAS questionnaire and the results of ADL, IADL, MNA and MMSE. The more points seniors received in these tests, the higher their QoL.

All five QoL dimensions assessed in EQ-5D-5L were significantly related to results of IADL, GDS, AIS, CFS, TT and MMSE (p <0.001). Nutritional status, identified by MNA, was strongly associated with three QoL areas (p <0.001). This relationship was weaker in cases of self-care (p = 0.03) and there was no relationship between MNA and the pain/discomfort dimension (p = 0.09). Regarding functionality in basic activities, only pain/discomfort was not related to the results of ADL (p = 0.06) and other dimensions of QoL were associated with it (p <0.001).

Discussion

Main findings

Our study showed that most of the examined patients attending GPs' offices in Krakow, Poland, reported relatively high QoL. Despite this, more than 2/3 of patients suffered from pain or discomfort. More than half of them had some difficulties with mobility. Only minor problems in other dimensions assessed in the EQ-5D-5L questionnaire were revealed.

QoL was associated with age and some social and medical factors. People who were older, led a sedentary lifestyle, had more chronic diseases, lived alone and who less frequently visited their GP were more likely to have lower QoL.

We noticed many relationships between QoL and the results of tests used in CGA. Patients with depressive disorders, malnutrition, cognitive impairment, poorer mobility, frailty symptoms, disturbed sleep and difficulties in coping with everyday life had lower QoL.

Comparisons with other studies

Although modern medicine pays great attention to QoL of patients, to the best of the authors' knowledge, no studies on this topic, using the EQ-5D-5L questionnaire, have been performed among general practice patients in Poland. However, in other countries, some studies on this subject have been carried out.

A TOPICS-MDS study in the Netherlands showed that older individuals, women in general, widows/widowers, people who live alone and are less educated have lower QoL. Moreover, multimorbidity negatively affected self-assessed QoL and more than 60% of the examined patients reported some problems with pain/discomfort and mobility [27]. These findings were similar to our results.

A study in Canada showed that 70% of the examined people noticed some problems in the pain/discomfort area, which was also similar to our findings. In contrast, the average score for the self-assessed QoL was 81.9 points [28], while in our study it was lower. This difference may be explained by the fact that younger people took part in the Canadian study (the average age of participants was 68.6 years).

In our study the most affected dimension of QoL was pain/discomfort, followed by mobility and then anxiety/depression. It is known that, in lower-income countries such as Uruguay [29], the last dimension is the least significant, but is gaining in importance in developed countries such as Germany [30]. Poland is a developing country, so our results confirm these observations.

The fact that depressed older people are more likely to have lower QoL, as found in our study, is similar to the results of a review of 74 studies concerning depression and QoL in older patients [31].

There has been a limited number of investigations which integrate the assessment of QoL and CGA. A Danish study performed among patients suffering from non-small cell lung cancer, showed that, in a specific group of patients, the results of CGA did not correlated with QoL [32]. Another study, performed among French patients treated for prostate cancer, also showed no statistically significant relationships between CGA and QoL [15]. We believe that those differences between our and the other studies are attributable to the characteristics of the patients enrolled. In those cases, participants were undergoing treatment for cancer and were terminally ill, while in our study we recruited patients in relatively good condition.

Strengths and limitations

Our study had some strengths. The most important is that it shows a representation of seniors from different general practices, living not only in the city but also in suburban areas. People over 80 years old (34%), were also widely represented. Moreover, the use of validated Polish versions of the questionnaires is a strong point. This is also one of the first projects which correlates QoL with CGA results in Central and Eastern Europe.

However, there are some limitations that should be taken into consideration. First of all, we cannot generalise our findings to the whole Polish population due to the lack of representation of seniors from rural areas which are located far from large agglomerations. Furthermore, consecutive sampling was used to recruit patients, which is not as representative as a randomised method. However, it is worth mentioning that all general practices were randomly selected. We performed our study in GPs' surgeries and we did not examine seniors with chronic conditions who were unable to visit their doctor. Our aim was to examine only those patients who were not bedridden.

Interpretation of the study findings and implication for practice and research

According to our study the most important dimensions of health that affect the QoL of senior patients are chronic pain or discomfort, problems with mobility and depression or anxiety. We believe that GPs should be more vigorous when dealing with these problems in everyday practice. They can be diagnosed early, systematically monitored and treated effectively. Furthermore, many seniors assessed their health in the middle of the EQ-5D-5L VAS questionnaire range. This might suggest that they were indecisive and that their QoL might easily change, in either direction, depending on various external conditions. We noticed a strong connection between QoL and all components of CGA. When a senior patient has low QoL, we might advise performing CGA, because we can expect deficiencies in some aspects assessed in this process.

Conclusions

QoL, in a sample of senior patients who attended GPs' surgeries in Krakow, was assessed at a relatively high level. Most of participants had minor problems with self-care and usual activities. They mostly complained about pain or discomfort and problems with mobility. Age, physical activity, living with someone else at home, visits to GPs' practices and the number of chronic diseases were associated with QoL. Dimensions of QoL were connected with the results of tests used in CGA. The strongest relationships were found between QoL and depression and frailty.

Conflict of interests

Tomasz Tomasik has served as a consultant or speaker for Boehringer Ingelheim, Novartis, Shire, Biofarm, and Eli Lilly. The other authors have declared no conflict of interest.

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