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Quality of life of elderly people with gastrointestinal malignant tumors

Izabela Wróblewska[1,2]
[1]Department of Gerontology, Wrocław Medical University, Wroclaw, Poland
[2]Faculty of Natural Sciences and Technology, Karkonosze College, Jelenia Gora, Poland
E-mail: izabela.wroblewska@umed.wroc.pl ; ORCID: 0000-0002-1307-5701

Zuzanna Wróblewska[3]
[3]"Cape of Hope" Centre for Pediatric Oncology, Wroclaw, Poland
E-mail: zn.wroblewska@gmail.com ; ORCID: 0000-0002-6056-0099

Stanisław Manulik[4,*]
[4]Department of Nervous System Diseases, Wroclaw Medical University, Wroclaw, Poland
E-mail: stanislaw.manulik@umed.wroc.pl ; ORCID: 0000-0003-4292-161X

*Corresponding author:
Dr. Stanisław Manulik, MSc, RN, PhD, MBA, Department of Nervous System Diseases, Faculty of Health Sciences, Wroclaw Medical University, Bartla 5, 51-618 Wroclaw, Poland; Phone: +48 506 511 282; E-mail: stanislaw.manulik@umed.wroc.pl

Abstract

Introduction: Gastrointestinal cancers (GICs) are one of the main factors of morbidity and mortality in the world. They affect the elderly to a large extent, as the natural ageing processes of the human body may also increase the occurrence of pathological changes, which in turn lead to disease. Cancer is now considered a chronic disease that affects the overall functioning of the patient in all areas of the patient's life. For this reason, quality of life (QOL) is more and more often taken into account in the treatment and care of the patient as an important factor influencing further prognosis.

Aim: To assess the level of QOL among elderly people with diagnosed GICs.

Material and methods: The study included 90 seniors aged >60 years with a diagnosed cancer located in the gastrointestinal tract. The exclusion criteria were: age <60, tumors in other part of the body than the gastrointestinal tract, GICs as primary tumor metastasis and dementia. Diagnostic survey method was provided and standardized scales were used to measure QOL: the 30 Items European Organization for Research of Life Questionnaire Core (EORTC QLQ-C30), the 18 Items Esophageal Cancer Module (EORTC QLQ-OES18), the 22 Items Gastric Cancer Module (EORTC QLQ-STO22), and the 29 Items Colorectal Cancer Module (EORTC QLQ-CR29).

Results: The QOL of the respondents was assessed as medium (M=54.09; SD=21.91). The analyses showed that age correlates negatively with cognitive (p=0.045) and emotional functioning (p=0.002). Higher QOL was observed among men (M=52.74), economically active people (p=0.027) with a diagnosis up to 6 months (M=49.00) and without stoma was (M=53.07). Respondents define their QOL higher (M=4.00) than the survey results show (M=54.09). The study showed that the youngest seniors (M=2.24), people with liver, pancreas and gallbladder tumors (M=2.89) declared the greatest pain.

Conclusions: Reduced QOL in elderly people with GIC is influenced by increased age, female sex, lack of professional activity, long time after the diagnosis of the disease and the presence of the stoma. There are discrepancies between subjective and objective evaluation of QOL, which requires extensive and insightful analysis of QOL, including its components, e.g. pain, in order to improve the seniors' QOL.

Keywords: elderly people; cancer; quality of life

Introduction

Nowadays, despite newer methods of treatment, technological progress and early diagnosis, cancer is one of the main public health problems. Medicine continues to face serious difficulties in diagnosing and combating the disease quickly and effectively enough, especially in the elderly. Cancer is the second largest cause of mortality among the general population. The peak incidence, regardless of gender, is between 50 and 79 years of age, with the highest number of deaths occurring in the 7th and 8th decade of life [1].

In Poland, the most common malignant cancer affecting men is lung cancer, followed by prostate, large intestine, bladder and stomach. However, in women with breast, lung, large intestine, ovaries, cervix, thyroid gland and stomach. Over the last 50 years, the total number of cancer cases has increased 4-fold [2]. Colorectal cancers are ranked fourth among cancer-related deaths and amount to about 8% of total cancer deaths [3,4].

Symptoms of cancer in the upper gastrointestinal tract are: dyspepsia, dysphagia, anorexia, reflux, bleeding, weight loss, vomiting and nausea. On the other hand, in the lower part of the alimentary tract they are anus bleeding, intestinal peristalsis disorders, obstruction, stool incontinence and abdominal pain. Additionally, general symptoms may occur (fatigue syndrome, increased weakness, and anemia). These symptoms are often exacerbated by physiological changes in the body's ageing process. This may result in a cascade of events

starting with a faster, progressive decrease in organ function, general decrease in psychophysical motility, which may aggravate geriatric syndromes and lower quality of life (QOL) of the senior [5,6].

QOL will also be affected by treatment, which is complicated in the case of older people due to health problems, multi-disease and multi-drug problems that increase with age [7]. Frequent deficiencies in the physiological reserve also cause prolonged functional deficits, disability, and therefore reduced QOL in all spheres of functioning [8,9]. Today's preferred holistic attitude towards the patient means a broad approach to all his physical, mental, social and spiritual problems. This means that all domains of the patient's functioning and the scale of intensity attributed to them are important and influence the treatment process [10,11]. Therefore, a multidimensional and individual view of the subjective experiences of patients should be of decisive importance in the modern care of oncologically ill patients [12].

The main objective of this paper was to evaluate the level of QOL in elderly people with GICs, analysis of factors influencing it and identification of the most important problems of the discussed group of patients.

Material and methods

Anonymous and voluntary study was conducted from November 2017 to September 2018. Total group of 90 patients with diagnosed GICs in general and oncological surgery wards participated in this study. A cross-sectional and descriptive correlational design was used in this study. The study was approved by the independent Bioethics Committee of the Wroclaw Medical University. The STROBE (Strengthening The Reporting of OBservational Studies in Epidemiology) reporting guidelines were followed.

The exclusion criteria were: age <60, tumors in other part of the body than the gastrointestinal tract, GICs being the metastasis of the primary tumor and dementia. The study used a questionnaire containing sociodemographic questions about the location of cancer, its type, genetic burden of the disease, the time elapsed since the diagnosis of the disease and the start of treatment. Also a standardized and relevant questionnaires were used to measure QOL: the 30 Items European Organization for Research of Life Questionnaire Core (EORTC QLQ-C30), the 18 Items Esophageal Cancer Module (EORTC QLQ-OES18), the 22 Items Gastric Cancer Module (EORTC QLQ-STO22), and the 29 Items Colorectal Cancer Module (EORTC QLQ-CR29).

Statistical analysis was performed using STATISTICA 12 software. The Shapiro-Wilk, Mann-Whitney and Kruskal-Willis tests were used as well as Spearman's rank correlation analysis was performed. The values for $p<0.05$ or $p<0.01$ were set as the assumed level of significance.

Table 1. Characteristics of the test group

Feature		**Female**		**Men**		**Both**	
Variable	Variants	n	%	n	%	n	%
Age	60-70	16	17.77	33	36.67	49	54.44
	71-80	11	3.36	19	21.11	30	33.33
	> 80	5	5.55	6	6.67	11	12.22
Sex		32	35.56	58	64.44	90	100.00
Place of living	Country	2	2.22	10	11.11	12	13.33
	City <100.000 inhabitants	12	13.33	24	26.67	36	40.00
	City >100.000 inhabitants	18	20.00	24	26.67	42	46.67
Education	Elementary	5	5.55	4	4.44	9	10.00
	Professional	6	6.67	18	20.00	24	26.67
	College	17	18.89	22	24.44	39	43.33
	Higher	4	4.44	14	15.55	18	20.00
Occupation	Active	3	3.33	6	6.67	9	10.00
	Retirement	27	30.00	44	48.89	71	78.89
	Health pension	2	2.22	8	8.89	10	11.11
Tumor localisation	Large intestine, Rectum	18	20.00	7	7.78	25	27.78
	Stomach	15	16.66	10	11.12	25	27.78
	Liver, gallblader, pancreas	9	10.00	9	10.00	18	20.00
	Esophagus	11	12.22	7	7.78	18	20.00
	Oral cavity	3	3.33	2	2.23	5	5.56
	Small intestine	2	2.23	3	3.33	5	5.56
Time from diagnosis	<6 months	10	11.11	29	32.22	39	43.33
	6 - 8 months	10	11.11	16	17.77	26	28.88
	18 - 30 months	5	5.56	7	7.77	12	13.33
	31 - 60 months	3	3.33	5	5.56	8	8.89
	>60 months	4	4.44	1	1.11	5	5.56
Cancer in family	Yes	20	22.22	34	37.78	54	60.00
	No	12	13.33	24	26.67	36	40.00
Treatment	In the course of the diagnosis	2	2.22	4	4.44	6	6.66
	Surgical	14	15.55	28	31.11	42	46.66
	Chemotherapy	1	1.11	6	6.67	7	7.78
	Radiotherapy	0	0.00	4	4.44	4	4.44
	Surgical + chemo-/radio	14	15.55	15	16.67	29	32.22
	Palliation	1	1.11	3	3.33	4	4.44

Abbreviations: *n* – number of participants

Results

The results showed an average QOL of the study group. The lowest mean result was obtained globally, and the highest in the domain of cognitive functions. The highest discrepancies in elections were observed in the role domain, and the lowest in the general QOL scale. Detailed data are presented in Table 2.

Table 2. Results for the EORTC QLQ questionnaire with modules

	Variable	**n**	**M**	**Me**	**Min**	**Max**	**SD**
	General QOL	90	50.75	54.09	2.78	95.23	21.91
	Scale of functioning	90	53.04	54.17	0.00	97.78	25.95
Domain	Physical	90	60.22	60.00	0.00	100.00	30.15
	Role	90	48.52	50.00	0.00	100.00	38.35
	Emotional	90	49.44	50.00	0.00	100.00	30.95
	Cognitive function	90	62.04	66.67	0.00	100.00	34.80
	Social	90	53.70	66.67	0.00	100.00	37.29
	Global scale	90	41.48	41.67	0.00	100.00	22.69
	Scale of symptoms	90	57.74	61.54	0.00	97.44	25.99

Abbreviations: ***n*** – number of participants; ***M*** – mean value; ***Me*** – median value; ***Min*** – minimum value; ***Max*** – maximum value; ***SD*** – standard deviation; ***QOL*** – quality of life

Relationships between age and all scales and domains using Spearman's rank showed that it correlates negatively with cognitive (R=-0.21; p=0.045) and emotional (R=-0.32; p=0.002), which means that the higher the age the lower the functioning in these spheres. No correlation was found for the rest of the variables (Table 3).

Table 3. Spearman rank correlations between the age of respondents and all subscales

Variable	General QOL	Scale of	Physical	Role fullfilling	Emotional	Cognitive function	Social	Global scale	Scale of symptoms
Age	R= -0.16	R= -0.19	R= -0.06	R= -0.07	R= -0.21	R= -0.32	R= -0.07	R= -0.07	R=-0.13
	p=0.136	p=0.078	p=0.593	p=0.537	p= 0.045*	p= 0.002**	p= 0.522	p= 0.513	p= 0.206

Notes: *p<0.05; **p<0.01
Abbreviations: ***QOL*** – quality of life

The survey showed a difference in QOL of respondents depending on their place of residence. In almost all surveyed aspects, older people from large cities had the highest QOL (general QOL: M=53.18; SD=22.42), with the exception of emotional domain (M=49.80; SD=32.79) and role playing (M=48.41; SD=39.95).

However, the Kruskal-Willis test did not show significant differences in the level of functioning between seniors living in rural areas, small or larger cities (H(2, N=90)=0.55; p=0.97). Similar was the comparison of the respondents' education with the level of their QOL, where the highest results were obtained by the group with primary education, the

lowest with vocational education, but there were no significant differences in the scope of QOL in groups distinguished by education (H(3, N=90)=5.02; p=0.17).

On the other hand, the comparison between women and men proved that in all major scales and domains the average points were higher in men (Tab. 4).

Table 4. Comparison of gender with all subscale QOL

	Variable	**Female (n=32)**		**Male (n=58)**	
		M	**SD**	**M**	**SD**
	Global QOL	47.15	21.48	52.74	22.07
	Scale of fucntioning	47.02	24.94	56.36	26.11
Domain	Physical	58.33	30.15	61.26	30.37
	Role fullfilling	40.10	34.61	53.16	39.79
	Emotional	37.76	30.16	55.89	29.70
	Cognitive function	48.96	33.85	69.25	33.45
	Social	47.40	37.89	57.18	36.82
	Global scale	40.10	22.94	42.24	22.72
	Scale of symptoms	54.33	25.84	59.62	26.10

Abbreviations: ***n*** – number of participants; ***M*** – mean value; ***SD*** – standard deviation; ***QOL*** – quality of life

The relationship between the scales in terms of employment status was also analysed. Differences were found in general QOL (H(2.N=90)=7.23; p=0.027), symptom scale (H(2.N=90)=10.17; p=0.006), cognitive function (H(2.N=90)=16.99; p=0.000) and role (H(2.N=90)=6.33; p=0.042). Multiple post hoc comparisons have shown that there is a difference in trend level (p=0.07) in overall QOL and individual symptoms between retired and retired people (the first group achieved a higher score than the second group). Multiple post hoc comparisons for cognitive function showed that the active population had a higher level of cognitive function than patients in retirement or retired.

The study compared QOL of patients treated with radio- and chemotherapy with patients treated with other methods of treatment (surgical, surgical with chemotherapy, palliative, without treatment). In both groups similar QOL results were obtained, with the exception of the cognitive function domain (patients treated with M=60 chemo-/radiotherapy; with other methods M=80). The Mann-Whitney test did not show any significant differences between the groups of seniors treated with different types of treatment.

As far as the relation between the time of cancer treatment and QOL of patients is concerned, the highest results were achieved by the group with cancer diagnosed relatively recently (up to 6 months). The highest differences were observed in the results of the general scale of QOL and symptoms, as well as in the physical, role and emotional domains. However, the Kruskal-Willis test did not show a statistically significant difference in functional sphere between the groups distinguished due to the duration of treatment (H(4, N=90)= 7.52; p=0.11). However, there was a significant difference in the level of symptoms (H(4, N=90)=15.03; p<0.001).

The study analyzed the QOL level of people with GICs in whom a stoma was present and those who did not undergo such a procedure. There was a statistically significant difference between these groups. People with stoma had lower levels of QOL in functioning (p=0.005), symptoms (p=0.000), total QOL (p=0.005), subscale of role (p=0.028) and emotional functioning (p=0.008), and higher levels in symptom scale (p=0.000).

The researchers also analyzed the QOL level in patients depending on the location of the cancer. Similar results were observed in individual groups, with the largest differences in

global scale, physical domain and cognitive function. The lowest QOL was observed in patients with esophageal cancer (M=43.08; SD=15.51), followed by liver, pancreas and gallbladder (M=48.77; SD=19.91), stomach (M=50.67; SD=21.23), small intestine M=52.78; SD=22.82) and large intestine (M=58.33; SD=27.93).

Respondents were asked about the severity of pain as an important component affecting their QOL. According to EORTC QLQ-C30, patients had to mark it on a scale from 1 to 4. The strongest pain was declared by patients with diagnosed pancreatic, liver and gallbladder tumors (n=18; M=2.89; SD=1.32). The Mann-Whitney test showed differences between groups at the trend level (U=473.00; p=0.078). At the same time, it was observed that the younger people, the less pain was felt. Seniors aged 60-70 rated it lower (M=2.24; SD=1.13) than people aged 71-80 (M=2.73; SD=1.08) or >80. (M=2.91; SD=0.83).

Patients were also asked about the objective evaluation of QOL. The answer to this question (on a scale of 1-7 points, where 1 means the lowest and 7 the highest QOL) was compared with the aggregated results obtained from the tests. Seniors received M=4.00 (SD=3.47) in objective analysis, and M=54.09 (SD=50.75) in general QOL research (on a scale from 0-100 points). The results of Spearman's rank correlation analysis showed a significant high correlation between the summed up QOL results and the subjective assessment of the patient (R= 0.762, p=0.000).

Discussion

Our own studies show that people over 60 years of age suffering from GICs have an average QOL, which is confirmed by analyses carried out by other researchers [13,14]. In the presented studies, individual QOL domains, including physical, mental and social functioning, were compared. Such an approach to the problem, especially in the situation of people struggling with cancer, is necessary as it is a significant burden on the overall functioning of the seniors. They also cause a high risk of depression, which can have a significant impact on the therapeutic process. As studies show, emotional functioning of older patients affects their physical wellbeing and vice versa and depends on the age of the respondents.

The conducted analyses prove a statistically significant negative difference in the cognitive and emotional domain due to the age of seniors - the older they are, the poorer the quality of the above aspects of life. Additionally, they show that all spheres of life decrease with age, which is confirmed by the results of Hamama-Raz et al. [15] study showing QOL decrease in cancer patients >75 years old compared to younger people, especially in the functional sphere. In turn, Khandelwal et al. [16] demonstrated QOL decrease also in the domains of physical, cognitive, social and role functioning. It seems that this situation is intensified by natural processes taking place in elderly people, as well as strong emotions related to the diagnosis and treatment of cancer.

Another aspect that was examined in this paper was the links between QOL and the place of residence of the respondents. Obtained results indicate better QOL of people living in big cities, which may be related to easier access to diagnostics, treatment and care. They are different from the data obtained by Forouzi et al. [17] and Milczak et al. [18]. These discrepancies may be due to the fact that QOL is influenced by so many social factors that it is difficult to find such a large and heterogeneous group to carry out in-depth analyses in this respect.

The factor that was analyzed for the purpose of this study was the gender of the respondents. It was shown that in women QOL in the cognitive and emotional sphere is lower than in men, and higher in everyday life. These results differ from the conclusions of Trinquinato et al. [19], who obtained higher results in men in cognitive function, while lower in the scale of symptoms. On the other hand, studies conducted by Trajkov et al. [20] did not show any significant differences between sex and QOL. Perhaps the differences revealed are

due to the fact that women more often than men realize themselves in the domestic environment, focusing on the family as the overriding value. On the other hand, men who are forced to interrupt their professional activity due to illness, for example, may feel unnecessary, which negatively affects their QOL. It seems that the correlation between gender and QOL requires further research on larger groups with additional details on the location of the cancer.

Another factor studied was the level of education of seniors. The results prove that people with basic education had a higher QOL than other respondents. Perhaps less knowledge about the disease, its symptoms, treatment and their consequences has a positive impact on the well-being of seniors. Contrary to the above were the results of Wysokiński et al. [13], who found a better QOL in respondents with higher education, explaining it with high awareness of the respondents. On the other hand, Rigoni et al. [21], who additionally examined patient caregivers, did not show any correlation between the level of education and QOL. Differences in the obtained data may result from different sizes of the studied groups representing different levels of education.

An important component influencing the QOL of the elderly is their social activity, including economic activity. Stress related to the cessation of work and thus reduced income may condition weaker results of QOL [22]. The research shows that significant differences in the scope of total QOL, its symptoms, cognitive and emotional functioning occurred between retired or retired persons in relation to professionally active persons. The obtained data confirm the results of Lundh et al. [23] who analyzed QOL of women with breast cancer, Wieczorek et al. [24] dealing with the well-being of patients with hematopoietic system tumors, as well as Tomaszewski et al. [25] studying people with esophageal and gastric cancer. They noted that professionally active patients declared a lesser severity of the ailment than retired or retired patients. The literature states that in the situation of elderly people, social activity plays an important role. Elderly people who are professionally engaged or socially active have a better assessment of their life situation. A sense of belonging and fulfillment is an important factor influencing the well-being of the elderly [26].

The variable that affects the QOL of older people with cancer is the type of treatment undertaken. In the case of seniors, the side effects of the measures taken should be considered, as well as their real effectiveness in a multi-disease and multi-drug situation. It is necessary to take into account undesired symptoms, which affect the well-being and consequently the independence of older people and their QOL [27,28]. The study did not confirm the relationship between the type of treatment and QOL of patients. Similar results were obtained by Won et al. [29]. This situation may be caused by good, holistic care of elderly patients and overlapping of symptoms associated with the therapy with symptoms of disease, which results in difficulties in separating them [30]. The opposite data was described by Breeze et al. [31] and Mahmoudvand et al. [32], who proved that surgical treatment gives higher QOL values, which, however, may decrease when supplementary treatment in the form of radio- or chemotherapy is used.

Undoubtedly, QOL is influenced by the time factor. In the available literature, if it is studied, it is most often in the context of comparing QOL with the beginning of the treatment process. An example is the Rønning et al. [33] study, which confirms the improvement of QOL in patients with colorectal cancer 3 months after the end of treatment. Lee, on the other hand, proved that differences in QOL appear after 3 months, but from the beginning of treatment [34].

The present study shows that the higher QOL, despite the first-ever frequently experienced symptoms, present patients who have not been diagnosed with the disease for 6 months, than seniors who have been struggling with cancer for a longer period of time. Perhaps they have not yet experienced the nuisance caused by the long-term treatment and the

long-term effects of the disease. The results may also indicate the burden of cancer for the elderly patient, especially when the inconvenience associated with it lasts over time. This situation seems to be overlapping with physical, mental, social and spiritual problems. Seniors may also experience depletion of their reserves, disturbance of homeostasis, and the appearance of general exhaustion, which affects their daily functioning and QOL. Different results were obtained by Quinten et al. [35], who demonstrated an increase in QOL within the first two years after the diagnosis. It seems that an important aspect that should be analyzed here is the prognosis, which if there is an idea, and the results of treatment optimistic, can increase the QOL of seniors.

Pain is one of the most disturbing symptoms in cancer patients [36]. It is particularly difficult to assess in the elderly due to its diverse specificity, diagnostic difficulties and overlapping of disease symptoms. In older patients, side effects of the treatment, pharmacodynamics and pharmacokinetics of drugs should also be taken into account. The influence of age and localization of the cancer on QOL was compared. It turned out that younger people felt it less, which may be influenced by a smaller number of coexisting diseases. Older patients, on the other hand, treat pain as a constant factor accompanying old age and related diseases, which is why they report it less frequently.

An important parameter was the location of the change. Patients with liver, pancreas and gallbladder cancer felt more pain, but at the level of the trend, which suggests that if the number of subjects increased, the hypothesis presented would be confirmed. Similar results were obtained by Glover et al. [37] and Kim et al. [38]. Higher pain sensations in patients with these cancers may also be a symptom of the advanced stage of the disease and the specificity of the changes in question. Seniors may also be unaware of modern methods of pain treatment and may not believe in the possibility of reducing or eliminating unpleasant sensations [39].

Interesting results were obtained by studying patients in whom artificial anus had to be found as a result of the treatment of colorectal cancer. The analyses confirmed a significantly higher QOL in patients who did not need to have a stoma, which is confirmed by the Näsvall et al. [40] study. This means that the emergence of an artificial anus is an operation that has a serious impact on the perception of the body by seniors. In addition, it causes, especially at the beginning, fear of integration with others, which can reduce mental well-being and lead to unfavourable isolation for the elderly. Due to age-related disability, not only physical, but also mental preparation of the patient for the planned operation, as well as systematic education of both the patient and the caregiver are of particular importance.

The QOL is a subjective evaluation of every human being [41]. Sometimes there is a discrepancy between the subjective and objective image in its assessment, as confirmed by the following studies and analyses carried out by Schuler [42]. According to the author, the subjective evaluation of QOL in elderly people is higher than the objective result obtained thanks to specialized tools. The reason for this may be that older people do not report factors negatively affecting their wellbeing, perhaps with the intention of not putting a burden on carers or fear of having to take additional health measures. The high correlation between variables among cancer patients confirms the need for continuous QOL studies, thanks to which it is possible to increase the level of comprehensive care [42].

Conclusions

The results of the study allow for the drawing of the following main conclusions: (1) Patients with GICs are characterized by average values of total QOL. (2) Higher age affects the cognitive and emotional functioning of older people with gastrointestinal cancers. (3) Women have lower QOL than men in terms of cognitive and mental functioning. (4) Non-active seniors have a lower overall QOL, especially in the sphere of cognitive symptoms and

domains and in their role. (5) The shorter the time since the diagnosis of cancer, the higher the level of QOL. (6) Stoma emergence in seniors with colorectal cancer reduces QOL in almost all aspects of life. (7) Patients declare a higher subjective QOL than objective studies show.

Conflicts of interest

The authors declared no potential conflicts of interest.

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